Task Sharing of Tele-Mental Health Interventions in Primary Care: Formative Assessment using Implementation Science

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A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2023

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Abstract

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Background: Mental disorders ranging from mild anxiety and depression to severe psychiatric illnesses are a worldwide concern that can lead to disability, high morbidity and mortality, and economic burden. In the United States of America (US), primary care has increasingly taken on the care of patients with mental health concerns. As the world population ages, mental health concerns in older adults can impede quality of life, increase resource usage, and impact healthcare spending. To aid in addressing mental health problems worldwide, tele-mental health (TMH) interventions are becoming increasingly used as an alternative to the traditional methods of mental health care delivery. However, implementation of these interventions has met with uneven success with many barriers that will need to be addressed to ensure that TMH interventions have the structures in place to ensure implementation success in existing health systems. Task sharing is a care model that trains less specialized health care workers to perform tasks typically done by specialized health care workers. Task sharing has been shown to be effective, acceptable, and feasible in Low- and Middle-Income Countries (LMIC)

with various evidence-based mental health interventions in various mental health conditions and patient populations. In the context of TMH interventions, few studies have examined the combination of task sharing and TMH intervention for the management of mental conditions in High-Income Countries (HIC). **Method**: This dissertation project utilized implementation science methodology for formative assessment of task sharing of TMH interventions. The dissertation studies were embedded in two parent studies. The first parent study was aiming to assess the modifiable components of a TMH intervention and identify barriers to implementation in primary care used a multi-method design of interviews and surveys. However, due to the COVID-19 pandemic, the researchers pivoted to examining perceptions of TMH interventions in general among healthcare professionals in the primary care setting using an explanatory sequential mixed-methods design. The goals of the three dissertation studies were to examine the organizational readiness, acceptability, appropriateness, and feasibility for the implementation strategy of task sharing of tele-mental health interventions (the innovation, the "thing") in primary care clinic. In **Aim 1**, a case study was based on the first parent study. The case study describes the formative, exploratory process of using Consolidated Framework for Implementation Research (CFIR) and Expert Recommendations for Implementing Change (ERIC) to formulate the study, to identify barriers and facilitators to the innovation, to analyze the results, and then using the CFIR-ERIC Mapping Tool identify strategies to overcome barriers. Aims 2 and 3 were embedding in the pivoted research. For **Aim 2**, the project presents the health professionals' perception of their organizational readiness to implement task sharing of TMH interventions. The study examines differences between

health professionals' roles and level of behavioral health integration in their clinics. Lastly, **Aim 3** studies the health professionals' perception of the acceptability, appropriateness, and feasibility of task sharing of TMH interventions for their clinics. The study examines differences between health professionals' roles and their comfort with task sharing to the implementation outcomes of acceptability, appropriateness, and feasibility. **Results**: All the studies demonstrate a formative research process. In Aim 1, the intrinsic case study approach exemplified the process of using Consolidate Framework for Implementation Research (CFIR), Expert Recommendations for Implementing Change (ERIC), and especially the CFIR-ERIC Mapping Tool to identify methods to aid implementation of a complex innovation. The case study identified many issues with using the CFIR-Mapping Tool and speculated on possible changes to this tool given the updated CFIR determinant framework. Aim 2 found that the health care providers from clinics that had behavioral and mental health services integrated with primary care perceived their organization as ready to implement change and had an implementation climate more supportive for evidence-based practice. This can be reflected in the qualitative data where those in BHI clinics were positive about implementation. Additionally, the survey showed that there were no differences between the three healthcare professionals (Primary Care Provider (PCP), Behavioral/Mental Health specialist (BMH), and Nurses, who can be considered Frontline Staff (FLS), for organizational readiness for change or implementation climate. The qualitative results reflect this lack of difference as the three healthcare professional roles of PCPs, BMH specialists, and FLS were all positive about the innovation. In Aim 3, the BMH specialists, PCPs, and Nurses show differences in scores for acceptability,

appropriateness, and feasibility of implementing task sharing of TMH interventions in primary care. The BMH specialists and PCPs had lower scores in comparison to Nurses. The qualitative data showed that the BMH specialists and PCPs expressed the concerns most often coded with CFIR constructs of Available Resources, Knowledge & Beliefs of the Innovation, Self-Efficacy, Needs & Resources of Those Served by the Organization, External Policies & Incentives, and Complexity for implementing task sharing of TMH interventions in primary care. **Conclusion**: These three studies add to the research on task sharing of TMH interventions in primary care in HICs, and help researchers and clinicians use implementation methods to investigate implementation strategies and the interventions in real-world setting. The three studies describe one aspect of implementation science, the formative, exploratory phase of implementation. After formative assessment, the next steps would have been to plan, implement, and sustain the innovation in the primary care clinics.

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Acknowledgement

Thank you to all members of my committee – Dr. Oleg Zaslavsky, Dr. Brenna Renn, Dr. Erin Blakeney, Dr. Sean Munson – for their patience and support as I applied the skills learned through my education.

Thank you to my funding from:

- Achievement Rewards for College Scientists (ARCS) Fellowship
- de Tornyay Healthy Aging Scholarship
- Hester McLaws Nursing Scholarship
- Joseph C. & Edith A. Cole Endowed Nursing Scholarship
- Joanna B Sevan Sharma Endowed Nursing Fellowship
- Robert L. & Catherine M. Zesbaugh Scholarship
- Tuition Reimbursement from Providence Health System

Without which I could not be able to complete my studies and dissertation.

Thank you to the Principal Investigators, Oleg Zaslavsky and Brenna Renn, and their funding from the ALACRITY center from the University of Washington for allowing me to add my questions to their study.

Thank you for the School of Nursing staff and faculty for aiding and answering all the questions as I underwent the program. Thank you to Jerusha Nyabiage for co-coding with me. Thank you to my 2018 cohort, my family and friends who encouraged and

supported me. A special thank you to my husband, Sean M. Laverty, for his patience as I went and got another degree.

This dissertation is dedicated to my mother, Fong Yung Chu.

Chapter 1. Introduction

Background and Significance

Mental disorders which range from mild anxiety and depression to severe psychiatric illnesses are a worldwide concern that can lead to disability, high morbidity and mortality, and economic burden. In 2008, the World Health Organization (WHO) issued a comprehensive report that led to the United Nations recommending a shift from tertiary, institutionalized care to integration of mental health care into primary care with community support.[1] In the United States of America (US), primary care has increasingly taken on the care of patients with mental health concerns.[2] Additionally, as the world population ages, mental health concerns in older adults can impede quality of life, increase resource usage, and impact healthcare spending.[3] Aging adds unique issues that can negatively affect mental health in older adults such as loss of social support, having multiple physical health conditions, and functional decline. When older adults are willing to address their mental health concerns, they most often want to discuss these concerns with their primary care provider.[4]

To aid in addressing the mental health problems worldwide, tele-mental health (TMH) interventions are becoming increasingly used as an alternative to the traditional methods of mental health care delivery. This growth of TMH interventions has been driven by demands of mental healthcare, shortages and urban distribution of Behavioral/Mental Health (BMH) specialists, advancements in technology, and reimbursement for TMH.[5,6] Tele-mental health refers to all of the forms of technology

that can be used to deliver mental health care from screening to diagnosis to treatment and follow-up.[5–7] Healthcare professionals using TMH interventions can be using technology to directly interact with patients, or indirectly care for patients by providing consultation and supervision of other healthcare professionals.[7] TMH interventions have been shown to be effective in the care of many mental disorders like depression, anxiety disorders, eating disorders, substance use disorders, psychosis, and suicide prevention. The interventions have also shown to be acceptable to patients, and improve access to care.[5–10] These technology enhanced mental health interventions are core to the concept of integrating mental health care into primary care and the community.[11] However, implementation of these interventions have met with uneven success with many barriers that will need to be addressed to ensure that TMH interventions have the structures in place to ensure implementation success in existing health systems.[12,13]

Implementation science investigates methods for systematic uptake of research findings and other evidence-based practices into routine practice with the goal to improve the quality and effectiveness of health services or care.[14] Implementation research focuses on how or the processes of introducing and embedding solutions to problems into a health system or community.[15] In other words, this research area is focused on strategies and tactics to enhance adoption, implementation and sustainability of evidence-based interventions which could be programs, practices, principles, procedures, products, pills and/or policies that will change health behaviors, health outcomes or health environments.[16] As such, this research methodology becomes

important as it seeks to investigate how to integrate interventions in practice and de-implement interventions that may be harmful and/or ineffective.

Implementation Strategies and Task sharing

Because implementation science investigates how to get interventions into practice or the community, the research focuses on “implementation strategies” or the methods or techniques used to increase adoption, implementation and sustainment of interventions in practice.[17] The study designs used to research these strategies are the same or similar to investigating interventions.[17]

Task sharing is a care model and implementation strategy that trains less specialized health care workers to perform tasks typically done by specialized health care workers. In a WHO report, task sharing is used to “emphasize the common performance of the entire clinical task, or key components of it, among teams of difference cadres of health workers. Tasks are not taken away from one cadre and given to another, but rather that additional cadres are given the capacity to take on identified tasks”.[18] Another similar term is task shifting. Task shifting has been defined as the “rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified health workers to health workers with shorter training and fewer qualification in order to make more efficient use of the available human resources for health”.[19] Often task shifting and task sharing are used interchangeably, but task sharing has a more collaborative connotation.[20] An older term is task substitution where a task is done by a person of other than the appropriate skill level[21]. A synonym is the

term delegation or where clinicians' tasks are given to others in a team [22]. Both terms of task sharing and task shifting reflect the same intent of utilizing a cadre of workers who normally do not perform the specific tasks, but are trained to develop the competency to perform these tasks.[18] Task sharing and task shifting can be used to address global health shortages of health professionals especially those with specialized skills like mental health providers. With the task being shifted to a health worker with shorter training and fewer qualifications, the effect will be decreased cost with the possible concomitant increase in the time required to perform the task. There should not be a loss of quality and safety with task shifting.[21] However, task sharing and task shifting will not resolve the shortages, but be a strategy that could be implemented along with other strategies to grow the health professional workforce. Task sharing and task shifting, itself, would require significant investment.[19]

Task sharing of components of various evidence-based mental health interventions like Behavioral Activation, Cognitive Behavioral Therapy, psychoeducation, or counseling in various mental health conditions and patient populations has been shown to be effective, acceptable, and feasible in Low- and Middle Income Countries (LMIC).[23–28] There are few studies on task sharing of mental health services not in LMICs. In one review, Hoeft et al.[29] aims to learn about task shifting approaches in rural areas in High-Income Countries (HICs) and then highlight the research needs to develop task-sharing of mental health services in the US. These researchers reviewed the articles thematically for content related to task sharing and identified these themes:

- The use of community health workers for mental health services through community outreach or clinics has mixed outcomes regarding behavior change and health outcomes.
- Task sharing with primary care clinic staff are usually working with a mental health specialist who may be located on- or off-site in an integrated or collaborative care model.
- Telehealth can support the non-mental health providers, especially with the use of video-consultations with the non-mental health providers.
- The need for training for non-mental health providers and the mental health specialists to enable care in a virtual team environment.
- The need for partnerships with the communities to implement the interventions.
- The challenges of task sharing, such as professional boundaries, confidentiality, burnout, and staff turnover.[29]

In another review, Shahmalak et al.[30] examines the literature for lay health workers trained in task shifting of psychological interventions. These researchers perform a meta-synthesis of qualitative research. The findings of the review supported the feasibility of training non-professionals to deliver psychological interventions. However, the review found that the articles did not address how to successfully train and support non-professionals in delivering psychological interventions [30]. In a review of nurse-led task shifting, the researchers concluded that employing nurses to provide mental health care was non-inferior to behavioral/mental health specialist mental health care if there existed in-service supports, and supervision for the nurses.[20] Singla et al.[31] in reviewing literature on task sharing of perinatal depression treatment also found that non-

specialists were effectively delivering care. Lastly, in synthesizing research on task sharing of Behavioral Activation (BA), the thirteen studies showed the efficacy of task sharing of BA. The findings from the synthesis showed that task sharing of BA as feasible, acceptable, and performed with fidelity.[32] However, these reviews did not investigate implementation outcomes of task shifting/task sharing of mental health services. Anvari et al.[32] did mention that few studies focused on implementation outcomes. In a review about economic aspects primary care services models, the researchers mentioned that studies found task shifting was cost-effective in certain situations, but the overall economic value was uncertain with a mix of positive and negative health and economic outcomes.[33]

A literature review was performed in the summer of 2020 in CINAHL, Embase, PsycINFO, and PubMed using controlled vocabularies and keywords on the concepts of task sharing, mental disorders, and primary healthcare with their possible synonyms for empirical studies in High-Income Countries (HIC). The review found eight studies on task sharing in HIC that were a mix of qualitative and quantitative designs. Two of the studies investigated task sharing/task shifting to lay health workers like promotores.[34,35] Three studies examined task sharing/task shifting from mental health specialists to general practitioners and pediatricians while the remaining three studies examined task shifting from primary care providers (PCPs) to nurses and medical assistants.[36–41] Among the four qualitative studies, two of the studies used focus groups to interview lay health workers in the US for their perceptions of taking the tasks of providing mental health services. Both studies found positive perceptions about task shifting by lay health

workers.[34,35] One qualitative study examined social media discussion by general practitioners about task shifting from specialists to generalist providers in Norway. After analyzing the social media posts, the researchers found that general practitioners were concerned about the administrative hassle, delays in needed examinations, overdiagnosis, reduced access, accountability, added burden, and malpractice. However, the researchers concluded that general practitioners were not averse to task shifting when task-shifting goals and supports are negotiated and handled well.[37] The final qualitative study observed nurses in the Netherlands utilizing motivational interviewing and behavior change counseling to patients with chronic conditions. The study examined the nurses for communication skills, adherence to practice guidelines, applying motivational interviewing, and whether patients made lifestyle changes. The researchers found the nurses communicated more empathetically and used motivational interviewing more clearly with females than males, but adhere to guidelines with both genders.[38]

In terms of the quantitative studies, all were in the United States, and the study designs were cross-sectional (n=1), cluster-randomized clinical trial (n=1), and quasi-experimental (n=2). The cross-sectional study investigated the characteristics, practice characteristics, and training experiences of pediatricians co-managing children's mental health conditions. The researchers found that co-management was essential, but there was no information on what and how much education was needed to improve pediatricians' capability and willingness to co-manage mental health conditions.[36] The cluster-randomized clinical trial investigated a program to train primary care physicians

to provide a guideline-concordant dosing of antidepressants and/or psychotherapy in the US. The physicians delegated the tasks of education about the benefits of medication and psychotherapy to nurses to ensure treatment adherence. The researchers found that patients were positive with the nurses' expanded role, and it was a cost-effective approach.[39] The two quasi-experimental studies were both interrupted time series design. One study demonstrated the feasibility of medical assistants (MAs) to screen for depression and enter the data into the electronic medical record.[40] The other quasi-experimental study examined the integration of behavioral health in pediatric practices and task shifting to pediatricians. The researcher found that task shifting did not lead to decreased quality of care nor increased cost of care.[41]

In general, all eight studies were positive about task sharing/task shifting in whatever form that was used. None of the eight studies examined the implementation outcomes of acceptability, appropriateness, and feasibility of task sharing/task shifting. The few studies simply stated the need for training and supervision of health care workers who have the shared task. In the context of TMH, few studies have examined the combination of task sharing and TMH interventions for the management of mental conditions in HICs especially in formative development of the implementation strategy and evidence-based mental health intervention.[42]

Objectives

Utilizing the Exploration, Preparation, Implementation, Sustainment (EPIS) Framework[43], the two parent studies were exploring the perceptions and opinions of

primary care staff about mental health interventions using technology in the primary care clinics with the plan to re-design the technology enhanced mental health intervention and developing implementation protocol adapted for the specific clinic. The EPIS framework was developed based on literature and has four phases to inform the implementation process. Each phase has key components that implementers need to consider as they work through the process of implementing an intervention.[43] The initial parent study was in the Exploration phase using a multi-method study design. The study utilized focus groups and interviews of primary care frontline staff, primary care providers, and clinic administrators along with surveys. Due to the COVID-19 pandemic, the parent study pivoted to an explanatory sequential mixed methods approach starting with a cross-sectional survey nationally in the United States. Subsequently, follow-up interviews with interested health professionals explored their perceptions of task sharing and TMH interventions for their organization. The parent studies were conducted with funding from the ALACRITY center from the University of Washington. The center was a multidisciplinary group that utilized human-centered design, education, and implementation science to provide solutions for mental health problems in underserved communities (https://www.uwalacrity.org/). The studies were deemed to be Exempt by IRB from University of Washington.

The following three manuscript are studies embedded within the parent studies. The three dissertation studies are examples of implementation science in formative or exploratory research using a combination of a determinant framework (Consolidated Framework for Implementation Research; CFIR[44]), an implementation theory

(Organizational Readiness for Change; ORC[45]), and an evaluation framework (Implementation Outcomes Framework; IOF)[46] to help explore whether the innovation of interest can be implemented in primary care.

The goals of the three dissertation studies are to examine the organizational readiness, acceptability, appropriateness, and feasibility for the implementation strategy of task sharing of tele-mental health interventions (the innovation, or the "thing" to be implemented) in primary care clinics.

In Chapter 2, a case study describes the formative, exploratory process of using CFIR to formulate the study, to identify barriers and facilitators to the innovation, to analyze the results, and then using a mapping tool to identify strategies to overcome barriers.

Chapter 3 presents the health professionals' perception of their organizational readiness to implement task sharing of tele-mental health interventions. The study examines differences between health professionals' roles and level of behavioral health integration in their clinics for organizational readiness for change and implementation climate.

Chapter 4 studies the health professionals' perception of the acceptability, appropriateness, and feasibility of task sharing of tele-mental health interventions for their clinics. The study examines differences between health professionals' roles and

their comfort with task sharing and the implementation outcomes of acceptability, appropriateness, and feasibility.

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Chapter 2. A case study of formative research on implementing task sharing of a tele-mental health intervention in primary care using CFIR and the CFIR to ERIC Mapping tool.

Abstract

Background: Depressive symptoms are common in older adults. In older adults, depressive symptoms are linked with worse morbidity and mortality, higher health costs, and lower quality of life. Behavioral Activation (BA) is one evidence-based treatment modality used to manage and treat depressive symptoms in older adults. Technology may be leveraged to increase the reach of BA. However, even with the efficacy and effectiveness of technology enhanced mental health care or tele-mental health (TMH), there still exists a shortage of mental health providers in the United States. To address this shortage, the concept of task sharing has been proposed as a possible solution to the lack of sufficient behavioral/mental health specialists. **Method**: Based off of the parent study, this case study aimed to describe the formative process of exploring how to implement task sharing of a Fitbit® enhanced behavioral activation intervention ("the innovation", "the thing") to manage depressive symptoms in older adults by primary care clinics, how Consolidated Framework for Implementation Research (CFIR) was used to identify barriers, and how the CFIR to Expert Recommendations for Implementing Change (ERIC) Mapping Tool (Version 1) was used to select the implementation package for the innovation. **Results**: ERIC strategies with the highest percentage by CFIR construct resulted in a list of 26 strategies. In general, the suggested strategies fell into categories of stakeholder involvement, process planning and quality

improvement, facilitation and being a resource/change agent for implementation, funding, and education and training. **Conclusion**: This process to assess implementation of a complex innovation can be utilized by clinicians and researchers who are interested in addressing problems which have identified evidence-based interventions, but need to ensure that the interventions and implementation strategies can be implemented in their specific context.

Background and Significance

The prevalence of depressive symptoms in older adults ranges from 2.1-7.2%.[1] In older adults, depressive symptoms are linked with worse morbidity and mortality, higher health costs, and lower quality of life[1–4]. Behavioral Activation (BA) is one evidence-based treatment modality used to manage and treat depressive symptoms in older adults. This therapy involves the use of daily planners and valued activity lists to schedule behaviors that are positive reinforcing, thereby improving behavioral withdrawal, avoidance, and depressive symptoms. The method has been shown to be user-friendly and a straight-forward approach to use with patients with depressive symptoms[3,5]. Polenick and Flora[6] summarized the research of BA for depression in older adults and found that BA has been shown to be effective in managing depression in older adults. To increase the reach of BA, this method has been combined with technology to monitor the patients, transmit the information to clinicians, and communicate with patients. The cost-effectiveness and quality of life outcomes of BA is similar between telehealth delivery and in person delivery, with an advantage for telehealth delivery in lowering health care use without negatively impacting patient

outcomes.[2,3] However, even with the efficacy and effectiveness of technology enhanced mental health care or tele-mental health (TMH), there still exists a shortage of mental health providers in the United States[7]. To address this issue, the concept of task sharing has been proposed as a possible solution to the shortage. The World Health Organization (WHO) defined task sharing as "the common performance of the entire clinical task, or key components of it, among teams of difference cadres of health workers. Tasks are not taken away from one cadre and given to another, but rather that additional cadres are given the capacity to take on identified tasks".[8] Hoeft et al.[9] reviewed fifty-five peer reviewed articles and grey literature sources with the aim of learning about task sharing of mental health care in rural areas of High-Income Countries (HIC). The synthesis showed challenges and issues with task sharing. These challenges included professional boundaries, confidentiality, burnout, and staff turnover. However, they did find that telehealth aided with task sharing of mental health interventions.[9] In a meta-synthesis, Shahmalak et al.[10] reviewed 10 qualitative studies on the impact of training on and delivery of psychological therapies by Lay Health Workers (LHW). This meta-synthesis found that task shifting of psychological interventions to LHWs can be a solution to the shortage of mental health professionals, but training is essential for successful task shifting.[10] In a systematic review of the barriers and facilitators of task sharing of mental health interventions in Low- and Middle-Income Countries (LMIC) using implementation science frameworks, the researchers developed a Barriers and Facilitators of Mental Health Task Sharing Interventions framework (BeFITS-MH) after reviewing 37 articles. Based on the developed framework, the facilitators most amendable to adaptation were in the

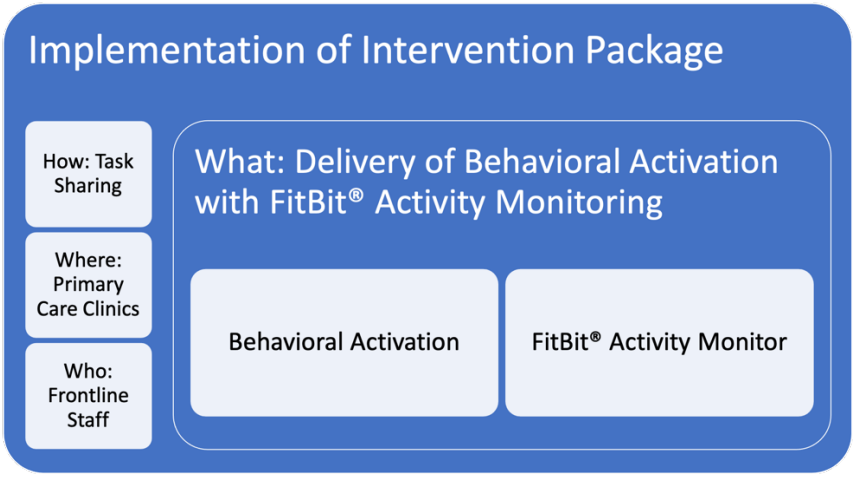
domains of the providers and the intervention while barriers fell in the domains of the clients, their family, and their communities.[11] Lastly, in an evidence synthesis on task sharing of BA for depression, the researchers examined thirteen articles and synthesis of the results showed efficacy of task sharing of the BA intervention. The evidence showed that task sharing of BA was also acceptable, feasible, and performed with fidelity by non-specialists.[12] Task sharing as an implementation strategy to address mental health professionals shortages is possible as long as the healthcare professionals receiving the tasks are willing and trained.

The Innovation

The innovation consists of the implementation strategy of task sharing to a health professional, typically frontline clinic staff in a primary care clinic, to deliver BA supported by monitoring Fitbit® activity data and then communicating with the patients using telecommunication methods (telephone or videoconferencing tools). The health professional given the task can contact the patients and encourage the patients with depressive symptoms to remain engaged and active with the BA plan depending on what they see from the Fitbit® activity information. This health professional will also be able to triage the patients' symptoms and consult with behavioral/mental health professionals and primary care providers in case of worsening conditions. A pilot study evaluating the feasibility and preliminary efficacy of a similar intervention using Fitbit® technology to monitor sleep, motivational interviewing with participants, and texting personalized messages to participants with osteoarthritis and sleep problems found that the participants were able to self-manage to improve their sleep quality.[13] In another

study on the use of Fitbit® in BA therapy for depression, the researchers explored the participants perceived experiences from using the Fitbit®. These participants found the Fitbit® monitoring useful for improving their physical activity levels by increasing their self-awareness. However, this study did not show improvements in Beck's Depression Inventory scores.[14] Thus, the innovation is a complex intervention that includes task sharing to frontline staff, using BA to manage depressive symptoms in patients in primary care, and telemonitoring and electronic notification of patients' activity using Fitbit® (Figure 1).

Figure 1: The innovation = intervention + implementation strategy



Implementation Science

Implementation science has been defined as the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and hence, to improve the quality and effectiveness of health services or care[15]. The goal of implementation research focuses on the processes to introduce, implement, and embed solutions to problems into health systems or communities.[16]

There is an increasing call for health care professionals to use this methodology and to study the "how" of implementing evidence-based interventions into practice. The need to study implementation of evidence-based interventions (EBIs) comes from the complexity of health care systems where difficulties in measuring impact, obtaining buy-in from stakeholders, tailoring strategies for change management, and leadership and organizational commitment can be barriers to implementing evidence-based interventions[17].

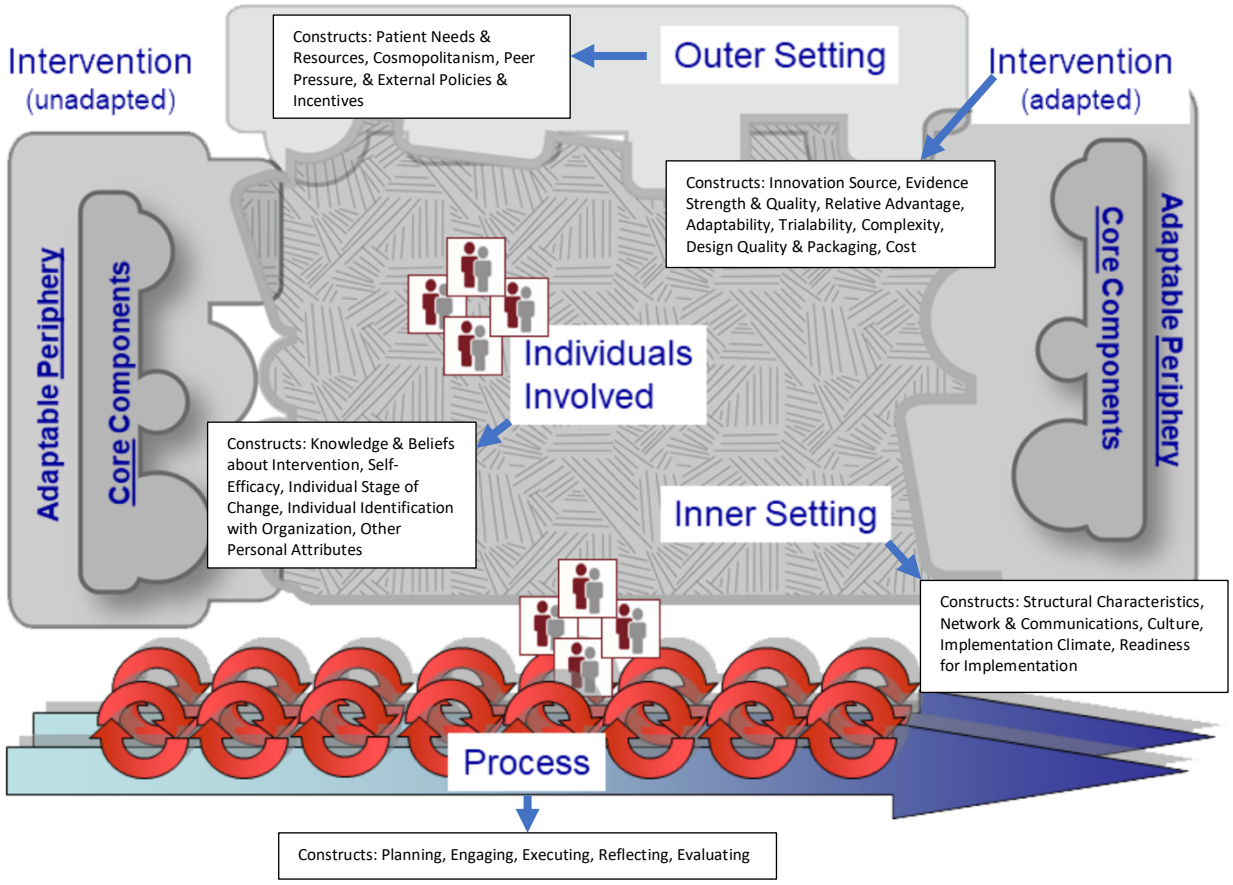
Consolidated Framework for Implementation Research (CFIR)

The Consolidated Framework for Implementation Research (CFIR) is the most utilized framework for identifying barriers and facilitators of implementation of evidence-based interventions (EBI).[18] Damschroder et al.[19] reviewed published literature for concepts, constructs, and terminologies found in the literature to design this framework. Damschroder et al.[19] developed this framework believing that this will help researchers with formative assessment and summative evaluation of EBI implementation in specific contexts. Researchers will be able to select constructs most relevant to the setting and then use the framework to guide assessment, evaluation, and explanations of findings.[19]

CFIR is classified into five domains: Characteristics of the Intervention, Outer Setting, Inner Setting, Characteristics of Individuals, and Process. The Characteristics of the Intervention domain includes eight constructs that apply to the EBI of interest. For the Outer Setting which contains four constructs, the constructs are focused on forces and factors outside of the organization. The Inner Setting domain contains fourteen constructs and focuses on internal organizational factors. Several constructs in the

Inner Setting contain sub-constructs. Further embedded in the organization are individuals who will be the main actors implementing the EBI. Characteristics of the Individual contains 5 constructs about these main actors. Lastly, the Process domain has eight constructs concerned with implementation.[19] The main constructs for each domain can be seen in Figure 2. All these constructs with their specific definitions can be found on the website, https://cfirguide.org/.[20]

Figure 2: Model of Consolidated Framework for Implementation Research



Adapted from https://cfirguide.org/cfirdiagram/

Consolidated Framework for Implementation Research (CFIR) - Expert Recommendations for Implementing Change (ERIC) Mapping Tool

To research the "how" of implementing evidence-based intervention into practice, implementation science investigates strategies. These strategies are the methods, approaches, or techniques that aid in adoption, implementation, sustainment, and dissemination of evidence-based interventions[21,22] Powell et al.[23] using a modified Delphi process, created a consensus developed list of 73 implementation strategies and definitions of these implementation strategies. These Expert Recommendations for Implementing Change (ERIC) strategies can be discrete or one single method, approach or technique, but are typically multifaceted combination strategies to ensure implementation of EBIs in the complex health system.[22] However, after identifying constructs that are potential barriers and facilitators, the issue becomes how should implementers identify these barriers and facilitators, and what strategies could be utilized to address the barriers to implementation. One size does not fit all contexts. Often strategies that works in one health system fail to work in another health system.[24]

To address the issue of which strategies can overcome which CFIR barriers, Waltz et al.[11] surveyed the broad implementation science expert community to select and rank strategies that best address CFIR barriers. The survey participants selected up to seven strategies that they believed would best address the listed barrier and then identify the level of influence on feasibility, improvement opportunity, validity, difficulty, and relevance of each ERIC strategy on their choices. The survey showed that participants on average chose six strategies per CFIR barrier with much heterogeneity of opinions

on which ERIC strategies best addressed each CFIR barrier. For each barrier, if over 50% of participants selected a strategy, it was considered a Level 1 endorsement while if 20-49.9% of participant select a strategy, it was considered a Level 2 endorsement. Based on the survey, Waltz et al.[24] developed a CFIR-ERIC Implementation Strategy Mapping Tool that can be found in www.cfirguide.org/choosing-strategies/. The tool can be downloaded and consists of four sheets in an Excel spreadsheet. The first sheet consists of instructions. The second sheet is a summary of implementation strategies to CFIR constructs with the percentages of recommendations. The third sheet is where the user would select the relevant CFIR constructs identified as barriers. Used macros, the spreadsheet generates recommended strategies by summing the percentages of selected CFIR constructs and sorting the results by cumulative percentages. Strategies listed with over 50% (Level 1) are color coded green while strategies between 20-49% (Level 2) are color coded yellow. Additionally, this sheet shows for each selected barrier CFIR construct (column headings), the implementation strategies most recommended to counter the barrier. Typically, implementation strategies with a cumulative match of 50% and greater will be strongly recommended for use to aid in addressing the identified barriers.[25]

Since the inception of the CFIR-ERIC Mapping tool in 2019, there have been eight published studies that included the CFIR-ERIC Mapping tool. These studies either used the tool or planned to use the tool for informing the implementation of the intervention of interest to the study.[26–33] However, these studies do not fully describe the process of

using CFIR for formative research and especially do not describe the use of the CFIR-ERIC Mapping tool to develop an implementation plan.

Method

The case study approach is a useful design when the goal is to gain an in-depth understanding and appreciation of an issue, event or phenomenon of interest in real-life contexts.[34] It is an approach to capture How, What, and Why questions especially when the research has little control over the events.[34,35] An intrinsic case study approach aims to learn more about a unique phenomenon.[34] Thus, this case study will use this intrinsic approach to inform implementation practitioners on the formative process of implementation of a complex evidence-based intervention in diverse complex health systems.

Specifically, this case study describes the formative process in exploring how to implement task sharing of a Fitbit® enhanced behavioral activation intervention to assist older adults manage depressive symptoms, how CFIR was used to identify barriers, and how the CFIR to ERIC Mapping Tool[24] (Version 1) was used to select the implementation strategy package for the intervention.

Step 1: Designing the formative research.

In 2019 for the parent study, the study team started with initial formative research to gather information on how to implement a task sharing of Fitbit® enhanced behavioral

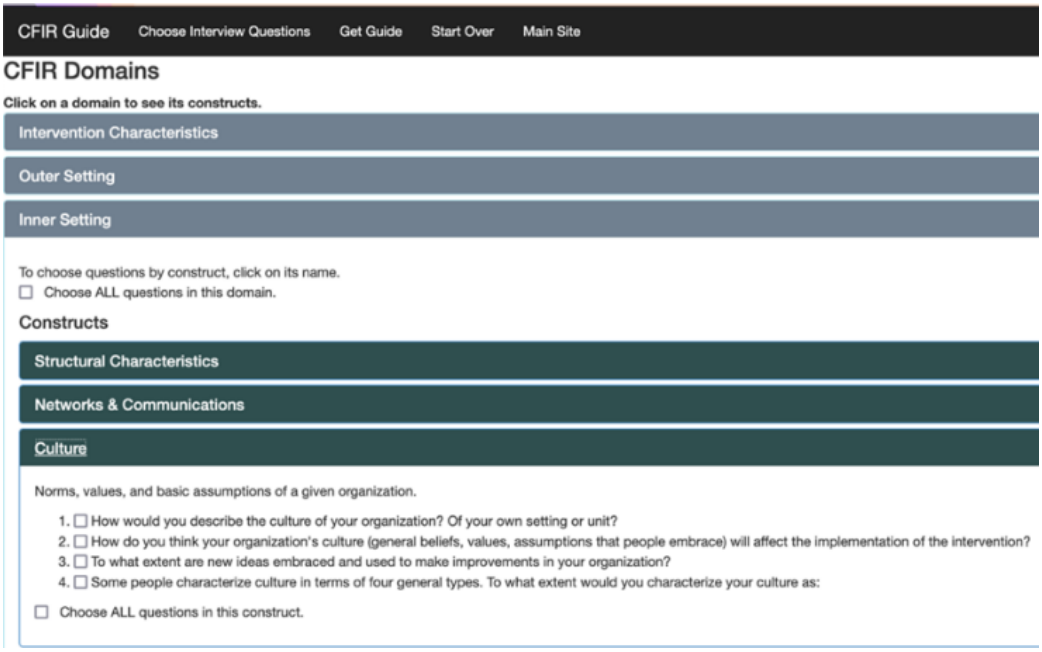
activation intervention for treating depression in older adults. The goal of the exploration phase of the parent study was to:

- Assess for modifiable components of the intervention such as who the task would be given to, and what parts of the technology could be enhanced or changed to ease the usability of the intervention.
- Identify barriers to implementation in primary care and select possible solutions to mitigate these barriers.

Specifically, the parent study wanted to conduct a contextual inquiry to map the policies, workforce competencies, and clinical workflows for delivering the technology supported BA intervention in primary care. The study was a multi-method design with both quantitative and qualitative data collected simultaneously. The methods and full results of the multi-methods study will be published elsewhere.

The study team began by using the CFIR Interview Guide Tool[36] to identify interview questions for constructs of interest (Figure 3).

Figure 3: Example of CFIR Interview Guide Questions



The study team focused on and adapted the questions in the domains of Characteristics of the Intervention, Inner Setting, and Characteristics of Individual to assess for implementation of the innovation in the participants' specific setting. The focus on the Characteristics of the Intervention would inform the researchers on what components of the intervention can be adapted to the specific context while the focus on Inner Setting and Characteristics of the Individual would inform the researchers on what combination of strategies, they could have used to aid the implementation of the intervention. The final interview guide consisted of topics of (see Appendix 1 for full interview guide by health care professional type):

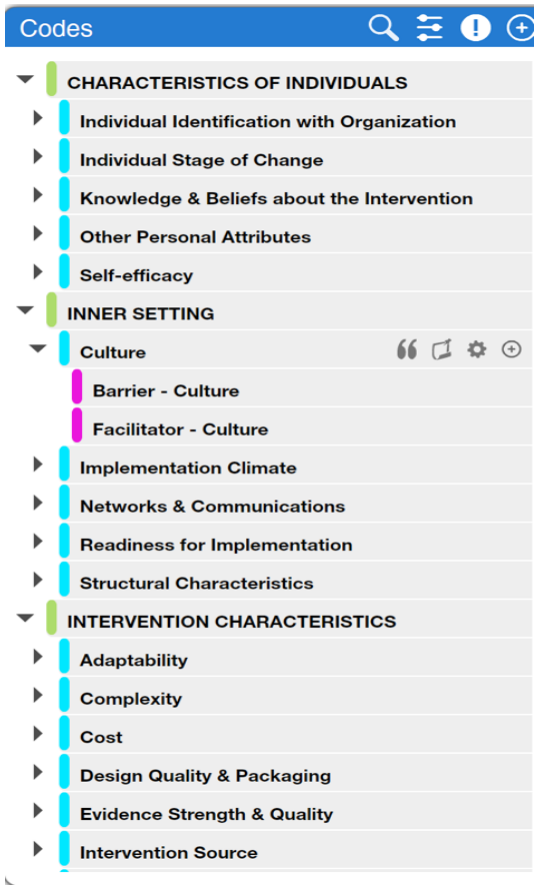
- Assessing the clinic process of screening and treating patients with depression.
- Clinic staff comfort with task sharing and treating people with depression.
- Factors that were barriers and facilitators to providing behavioral interventions in the clinic.

- Attitude toward technology to provide behavioral interventions.
- Needs of the staff to be able to deliver the intervention.

Step 2: Performing the formative research.

The study team interviewed three types of health professional groups in-person at two primary care clinics in 2019 to obtain a broad view of the innovation for their clinic. One health professional group of frontline staff consisted of registered nurses (RN)/licensed practical nurses (LPN), medical assistants (MA), and receptionists or similar. The second health professional group consisted of physicians, mental health professionals like psychologists, advanced practice nurses, and physician assistants. The last group consisted of individual interviews with clinic administrators. The study team who interviewed the participants consisted of a research coordinator, a nurse scientist, a psychologist, and a student nurse researcher. The focus groups and interviews each lasted about one-hour and were recorded and transcribed for exact wording, but no pauses or filler words were captured in the transcription. Using Dedoose® online software, three members (research coordinator, student researcher, and psychologist) of the study team performed content analysis by deductively coding using CFIR. The Dedoose® project was pre-populated with the CFIR determinant constructs. Each determinant construct was also linked with the word “barrier” or the word “facilitator” (Figure 4).

Figure 4: Dedoose Code Structure



This coding structure enabled the coders to identify whether the determinant construct was a barrier or facilitator. Two members coded with the third member working as tiebreaker in case of disagreements. The research team met weekly to discuss the coding and to develop a consensus on the appropriate codes applied to the transcripts.

Step 3: CFIR-ERIC Mapping process.

After completion of coding in Dedoose®, code count data was exported out into a spreadsheet to sum the number of constructs by barriers and facilitators. Following the instructions in the CFIR-ERIC Mapping Tool and the example from the article about the development of the tool[24], only barriers were identified for entry in the CFIR to ERIC

Mapping Tool since the goal was to identify strategies that could be used to overcome those barriers. Barrier determinants across all participants' transcripts with counts over 5 were pre-selected and identified in the CFIR to ERIC Mapping Tool by selecting 1 (Yes) from a 0 (No)/1 (Yes) selection (Figure 5).

Figure 5: Snippet of a selection portion of the CFIR to ERIC Mapping tool

	INNER SETTING	
1	Structural Characteristics	The social architecture, age, maturity, and size of an organization hinders implementation.
1	Networks & Communications	The organization has poor quality or non-productive social networks and/or ineffective formal and informal communications.
1	Culture	Cultural norms, values, and basic assumptions of the organization hinder implementation.
0	Implementation Climate	There is little capacity for change, low receptivity, and no expectation that use of the innovation will be rewarded, supported, or expected.
0	Tension for Change	Stakeholders do not see the current situation as intolerable or do not believe they need to implement the innovation.
1	Compatibility	The innovation does not fit well with existing workflows nor with the meaning and values attached to the innovation, nor does it align well with stakeholders' own needs and/or it heightens risk for stakeholders.
0	Relative Priority	Stakeholders perceive that implementation of the innovation takes a backseat to other initiatives or activities.
0	Organizational Incentives & Rewards	There are no tangible (e.g., goal-sharing awards, performance reviews, promotions, salary raises) or less tangible (e.g., increased stature or respect) incentives in place for implementing the innovation.
0	Goals and Feedback	Goals are not clearly communicated or acted upon, nor do stakeholders receive feedback that is aligned with goals.

Using embedded macros in the spreadsheet, the CFIR to ERIC Mapping tool then automatically generated cumulative percentages of recommended implementation strategies that the research team could consider and bring back to the clinic stakeholders.

Results

From both clinics, one focus group consisted of ten frontline staff, and the other focus group had seven providers. Interviews occurred with five clinic administrators. Both

clinics were in the state of Washington with one urban located clinic and one rural-serving clinic. The results of the coding showed that the identified barrier constructs deemed relevant were in four of the five domains (Table 1).

Table 1: Barrier constructs by domain and number times coded.

Domain	Construct	Number of Times Coded
Characteristic of the individuals constructs	Self-efficacy	12
	Knowledge & beliefs about the intervention	8
	Other personal attributes	8
Inner setting constructs	Available resources in readiness for implementation	43
	Compatibility in implementation climate	24
	Access to knowledge & information in readiness for implementation	22
	Structural characteristics	10
	Networks & communication	10
	Culture	6
Characteristics of the intervention constructs	Adaptability	31
	Design quality & packaging	29
	Relative advantage	26
	Trialability	13
	Complexity	7
Outer setting constructs	Patient needs & resources	53
	External policy & incentives	16
	Cosmopolitanism	11

Upon selecting the constructs in the CFIR-ERIC Mapping Tool, spreadsheet macros identified 57 strategies by cumulating all the percentages for the selected strategies and sorted the strategies by percentage over 50% (Table 2). Because the spreadsheet macros cumulated all the percentages, the results showed percentages over 100%.

Table 2: Identified implementation strategies using CFIR-ERIC Mapping Tool

ERIC Strategies	**Cumulative Percent**
Identify and prepare champions	**382%**
Capture and share local knowledge	**355%**
Assess for readiness and identify barriers and facilitators	**355%**
Promote adaptability	**355%**
Create a learning collaborative	**323%**
Conduct educational meetings	**315%**
Build a coalition	**296%**
Conduct local consensus discussions	**283%**
Conduct local needs assessment	**280%**
Conduct cyclical small tests of change	**277%**
Tailor strategies	**264%**
Facilitation	**249%**
Inform local opinion leaders	**235%**
Identify early adopters	**212%**
Develop educational materials	**210%**
Promote network weaving	**194%**
Visit other sites	**184%**
Develop a formal implementation blueprint	**183%**
Model and simulate change	**183%**
Use advisory boards and workgroups	**181%**
Organize clinician implementation team meetings	**174%**
Alter incentive/allowance structures	**165%**
Conduct educational outreach visits	**165%**
Conduct ongoing training	**163%**
Involve patients/consumers and family members	**162%**
Stage implementation scale up	**161%**
Provide ongoing consultation	**152%**
Obtain and use patients/consumers and family feedback	**150%**
Involve executive boards	**145%**
Distribute educational materials	**143%**
Provide local technical assistance	**143%**
Use an implementation adviser	**140%**
Purposely reexamine the implementation	**140%**
Access new funding	**131%**
Develop academic partnerships	**121%**
Fund and contract for clinical innovation	**118%**
Recruit, designate and train for leadership	**110%**
Shadow other experts	**106%**
Audit and provide feedback	**104%**

Develop and implement tools for quality monitoring	**96%**
Change physical structure and equipment	**93%**
Develop resource sharing agreements	**87%**
Facilitate relay of clinical data to providers	**83%**
Centralize technical assistance	**81%**
Make training dynamic	**80%**
Obtain formal commitments	**79%**
Increase demand	**73%**
Work with educational institutions	**69%**
Use train the trainer strategies	**68%**
Create new clinical teams	**64%**
Mandate change	**63%**
Intervene with patients/consumers to enhance uptake & adherence	**60%**
Prepare patients/consumers to be active participants	**58%**
Provide clinical supervision	**58%**
Use data experts	**56%**
Revise professional roles	**55%**
Develop and organize quality monitoring systems	**55%**

The spreadsheet further broke down the endorsement percentages for each ERIC strategy (row) by selected CFIR barrier constructs (column header) to the right of the cumulative percentages (Figure 6).

Figure 6: Snippet of CFIR-ERIC Mapping Tool results showing ERIC strategy, cumulative percent, and percentages of endorsement by selected CFIR constructs.

ERIC Strategies	Cumulative Percent	Relative advantage	Adaptability	Trialability	Complexity
Identify and prepare champions	382%	45%	23%	12%	30%
Capture and share local knowledge	355%	17%	35%	23%	27%
Assess for readiness and identify barriers and facilitators	355%	24%	31%	35%	30%
Promote adaptability	355%	24%	73%	27%	40%
Create a learning collaborative	323%	7%	23%	12%	33%
Conduct educational meetings	315%	24%	12%	8%	13%
Build a coalition	296%	14%	15%	15%	0%
Conduct local consensus discussions	283%	24%	31%	8%	7%
Conduct local needs assessment	280%	34%	35%	19%	3%
Conduct cyclical small tests of change	277%	31%	23%	38%	37%
Tailor strategies	264%	17%	35%	23%	27%
Facilitation	249%	10%	27%	23%	20%
Inform local opinion leaders	235%	28%	15%	23%	13%
Identify early adopters	212%	17%	27%	15%	20%
Develop educational materials	210%	14%	12%	0%	13%
Promote network weaving	194%	3%	4%	0%	0%
Visit other sites	184%	21%	19%	12%	3%
Develop a formal implementation blueprint	183%	7%	8%	19%	43%
Model and simulate change	183%	10%	19%	31%	27%

ERIC strategies with the highest percentage by CFIR construct or were highlighted green resulted in a shorter list of 26 strategies. Several of the CFIR barrier determinants had the same recommended strategies (Table 3). For example, the Relative Advantage construct had the ERIC recommended strategy of “Identify and prepare champions”, but this was also the recommendation for the Culture construct.

Table 3: Selected CFIR barriers with recommended ERIC strategies

CFIR Barrier Determinants	**ERIC Recommended Strategies**	**Percent Endorsement**
Relative advantage	Identify and prepare champions	45%
Adaptability	Promote adaptability	73%
Trialability	Conduct cyclical small tests of change	38%
Complexity	Develop a formal implementation blueprint	43%
Design Quality & Packaging	Promote adaptability	48%
Patient Needs & Resources	Obtain and use patients/consumers and family feedback	76%
	Involve patients/consumers and family members	71%
	Conduct local needs assessment	57%
Cosmopolitanism	Build a coalition	62%
	Promote network weaving	50%
	Develop academic partnerships	50%
External Policy & Incentives	Alter incentive/allowance structures	41%
	Involve executive boards	41%
Structural Characteristics	Assess for readiness and identify barriers and facilitators	36%
Networks & Communications	Promote network weaving	57%
	Organize clinician implementation team meetings	52%
Culture	Identify and prepare champions	52%
Compatibility	Promote adaptability	45%

Available Resources	Access new funding	78%
Access to knowledge & information	Conduct educational meetings	79%
	Develop educational materials	59%
	Distribute educational materials	55%
Knowledge & Beliefs about the Intervention	Conduct educational meetings	56%
Self-efficacy	Conduct ongoing training	41%
	Provide ongoing consultation	41%
	Make training dynamic	41%

In general, the suggested strategies fell into categories of stakeholder involvement, process planning and quality improvement, facilitation and being a resource/change agent for implementation, funding, and education and training.

Discussion

This case study exemplified the formative process of implementation of a complex innovation by first using CFIR to develop interview questions and guides. After completion of interviews of stakeholders, CFIR was utilized again to identify determinants. Using the CFIR to ERIC Mapping Tool, barrier determinants were selected, and the mapping tool then identified potential strategies to address these barriers. Although the process of designing and developing the formative research was iterative, the researchers did encounter some difficulties such as their concerns with the CFIR-ERIC Mapping Tool.

Issues with the CFIR-ERIC Mapping Tool

Smith et al.[37] in developing the Implementation Research Logic Model noted that the implementation science field experienced challenges in consistently linking barriers to

specific strategies. This case study also experienced this challenge even with the use of the tool. This project identified these difficulties and uncertainties with using the CFIR-ERIC Mapping tool.

- The researchers were uncertain about what the cutoff point for indicating a determinant was relevant or not. Thus, they arbitrarily chose a cut off over 5 for identified barriers to implementation. It would have been helpful to indicate a cut off number in the instructions in the CFIR-ERIC Mapping Tool or provide suggestions on how to select cut off numbers or even if a cut off number should be used.
- The researchers also found that some of suggested strategies appeared to already have been completed. For example, for the CFIR barrier determinant of structural characteristics, the suggested strategy was to "assess for readiness and identify barriers and facilitators". However, the researchers were already using that strategy. As a result, the researchers were uncertain about what to do with those strategies. The researchers for this project decided to just identify the strategies that were completed and move onto unused strategies that could be useful to address the barriers.
- The researchers found it difficult to truly identify strategies for specific barriers to use for the context as many strategies appear similar to each other. Weir et al.[33] also noted the same issue of similarities in the strategies for the individual barriers.
- The researchers were uncertain on which strategies to choose without stakeholder involvement in the process. Indeed, Delaforce et al.[27] also noted that

> the tool provided guidance, but consensus work still needed to be done to ascertain the strongest strategy across the various barriers for the specific implementation context. Similar to Verweij et al.[26], the researchers would have shared the results of the qualitative coding with the clinic stakeholders with the suggested strategies to overcome the identified barriers. Next, the researchers and stakeholders would identify strategies that are feasible and a priority leading to an implementation guide for the intervention of interest.[26]

When the researchers for this study were using the CFIR-ERIC Mapping Tool, there were a large amount of heterogeneity and little consistent relationships between barriers and strategies which is similar to what other researchers encountered. Smith et al.[37] noted that multiple strategies may be needed to address multiple barriers. Weir et al.[33] also concluded that these strategies generated by the tool were not empirically tested.

In 2022, Damschroder et al.[38] presented on CFIR 2.0 with major changes to the constructs within the domains. Additional constructs were created, and some constructs moved to other domains. In updating CFIR, Damschroder et al.[39] conducted a survey of authors who had published articles using CFIR to obtain feedback about their experiences using CFIR, rate CFIR based on criteria for determinant frameworks, and give open-ended feedback about the framework. Based on the results of the survey, the researchers updated the framework. The Characteristics of the Intervention and Characteristics of the Individual domains' names were changed to Innovation domain and Individual domain. For all the domains, new constructs were added, older constructs were re-named and/or re-defined.[39] Given these changes, there would be

direct impacts on the CFIR-ERIC Mapping Tool and its current applicability. Implementation science researchers will need to study how these changes would affect the selection of strategies and consider whether new strategies would need to be added. For example, in the Individual domain, the construct of Roles was added with new sub-constructs such as the Implementation Team Members while other role constructs were combined. Would new strategies such as team training versus individual team member training, or team building methods need to be added to the ERIC list? Would the process used to develop the CFIR-ERIC Mapping Tool need to be reproduced to see if rankings change if new strategies are added? The results of the tool would need to change to add the new constructs and change the display of results to reflect the changed domains and their constructs. If changes to the CFIR-ERIC Mapping Tool are made to reflect these changes, additional suggestions would be to provide better instructions on how to use to tool, better explanations on how the tool works, and better explanations of the results of the tool. It would behoove the developers to consider user centered design and usability testing to improve the ease of use of this tool for novice users.

Limitations

The case study approach is the major limitation of this study. As a research method it is often criticized as non-rigorous, and non-generalizable. However, the case study approach is used to gain an in-depth understanding of a phenomena of interest in its real-world context[34] Indeed, the goal of this study was not to generalize the results, but

to describe a situation that could help inform implementation practitioners and researchers.

Conclusion

Even with these limitations, this process for formative research to assess implementation of a complex intervention can be utilized by clinicians and researchers who are interested in addressing problems which have identified evidence-based interventions or developing interventions to address healthcare problems. Indeed, several years into the COVID-19 pandemic and years after the shutdown of the country, multiple studies have shown that during the pandemic, mental health of many populations worsened. In the arena of older adults, Fleet et al.[40], in a Health Affairs post, call out the continued need for mental health services to older adults. They specifically identify the need for integration of mental health in primary care, the use of technology, and the creative use of the workforce like using the Improving Access to Psychological Therapies (IAPT) model which used task sharing strategy as way for managing mental health conditions like depression in older adults.[40]

Researchers need to collaborate with practitioners to help these practitioners implement evidence-based interventions or develop interventions that can improve population health in addition to investigating the causal pathways between implementation strategies, implementation outcomes, service outcomes, and patient outcomes.

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Chapter 3. Organizational Readiness and Implementation Climate for Task Sharing of Tele-Mental Health Intervention: Perceptions from Health Care Professionals

Abstract

Background: In the United States of America (USA), primary care clinics are often the first location to screen, identify, and manage mental health concerns. To address the challenges of managing mental illness, in some settings, behavioral health is integrated into primary care (behavioral health integration; BHI), a model which has shown positive impact on patient outcomes and cost-effectiveness. Task sharing is an implementation strategy to address shortages in Behavioral/Mental Health (BMH) specialists and may be utilized in the BHI model. The addition of technology to manage behavioral mental health conditions, or tele-mental health (TMH) can add additional complexity. Although integrated care with task sharing and TMH interventions have many proponents, health care professionals' perceptions on their organizations' readiness to implement the innovation still needs further research. Thus, the goal of this study is to examine perceptions of organizational readiness and implementation climate for task sharing of TMH interventions in primary care between health care professional in varied levels of BHI clinics and between different health care professional roles. **Method**: The dissertation study focused on organizational readiness as measured by the Organizational Readiness for Implementing Change (ORIC) and implementation climate as measured by the Implementation Climate Scale (ICS) for task sharing of TMH interventions in primary care. The study then used qualitative data to explain the results

of the surveys. Qualitative data was coded with Consolidated Framework for Implementation Research (CFIR) and analyzed with Dedoose® Descriptor to Code Analysis. **Results**: The study found that the health care providers from clinics that had behavioral and mental health services integrated with primary care perceived their organization as ready to implement change for task sharing of TMH interventions and had an implementation climate more supportive for evidence-based practice. This can be reflected in the qualitative data where those in BHI clinics were positive about implementation. The organizational readiness and implementation climate was not statistically different based on the health care professional role of Behavioral Mental Health (BMH) specialists, Primary Care Providers (PCP), and Nurses, who can be considered Frontline Staff (FLS), for implementing task sharing of TMH interventions. From the qualitative component of the study, the BMH specialists, PCPs, and FLS from BHI primary care clinics were all positive about the innovation with the most often coded CFIR constructs of Available Resources, Network & Communications, and Compatibility applied to the qualitative data. **Conclusion**: This study investigated organizational readiness and implementation climate for task sharing of TMH interventions. Health care professionals perceived their organization as ready to change to implement task sharing of TMH interventions especially if they were from BHI primary care clinics. As mental health concerns increase and more care will be provided in primary care, primary care clinics need to be organizationally ready and equipped to handle such demands especially given the evidence that PCPs end up providing more mental health services in BHI clinics versus those without BHI.

Background and Significance

In the United States of America (USA), primary care clinics are often the first location to screen and identify mental health concerns and also become the primary point of treatment of mental illnesses.[1–3] However, major challenges to mental health care include the shortage of Behavioral/Mental Health (BMH) specialists, the stigma of mental illness, fragmented care, barriers to access to care, and the complicated needs of patients with multiple comorbidities.[4]

To address the challenges of managing mental illness, an integrated model of behavioral/mental health into primary care has been shown to positively impact patient outcomes and is an cost-effective model.[5] There are many methods of having Behavioral Health Integration (BHI) from the Primary Care Providers (PCP) referring to BMH specialists to where PCPs and BMH specialists are co-located and make decisions together. In primary care, integrated care aid PCPs with mental health management and are cost-effective and effective for managing mental health conditions.[2,5,6] This model not only decreases silos in care, but also promotes timely care and avoids adverse outcomes.[7] Some issues regarding BHI include the lack of specific technical assistance for PCPs, the continued shortage of BMH specialists, and organizationally, there is inconsistent integration of behavioral health services.[5]

To address the shortage of BMH specialists, task-sharing is a strategy that can help extend the capacity of primary care clinics to manage mental health concerns. Task sharing involves training less specialized health care workers to perform tasks typically

done by specialized health care workers. Task sharing has been studied in Low and Middle Income Countries (LMIC) and shown to be effective in LMICs with various evidence-based mental health interventions.[8] This BHI model can involve not only the PCP and BMH specialists but may have the additional role of care managers who may be social workers, nurses, or medical assistants. This care manager role would take on tasks such as developing relationships with patients, follow-ups, and could use psychotherapy techniques with patients.[7]

To add to this model is the use of technology to manage behavioral mental health conditions, or tele-mental health (TMH). TMH interventions have been components of the BHI model and the research does support its ability to facilitate integrated care.[2,6] TMH interventions involve providing mental health care using technology synchronously such as videoconferencing tools, or asynchronously using websites, emails, or text messaging. The TMH interventions could come in many forms. It could be used directly with the patients or it could be used indirectly such as consultation between different health professionals for patient care.[9] TMH interventions can be used as preventive services, assessment, diagnosis, treatment, and follow-up of mental conditions.[10] There is much research and evidence that support the safety, effectiveness, and utility of TMH interventions for mental health services for a variety of patient populations.[2,11,12] These TMH interventions have been shown to be satisfactory to patients, effective in terms of increasing access to care, acceptance, and reaching educational goals. Research has found that TMH interventions are valid, reliable, and non-inferior to in-person care.[13]

However, from the perspective of health care professionals, many concerns have been raised regarding TMH interventions. Using the Consolidated Framework for Implementation Research (CFIR), a framework that aids in identifying constructs that could be barriers and facilitators to implementation of innovative interventions, these concerns can be broken into constructs within the Outer Setting, Inner Setting, Characteristics of the Intervention, and Characteristics of the Individual domains. The framework helps researchers with formative assessment and summative evaluation of implementation and guides assessment, evaluation, and explanations of findings[14]. These constructs and sub-constructs with their specific definitions can be found on the website, https://cfirguide.org/.[15]

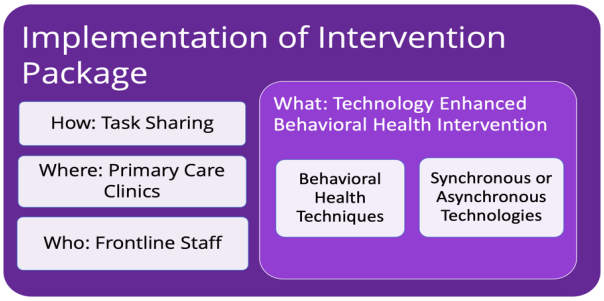
From the Outer Setting, health care professionals often express concerns with billing and reimbursement, and malpractice and liability.[9,10,16,17] The other Outer Setting construct of concern involves the patients, themselves. These concerns include whether the patients have the skills to manage the technology, the means to afford the technology and the private spaces to engage with the health care professional. Some express concerns that some TMH interventions are inappropriate for some patients, and that some patients will be uncomfortable with and be unwilling to use technology for care.[16,17] From the domain of Characteristics of the Intervention, researchers find that the concerns focus on privacy and confidentiality, security, clinician privileges, technology costs and usability, developing therapeutic alliance, and setting boundaries.[9,11,17–19] In the domain of Characteristics of the Individual, the health care professionals are influential in impacting the implementation of TMH interventions. If the

clinicians have limited education and exposure to TMH interventions, they are less likely to promote and use TMH interventions.[17,20] Lastly, of interest to this study, the organizational factors in the Inner Setting that are of concern are organizational culture, and process, procedures, and resources provided by the organization.[17]

The Innovation:

The innovation consists of the implementation strategy of task sharing to support the TMH interventions that can be used to address a variety mental conditions like anxiety and depression and substance use disorders. Figure 1 reflects the broad idea of the intervention or innovation of interest.

Figure 1: The Innovation of Task sharing of Tele-Mental Health Interventions

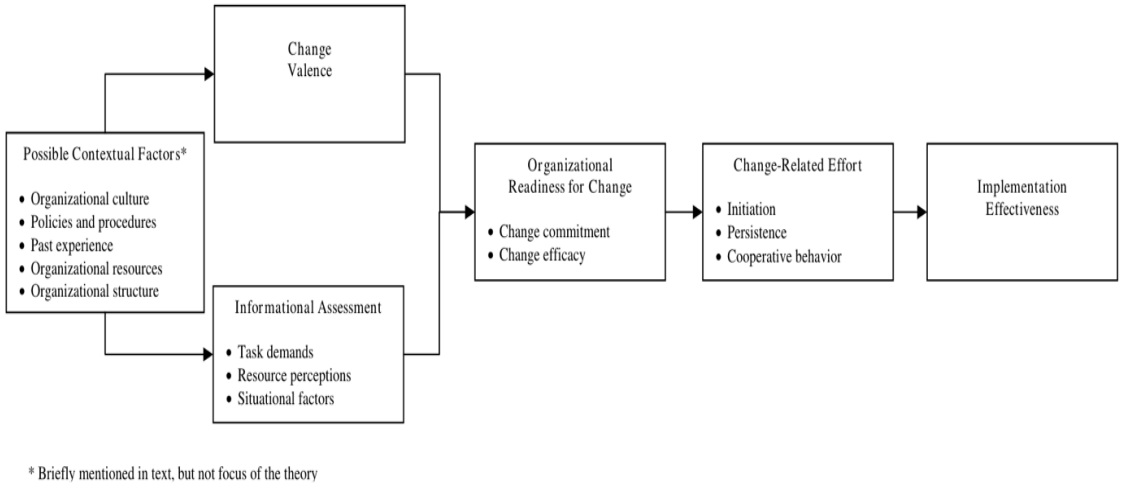


Theoretical Frameworks:

Intentional organizational change involves formally organized groups making deliberate efforts to move the organization from one state to a desired state in composition, structure, or behavior with the goal of increasing organizational effectiveness. For an organization to change, they must be ready for change.[21] Weiner et al.[21] stated that readiness is thought to be a critical precursor to successful organizational change.

Thus, organizational readiness for change has been conceptualized as the extent to which organizational members are psychologically and behaviorally prepared to implement organizational change or the members willingness and ability to implement change. Organizational readiness for change has attributes of change commitment or whether the organizational members collectively value the change enough to commit to its implementation, and change efficacy or whether the organization has the human, financial, material, and informational resources needed to implement change.[21]

Figure 2 depicts the pathway from contextual factors to implementation effectiveness as developed by Weiner et al.[22] about Organizational Readiness for Change.



However, few studies have explicitly examined task sharing in the context of mental health diagnoses and TMH in primary care in High-Income Countries (HIC). Additionally, health care professionals' perceptions on their organizations' readiness to implement the innovation still needs further research. Thus, the goal of this study is to examine perceptions of organizational readiness and implementation climate for task

sharing of TMH interventions in primary care. Specifically, the study will examine the responses to Organizational Readiness for Implementing Change (ORIC)[23] and Implementation Climate Scale (ICS)[24] for task sharing of TMH interventions to level of behavioral health integration and the healthcare professional role data collected from the participants.

Hypothesis 1: Primary clinics with integrated behavioral/mental health services will have higher responses to organizational readiness as measured by ORIC and implementation climate as measured by ICS for task sharing of TMH interventions compared to primary care clinics without, minimally, or partially integrated behavioral/mental health services.

Hypothesis 2: There are differences in perceptions of organizational readiness as measured by ORIC and implementation climate as measured by ICS for task sharing of TMH intervention between behavioral/mental health specialists, frontline staff, and primary care providers.

Methods

Study Design:

The larger study explored the perceptions of health professionals on TMH interventions during the COVID-19 pandemic. The study involved a national cross-sectional survey of healthcare professionals who indicated that they worked in primary care, specifically the population of health care professionals providing primary and mental health services in primary care clinics. The survey was followed by interviews to explain the results from

the survey. The dissertation study embedded questionnaires on organizational readiness and implementation climate measures for task sharing of TMH interventions. All data was managed using REDCap electronic capture tool[25] hosted at the Institute of Translational Health Sciences (ITHS). REDCap at ITHS is supported by the National Center for Advancing Translational Sciences of the National Institutes of Health under Award Number UL1 TR002319. (https://www.iths.org/investigators/forms-templates/citation-information/)

The survey data was collected in Fall 2020 during the COVID-19 pandemic. The survey was promoted to thirteen psychology, nursing, and primary care associations from September to December 2020. The researchers also paid to use a private repository of providers of nurses, primary care providers and behavioral/mental health specialists. Due to cost constraints, the study team decided to cap the number of responses to 50 nurses, 50 primary care providers, and 50 behavioral/mental health specialists. Survey participants had to select that they worked in primary care before they could advance to the full survey, and when the cap was reached for the role, no more surveys were collected for that role. Participants of the survey were also entered into a raffle to receive $100 gift cards.

Questionnaires in the Survey:

Demographic and Practice Questionnaire:

Demographic data was collected from the participants. Participants who selected roles of physicians (MD, DO), Advanced Practice Registered Nurses (APRNs, but not

Psychiatric APRNs), or Physician Assistants (PAs) were collapsed into the role of Primary Care Provider (PCP). Participants who selected roles of nurses (RN, LPN) were labelled as Nurses. Participants who selected their roles as psychiatrist, psychologists, psychiatric APRN, social workers or other types of counselors were collapsed into the role of Behavioral/Mental Health (BMH) specialists.

Within the demographic data collected, practice characteristics were also captured. Practice characteristic included data about clinic/practice setting, description of the type of clinic/practice, clinic location in the U.S. census region, percentage of Medicare/Medicaid patients, and the level of behavioral health integration in the primary care clinic. The levels of behavioral health integration were: No integrated behavioral health, Available behavioral health, Partial integrated behavioral health, Full integrated behavioral health, and Other. Table 1 showed the levels and the descriptions provided in the questionnaire.

Table 1: Level of Behavioral Health Integration and Descriptions from Questionnaire

Level of Behavioral Health Integration	Descriptions in Questionnaire
No integrated behavioral health	Medical providers refer out to behavioral/mental health services in a separate facility, where those providers have their own systems develop their own treatment plans
Available behavioral health	Behavioral health is available in our facility, but patients are referred for these services and treated separately with little to no sharing of care and treatment plans.
Partial integrated behavioral health	Behavioral health is available in our facility, where they can communicate with medical providers in person if needed. There may be collaborative treatment planning for specific patients.

Full integrated behavioral health	Behavioral health is part of our team. They share the same practice space and use the same EHR as medical providers. Behavioral health providers/staff are part of regular team meetings with the medical providers to discuss overall patient care and specific issues. We have consistent behavioral health screenings in place and collaborative treatment planning for shared patients.
Other	Other

Organizational Readiness for Implementation Change (ORIC):

Shea et al.[23] developed the Organizational Readiness for Implementing Change (ORIC) to assess for organizational readiness based on Weiner's model for organizational readiness for change[22]. When used in studies, the researchers demonstrated content adequacy, model fit, and high inter-item consistency. However, being a newer assessment tool to measure organizational readiness, they recommended further study of this instrument. Scores were generated for the two domains of Change Efficacy and Change Commitment by calculating the means of the items in each domain, and the final ORIC score was generated by multiplying Change Efficacy and Change Commitment scores.[23]

Implementation Climate Scale (ICS):

To capture more information about an organization's readiness, the Implementation Climate Scale (ICS) was also used. The goal of this measure was to assess the strategic climate for Evidence-Based Practice (EBP). This instrument assessed for six dimensions of climate for EBP. These dimensions were labelled "selection for openness", "recognition for EBP", "selection for EBP", "focus on EBP", "educational

support for EBP", and "rewards for EBP". The scores for each dimension were calculated by computing the means, and the total score was generated by calculating the mean of all the dimensions. Ehrhart et al.[24] performed confirmatory factor analysis that supported the subscales and total scale structure. Cronbach's alpha calculations showed high internal consistencies for the final scales (α = 0.81-0.91). Intraclass correlations ranged from 0.12 to 0.25 for the six dimensions and 0.25 for the overall scale.[24]

Quantitative Analysis:

Quantitative data was analyzed with descriptive statistics, one-way ANOVA, and Cronbach alpha for this sample using V2.7 IBM SPSS®. One-way ANOVA was used to assess for differences in ORIC and ICS scores for task sharing of TMH interventions by health professional role and level of behavioral/mental health integration in primary care. Cronbach's alpha reliability was calculated for this sample for each instrument's subscales and the whole instrument.

Qualitative Data Collection

Initial estimates for the qualitative sample size were between 10-20 interview participants since the goal was to reach code saturation when no additional or new codes were identified or applied to the transcripts.[26] Initially, participants who provided their contact information were scheduled for interviews in Winter 2021. Snowball sampling was also used to gather more interview participants. Participants who were interviewed received $50 gift cards after completion of the interviews.

Interviews:

The interview guide (See Appendix 2) captured these categories of information:

- Demographics – professional role, education, years in practice, EBP training, immediate team members.
- Current mental/behavioral health services – common mental health conditions, current practices for managing mental health conditions, any behavioral/mental health techniques utilized to manage mental health conditions.
- Experiences and perceptions of task sharing and using technologies to deliver mental/behavioral health services.

Interviews were scheduled based on the interview participants' schedule, and used Zoom® videoconferencing technology for interviews, for recording of the interviews, and the beginning transcription of the recording. The researchers performed their own transcription by reviewing and correcting the Zoom generated transcription with the recordings. Due to time constraints, questions to explain the organizational readiness instruments was not feasible. The researchers wanted to keep interviews with health care providers to be less than one hour. Instead, analysis with CFIR Inner Setting codes explained responses to the organizational readiness results by using the Dedoose® Descriptor to Code Analysis. This Dedoose® analysis allowed the researcher to limit to codes associated with the selected descriptors of interest which were practice and role demographic variables.

Qualitative Analysis:

The study team was compromised of a PhD psychologist, a PhD nurse, and two PhD nursing research students. The two PhD nursing research students performed deductive content analysis of all the transcripts using CFIR as the coding framework in Dedoose®. The analysis followed the recommended qualitative analysis guidance from the CFIR Guide website.[27] CFIR constructs were rated with positive, negative, mixed, or neutral for the implementation of task sharing and TMH intervention in their clinics. Additionally, the codebook included codes for some inductive content analysis to capture demographic data like participant healthcare role, clinic type, behavioral health integration, team structure, and whether the participant focused more on task sharing, the technology, and/or the psychotherapeutic techniques. Two researchers coded each transcript and agreed upon the codes by consensus. A third researcher was available if conflicts occurred during coding. Using Dedoose® Descriptor to Code Analysis, the researchers selected the relevant descriptors of Behavioral Health Integration and Role to Inner Setting Constructs to identify the top 3-4 CFIR Inner Setting constructs for analysis and identifying exemplar excerpts. The researchers focused on the Inner Setting Constructs since this domain reflected the organization.

Results

One hundred and ninety-two participants completed the survey in Fall of 2020. The clinic settings were mainly in Urban (35%) and Suburban (43%) but was spread throughout the United States. The clinic types were varied, but about thirty percent of the participants selected their clinics as private, independent group practices. Many of

the participants indicated their setting had fully integrated behavioral health (35%) followed by partial integrated behavioral health (30%). See Table 2 for practice characteristics of the survey participants.

Table 2: Primary Care Healthcare Professional Practice Demographics

	Behavioral/Mental Health Specialists (N = 51)	*Nurses (RNs/LPNs) (N = 48)*	*Primary Care Provider (N = 52)*
Clinic Setting, n (%)			
Urban	21 (41.18%)	17 (35.42%)	13 (25.00%)
Suburban	22 (43.14%)	22 (45.83%)	30 (57.69%)
Rural	4 (7.84%)	4 (8.33%)	9 (17.31%)
Rural serving	3 (5.88%)	4 (8.33%)	0 (0%)
Frontier	1 (1.96%)	1 (2.08%)	0 (0%)
Patient Panel Size			
Mean (SD)	422.6 (1435.9)	1909.4 (4153.1)	2525.1 (2077.3)
Range	6-10000	10-20000	6-9000
Clinic Type, n (%)			
Clinic/practice at academic medical center	5 (9.80%)	10 (20.83%)	10 (19.23%)
Clinic/practice affiliated with university teaching hospital	3 (5.88%)	6 (12.50%)	7 (13.46%)
Community health center and/or federally qualified health center (FQHC)	6 (11.76%)	5 (10.42%)	7 (13.46%)
Private health care system	8 (15.69%)	14 (29.17%)	14 (26.92%)
Veterans Affairs (VA) Medical Center or community-based outpatient clinic	2 (3.92%)	2 (4.17%)	0 (0%)
Military medical center (e.g., Army)	0 (0%)	0 (0%)	0 (0%)
Other government hospital (specify)	2 (3.92%)	1 (2.08%)	0 (0%)
Private (independent or group) practice	29 (56.86%)	11 (22.92%)	17 (32.69%)
Other	1 (1.96%)	3 (6.25%)	1 (1.92%)
Geographic Location, n (%)			
Northeast (PA, NY, NJ, CT, RI, MA, VT, NH, ME)	13 (25.49%)	12 (25.00%)	6 (11.54%)

Midwest (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, MI, OH)	8 (15.69%)	12 (25.00%)	12 (23.08%)
South (TX, OK, AR, LA, MS, AL, GA, FL, SC, NC, TN, KY, WV, VA, MD, DC, DE)	12 (23.53%)	13 (27.08%)	24 (46.15%)
West (WA, OR, CA, ID, NV, MT, WY, UT, CO, AZ, NM, AK, HI)	18 (35.29%)	11 (22.92%)	10 (19.23%)
Medicare/Medicaid Percentage			
Mean (SD)	41.9 (34.8)	56.5 (26.4)	47.1 (23.2)
Range	0-100	0-100	5-95
Behavioral/Mental Health Integration in Primary Care Clinic, n (%)			
Fully integrated behavioral health	20 (39.22%)	14 (29.17%)	7 (13.46%)
Partial integrated behavioral health	16 (31.37%)	20 (41.67%)	15 (28.85%)
Available behavioral health	2 (3.92%)	6 (12.50%)	10 (19.23%)
No integrated behavioral health	9 (17.65%)	8 (16.67%)	20 (38.46%)
Other	4 (7.84%)	0 (0%)	0 (0%)

Reliability of Questionnaires:

Cronbach's alpha for the ORIC Change Commitment subscale was 0.94 and Change Efficacy subscale was 0.95. The overall Cronbach's alpha for ORIC was 0.96. The Cronbach's alpha for each dimension of the Implementation Climate Scale ranged from 0.86 to 0.95 (Table 3). The Cronbach's alpha for the entire scale was 0.81.

Table 3: Reliability of ICS Dimensions

Dimension	Cronbach's alpha
selection for openness	0.95
recognition for EBP	0.86
selection for EBP	0.91
focus on EBP	0.95
educational support for EBP	0.93
rewards for EBP	0.93

Aim 2:

Hypothesis 1: Primary clinics with fully integrated behavioral/mental health services will have higher responses to organizational readiness as measured by ORIC and implementation climate as measured by ICS for task sharing of TMH interventions compared to primary care clinics without, minimally, or partially integrated behavioral/mental health services.

A one-way ANOVA revealed that there was a small statistically significant difference in organizational readiness for implementing change based on the levels of BHI ($F(4, 186) = [2.40]$, $p = 0.05$). The one-way ANOVA also showed statistically significant difference in the scores for implementation climate for EBP by levels of BHI ($F(4, 186) = [3.79]$, $p = 0.005$).

The mean ORIC scores ranged from 11.86 (SD 6.46) to 17.97 (SD 7.24) for the levels of BHI. The total ORIC score for all the participants was 14.18 (SD 6.30). The mean ICS scores ranged from 1.93 (SD 0.73) to 2.83 (SD 0.74) for the levels of BHI. The total ICS score for all the participants was 2.25 (SD 0.76).

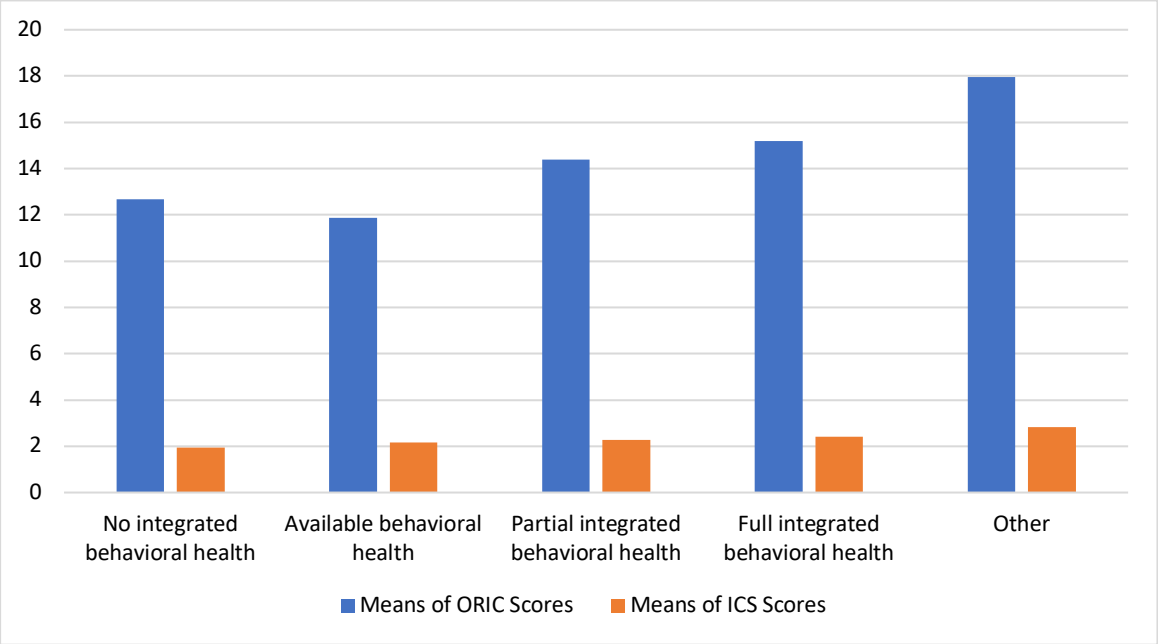
Table 4: ORIC and ICS Scores by BHI

Level of BHI	N	ORIC Score Means (SD)	ICS Score Means (SD)
No integrated behavioral health	39	12.66 (5.20)	1.93 (0.73)
Available behavioral health via referral	20	11.86 (6.46)	2.16 (0.79)
Partial integrated behavioral health	58	14.37 (6.14)	2.25 (0.68)

Fully integrated behavioral health	67	15.19 (6.60)	2.41 (0.78)
Other	7	17.97 (7.24)	2.83 (0.74)
Total	191	14.18 (6.30)	2.25

Note: Participants who selected “Other” were all from mental health clinics

Figure 2: ORIC and ICS Means by Behavioral Health Integration



Note: Participants who selected “Other” were all from mental health clinics

The study confirms the hypothesis that there would be higher organizational readiness and implementation climate scores by level of BHI.

Hypothesis 2: There are differences in perceptions of organizational readiness as measured by ORIC and implementation climate as measured by ICS for task sharing of TMH intervention between behavioral/mental health specialists, frontline staff, and primary care providers.

A one-way ANOVA revealed that there was no statistically significant difference in organizational readiness for implementing change based on the health care provider role ($F(2, 188) = [0.17]$, $p = 0.85$). The one-way ANOVA also showed no statistically significant difference in the scores for implementation climate for EBP by health care provider role ($F(2, 188) = [0.54]$, $p = 0.58$).

The mean ORIC scores ranged from 13.85 (SD 6.04) to 14.47 (SD 6.43) for the three roles of Mental/Behavioral Health specialist, Nurse (who could be considered frontline staff), and Primary Care Provider. The total ORIC score for all the participants was 14.18 (SD 6.30). The mean ICS scores ranged from 2.18 (SD 0.72) to 2.32 (SD 0.78) for the three roles of Mental/Behavioral Health Specialist, Nurse, and Primary Care Provider. The total ICS score for all the participants was 2.25 (SD 0.76).

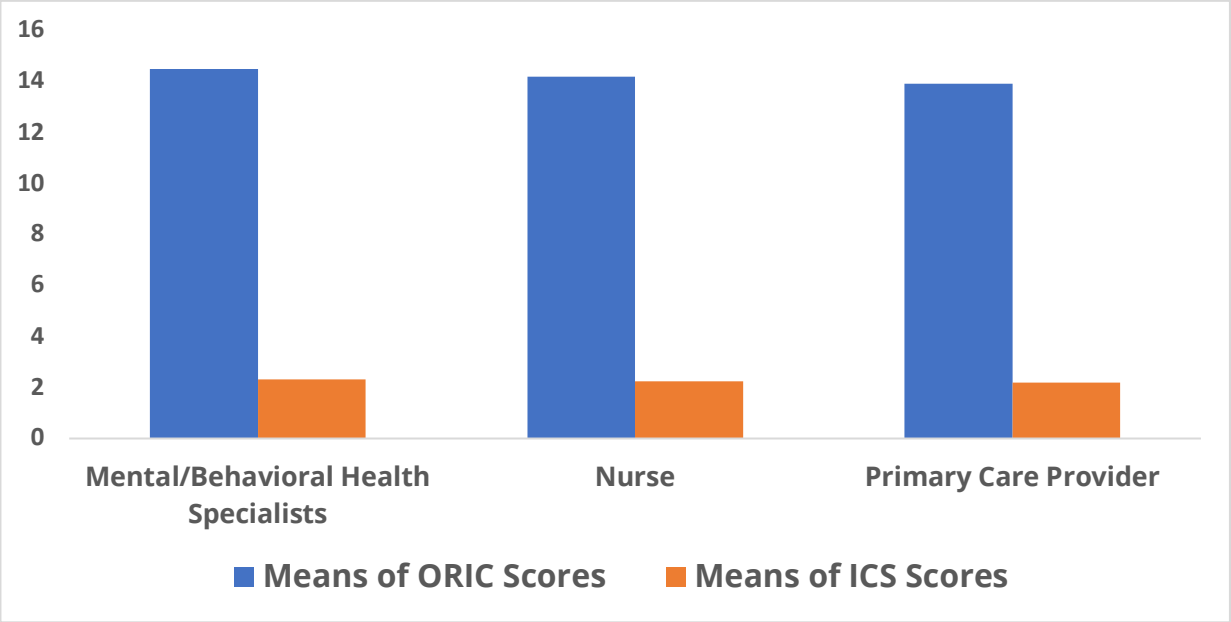
Table 5: ORIC and ICS Scores by Role

Role	N	ORIC Score Means (SD)	ICS Score Means (SD)
Mental/Behavioral Health Specialist	74	14.47 (6.43)	2.32 (0.78)
Nurse	52	14.18 (6.52)	2.25 (0.78)
Primary Care Provider	65	13.85 (6.04)	2.18 (0.72)
Total	191	14.18 (6.30)	2.25 (0.76)

In contradiction to the hypothesis that there would be differences in organizational readiness and implementation climate by health care role, the study found that there were no statistically significant differences between health care roles of

mental/behavioral health specialist, nurse, and primary care provider which can be seen in Figure 3.

Figure 3: Means Plot of ORIC and ICS Scores by Role



Qualitative Results:

To explain the quantitative results, respondents who indicated they were willing to be interested, were interviewed Winter 2021. Code saturation was achieved with ten interview participants. Of the ten interview participants, the majority were Behavioral/Mental Health specialist and Primary Care Providers (all physicians). One frontline staff (FLS) was interviewed, and the person was a Medical Assistant. Two interview participants were identified with snowball sampling. No nurses responded the opportunity to be interviewed. Nine out of the ten interview participants worked in clinics with full behavioral health integration. See Table 6 for the practice characteristic of the interviewees.

Table 6: Practice Characteristics of Interview Participants

	Behavioral/Mental Health Specialist (n=5)	*Frontline Staff (n=1)*	*Primary Care Provider (n=4)*
Clinic Type			
Clinic/Practice Affiliated with University Teaching Hospital	1 (10%)	-	1 (10%)
Clinic/Practice at Academic Medical Center	1 (10%)	-	-
Private Health Care System	3 (30%)	1 (10%)	2 (20%)
Behavioral/Mental Health Integration			
Full Behavioral/Mental Health Integration	5 (50%)	1 (10%)	3 (30%)
No Behavioral/Mental Health Services	-	-	1 (10%)

Using CFIR for content analysis to deductively code barriers and facilitators to task sharing of TMH interventions, and then using the Dedoose® Descriptor to Code Analysis, the top three Inner Setting domain constructs by Behavioral Health Integration and Role were extracted for further analysis.

Since most interview participants were in fully integrated behavioral health primary care clinics, the analysis focused on those excerpts. The top CFIR construct for participants in BHI clinics was Available Resources (count = 142). Many Available Resources codes (count = 88, 62%) were co-coded with positive impact for implementation of task sharing of TMH interventions. The next top Inner Setting constructs were Network & Communications (count = 42) and Compatibility (count = 32) also co-coded as mostly positive impact on implementation (Table 7).

Table 7: Inner Setting Constructs and Counts for Positive, Negative, Mixed, and Neutral Impact on Implementation

Code	Positive	Negative	Mixed	Neutral
Available Resources	88	22	26	6
Network & Communications	31	3	4	4
Compatibility	26	4	2	0

The Available Resources construct falls within the Readiness for Implementation construct, and it indicates the level of resources an organization provides for implementation such as funding, training, education, space, and time.[15] In the context of task sharing this also means providing the staff who will be assigned the tasks, and in the context of TMH interventions, the technology in addition to the space to provide tele-mental health. Network & Communications is a major domain concerned with the social network, and formal and informal communications within an organization.[15] Task sharing would require that the staff given the tasks have support from their colleagues and the means to contact and consults their colleagues in the care of the patients. Lastly, Compatibility is the perception of degree of fit between the innovation and the involved staff.[15] This construct falls within the Implementation Climate domain and would indicate that the staff feel the innovation fits well within their organization because the innovation can be integrated into existing workflows and systems or are already being used in the organization. Some exemplar quotes of the positive view of the innovation for each construct can be seen in Table 8.

Table 8: Exemplar quotes for constructs with positive impact on implementation

Construct	Role	Quote
Available Resources	BMH	“I think your para professionals are in a prime position to do this, and in fact I think in a in the primary care setting I think they go under utilized

		a lot and so MAs absolutely our LPNs and our RNs, I think, are in a great position to do that.
	FLS	“Yeah, yeah we even have like a we even have like a portable computer our doctors used to like zoom patients if they don't have one available. Really easily yeah he's just grab one pull it talk to the patient gather the information here we go.”
Network & Communications	BMH	“we're still consulting we can consult through you know the patient medical record medical providers will route us the chart and ask us particular questions that kind of thing.
	PCP	“But we can still like chat to the clinic from home through epic so we can chat to like MA we normally work with or to the front desk and say like hey this person's having trouble like getting on can you help them, so we still have some support remotely as well.”
Compatibility	BMH	“I mean from what you're describing it sounds like that role is what in my system that mental health care partners are already doing and that they're kind of specifically trained to do that, I think they do a great job with it um yeah”
	PCP	“yeah most places have like telemed capacity ability now yeah before COVID we were not doing it so it's kind of lucky, but now we are so”

Investigating the qualitative codes by roles, we see a different picture. For PCPs, the top three codes were Available Resources (count = 61), Compatibility (count = 18), Network & Communications (count = 16) while BMH specialists had Network & Communications (count = 24), Access to Knowledge & Information (count = 16), and Compatibility (count = 15). Access to Knowledge and Information described the ease of access to information and knowledge with the CFIR guide indicating that this code be used for training and education.[15] The sole FLS transcript was coded most often with Available Resources (count = 12), Implementation Climate (count = 4), and Goals & Feedback (count = 3). Goals & Feedback was the degree that goals are communicated, acted upon, and feedback provided.[15] However, in general, the Inner Setting constructs

were coded as mainly positive impact on implementation (see Table 9). Table 10 has exemplar excerpts of each construct by role for positive impact on implementation of task sharing of TMH interventions.

Table 9: Inner Setting Constructs and Counts for Positive, Negative, Mixed, and Neutral Impact on Implementation by Role

Role and Construct	Positive	Negative	Mixed	Neutral
PCP				
Available Resources	36	5	17	3
Compatibility	15	2	1	0
Network & Communications	10	3	2	1
BMH				
Network & Communications	21	0	2	1
Access to Knowledge & Information	11	0	5	0
Compatibility	13	2	0	0
FLS				
Available Resources	10	0	2	0
Implementation Climate	2	1	1	0
Goals & Feedback	3	0	0	0

Table 10: Quotes for Positive Impact for Implementation by Role and Construct

Role	Construct	
PCP	Available Resources	“um yeah so the patient like comes in there's a front desk staff we call them PSRs, the MA goes and gets the patient from the waiting room. Does the vitals and asked a lot of questions and fills out a lot of necessary information for us, then we see the patient and then other TEAM members that might get involved are we have social work like I said, we have psychologists, we have a nutritionist we have a pharmacist, we have a nurse, and we have a lab and X Ray, and we have a health navigator and we have these TEAM members, we call BBC, which is between visit care coordinators who help with like tracking patient emails and getting appointments scheduled and handling things that are like a little bit more clinical than what the front desk handles.”
	Compatibility	“We had already doing it. Okay, I told you those their master level is two years have been doing

		therapy for their houses to patients, using the hippa approve epic through Zoom”
	Network & Communications	“I'm I will, depending on my level of concern. Like I said, usually there's a psychiatrist in the building, and so I'll just walk down the Hall and sign in if they're not available at that particular moment, we use Microsoft Teams, I mean, so very friendly sort of live messaging and that is secure within our organization, so I can usually look and see. Find one of the psychiatrists little boxes green so I know they're available, even if perhaps there at the hospital and I'll send one of them a message. And that if it's if I'm in the middle of a video visit or a phone call, and then I really rely on our scheduler, which is Christy to say, you know who's the next available? Which psychiatrists can I get ahold of in the next hour if I think that needs to be done quickly?
BMH	Network & Communications	“yeah it's asynchronous we use epic so it'll be like an epic you know CC chart staff message and that we're then replying to we try to reply to same day not looking”
	Access to Knowledge & Information	“I think that it's perfectly within their their skill set their their capabilities, again with you know, training and supervision from the behavioral consultant, and in that way, they can actually become a provider extender. So you know you're teaching them how to provide the skills.”
	Compatibility	“yeah yeah I do, and I think in some ways we're already we're already heading in that direction and using a modicum of that. You know, right now, I mean obviously we're are already doing Tele health.”
FLS	Available Resources	“Ours I know all of us have pretty good like systems here like computer systems. I don't think that would be an issue for when it comes to that that's why one of the reason I think it's so appropriate because we do have so many different areas well it's easier to communicate and we could easily set up something that would be able to do that, between MA doctor patient.”
	Implementation Climate	I think knowing that we're prepared for, like the other stuff that we're going to need for it and not having to stress as much about getting all that stuff set up, I feel like will give us more time to be able to just to prepare ourselves for stuff that

		could change or be added to our role, instead of having to worry about everything else."
	Goals & Feedback	"um, I think, so I like to huddle like in the mornings, we just go over everything make sure, can you watch this why we're doing this with the patient to make sure everything's covered so we're not missing anything I like to make sure everyone's I can agree good understanding of what's gonna be happening so no one's confused I guess just I'm saying"

Discussion

As the study showed, the health care providers from clinics that had behavioral and mental health services integrated with primary care perceived their organization as ready to implement change and had an implementation climate more supportive for evidence-based practice. However, perceptions of the organizational readiness and implementation climate was not statistically different based on the health care professional role. This can be reflected in the qualitative data where nine out of ten participants were from behavioral/mental health integrated primary care clinics. Those interview participants in BHI clinics had the top three CFIR constructs coded with having positive impact on implementation as Available Resources, Network & Communications, and Compatibility. Additionally, the three healthcare professional roles of BMH specialists, PCPs, and Frontline Staff from the qualitative component were all positive about the innovation. The CFIR Inner Setting constructs coded as having positive impact on implementation based on role were Available Resources, Network & Communications, Compatibility, Access to Knowledge & Information, Implementation Climate, and Goals & Feedback. Both the survey participants and the interview participants were mostly positive about implementing task sharing of TMH interventions.

In a multi-stakeholder study of task sharing of telemedicine for perinatal depression in HICs, the study found similar barriers and facilitators. Although the study did not use CFIR, the researchers found that the majority of participants (patients, clinicians, and administrators) perceived that non-specialists can be trained to deliver psychological interventions remotely. The study found that if non-specialists had training in delivering psychological interventions (Access to Knowledge & information) then task sharing using non-specialists was feasible. The researchers of the study also identified that BMH specialists could be the best supervisors of non-specialists and these supervisors needed regular and scheduled meetings with non-specialists (Network & Communications).[28] In South Africa, researchers investigated task sharing of a lay counselling intervention with nurses triaging patients with depressive symptom and referring to lay counsellors for mild to moderate depression or primary care providers for moderate to severe depression. The study used a qualitative method and CFIR for framework analysis of interviews with administrators, health care professionals, lay counsellors, and patients. The study found that having a community of practice learning space (Access to Knowledge & Information) and having supervision (Network & Communications) was a facilitator while the lack of space (Available Resources) was a barrier to task sharing of managing depressive symptoms in patients. Although, this study did not address task sharing of TMH interventions, it did stress the importance of organizational readiness for task sharing.[29] In terms of TMH interventions, Cowan et al.[17] concluded that clinician concerns need to be addressed to ensure acceptance of TMH interventions. In an article on how to establish TMH services, Mishkind[30] called out the need to determine if the health care professionals would be able and willing to

deliver TMH services. This included understanding process flows and how to integrate the TMH services, and having the resources such as the technology and space available to provide TMH services.[30]

The major limitation of this study was the cross-sectional nature of the quantitative and qualitative data collection. Convenience sampling with self-selection would lead to bias where those who were positive about the intervention were more willing to fill out the survey and be interviewed for the study. Also, no nurses responded to the request to be interviewed. Although a medical assistant was interviewed and is considered frontline staff, nurses may have a different view of task sharing of TMH interventions. Additionally, the study occurred during the COVID-19 pandemic where strict social distancing was mandated, and many clinics were shut down to in-person appointment. The rapid transition to telehealth could have further caused a more positive view of TMH interventions. Chang et al.[31] noted that prior to the pandemic, telehealth was implemented slowly and in a fragmented manner. Their cross-sectional study explored telehealth use and barriers to telehealth in small primary care practices during the COVID-19 pandemic. They found that these small clinics provided telehealth services at the peak of the pandemic and slowly declined as the pandemic continued in 2021. They also found disparities between clinics supporting socially vulnerable populations versus clinics that did not support socially vulnerable population. The clinics supporting socially vulnerable populations did not use high technology approaches like videoconferencing. These clinics often relied on telephone encounters. However the clinics providing services to socially vulnerable populations were still comfortable with using technology

to provide care.[31] These small primary care practices typically would not have the ability to have a behavioral health integrated model or collaborative care with behavioral health on-site. Additionally, this study was not examining task sharing of TMH interventions. The questions remain on whether smaller primary care clinics with no or minimal behavioral health integration would perceive their organization as ready for implementing task sharing of TMH interventions. This study could have been a stronger study if the study team were able to recruit health care professionals from primary care practices not part of a large health system to get a fuller picture of the potentials barriers and facilitators, and organization readiness for task sharing of TMH interventions in primary care.

Conclusion

This dissertation study investigated organizational readiness and implementation climate for task sharing of TMH interventions in primary care clinics. The study shows that health care professionals from behavioral health integrated primary care practices perceived their organizations as ready and have the implementation climate for the innovation with no differences between PCPs, BMH specialists, and frontline staff who could potentially be tasked with parts of the TMH intervention. As mental health concerns increase and more care will be provided in primary care, primary care clinics need to be equipped to handle such demands especially given the evidence that PCPs end up providing more mental health services in BHI clinics versus those without BHI.[3] Indeed Adepoju et al.[7] noted that access to the right care at the right time and in the right setting helps people with mental health conditions. However, continued research

will be needed to identify how to structure these services in existing health care systems and how to ensure success and sustain the innovation over time and in different cultures.[16] Outer Setting factors such as payment models and policy changes, and Inner Setting factors of investing in infrastructure for the innovation will be needed to ensure implementation and sustainment. Additionally, investment in capacity building and changing health professionals attitudes and beliefs of the innovation will also be needed to aid with implementing task sharing of TMH interventions.[5]

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Chapter 4: Acceptability, Appropriateness, and Feasibility of Task Sharing of Tele-Mental Interventions in Primary Care: Perspectives of Health Professionals.

Abstract

Background: Tele-mental health (TMH) interventions have been growing gradually, but during the COVID-19 pandemic, these interventions were rapidly implemented. However, there are many barriers to TMH interventions. These barriers include commitment, added workload, available staff, and integration into the workflow. Task-sharing is an implementation strategy that can help extend the capacity of primary care clinics to manage mental health conditions. Task sharing is a care model that trains less specialized health care workers to perform tasks typically done by specialized health care workers. The aim for this study is to survey health care professionals and investigate their perceptions of acceptability, appropriateness, and feasibility of task sharing of tele-mental health interventions in primary care. **Method**: The dissertation study examined the implementation outcomes of acceptability, appropriateness, and feasibility as measured by Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM) for task sharing of TMH interventions. Follow-up interviews were used to explore barriers and facilitators to task sharing of TMH interventions in primary care and explain the results of surveys by coding the qualitative data with Consolidated Framework for Implementation Research (CFIR) and analyzed with Dedoose® Code Co-Occurrence Analysis. **Results**: The Behavioral/Mental Health (BMH) specialists, Primary Care Providers (PCP), and Nurses showed differences in scores for acceptability,

appropriateness, and feasibility of implementing task sharing of TMH interventions in primary care, and those comfortable with task sharing of TMH interventions showed higher scores for acceptability, appropriateness, and feasibility. The BMH specialists and PCPs expressed concern most often coded with CFIR constructs of Available Resources, Knowledge & Beliefs of the Innovation, Self-Efficacy, Needs & Resources of Those Served by the Organization, External Policies & Incentives, and Complexity for implementing task sharing of TMH interventions in primary care. **Conclusion**: The study showed differences in acceptability, appropriateness, and feasibility for task sharing of TMH intervention among health care professionals and stated comfort with task sharing of TMH interventions. However, there should be more formative research to obtain a broader stakeholder perspective including the recipients of the service to truly ensure that many of the possible barriers could be identified. The next steps should be to investigate possible strategies to counter the barriers to implementation and sustainment of the innovation. Following the implementation process, researchers and practitioners can work together to implement and sustain evidence-based intervention into practice to ensure the optimal population health.

Background and Significance

Technology enhanced mental health interventions have been growing gradually with many studies showing that tele-mental health (TMH) interventions can be non-inferior or even superior to traditional mental health services across different ages, specialty populations, condition, and settings. TMH interventions are mental health services using synchronous technology like videoconferencing, instant messaging/chat services,

telephone and asynchronous technologies like internet/online websites, and mobile applications. TMH interventions have been growing in USA due to increased need for mental health services, shortages of mental health professionals, the increased availability of technology, and better reimbursement of telemedicine services.[1] Additionally, during the COVID-19 pandemic, government and private insurers rapidly made changes to telehealth coverage and reimbursement.[2] However, there are many barriers to implementation of telehealth in primary care. These barriers include commitment, added workload, available staff, and the process of integrating the intervention into the workflow.[3] Health care professionals reluctance to use TMH interventions impact implementation with those with higher comfort with technology having less reluctance to use TMH interventions.[4,5]

Task sharing is an implementation strategy and care model that could aid with the barriers of added workload and the lack of available staff. The model trains less specialized health care workers to perform tasks typically done by specialized health care workers. In this model, Behavioral Mental Health (BMH) specialists can be in teams with other providers and community resources. The specialists become trainers, supervisors, and consultants.[6] Task sharing has been shown to be effective in Low- and Middle Income Countries (LMIC) with various evidence-based mental health interventions.[7,8] In a WHO report, task sharing is used to “emphasize the common performance of the entire clinical task, or key components of it, among teams of difference cadres of health workers. Tasks are not taken away from one cadre and given to another, but rather that additional cadres are given the capacity to take on

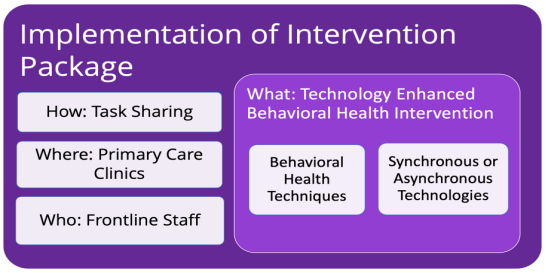
identified tasks".[9] There are few studies on task sharing of mental health services not in LMICs with few studies conducted in High-Income Countries (HIC) on task sharing of mental health interventions with or without technology.[10] Hoeft et al.[6] reviewed the literature with the aim to learn about task sharing approaches in rural areas in HICs, specifically in United States of America (US), and then highlighted the research needs to develop task-sharing of mental health services. The review identified 47 peer-reviewed articles and 8 grey literature resources that described various task sharing approaches using Community Health Worker (CHW), non-mental health providers in primary care, and/or behavioral mental health specialists. The review also mentioned that telehealth may help different health professionals with task sharing. Even with the limitations of the review, the researchers' highlighted research opportunities on task sharing of mental health care in the rural and low-resources settings in the US such as assessing the workforce's interest and capacity to take on mental health care tasks in their diverse setting.[6] Singla et al.[10] studied task sharing of mental health treatment of perinatal depression and found that the synthesis of the literature showed compelling evidence that non-specialists can treat and prevent depression and anxiety in women in HICs. However, there are few studies examining task sharing with TMH Interventions.

The Innovation:

Broadly, the innovation consists of the implementation strategy of task sharing to support the intervention of technology enhanced/supported psychotherapy techniques that could be used to address multiple mental conditions in primary care. The

technology could be synchronous like videoconferencing, or asynchronous like an interactive website. Figure 1 reflects the broad idea of the innovation of interest.

Figure 1: The Innovation of Task sharing of Tele-Mental Health Interventions



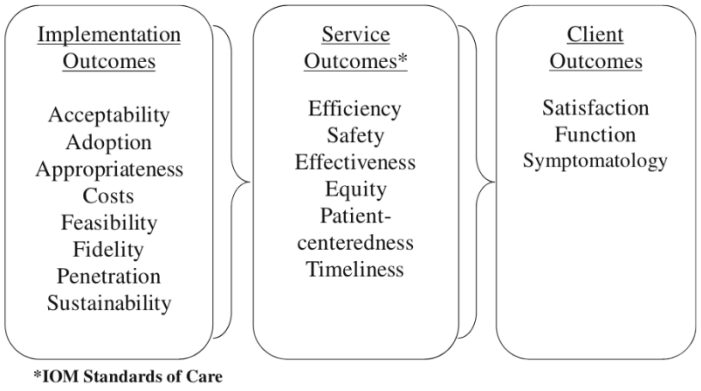
Theoretical Frameworks:

The Consolidated Framework for Implementation Research (CFIR) will be the framework for identifying barriers and facilitators of implementation of the innovation. Developed by Damschroder et al.[11], the framework built constructs from existing theories. This framework will help researchers with formative assessment and summative evaluation of implementation. The framework can then guide assessment, evaluation, and explanations of findings. All the constructs of CFIR are classified into five domains of Characteristics of the Intervention, Outer Setting, Inner Setting, Characteristics of the Individuals, and Process.[11] All these constructs with their specific definitions can be found on the website, https://cfirguide.org/.[12]

The Implementation Outcome Framework (IOF) is the other framework that will inform this study. Proctor et al.[13] developed the IOF to distinguish implementation effectiveness from service and clinical effectiveness. Implementation outcomes are the outcome of

"deliberate and purposive actions to implement new treatments, practices, and services" (Figure 2).[13] Acceptability, Appropriateness, and Feasibility are implementation outcomes that can be assessed at the formative stage of intervention implementation. Acceptability of an intervention is the stakeholders' perception of palatability, agreeableness, or satisfaction for the intervention. Appropriateness, on the other hand, is the stakeholders' perception of intervention fit, relevance, or compatibility in their context. Lastly, feasibility is the stakeholders' perception that the intervention can be successfully used and carried out in their setting.[13]

Figure 2: Proctor's Implementation Outcome Framework[13]



Using CFIR, researchers can identify barriers and facilitators for the implementation outcomes of interest for the innovation. As such, the aim for this study is to examine perceptions of acceptability, appropriateness, and feasibility of task sharing of tele-mental health interventions in primary care and explore barriers and facilitators to task sharing of tele-mental health interventions in primary care. Specifically, the goal of this paper is to examine responses to Acceptability of Intervention Measure (AIM)/Intervention Appropriateness Measure (IAM)/Feasibility of Intervention Measure

(FIM)[14] for task sharing of TMH interventions to participants' health care roles and comfort with task sharing, and then use CFIR to explain the results of AIM/IAM/FIM.

Hypothesis 1: The healthcare roles will perceive the acceptability, appropriateness, and feasibility the same for task sharing of TMH interventions.

Hypothesis 2: Those healthcare professionals who expressed more comfort with task sharing will have higher perceptions acceptability, appropriateness, and feasibility of task sharing of TMH interventions.

Methods

Study Design:

The parent study was an explanatory sequential mixed-method study using a cross-sectional survey followed by interviews conducted in the United States with the target population of health care professionals providing primary and mental health services in primary care clinics. The survey data was collected in Fall 2020 during the COVID-19 pandemic and captured information about the TMH landscape. The dissertation study embedded the measures of acceptance, appropriateness, and feasibility of task sharing of TMH interventions to the survey. The survey was promoted to thirteen psychology, nursing, and primary care associations. The researcher also paid a private repository of healthcare professionals (capped at 50 nurses, 50 primary care providers, and 50 behavioral/mental health specialists due to cost constraints) for survey participants. Survey participants had to select that they worked in primary care to be able to reach the measures of acceptance, appropriateness, and feasibility. Participants of the survey

were entered into a raffle to receive $100 gift cards. Study data were collected and managed using REDCap electronic capture tool[15] hosted at the Institute of Translational Health Sciences (ITHS). REDCap at ITHS is supported by the National Center for Advancing Translational Sciences of the National Institutes of Health under Award Number UL1 TR002319. (https://www.iths.org/investigators/forms-templates/citation-information/)

Questionnaires in the Cross-Sectional Study:

Demographic Questionnaire:

The demographic questionnaire collected data about the participants such as age, gender, race/ethnicity, and their role in the clinic. Participants who selected roles of physicians (MD, DO), Advanced Practice Registered Nurses (APRNs, but not Psychiatric APRNs), or Physician Assistants (PAs) were collapsed into the role of Primary Care Provider (PCP). Participants who selected roles of nurses (RN, LPN) were labelled as Nurses. Participants who selected their roles as psychiatrist, psychologists, psychiatric APRN, social workers or other types of counselors were collapsed into the role of Behavioral/Mental Health Specialists (BMH).

Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM):

To measure implementation outcomes of acceptability, appropriateness, and feasibility of any intervention, Weiner et al.[14] designed, developed, and validated the AIM/IAM/FIM. Each measure was shown to be valid and reliable. The test-retest

reliability (Cronbach alpha) was 0.83 for Acceptability, 0.87 for Appropriateness, and 0.88 for Feasibility. The AIM/IAM/FIM questionnaires were Likert response scales with the range of Strongly disagree (0) to Strongly agree (6). Each construct had between 4-5 questions.[14] For this study, scores were generated from participants' AIM/IAM/FIM responses by calculating the means of the responses to each question by the constructs of Acceptability (AIM), Appropriateness (IAM), and Feasibility (FIM). Additionally, the participants were also asked their comfort with task sharing of tele-mental health intervention.

Quantitative Analysis:

The quantitative data was analyzed with descriptive statistics, one-way ANOVA, and Cronbach alpha for this sample using V2.7 IBM SPSS®. One-way ANOVA assessed for differences in AIM/IAM/FIM scores for task sharing of TMH interventions by health professional role and stated comfort with task sharing.

Qualitative Data Collection:

Qualitative sample size was estimated for 10-20 interview participants to achieve the goal of code saturation when no additional or new codes are identified or applied to the transcripts.[16] Initially, participants who provided their contact information were scheduled for interviews in Winter 2021. Snowball sampling was also used to gather additional interview participants. Participants who were interviewed received $50 gift cards after completion of the interviews.

Interviews:

The interview guide was developed based on the Implementation Outcomes Framework[13] and the Consolidated Framework for Implementation Research[11]. The goal of the interviews was to continue to assess for acceptability, appropriateness, feasibility for task sharing and tele-mental health intervention. The interview guide captured these categories of information (See Appendix 2):

- Demographics – professional role, education, years in practice, EBP training, immediate team members.
- Current behavioral/mental health services – common mental health conditions, current practices for managing mental health conditions, any behavioral/mental health techniques utilized to manage mental health conditions.
- Experiences and perceptions of task sharing and using technologies to deliver behavioral/mental health services.

The interviews included specific questions assessing for acceptability, appropriateness, and feasibility of the innovation. The researchers kept interviews with health care providers to be less than one hour. The goal was to identify the potential barriers and facilitators to task sharing of TMH interventions in primary care, and what components of the intervention was most concerning to health care professionals. Interviews were scheduled based on the interviewees' schedule, and used Zoom® videoconferencing technology for live interviews, for recording of the interviews, and for beginning transcription of the recording. The researchers performed their own transcription by reviewing and correcting the Zoom generated transcription with the audio recordings.

Qualitative Analysis:

The researchers on the project were a PhD psychologist, a PhD nurse, and two PhD nursing student researchers. The student researchers coded deductively using CFIR for content analysis in Dedoose®. CFIR constructs were also rated with positive, negative, mixed, or neutral to the implementation of task sharing and TMH intervention in their context. Additionally, the codebook included inductive codes to capture demographic data like participant healthcare role, clinic type, behavioral health integration, team structure, and after description of the intervention was explained whether the participant focused more on task sharing, the technology, and/or the psychotherapeutic techniques. Two researchers coded each transcript and agreed upon the codes by consensus. A third researcher was available if conflicts occurred during coding. Using Dedoose® Code Co-Occurrence Analysis, a study team member arbitrarily chose constructs with over 10 counts for the ratings of positive, negative, mixed, or neutral impact for implementation for analysis and identifying the exemplar excerpts. Including constructs with ten or less counts would have resulted in a large result set and complicated analysis. Within those CFIR constructs, the coding study team members identified whether the participants were discussing the intervention in terms of its three separate core components of the psychotherapy, the technology, the concept of task sharing, or a combination of the components.

Integration of Quantitative and Qualitative Analysis:

The quantitative results of AIM/IAM/FIM were then combined with the qualitative codes and exemplar quotes as an integrated joint display of statistics to code table.

Results

In Autumn 2020, one hundred and ninety-two participants completed the survey. Most respondents were White (74%) and not Hispanic/Latinx (85%). Participants were spread throughout the United States. See Table 1 for demographic of the survey participants.

Table 1: Primary Care Healthcare Professionals' Demographics

	Behavioral/Mental Health Specialist (N = 51)	*Nurses (RNs/LPNs) (N = 48)*	*Primary Care Provider (N = 52)*
Race, n (%)			
Black or African American	3 (5.88%)	3 (6.25%)	2 (3.85%)
American Indian or Alaska Native	0 (0%)	0 (0%)	1 (1.92%)
Asian	1 (1.96%)	5 (10.42%)	13 (25.00%)
Native Hawaiian or Other Pacific Islander	0 (0%)	0 (0%)	0 (0%)
White	45 (88.24%)	33 (68.75%)	30 (57.69%)
Prefer to Self-Describe	1 (1.96%)	1 (2.08%)	0 (0%)
Prefer to Not Answer	1 (1.96%)	6 (12.5%)	6 (11.54%)
Self-Description	Hispanic-White	Brown	
Ethnicity, n (%)			
Hispanic/Latinx	3 (5.88%)	8 (16.67%)	3 (5.77%)
Not Hispanic/Latinx	46 (90.20%)	35 (72.92%)	45 (86.54%)
Prefer to Not Answer	2 (3.92%)	5 (10.42%)	4 (7.69%)
Age, n (%)			
Mean (SD)	51.7 (11.9)	47.1 (11.4)	45.1 (10.8)
Range	30-73	24-67	29-77
Gender, n (%)			
Female	37 (72.55%)	30 (62.50%)	24 (46.15%)
Male	13 (25.49%)	9 (18.75%)	24 (46.15%)
No response	1 (1.96%)	9 (18.75%)	4 (7.69%)
Trainee Status, n (%)			
No	46 (90.20%)	46 (95.83%)	50 (96.15%)
Yes	5 (9.80%)	2 (4.17%)	2 (3.85%)
Geographic Location, n (%)			
Northeast (PA, NY, NJ, CT, RI, MA, VT, NH, ME)	13 (25.49%)	12 (25.00%)	6 (11.54%)

Midwest (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, MI, OH)	8 (15.69%)	12 (25.00%)	12 (23.08%)
South (TX, OK, AR, LA, MS, AL, GA, FL, SC, NC, TN, KY, WV, VA, MD, DC, DE)	12 (23.53%)	13 (27.08%)	24 (46.15%)
West (WA, OR, CA, ID, NV, MT, WY, UT, CO, AZ, NM, AK, HI)	18 (35.29%)	11 (22.92%)	10 (19.23%)

Reliability of Questionnaires:

The Cronbach's alpha for this sample was 0.97 for AIM, 0.98 for IAM, and 0.93 for FIM.

Aim 3:

Hypothesis 1: The healthcare roles will perceive the acceptability, appropriateness, and feasibility the same for task sharing of TMH interventions.

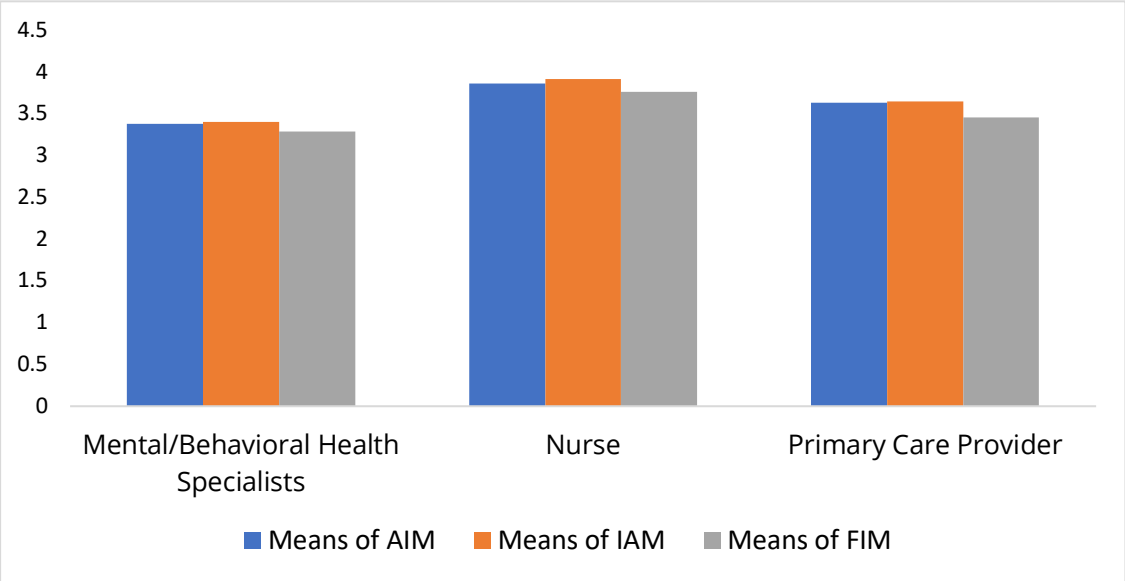
One-way ANOVA found statistically significant differences for the scores for acceptability (F(2, 187) = [3.57], p=0.03), appropriateness (F(2, 187) = [3.84], p=0.02), and feasibility (F(2, 188) = [3.60], p=0.03) of task sharing of tele-mental health interventions based on the healthcare roles of behavioral/mental health specialists, nurses, and primary care providers (Table 2). The BMH specialists and the PCPs had lower scores than the Nurses.

Table 2: AIM/IAM/FIM Score by Role

Role	N	Mean	SD	Std. Error	Minimum	Maximum
Behavioral/Mental Health Specialist						
AIM	74	3.38	1.14	0.12	1.00	5.00
IAM	74	3.29	1.06	0.12	1.00	5.00

FIM	74	3.41	1.16	0.13	1.00	5.00
Nurse						
AIM	51	3.87	0.76	0.11	1.50	5.00
IAM	52	3.77	0.80	0.11	1.75	5.00
FIM	51	3.92	0.73	0.10	2.00	5.00
Primary Care Provider						
AIM	65	3.64	1.05	0.13	1.00	5.00
IAM	65	3.46	1.03	0.13	1.00	5.00
FIM	65	3.65	1.02	0.13	1.00	5.00
Total						
AIM	190	3.60	1.03	0.07	1.00	5.00
IAM	191	3.48	1.00	0.07	1.00	5.00
FIM	190	3.63	1.03	0.07	1.00	5.00

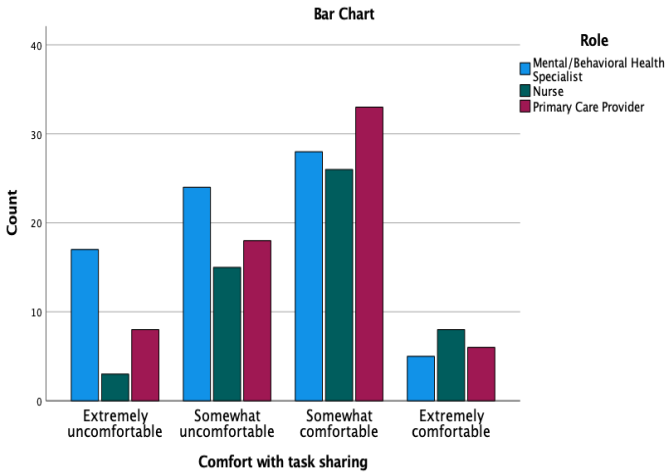
Figure 3: Mean Scores of AIM/IAM/FIM by Health Professional Role



Hypothesis 2: Those healthcare professionals who expressed more comfort with task sharing will have higher perceptions in acceptability, appropriateness, and feasibility of task sharing of TMH interventions.

Most respondents were somewhat comfortable with the concept of task sharing for TMH interventions (Figure 4). The PCPs indicated the most comfort with task sharing while the BMH specialist the least comfort.

Figure 4: Comfort with task sharing by role.



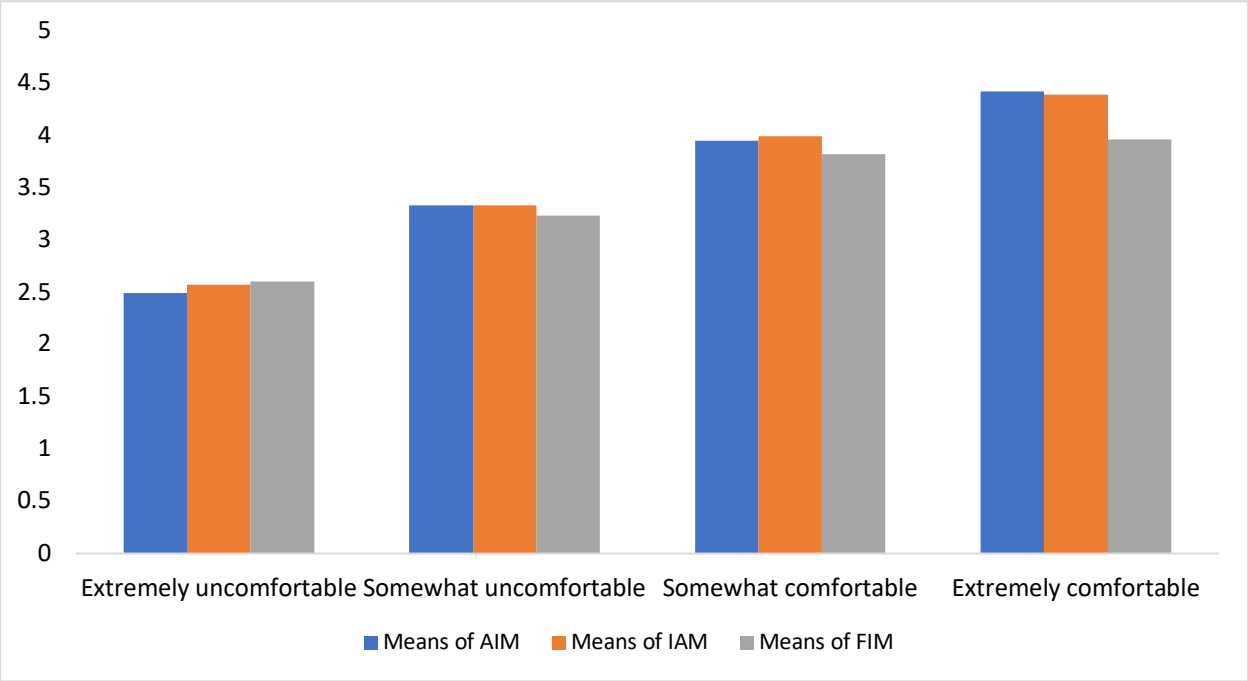
There were statistically significant differences for the scores for acceptability (F(2, 186) = [24.50], p<0.001), appropriateness (F(2, 186) = [26.10], p<0.001), and feasibility (F(3, 187) = [16.60], p<0.001) of task sharing of TMH interventions based on the respondents' comfort with the concept of task sharing (Table 3).

Table 3: AIM/IAM/FIM Scores by Comfort with Task sharing

Role	N	Mean	SD	Std. Error	Minimum	Maximum
Extremely uncomfortable						
AIM	28	2.49	1.30	0.25	1.00	5.00
IAM	28	2.57	1.26	0.24	1.00	5.00
FIM	28	2.60	1.28	0.24	1.00	5.00
Somewhat uncomfortable						
AIM	56	3.33	0.97	0.13	1.00	5.00
IAM	56	3.33	0.96	0.13	1.00	5.00
FIM	57	3.23	0.95	0.13	1.00	5.00

Somewhat comfortable						
AIM	87	3.95	0.64	0.07	1.00	5.00
IAM	87	3.99	0.67	0.07	1.00	5.00
FIM	87	3.82	0.69	0.07	1.25	5.00
Extremely comfortable						
AIM	19	4.42	0.62	0.14	3.00	5.00
IAM	19	4.39	0.68	0.16	3.00	5.00
FIM	19	3.96	0.83	0.19	1.75	5.00
Total						
AIM	190	3.60	1.03	0.07	1.00	5.00
IAM	190	3.63	1.03	0.07	1.00	5.00
FIM	191	3.48	1.00	0.07	1.00	5.00

Figure 5: Mean Scores for AIM/IAM/FIM by Comfort with Task Sharing



Qualitative Results:

To explain the quantitative results, respondents who indicated they were willing to be followed up, were interviewed Winter 2021. Code saturation was reached rapidly whereby the tenth interview data analysis saw no new applications of codes. Of the ten

interviewees, the majority were Behavioral/Mental Health Specialist and Primary Care Providers (all physicians). One frontline staff was interviewed, and the person was a Medical Assistant. Two out of the ten were identified via snowball sampling. No nurses responded the opportunity to be interviewed. Nine out of the ten interview participants worked in clinics with full behavioral health integration. See Table 4 for demographic characteristics of the interviewees.

Table 4: Participant Characteristics of Interviewees

	Behavioral/Mental Health Specialist (n=5)	*Frontline Staff (n=1)*	*Primary Care Provider (n=4)*
Highest Educational Level			
Doctorate Level	2 (20%)	-	4 (40%)
Master's Level	2 (20%)	-	-
Bachelor's Level	1 (10%)	-	-
Certification Level	-	1 (10%)	-
EBP Training			
No to Little EBP Training	-	1 (10%)	1 (10%)
Some EBP Training	4	-	-
Use & Experienced with EBP	1 (10%)	-	3 (30%)
Clinic Type			
Clinic/Practice Affiliated with University Teaching Hospital	1 (10%)	-	1 (10%)
Clinic/Practice at Academic Medical Center	1 (10%)	-	-
Private Health Care System	3 (30%)	1 (10%)	2 (20%)
Behavioral/Mental Health Integration			
Full Behavioral/Mental Health Integration	5 (50%)	1 (10%)	3 (30%)
No Behavioral/Mental Health Services	-	-	1 (10%)

Using CFIR for content analysis by deductively coding barriers and facilitators to task sharing of TMH interventions, and then using the Dedoose® Code Co-Occurrence Analysis with positive, negative, neutral, and mixed impact on implementation codes, the researchers identified that PCPs and BMH specialists were most concerned (negative impact on implementation) about:

- Inner Setting constructs of Available Resources
- Individual Characteristics of the Individual constructs of Knowledge & Beliefs of the Innovation and Self-Efficacy
- Outer Setting constructs of Needs & Resources of Those Served by the Organization and External Policies & Incentives
- Characteristics of the Intervention construct of Complexity for implementing task sharing of TMH interventions in primary care

(See Table 5 for joint display of mean scores by role, construct, topics, and exemplar quotes).

Table 5: Joint Display of AIM/IAM/FIM Mean Scores of PCPs and BMH Specialists to CFIR Constructs coded as Negative Impact on Implementation with Topics and Exemplar Quotes

Role & Mean Scores of AIM/IAM/FIM	CFIR Construct of Concern	Topics	Exemplar Quotes
Behavioral/Mental Health Specialist AIM 3.38 IAM 3.29 FIM 3.41	Available Resources	Space availability	“it's like all good projects you do them when you can and you fit them in I think it'd be challenging and their work environment where they're going to be interrupted around them because, generally, they sit in kind of an open area. You know, to hone in and do that and also if they're actually

			having a virtual visit there they're going to need to have an office or place to go to for confidentiality purposes. Because those areas are not confidential the MAs work areas generally and I just think you know, like any other clinic i've walked through be MAs.”
		Sufficient staffing	“that be that MA being off to do that because it quickly you end up with a sick MA. And you're short I mean there's MA shortages right now. So when you talk about MA time then you're kind of leaning into a population that already have shortages and people already compensating and covering for each other”
		Time management	“yeah. I would say your general MA is responding to like needing to room and tranfer you know get patients through the wheelhouse of the clinic. And then, following up on whatever the provider comes out and relays to them that you know xyz needs to happen and they're checking faxes and they're checking voicemail. They're so they're busy and they're already attending to a lot of things”
	Self-Efficacy	Need for training	“Like what the intervention ideas I think it'd be challenging for MAs to provide motivational interviewing techniques. They would definitely need training.”
	Needs & Resources of Those Served by	Ability and capability to use technology	“And sometimes their cognitive ability isn't isn't so that they can actually use the technology or how to do it, and then a lot of I shouldn't

	the Organization		say a lot, but a number are homeless and so it's very common for them to break or lose their phone.”
		Willingness to use technology	“I also, though, feel like they're a lot of things that come up are a lot of anxiety will be about being on screen, especially with adolescence”
		Financially able to have technology	“You have people that are on like disability and they probably are making under $1,000 a month. And that does not give them any funds for Internet”
	External Policies & Incentives	Issues with scope	“I know, just like speaking like system perspective, like the nurses, are in a Union, and so I can imagine if they're to add something else, they have to do, then that would have to go through the Union and might get some pushback i'm just imagining what would happen if we were to propose that”
	Complexity	Task sharing of psychotherapeutic techniques	“You know motivational interviewing you have to really be listening and catching cues catching themes that takes experience and it takes time to ask questions, I mean you can ask scaling questions, but you have to be able to effectively hear what the patient is communicating and pick up on those.”
Primary Care Provider AIM 3.64 IAM 3.46 FIM 3.65	Available Resources	Technology availability	“that was another problem that before April we didn't have the monitors with cameras”
	Knowledge & Beliefs of the Innovation	Technology concerns	“But there are a lot of things that can't be done on telemed too.”

	External Policies & Incentives	Issues with reimbursement using the technology	“But we make a lot less money, like not personally because we're not like productivity based only, but the clinic like not all of our slots bill, we see a lot less patients on telemed we do less ah we bill less because we can't do procedures we can't do things that are more like bringing in more revenue and there's a lot of things you can't do on telemed and so like ah having a provider in clinic for a half day and seeing mostly patients in person is much more productive than having someone at home doing telemed”
		Issues with reimbursement because of the role	“And then that could be quite frank that’s why our medical assistants don't have it because we have to pay per license for the professional zoom that we use and those MA follow up calls and visits are not billable visit”
	Complexity	Technology	“Now it has been difficult. So, even with the using Telehealth, it's still is difficult. It worse from the sounds of it, you can't you can't page them or something like that. We cannot page them and then, if the person is physically in our office, we cannot do that a handoff right away. Because we need to plan to get the Zoom to get them to come and talk to the patient and get on the phone on the Zoom right away, so we haven't been able to do that.”

However, in general the participants of the interviews were positive for implementation of this innovation especially in the Inner Setting and Characteristics of Individual Domain. Constructs with counts over ten in positive, negative, and mixed impact for implementation can be seen in Table 6.

Table 6: CFIR Constructs Code Counts over 10 by Positive, Negative, and Mixed Impact on Implementation

	Positive Impact	Negative Impact	Mixed Impact	Total
Outer Setting				
Needs & Resources of Those Served by the Organization	39	16	-	55
External Policy & Incentives	-	18	11	29
Inner Setting				
Available Resources	90	23	32	145
Networks & Communications	32	-	-	32
Compatibility	28	-	-	28
Access to Knowledge & Information	16	-	-	16
Characteristics of Individual				
Knowledge and Beliefs about the Innovation	55	24	25	108
Self-efficacy	38	11	15	65
Characteristics of Innovation				
Complexity	-	17	11	28

Discussion

The three roles of health care providers showed differences in scores for acceptability, appropriateness, and feasibility of implementing task sharing of TMH interventions in primary care. The higher comfort they had with task sharing resulted in stronger differences in acceptability, appropriateness, and feasibility. The major CFIR domain and construct that were coded as having the most impacted on implementation was the Inner Setting CFIR construct of Available Resources. If the organization provided the

needed staffing (the person given the task), an allotted time to perform the tasks, space to perform the tasks, and the needed technology, they felt the implementation was feasible. The other barrier and facilitator CFIR domain with high impact was the Characteristics of the Individual. Indeed, in a systematic review of task sharing of mental health interventions in LMIC, the researchers had the aim of using an implementation science perspective to identify barriers and facilitators in low-resource settings. In their review of thirty-seven studies, they found that task sharing had more facilitators than barriers. In their review, a major facilitator was providers' skills and self-efficacy.[17] This result can be seen in this study's qualitative results where PCP and BMH clinicians were positive about task sharing to frontline staff if they were trained and had supervision. Le et al.[17] noted that it was important to ensure that the roles of task shared providers were appropriate to the providers' knowledge, attitude, skills, and confidence, and that high quality training be provided to those given the tasks. In a recent study of barriers and facilitators of task sharing of telemedicine in HICs for perinatal depression, the researchers also found that the most frequent facilitator of non-specialists providing psychological care was having high-quality training and education.[8]

Although the study was attempting to only investigate inner setting and individual CFIR constructs, the outer setting construct was often mentioned. Specifically, the needs of the patients the organization served. This construct also had predominantly positive impact, but there were some concerns with the technology aspect of the intervention. However, for all the positives of telehealth, there are still many issues. For example,

Qian et al.[18] found significant disparities in the use of telemedicine among Hispanics and Asians. This population had lower utilization of telemedicine during the height of COVID-19 pandemic even though they were the population with the higher risk of contracting COVID-19. Similarly, White-Williams et al.[19] also found Hispanic patients were less likely to use telehealth modalities. Another population with a historical concern with technology are older adults. In a news article in the New York Times, this issue of technology glitches and older adults was raised[20], but even with technology concerns, TMH interventions had been shown to be effective and safe alternative to face-to-face psychotherapy.[21] Interestingly, this study also found that adolescents had concerns with technology. This was reflected in a comment by a BMH specialist where the provider noted that many adolescents did not like to have the video cameras on during therapy. Additionally, Zaslavsky et al.[22] found that there were potential differences in how different health care providers envision how technology could be used for patient care. Zaslavsky et al.[22] found that BMH and PCPs endorsed the use of live video with managing common mental conditions while nurses endorsed the use of mobile apps with health-promoting behaviors. All health professionals had low endorsement for using technology for serious mental conditions and social media for medication management.[22] Indeed, Vernig[23] commented that clinicians perceive these TMH interventions to be more useful for mood and anxiety disorders than for psychotic and substance-related disorders. Although, Zaslavsky et al.[22] did not investigate qualitatively why certain health professionals preferred specific technologies for specific conditions, it could a potential next step in the research to find out why one technology type would be better for specific conditions.

The policies and incentives for TMH was also mentioned as a mainly negative or mixed impact on implementation of the intervention. During the COVID-19 pandemic, Medicare extended coverage of remote health care to 2023 such that patients could receive telehealth care without care for geographic barriers, and it raised the reimbursement amounts so that providers were not paid less for telehealth visits.[20] However, the question remained on whether Medicare and other payers would still reimburse telehealth at comparable rates to in-person visits as the pandemic wanes.

The major limitation of this study was the cross-sectional method of the quantitative and qualitative data collection. Convenience sampling and snowball sampling with self-selection would lead to bias. The participants who were already positive about the task sharing of TMH interventions could have been more willing to fill out the survey and be interviewed for the study. This can be seen in that the lack of diversity of interview participants leading to rapid code saturation with only ten interview participants. Most interview participants came from BHI health systems, so they may already have comfort with task sharing. Also, the results are not generalizable given that the participants of the interviews did not match the participants of the surveys in terms of roles. Especially notable was the lack of nurses who were willing to be interviewed. Lastly, the study occurred during the COVID-19 pandemic where strict social distancing was mandated, and many clinics were shut down to in-person appointment. The use of telehealth during the pandemic could have further caused a more positive view of task sharing of TMH interventions. The pandemic also impacted the ability of the researchers to return to the participants to triangulate and confirm the qualitative results as many practitioners

became overwhelmed with patient care and COVID-19 rapid policy and procedure changes.

Conclusion

This study investigated technology enhanced mental health services utilizing a task sharing model. The study shows acceptability, appropriateness, and feasibility differences for task sharing of TMH intervention among different health care professional roles and comfort with task sharing. However, there should be more formative research to obtain a broader stakeholder perspective including the patients to truly ensure that as many possible barriers could be identified. The next steps should be to investigate possible strategies to counter the barriers to implementation and sustainment of the innovation. Following the implementation process, researchers and practitioners can work together to implement and sustain evidence-based intervention into practice to ensure the optimal population health. Lastly, the developers of CFIR had been re-designing CFIR to reflect the recommendations of researchers who have used the framework.[24] This re-design will impact how barriers and facilitators are coded and could potentially impact the results of qualitative content analysis with CFIR and selection of implementation strategies in the future.

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Chapter 5: Conclusion

Summary of Findings

All the studies show the formative research process in implementation science. In Aim 1, the intrinsic case study approach exemplified the process of using Consolidate Framework for Implementation Research (CFIR)[1], Expert Recommendations for Implementing Change (ERIC)[2], and especially the CFIR-ERIC Mapping Tool to identify methods to inform implementation of a complex innovation. This innovation consists of an implementation strategy of task sharing of a Fitbit® enhanced Behavioral Activation psychotherapy in primary care to manage depression in older adults. The case study showed step 1 of designing the formative research with CFIR, step 2 of performing and analyzing the research, and step 3 of using the CFIR-ERIC Mapping Tool to identify methods to help implementation. The case study identified many issues with using the CFIR-ERIC Mapping Tool and speculated on the possible changes with this tool given the updated CFIR determinant framework.[3] However, this process to assess implementation of a complex innovation can be utilized by clinicians and researchers who are interested in addressing problems which have identified evidence-based interventions but need to ensure that the interventions and implementation strategies can be implemented in their specific context.

In Aim 2 and Aim 3, the explanatory sequential mixed-method studies examined perceptions in organizational readiness, implementation climate, acceptability, appropriateness, and feasibility of task sharing of TMH interventions, and then

interviewed participants to help identify barriers and facilitators to the innovation and explain the results of the surveys. The study for Aim 2 found that the health care providers from clinics that had behavioral and mental health services integrated with primary care perceived their organization as ready to implement change for task sharing of TMH interventions and had an implementation climate more supportive for evidence-based practice. This can be reflected in the qualitative data where nine out of ten participants were from BHI primary care clinics, and those in BHI clinics were positive about implementation. The organizational readiness and implementation climate was not statistically different based on the health care professional role of BMH specialists, PCPs, and Nurses, who could be considered Frontline Staff (FLS). This was reflected in the qualitative component of the study where the three healthcare professional roles of BMH specialists, PCPs, and FLS were all positive about the innovation. In Aim 3, the BMH specialists, PCPs, and Nurses showed differences in scores for acceptability, appropriateness, and feasibility of implementing task sharing of TMH interventions in primary care. The BMH specialists and PCPs expressed concerns most often coded with CFIR constructs of Available Resources, Knowledge & Beliefs of the Innovation, Self-Efficacy, Needs & Resources of Those Served by the Organization, External Policies & Incentives, and Complexity for implementing task sharing of TMH interventions in primary care.

In a similar study, Singla et al.[4] examined the barriers and facilitators of non-specialists delivering psychological interventions using telemedicine for perinatal depression in a High-Income Country (HIC) by interviewing multiple types of stakeholders from patients

and their spouses to healthcare professionals. Although, the study did not use CFIR for content analysis, they identified barriers of perceptions of legitimacy of non-specialist providers, limited time and increased burden, perception of the difficulty in developing a therapeutic alliance with telemedicine, patient access to technology, fears of competition to BMH specialist, resistance to non-specialist providers especially from BMH specialist, and cost. The study also found facilitators included high-quality education and guidelines for psychological care for the non-specialist provider, the other healthcare professionals, and the patients and family. The study concluded that task sharing of psychological treatment using telemedicine for perinatal depression was assessed as acceptable and feasible by multiple stakeholders especially if the non-specialist obtains high-quality education and have appropriate supervision.[4] This study did not use any implementation science theories, models, or frameworks to help with the assessment of task sharing of telemedicine for perinatal depression. Thus, these three studies add to the research on task sharing of TMH interventions in primary care in HICs, and help researchers and clinicians use implementation methods to investigate implementation strategies and the interventions in real-world setting.

What are the gaps in implementation science?

Because this research arena is relatively new, there are many unanswered questions. The largest gap is in the implementation strategies, themselves. There is little high-quality evidence on the effectiveness or adverse consequences of different implementation strategies. The implementation science research area needs to move beyond identifying barriers and facilitators to studying causal mechanisms of

implementation strategies while being aware that different strategies may be more effective in the different phases of implementation or in different contexts. Many implementation strategies involve multiple techniques and methods, and many techniques and methods are similar which adds to the confusion of what implementation strategy is being studied. Deploying and evaluating these multilevel implementation strategies in addition to the complex interventions can confuse the outcomes with little research on the synergistic or antagonistic effects of these multilevel implementation strategies and complex interventions.[5] However, a major issue is the lack of clarity of the definitions of the implementation strategies. Consistent terminology aids searching and browsing for information. An additional difficulty facing implementation science is the lack of reliable, valid and practical measurements for the concepts[6], and if there are existing measures, many have not been translated to other languages and cultures. Indeed, much of this research was developed in high-income, English-speaking countries, and there is uncertainty on whether the implementation science research results can be applied in other countries and their local cultural context.[7] Another area of research in implementation science is the concepts of de-implementation and mis-implementation of interventions. There is very little research how to de-implement and how to identify mis-implementation.[8]

Beidas et al.[9] recently presents a pre-mortem exercise to describe threats and opportunities for implementation science. They identify six themes on implementation science research:

- Not impacting population health or health equity.

- Focusing on becoming a “legitimate” science.
- Re-creating the research to practice gap.
- Not balancing the science being available to everyone and retaining coherence.
- Not aligning timelines, incentives, or problems with partners.
- Making the implementation process and strategies too complex and not matching partners’ needs.[9]

These themes are threats, but also provide opportunities for implementation researchers. Beidas et al[9] provides many recommendations to address these six identified threats and opportunities for implementation researchers. It will behoove implementation researchers to be aware of these issues and collaborate to address these issues in implementation science.

Nursing and Implementation Science

Healthcare has acknowledged and accepted the importance of Evidence-Based Practice (EBP). However, there are still existing health care practices not based on the evidence.[10] At the crux of the issue for EBP is the need to implement which in the complex health care systems is not simple and straightforward.[11] McNett[11] states, “fortunately, the field of implementation science provides direction, support, and scientific approaches to guide implementation efforts”. However, even with the knowledge generated from implementation research, clinicians often do not apply the information generated from the research to initiating EBP change. This creates a secondary gap where clinicians recognize the EBP intervention, but neglect evidence that can inform approaches to implementation for practice change.[12] Nurses have

important roles to advance implementation science and apply implementation science knowledge. Nurses can use implementation science's frameworks and systematic approaches to EBP implementation. Nurses can also lead scientific efforts to identify effective implementation strategies, determine facilitators and barriers, identify ethical and political considerations, and evaluate implementation, service, and patient outcomes. Nurse scientists trained in implementation science can investigate research gaps and generate evidence to address these gaps.[10] Lastly, nurses can be work collaboratively with other fields involved in implementation science as they investigate new study designs and analytical methods to research implementation strategies and interventions to ensure more rapid implementation of interventions.[13]

Conclusions and Future Directions

The three studies describe one aspect of implementation science. The studies focus on the formative, exploratory phase of implementation. The studies investigate the implementation strategy of task sharing on an EBP intervention, and specifically on implementation determinant of organizational readiness and outcomes of acceptability, appropriateness, and feasibility. Nurse scientists should learn, apply, and research in implementation science. McNett[10] notes that nurses are key positions to recognize and appreciate health care complexities, and doctorally prepared nurses must incorporate implementation science information and knowledge into generating evidence for and promoting evidence-based approaches to implementation.

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Appendix 1. Interview Questions from Parent Study used in Aim 1

Interview Questions for Clinic Administrators

In your clinic, what is the mission and priorities with regards to patient care?
How does behavioral health fit within this mission? And how important is it to provide behavioral health interventions to older adults with depression?
What are the organizational factors that facilitate the provision of behavioral interventions for older adults?
What are the organizational factors that impede the provision of these interventions?
How do you feel about task-sharing (or task-shifting)?
What would it take to implement task-sharing for behavioral interventions in this clinic?
Who would be the best frontline staff to potentially deliver this intervention (see description)?
What support and infrastructure would need to be in place for frontline staff to deliver this intervention?
What potential challenges would frontline staff encounter with using this technology (see description)?
What other potential challenges or concerns do you have about this intervention?

Focus Group Questions for Frontline Staff

Please think about a patient's experience in your clinic and describe:
What is the check-in process like?
Is the patient's mood assessed? If so, how and by whom?
What happens next? And who is involved with care planning decisions?
In your clinic, do you provide behavioral interventions (eg. CBT, psychotherapy, motivational interviewing, etc) to older adults with depression?
If no, are you interested in providing behavioral interventions for depression? Why or why not?
How comfortable are you in working with people with depression?
To what extent would task-sharing help you work to the top of your license?
In your clinic, what helps you provide behavioral interventions for older adults with depression?
In your clinic, what makes it difficult for you to provide behavioral interventions for older adults with depression?
How do you feel about using technology to interact and provide behavioral health support to your patients?
What would you need to be able to deliver this intervention?
In your clinic, how important is it to offer behavioral interventions for depression (for older adults)?

Focus Group Questions for Providers

Please think about a patient's experience in your clinic and describe:
What is the check-in process like and what occurs prior to you seeing them?
Is the patient's mood assessed? If so, how and by whom?
What is the process for providing behavioral health interventions to a patient? And who does what task?
How comfortable are you in working with people with depression?
How important is it for your clinic to offer behavioral interventions for depression?
In your clinic, what helps you to provide behavioral interventions to older adults in your clinic (eg. clinic supports)?
In your clinic, what makes it difficult to provide behavioral interventions to older adults in your clinic (eg. organizational barriers)?
How comfortable are you with frontline staff delivering this type of behavioral intervention (see description)?
What skills, characteristics and supports do the frontline staff need to deliver this intervention?
How do you feel about this intervention?

Appendix 2. Interview Guide for Explanatory Sequential Study used for Aim 2 & 3

Demographics:

1. Please describe for me your professional role such as what education you received for your professional role, and how many years have you practiced in your professional role?
    a. Probe: Did they get training on EBP? How much?
2. Please describe for me your current practice/clinic such as how many years you have been working in current practice/clinic.
3. Have you been in the same professional role? If no, what role before and how long in that role?
4. Please describe your immediate team such as what professionals work with you in your immediate team?

Current mental health/behavioral health services:

1. What are the most common mental health conditions seen in your clinic?
2. How do you currently deal with these mental health conditions?
    a. Probe: Do they refer out? Is mental health services integrated fully or partially?
3. How do you currently deal with conditions where you need to encourage behavior change?
    a. Probe: Do they use a specific technique like motivational interviewing? Do they use or recommend any technologies?

Intervention:
We are talking about using technologies to give your patients brief psychotherapies or behavior change techniques like motivational interviewing and combining these techniques with task sharing. The WHO defines task sharing as “the common performance of the entire clinical task, or key components of it, among teams of different cadres of health workers”. So, we are envisioning the treatment plan development and management occurring between specialists and primary care providers, and management and performing the psychotherapies or behavior change techniques using technologies like Zoom video conferencing, text messaging or Mobile apps between the primary care provider and the frontline staff like the medical assistant or nurse. Our survey results showed that the majority of respondents thought task sharing was acceptable, appropriate and feasible with their organizations ready and a positive climate for implementing.

Gather experiences and perceptions:
Thinking about your primary care clinic...

- Do you think your clinic is interested in using technologies to deliver mental health services or behavior change? Why or why not?
- Do you think your clinic is interested in task sharing and using technologies to deliver mental health services or behavior change? Why or why not?
- How is task sharing and using technologies to deliver mental health services or behavior change appropriate or not appropriate for your practice/clinic?

- How can you see making task sharing and using technologies to deliver mental health services or behavior change feasible/work for your practice/clinic?
- What would you need to feel comfortable with task sharing and using technologies to deliver mental health services or behavior change?
- What would your team need to be able to do task sharing and using technologies to deliver mental health services or behavior change?
- What would your practice/clinic need to be able to do task sharing and using technologies to deliver mental health services or behavior change?
- How prepared is your practice for delivering mental health services or behavior change services using technology like video conferencing software, text messaging, mobile apps, etc.?