Depression Research and Treatment

Implementation Research: Reducing the Research-to-Practice Gap in Depression Treatment

Guest Editors: Amy M. Kilbourne, Mark Williams, Mark S. Bauer, and Patricia Arean

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Editorial Board

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Editorial

Implementation Research: Reducing the Research-to-Practice Gap in Depression Treatment

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"*The implementation gap prevents our nation from reaping the benefit of billions of US tax dollars spent on research and, more important, prolongs the suffering of millions of Americans who live with mental disorders*."—President's New Freedom Commission on Mental Health 2003.

Despite the development of effective treatments, depression is still ranked as one of the top ten causes of disability worldwide according to the World Health Organization. It often takes years if not decades to translate evidence-based depression treatments into nonacademic, community-based practices. This research-to-practice gap can lead to millions of dollars of funded research being wasted when the treatments themselves never reach the populations in need [1]. Without a clear strategy to foster implementation and acceptance at the community provider level, a "voltage drop" is experienced when an evidence-based depression treatment developed in tightly-controlled academic settings is then introduced into real-world settings [2]. Moreover, current clinical trials populations are still highly selective (<5% of the diagnosed population) despite the movement towards "community-based research." There is a paucity of effective strategies or implementation approaches for getting effective treatments for depression and other mental disorders off the academic shelf and into the hands of those who need them.

Subsequently, there is a need for further cross-disciplinary research on effective processes to facilitate the uptake of evidence-based treatments in real-world practices. Implementation science is an emerging field poised to address the organizational, provider, and patient-level barriers to the adoption of new treatments for depression as well as for other conditions. The National institute of Mental Health defines implementation as the "use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings [3]."

This current issue explores novel approaches based on implementation science for enhancing the uptake of depression treatments. The articles address a range of concepts, both at a higher level on tools for and theories of effective implementation and at the practical level of lessons learned on the ground. This series of articles also focuses on implementing evidence-based programs to improve depression outcomes particularly for underserved populations including lower income patients, adolescents, and women with postpartum depression.

Four articles describe the application of implementation theory and measures to inform changes in mental health practice in general and for depression treatment in particular. J. K. Benzer et al. describe barriers and facilitators to coordinated mental health care in primary care settings. Key findings were used to refine an implementation theory for coordinated depression care included the importance of organizational factors such as resources, provider training and workflow designs, and an understanding and appreciation of mental health and primary care practice boundaries. Two additional articles describe complementary approaches for engaging providers in the implementation of new mental

health treatments. E. Aisenberg et al. describe a process for building a community-academic partnership to implement telephone cognitive-behavioral therapy for rural Latinos. The article points to how such partnerships can facilitate the adaptation of evidence-based practices in community settings by garnering frontline participant feedback on which elements need to be changed to implement a more scalable and culturally appropriate program. Similarly, D. E. Goodrich et al., using the Enhanced Replicating Effective Programs implementation framework, describe the implementation of an outreach program for Veterans with mental disorders, and what lessons were learned in regards to activating and empowering providers to "lead from the middle" and work within their systems to facilitate patient access. In addition, the paper by A. J. Lewis et al. describes how qualitative data can be applied to develop fidelity and implementation measures to assess update of a family-focused depression intervention.

Providers are key stakeholders in the implementation process, yet few studies have focused on the development of effective implementation strategies to facilitate provider training in and sustainability of using evidence-based depression treatments. Three of the papers in this special issue address the challenges in training clinicians in new mental health treatments, and whether training leads to long-term adoption and use of these practices, in particular, problem-solving therapy (PST). J. A. Cartreine et al. describe a web-based training program to further disseminate PST training to novice clinicians and whether long-term coaching by more experienced providers to further boost training effectiveness might be needed. In the paper by R. M. Crabb et al., clinicians undergoing training in PST were followed over to assess the long-term impact of the training on adoption and spread. S. W. Stirman et al. identified key reasons for variation in cognitive behavioral therapy training outcomes across community-based practices and the importance of garnering feedback from frontline providers prior to implementing training initiatives.

Additional studies in this issue involved the implementation of depression treatments, notably in real-world populations. J. A. Waxmonsky et al. found that implementing a depression chronic care management programs in a public sector health plan led to significantly reduced depression severity over a 12-month period with a modest increase in health care costs. R. R. Dopp et al. present results of a novel program for adolescents with depression, demonstrating an alternative way to address mood symptoms that in turn also address other major chronic conditions such as obesity. Finally, B. P. Yawn et al. present a systematic review of postpartum depression treatment programs in which the most effective components included formal psychiatric evaluation, colocation of mental health care, and tracking of long-term outcomes.

Ultimately, implementation science can inform the adoption and adaptation of effective depression treatments, primarily through a better understanding of the importance of building partnerships with end-users such as health care organizations and frontline providers, understanding barriers to adoption of effective treatments at these levels, and developing interventions that use organizational strategies such as collaborative care or systematic training programs to facilitate adoption. Moreover, there will be additional opportunities for researchers and practitioners to apply the lessons learned from this emerging field to develop more effective and practical depression treatments from the beginning, as well as the use of provider and health care organization-level strategies to ensure their adoption and sustainability in the real world. To this end, new skills will need to be acquired, including the measurement of factors facilitating or impeding treatment uptake, especially at the provider and system level using both qualitative and quantitative methods, application of nonrandomized controlled study designs that take into account variations in provider and organizational differences, as well as the inclusion of real-world patient populations that to date are not well-represented in depression clinical trials. Moreover, by placing greater emphasis on partnerships, frontline provider input, and practical treatment strategies, mental health implementation researchers will be poised to lead the development of the next generation of effective depression treatments.

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Research Article

Using Self-Guided Treatment Software (*ePST*) to Teach Clinicians How to Deliver Problem-Solving Treatment for Depression

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Problem-solving treatment (PST) offers a promising approach to the depression care; however, few PST training opportunities exist. A computer-guided, interactive media program has been developed to deliver PST electronically (*ePST*), directly to patients. The program is a six-session, weekly intervention modeled on an evidence-based PST protocol. Users are guided through each session by a clinician who is presented via hundreds of branching audio and video clips. Because expert clinician behaviors are modeled in the program, not only does the *ePST* program have the potential to deliver PST to patients but it may also serve as a training tool to teach clinicians how to deliver PST. Thirteen social workers and trainees used *ePST* self-instructionally and subsequently attended a day-long workshop on PST. Participants' PST knowledge level increased significantly from baseline to post-*ePST* ($P = .001$) and did not increase significantly further after attending the subsequent workshop. Additionally, attending the workshop did not significantly increase the participants' skill at performing PST beyond the use of the *ePST* program. Using the *ePST* program appears to train novices to a sufficient level of competence to begin practicing PST under supervision. This self-instructional training method could enable PST for depression to be widely disseminated, although follow-up supervision is still required.

1. Introduction

Effective treatments have been developed for depression, including antidepressant medications and psychotherapies. Many patients prefer counseling or psychotherapy to taking medications, if it is available [1], and matching treatment (medication or therapy) to patient preference has been demonstrated to improve outcomes, independent from depression severity [2, 3]. Unfortunately, many mental healthcare providers lack training in evidence-based treatments [4] or fail to implement them properly [5], making evidence-based psychotherapy unavailable to many persons with depression in the United States. One way to increase access to evidence-based psychotherapies is to develop more cost-efficient and accessible training methods.

Problem-solving treatment (PST; also known as problem-solving therapy) has emerged as an effective treatment for depression [6–8]. The basis of PST is that enhancing problem-solving skills and attitudes and working to solve concrete problems in one's life can reduce depression. PST breaks the problem-solving process into steps and teaches participants to go through these steps systematically and effectively, targeting parts of the process that are particularly challenging for depressed patients. PST has been found to produce outcomes comparable to antidepressant medications [9, 10] and better than treatment as usual [11, 12].

PST has great potential for dissemination because it can be delivered by mental health as well as nonmental health specialists in a wide range of healthcare settings, including primary care [13]. Healthcare professionals, such

as nurses and social workers are trained in a one- to two-day seminar that includes didactics, demonstrations, and roleplay with feedback [14]. They are then supervised on PST by a recognized expert over the course of three to five cases. For each case, the supervisor listens to and critiques a recording of three PST sessions, sometimes providing this supervision via the telephone.

Automating PST training could improve the ability to further disseminate PST and potentially result in cost savings. Although the supervision portion of the training requires the involvement of a live clinician, it is conceivable that some or all of the workshop could be automated. Self-instructional training is not a new concept; self-instructional books have existed for centuries and self-instructional videos for decades. These could be good starting points to learn PST. However, it has been demonstrated that the more interactive a training experience is, the more effective it is [15–18]. Since the skill at hand, PST, is a highly interactive process, developing a highly interactive self-guided training approach should enhance PST skill building.

1.1. ePST Software. An interactive media-based computer program has been developed to provide PST electronically (*ePST*) in an entirely automated manner [19]. In this self-help program, users are guided through six sessions of PST by a master clinician (M. T. Hegel) who is an expert in the intervention and conveys the "nonspecific" characteristics of effective therapists, such as warmth, genuineness, compassion, and the ability to provide support when the patient experiences setbacks [20]. Users interact with the program by entering text via the keyboard or by clicking on answers to questions, and hundreds of branching audio and video clips are used to tailor the program to users' inputs. The program tracks the user's depression via the Patient Health Questionnaire-9 (PHQ-9; [21]) and the on-camera host provides feedback and recommendations. The program reviews the user's work across sessions and across problems to provide guidance on how to improve his or her problem-solving success, through the use of failure analyses [22–24] algorithms. Although the program was originally developed for astronauts to treat their own depression on long-duration space missions, it was designed for use by the public.

Because the program models best practices for providing PST, it may be useful not only as an intervention but also as a teaching tool, to demonstrate how to deliver PST. The purpose of this study was to obtain pilot data on the feasibility and efficacy of using this program to teach PST to therapists unfamiliar with the intervention. Primary research questions addressed were as follows.

(1) Is use of *ePST* associated with change in knowledge of the steps and process of PST?

(2) Is live training associated with change in skill at performing PST, for persons who have already been trained via *ePST*?

Secondary research questions were as follows.

(1) Is use of *ePST* associated with change in self-efficacy for performing PST-specific skills, and for doing counseling in general?

(2) How acceptable and easy to use is *ePST* for training?

2. Methods

2.1. Participants. The subject population consisted of clinical staff and trainees from a human services organization in Framingham, MA, with no prior training in PST. All participants volunteered for the study and received no compensation for participation. Training was offered to all clinicians and trainees working at the site.

2.2. Procedure. The study was approved by the Massachusetts General Hospital's Institutional Review Board, and consent to participate in the study was implied by voluntary completion of the study questionnaires. Receiving training was not contingent on participation in the evaluation component, and participants were not required to participate as part of their employment.

Training consisted of participants using the *ePST* program for four sessions *as if they were patients*. Participants were encouraged to work on real problems in their own lives via *ePST* as a means of learning how PST works. They were also asked to view the on-camera therapist as a model for delivering PST. Although a full course of treatment via *ePST* involves six sessions, the investigators judged *a priori* that using the program for only four sessions would provide sufficient exposure to the model for trainees to learn PST. At no point in this study did the participants interact with actual patients using the PST approach.

Assessments were conducted at three time points and trainings were conducted at two points. At baseline (before beginning training), participants completed a test of their knowledge of PST and a measure of self-efficacy to do counseling (regarding both general and PST-specific skills). Following completion of their training using *ePST,* participants again completed questionnaires on their knowledge of PST and self-efficacy as well as the acceptability and usability of the computer program. They also participated in audiotaped roleplay sessions as a PST therapist treating a standardized patient (a research assistant trained to portray a depression patient). After the workshop, participants completed the knowledge and self-efficacy questionnaires for the third time and then conducted another taped roleplay session with a different standardized patient. Three standardized patient cases of similar difficulty were written for the roleplay. Subjects were randomly assigned to different cases for their roleplay sessions.

2.3. Measures

Knowledge of PST. This was a primary measure, which consisted of one open-ended essay-format question: "Please describe the process of problem-solving therapy in detail, including all steps and the criteria for successfully completing each one." Essays were scored using criteria developed for the study (see Appendix A). The possible range of scores was 0

to 120, with higher scores indicating greater knowledge. The essays were rated by M. T. Hegel and J. L. Seville, blind to the time point of each essay.

Skill Implementing PST. The standardized patient roleplay was a primary measure. The audiotaped roleplay sessions were scored using the Problem-Solving Treatment in Primary Care Adherence and Competence Scale (PST-PAC) [25, 26] which evaluates trainees' performance on nine dimensions of PST, each on a six-point scale (0–5; worst to best performance) (see Appendix B). Because each standardized patient was being seen for an initial PST session, the first rating dimension, "Defining the outcome" (of the previous session's action plan) was not included. Therefore, participants were rated on dimensions two through eight of the PST-PAC. The possible range of scores was 0 to 40, with higher scores indicating better performance.

Scoring was performed by J. A. Cartreine and J. L. Seville, who were blind to the time point of each roleplay. One of the raters (J. L. Seville) had been trained in the use of the PST-PAC previously; the other (J. A. Cartreine) was trained to rate roleplays by rating audio recordings of sample cases.

Self-Efficacy for Implementing PST and Doing Counseling, in General. The *PST and Counseling Self-Estimate Inventory* (PCSEI) was created for this study, it consists of 30 items that measure different aspects of a therapist's perception of his or her ability to perform specific PST skills and general counseling skills (see Appendix C). It was adapted from the Counseling Self-Estimate Inventory (CSEI) [27]. To reduce the length of the measure, some items from the CSEI less relevant to the study were dropped, while several new items pertinent to performing PST-specific skills were added, using similar language. Items were scored on a six-point scale (1 = "strongly disagree"; 6 = "strongly agree"), with a possible range of 30 to 180 for the total measure, a range of 16 to 96 for the "PST-specific" subscale and 14 to 84 for the "General" subscale. Some items are reverse scored to avoid acquiescence bias; higher scores reflect higher self-efficacy.

Acceptability of Using ePST to Learn PST. The Program Acceptability Questionnaire (PAQ) was written for this study and consisted of six questions on various aspects of the acceptability of the PST computer program, such as how much the program helped the trainee learn PST and whether the subject would recommend its use to other prospective trainees (see Appendix D). Items were rated on a six-point scale as above (1 = "strongly disagree"; 6 = "strongly agree").

Usability of the ePST Program. The System Usability Scale (SUS) [28, 29] was used to assess ease of using the software. The SUS is a ten-item questionnaire that is widely used for assessing software usability, such as whether a system is excessively complex or cumbersome to use, or whether the trainee needs technical support to use it. Statements about the software are rated on a six-point scale (0 = "strongly disagree"; 6 = "strongly agree").

2.4. Analytic Methods

Score Calculations. Scores for the PST-PAC were obtained using the following procedures: for each standardized patient interview, all eight scores given by each rater were averaged, yielding two scores (one for each rater). For items where the raters' scores differed by more than one point, the raters discussed the item and arrived at a consensus score for that item. Then, the average was taken of the two raters' scores, yielding one final score per standardized patient interview.

PST knowledge essays were scored on 27 items that map onto seven subscales, which correspond to the steps of PST. Because the seven subscales contain different numbers of items, an average of the scores for each subscale, for each rater, was calculated. The seven scores were then summed, yielding one score per essay for each rater. Finally, an average was calculated between scores awarded by each rater, to obtain a full-scale score for each participant on each essay written.

Self-efficacy scores were calculated by summing the responses to individual items (with some questions reverse scored). Additionally, subscales were calculated by summing the items measuring general self-efficacy and those measuring PST-specific self-efficacy.

Analyses. Due to the small sample size, nonparametric analyses were used to answer the research questions. The Wilcoxon signed ranks test was used to compare skill levels between Assessment 2 and 3 (no skill test was administered in Assessment 1). The same test was also used to gauge change in knowledge and self-efficacy at Assessment 1 compared to 2, and Assessment 2 compared to 3. Because multiple comparisons were made, a Bonferroni correction was used, which set the P cutoff for significance at $P = .0125$ for the primary outcomes of skill and knowledge. The Bonferroni correction was not used for the secondary outcome of self-efficacy.

Descriptive statistics were used to characterize the sample and results of the SUS and PAQ. Because the PAQ was created for this study, an insufficient quantity of data has been collected to support a factor analysis and the reporting of a composite score. Therefore, results on this questionnaire are reported by item.

3. Results

Thirteen participants (11 female and 2 male) enrolled, with a mean age of 37.5 (±12.9); 11 self-identified as Caucasian and the other 2 as racial minorities. Six were licensed clinical social workers, with an average of 2 years in practice (±1.4, range 2 to 6 years); the other 7 were social work graduate students. No participants who inquired about the study subsequently refused to participate or dropped out.

Interrater reliability for both the essay and roleplay scoring was calculated using percent agreement between raters. For the skill measure, interrater agreement per item (defined as agreement on the rating plus or minus 1 point) between the two raters averaged 79.6%. To increase concordance between raters, consensus scores (as described in the methods section) were obtained for items in which raters

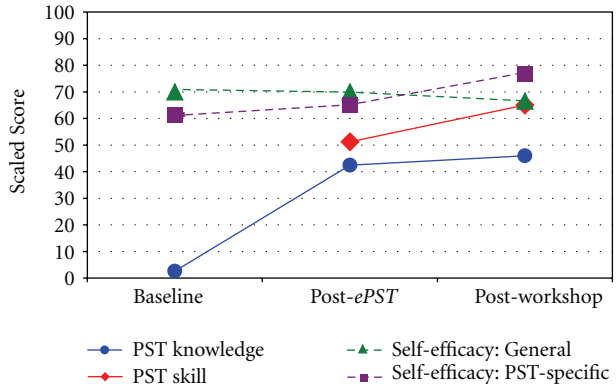

FIGURE 1: Scaled scores for skill, knowledge, and self-efficacy. Scaled Score = Median converted to percent of maximum possible score.

differed by >1 point. For the knowledge (essay) measure, the percent agreement (within one point) between the raters across items was 87.5%. Because agreement between raters on the knowledge measure was high from the outset, a consensus process was not needed to improve concordance.

Summary results of the knowledge, skill, self-efficacy, and usability measures are presented in Table 1.

3.1. Primary Outcomes. Knowledge scores significantly increased from pretraining to post-using *ePST* ($Z = 3.18$, $P = .001$) but did not increase significantly more after attending the live workshop ($Z = 1.363$, $P = .173$). No significant difference was found in skill level after using *ePST* versus after the live workshop, using either nonparametric (Wilcoxon signed ranks test $Z = -2.040$; $P = .041$) or parametric ($t = -2.346$; $df = 12$; $P = .037$) statistics. This suggests that the workshop did not substantially increase the knowledge or skill of the participants beyond what they learned using the *ePST* program. On an item-level analysis of the roleplay ratings, only skill at helping patients identify pros and cons of solutions changed before to versus after attending the live workshop. On this item, before attending the workshop (but after completing *ePST*) the median score was 2.5 on a scale of 0 to 5 (range .5 to 4.5; mean of 2.5 ± 1); and after the workshop, the median increased to 3.5 (range .5 to 5.0; mean 3.81 ± .9; Wilcoxon signed ranks test $Z = -2.599$; $P = .009$). Also, across outcome measures and time points, there were no significant correlations between participants' knowledge, skill, or self-efficacy levels.

To facilitate comparisons between knowledge and skill levels, scaled scores of 0 to 100 were calculated by converting the median to the percentage of the maximum score possible on each scale (see Figure 1). Both knowledge and skill were near the midpoint after using *ePST* (42.46 and 51.25, resp.) and remained near that point after completing the workshop (45.97 and 65).

3.2. Secondary Outcomes

Self-Efficacy for PST and Counseling, Overall. Five items were unanswered in the PCSEI data set. Values for these missing data points were imputed by calculating the mean of the participant's responses to the other items from the same subscale on that administration of the PCSEI. Composite self-efficacy scores, which included all items on the PCSEI, remained stable from pretraining to post-*ePST* training to post-live workshop, although there was a significant increase in composite self-efficacy from pre-training to post-workshop ($P = .028$). The Wilcoxon signed ranks test Z-score for self-efficacy at pretest compared to post-*ePST* was -1.014; $P = .311$ ($t = -1.365$; $df = 12$; $P = .199$) and the Z-score for post-*ePST* compared to post-live training was -1.751; $P = .080$ ($t = -1.977$; $df = 12$; $P = .071$). On the PST-specific subscale, there was a significant improvement from post-*ePST* and post-live workshop training (Z-score $= -2.033$; $P = .042$). No significant difference was found for the subscale of general counseling self-efficacy between pretest and post-*ePST* training, or between post-*ePST* and post-live workshop training.

3.3. Usability and Acceptability. The median SUS score was 67.5 (range 60 to 87.5; mean = 69.23 ± 7.8) on a scale of 0 to 100. On the PAQ, the medians for all but one item were 5 (means ranged from 4.54 to 5.23) on a scale of 0 to 6 (see Table 2).

4. Discussion

PST is an evidence-based intervention for depression; however, few providers have training in it. A novel approach to teaching PST is the use of a computer-automated treatment, *ePST*. Users are guided through it via branching videos to simulate the experience of being in treatment with a master clinician (M. T. Hegel). As such, best practices for delivering PST are modeled and the program may serve as a training tool for practitioners, in addition to a treatment for patients.

Thirteen persons with no prior experience delivering PST (6 licensed clinical social workers and 7 social work graduate students) used the *ePST* interactive media program for four sessions over the course of two weeks. They were instructed to work on a real problem in their own lives, to make the training more meaningful. After the self-guided instruction, all 13 attended a standard PST training workshop presented by a veteran PST trainer (also M. T. Hegel), which is the standard method to train new practitioners.

It was found that live training does not add knowledge or skill beyond what *ePST* provides. Trainees were assessed on knowledge at three points: once at baseline, again after using *ePST* for four sessions, and again after completing the live day-long workshop. They were also assessed on PST skill via roleplays with standardized patients after completing *ePST* and again after completing the workshop. Knowledge about how to conduct PST went from a near-zero level (1.5 on a scale of 0 to 35) at baseline to a significantly higher level after using *ePST* (mean score 14.1) and did not significantly improve following the workshop (mean score 16.7).

PST skill was not assessed at baseline due to logistical constraints; however, it is likely that it would also have been very low before training, since none of the subjects had received prior training. After completing 4 sessions of *ePST*,

Table 1: Assessments of knowledge, skill, self-efficacy, and *ePST* program usability.

	Pre-training			Post-*ePST* (computerized) Training			Post-live training		
	Median (range)	Mean ± SD	Scaled score (0 to 100)[a]	Median (range)	Mean ± SD	Scaled score (0 to 100)[a]	Median (range)	Mean ± SD	Scaled score (0 to 100)[a]
Knowledge of PST	0.9 (0 to 6.45)	1.53 ± 2.04	2.57	14.86[b] (3.33 to 24.49)	14.06 ± 6.74	42.46	16.09 (8.74 to 24.63)	16.74 ± 5.17	45.97
Skill implementing PST	—	—	—	20.5 (7 to 28)	19.65 ± 6.70	51.25	26 (11 to 34)	25.23 ± 7.16	65.00
Self-efficacy (Composite)	126 (106 to 162)	129.54 ± 14.64	64.00	133 (112 to 156)	134.31 ± 13.81	67.33	145[c] (106 to 168)	143.31 ± 17.36	76.67
Self-efficacy (General)	63 (54 to 76)	63.31 ± 6.29	70.00	65 (52 to 73)	64.23 ± 6.10	70.00	66 (54 to 78)	66.54 ± 8.23	74.29
Self-efficacy (PST-specific)	65 (50 to 86)	66.23 ± 9.59	61.25	68 (52 to 86)	70.08 ± 9.21	65.00	77[d,e] (52 to 90)	76.77 ± 10.52	76.25
Usability of *ePST*	—	—	—	67.5 (60 to 87.5)	69.23 ± 7.8	—	—	—	—

[a]Median converted to percent of maximum possible score.
[b]Compared to pre-training ($P = 0.001$).
[c]Compared to pre-training ($P = 0.028$).
[d]Compared to pretraining ($P = .023$).
[e]Compared to post-*ePST* ($P = .042$).

Table 2: Program Acceptability Questionnaire (scale range 0 to 6).

Item	Mean ± SD	Median (range)
I felt comfortable using the PST program for training	5.23 ± 0.73	5 (4 to 6)
Doing training using this program was acceptable to me	4.92 ± 0.76	5 (4 to 6)
Using the program helped me understand how to do PST	4.69 ± 0.75	5 (4 to 6)
I enjoyed using the program to learn PST	4.62 ± 1.12	4 (3 to 6)
I would rather do training in a live workshop than with the computer	4.54 ± 1.05	5 (3 to 6)
I would recommend this program to a colleague who is interested in learning how to do PST	4.54 ± 1.13	5 (2 to 6)

mean skill was 19.7 (on a scale of 0 to 40) and was 25.2 following the live workshop. This change was not statistically significant. Composite self-efficacy for performing PST skills and for doing counseling in general gradually increased from baseline to post-live training. This appears to be due to a significant improvement in self-efficacy for performing PST skills after the workshop and one standardized patient interview. Therefore, confidence in one's ability to conduct PST increased significantly as a result of the live workshop and/or standardized patient interview, even though actual skill and knowledge did not.

The only specific areas of improvement found after completing the workshop were knowledge and implementation of decision-making guidelines (i.e., evaluation of pros and cons in problem solving). Both skill and knowledge regarding decision-making guidelines improved following the workshop, suggesting that *ePST* could be strengthened in this regard. No significant change in either direction was noted for other content areas following the live workshop.

A key ingredient in clinical training is supervision while treating actual patients, and it is unrealistic to expect that use of a self-instructional training program or a one-day workshop would produce fully competent PST clinicians. However, after using *ePST,* social workers and social work trainees possessed a sufficient level of skill to begin providing PST under supervision. As such, *ePST* may be a convenient and low-cost alternative to the in-person PST workshops that are the standard of practice. As the number of PST practitioners increases, the number of persons with sufficient experience to serve as supervisors will also increase. Moreover research has already supported PST supervision via telephone [12], meaning the supervisor need not be in the same room—or the same time zone—as the trainee. Together, *ePST* plus telephone-based supervision could support the diffusion of PST throughout the medical and mental health communities.

Regarding the usability of *ePST*, an analysis of all published studies that used the SUS to evaluate software of all types found that the mean score was 70.14 [28]. The mean SUS score for *ePST* was 69.23; however, this may underestimate the program usability. Because *ePST* is designed for weekly sessions, to run the program more than once per week (as was done in this study), participants had to manually advance the system date on their computers, which can be challenging. A training version of *ePST* could readily overcome this limitation.

Acceptability of *ePST* appeared high. That said results of the Program Acceptability Questionnaire, written for this study, may have been subject to response set, as the means and standard deviations were very similar between items. For example, on a scale of 1 to 6, the mean of "I would recommend the program to a colleague" was 4.54 (±1.13); similarly, "I would rather do training in a live workshop than with the computer" was also 4.54 (±1.05).

ePST appears to be only the second computer program to evaluated the potential of a computer-automated treatment to train clinicians, and this appears to be the first study to use a behavioral outcome measure (i.e., standardized patient roleplays). The researchers identified one other computer-automated treatment program that has been used to teach clinicians how to perform a skill. *FearFighter*, a UK program for these treatment of panic and phobias [30], was used to teach the process of exposure therapy in two studies [31, 32]. Both studies used written measures to assess instructional gains, and both concluded that educational gains were equivalent to classroom training.

This study advances the literature on self-instructional training of therapists, and of clinicians in general, by using an e-therapy program as a training tool to teach clinicians an evidence-based treatment. Research on self-directed/computer-automated/online training has reported mixed training outcomes, likely because the pedagogies of the tools vary widely, from passively viewed didactics to written manuals to interactive programs [33]. Highly interactive training experiences, such as using *ePST*, have been demonstrated to produce superior outcomes regarding therapists' skill and actual behavior in the implementation of evidence-based treatments [33].

4.1. Limitations and Future Directions. This study has several limitations, including the mixed educational background of the sample and the lack of a comparison group design, which limit generalizability. Without a comparison group, it is impossible to say for certain what trainees learned from *ePST* versus from the live workshop. This study also had a relatively small sample size; however, we have noted that training studies often enroll fewer participants than treatment studies. Additionally, the use of standardized patients is a well-accepted measure of clinician skill [34, 35]; however, participants' performance might have been different with actual patients. Confidence in these results would be strengthened if interrater reliability of participant skill (in the roleplays) were higher. Finally, trainees may have learned from participating in the roleplay (the first of which happened after the post-*ePST* assessment and before the workshop); this effect might have artificially inflated the estimates

of learning from the workshop, thus leading to an underestimate of the full effect of *ePST* training.

Regarding modifications to the *ePST* software, many trainees suggested the inclusion of a modeling video demonstrating the use of PST with a patient. Such a video has already been recorded and can be incorporated into a training version of *ePST*. Also, there exists a wealth of print training material for PST that could augment the computer-based training. Finally, supervision of new PST therapists is a necessary component of PST training [25, 26] and is unlikely to be automated.

Several national and statewide initiatives are implementing evidence-based treatments for depression and could benefit from cost-effective training, such as those by the National Network of Depression Centers [36], The University of Washington's Improving Mood: Promoting Access to Collaborative Treatment (IMPACT) [37] and its Program to Encourage Active, Rewarding Lives for Seniors (PEARLS) [38] programs, and Depression Improvement Across Minnesota, Offering a New Direction (DIAMOND) [39]. *ePST* opens the door to a new training method that could promote the mass dissemination of PST among healthcare providers in order to improve patient access to care and ultimately reduce the impact of depression in the population.

Appendices

A. PST Knowledge

A.1. Problem-Solving Treatment Knowledge Assessment

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Instructions. In the space below, please answer the following essay question. You have 10 minutes.

> *Please describe the process of problem-solving therapy in detail, including all steps and the criteria for successfully completing each one.*

Scoring Criteria. Assess whether the written response addresses each element below, on a scale of 0–5.

0	1	2	3	4	5
Very Poor	Poor	Borderline	Satisfactory	Good	Very Good

Number	Element	Subscale
(1)	Problem should be observable	Problem
(2)	Problem should be under client's control	Problem
(3)	Goal should be behavioral (something client does)	Goal
(4)	Goal should be general (more than one way to reach it)	Goal
(5)	Goal should be observable (or countable)	Goal
(6)	Goal should be achievable (or short term, i.e., 2 weeks)	Goal
(7)	Goal should not just be the converse of the problem	Goal
(8)	Brainstorming should include multiple ideas/solutions	Brainstorming
(9)	Do not prejudge solutions	Brainstorming
(10)	Pros are identified for each idea/solution (or what makes each unique)	Solutions
(11)	Multiple cons are assessed for each idea/solution	Solutions
(12)	Effort to implement solution is assessed	Solutions
(13)	Time to implement solution is assessed	Solutions
(14)	Cost of solution is assessed	Solutions
(15)	Need for other people to implement solution is assessed	Solutions
(16)	Negative impact on others is assessed	Solutions
(17)	One or more solutions must be chosen	Solutions
(18)	Action plan can be implemented soon	Action plan
(19)	Action plan is step by step, detailed	Action plan
(20)	Action plan includes Who, What, Where, and When are the steps to be taken	Action plan
(21)	Anticipate obstacles and plan around them	Action plan
(22)	Plan B's (backup plans) are created	Action plan
(23)	Enjoyable activities should be scheduled for each week	Pleasant events
(24)	Clinician checks whether action plan was implemented and goal was reached	Progress check

(25)	Clinician checks client's satisfaction with his or her effort	Progress check
(26)	Clinician helps clients troubleshoot how to improve their problem solving	Progress check

B. PST Skill

B.1. Problem-Solving Treatment in Primary Care Therapist Adherence and Competence Scale. Version 8-13-09

Authors. Mark T. Hegel, Ph.D., Geisel School of Medicine at Dartmouth, Hanover, NH.

Laurence Mynors-Wallis, M.D., University of Southampton, UK.

Rater Instructions. For each item, assess the therapist on a scale of 0–5 and record the rating on the line next to the item number.

0	1	2	3	4	5
Very Poor	Poor	Borderline	Satisfactory	Good	Very Good

(1) Evaluating the outcome

- Review of all current tasks
- Praise success
- Exploration of failure
- Rate Satisfaction and Mood
- Reinforce PST-PC Model
- Review previous problem areas

(2) Defining the problem

- Specific, feasible problem chosen
- Described in objective terms
- Problem explored, clarified
- Identify barriers

(3) Establishing a realistic goal

- Goal is objective
- Described in behavioral terms
- Goal is achievable
- Goal is general
- Follows directly from problem statement
- Addresses barriers identified in problem

(4) Generating solutions

- Prime for brainstorming
- Brainstorming facilitated
- Solutions from patient
- Withhold judgment

(5) Implementing Decision-Making Guidelines and Choosing the Solution(s)

- Consider "pros" and "cons" for one's self/others
- Rate each theme
- Compare solutions
- Solution(s) satisfies the goals
- Negative impact is limited

(6) Implementing the preferred solution(s)

- Specific tasks identified
- Realistic behavior requirements
- Plan B
- Plan pleasant activities for the week

(7) Process tasks

- Clear demarcation of PST-PC stages
- Kept session near a 30-minute timeframe
- Cue and review for stages
- Summarize process at end of session
- Facilitate a positive problem orientation
- Facilitate independence in guiding PST process

(8) Communication and interpersonal effectiveness

- Facilitates communication (supportive vocalizations/nonverbals)
- Use of patient's own language and phrases
- Warm/confident/professional
- Tactful limiting of peripheral and unproductive discussion

(9) Global rating

- How would you rate the problem-solving therapist overall in this session? (does not need to approach a mathematical average of previous eight items)

C. Self-Efficacy

C.1. PST and Counseling Self-Estimate Inventory

Authors. Based on Larson et al. [27]. (PST-specific questions added by the authors.)

Instructions. This is not a test. There are no right or wrong answers. Rather, this is an inventory that attempts to measure how you think you behave doing problem-solving therapy. Please respond to the items as honestly as you can to most accurately portray how you think you behave as a PST therapist. Do not respond with how you wish you could perform each item, or think you might in the future. Rather, answer in a way that reflects your actual estimate of how you perform as a counselor at the present time.

1 2 3 4 5 6

Strongly Disagree Strongly Agree

	Item	Subscale
(1)	I can effectively redirect clients who choose to work on problems over which they have limited control	PST
(2)	I am likely to impose my values on the client during the interview	General
(3)	When I initiate the end of a session, I am positive it is in a manner that is neither abrupt nor brusque, and I end sessions on time	General
(4)	I can help clients construct action plans that meet the criteria of problem-solving therapy	PST
(5)	I feel that I will not be able to respond to the client in a nonjudgmental way with respect to the client's values, beliefs, and so forth	General
(6)	I feel that I can respond to the client in an appropriate amount of time (neither interrupting the patient nor waiting too long to respond)	General
(7)	I anticipate that the type of response I use at a particular time may not fit with the problem-solving therapy approach	PST
(8)	I can help clients with the brainstorming step of problem-solving therapy	PST
(9)	I feel confident that I have resolved conflicts in my personal life so that they will not interfere with my counseling abilities	General
(10)	I feel that I have enough fundamental knowledge to do effective problem-solving therapy	PST
(11)	I am able to respond in a helpful way when clients report that they have not worked on a problem since last session	PST
(12)	I may not be able to maintain the intensity and energy level needed to produce client confidence and active participation	General
(13)	I am not sure that when doing problem-solving therapy I will express myself in a way that is natural without deliberating over every response or action	PST
(14)	I am confident that I can conduct problem-solving therapy, adhering to the guidelines set out in the PST therapy manual	PST
(15)	My assessments of client problems may not be as accurate as I would like them to be	PST
(16)	I am confident that I can help patients define their problems in a manner suitable for problem solving	PST
(17)	I do not feel I possess a large enough repertoire of techniques to deal with the different problems my client may present	General
(18)	I am uncomfortable about dealing with clients who appear unmotivated to work toward their goals	PST
(19)	I have difficulty dealing with clients who do not verbalize their thoughts during the counseling session	General
(20)	I am unsure how to deal with clients who appear noncommittal and indecisive	General
(21)	I am an effective counselor with clients of a different socioeconomic status	General
(22)	I am unsure how to lead my client to work toward concrete goals	PST
(23)	I am confident that I can assess my client's readiness and commitment to work on a given problem	PST
(24)	When working with ethnic minority clients I am confident that I will be able to bridge cultural differences in the counseling process	General

(25)	I am confident that I can help my patients evaluate the pros and cons of their solutions and choose a feasible solution in an efficient and helpful manner	PST
(26)	I am confident that I can support the client in choosing his or her own problems on which to work	PST
(27)	I feel I may give advice	General
(28)	In working with culturally different clients, I have a difficult time viewing situations from their perspective	General
(29)	I anticipate having difficulty helping clients write goal statements that meet all of the problem-solving therapy criteria	PST
(30)	I am afraid that I may not be able to effectively relate to someone of lower socioeconomic status than me	General

D. Acceptability

D.1. Program Acceptability Questionnaire

Author. James A. Cartreine, Brigham and Women's Hospital/Harvard Medical School, Boston, MA.

Instructions. Please read each item carefully and circle a number to show how much you agree or disagree with the statement.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

(1) I felt comfortable using the PST program for training

(2) Doing training using this program was acceptable to me

(3) Using the program helped me understand how to do PST

(4) I enjoyed using the program to learn PST

(5) I would rather do training in a live workshop than with the computer

(6) I would recommend this program to a colleague who is interested in learning how to do PST

Disclosures

The *ePST* software was designed by Cartreine (née Carter). When this study was conducted, the *ePST* software was owned by Beth Israel Deaconess Medical Center and Dartmouth Medical School. The *ePST* software is now owned by Cognitive Behavioral Technologies, LLC, which was founded by Cartreine and Hegel. Data analysis was conducted by another author (TC) in consultation with a statistical analyst, both who have no financial interest in *ePST*.

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Research Article

Evaluating Depression Care Management in a Community Setting: Main Outcomes for a Medicaid HMO Population with Multiple Medical and Psychiatric Comorbidities

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The authors describe the implementation of a depression care management (DCM) program at Colorado Access, a public sector health plan, and describe the program's clinical and system outcomes for members with chronic medical conditions. High medical risk, high cost Medicaid health plan members were identified and systematically screened for depression. A total of 370 members enrolled in the DCM program. Longitudinal analyses revealed significantly reduced depression severity scores at 3, 6, and 12 months after intervention as compared to baseline depression scores. At 12 months, 56% of enrollees in the DCM program had either a 50% reduction in PHQ-9 scores or a PHQ-9 score < 10. Longitudinal economic analyses comparing 12 months before and after intervention revealed a significant but modest increase in ER visits, outpatient office visits, and overall medical and pharmacy costs when adjusted for months enrolled in DCM. Limitations and recommendations for the integrated depression care management are discussed.

1. Introduction

In 2004, Colorado Access, a nonprofit public sector health plan, developed and implemented an internal depression care management program to improve depression treatment outcomes, increase appropriate utilization of medical services, and reduce health care costs. In order to achieve these goals, Colorado Access developed a risk-stratification algorithm to identify a target population of high cost health plan members with depression and chronic medical illnesses who were likely to benefit from care management through a proactive care management plan delivered by care managers [1]. This paper describes the care management program and its outcomes, challenges in measuring outcomes for Medicaid populations, and future directions for integrated behavioral and medical care management services.

Over the past decade, collaborative care models for depression and chronic medical diseases have demonstrated success in population-based case finding and employment of evidence-based treatments for depression [2]. Meta analyses of such studies have yielded moderate effect sizes in reducing depressive symptoms as well as improving medical illness outcomes [3, 4].

As part of the Robert Wood Johnson Foundation's initiative on aligning clinical and economic systems to sustain depression care management for primary care, Colorado Access combined depression care management with economic and nonfinancial incentives to reorganize systems of care for depression treatment [5]. Colorado Access utilized the Chronic Care Model's (CCM) clinical framework to develop and integrate depression care management into its existing health plan infrastructure and support depression treatment in primary care [6, 7].

Unlike many depression care management programs that are practice based, Colorado Access designed its program to be operated at the health plan level in order to create efficiencies and consistency in program delivery and to be minimally burdensome to primary care providers, that is, having little impact on existing provider clinical practices [1]. The program utilized a multifaceted depression intervention that involved changes within the CCM health care components: leadership, delivery system design, clinical information systems, decision support, self-management support, and community resources and health care policies [7]. Evidence suggests that CCM multicomponent interventions are effective in promoting informed members who take an active part in their care and more effective providers with enhanced resources and expertise [8]. Also, data from randomized trials demonstrate that multifaceted interventions are more likely to improve depression outcomes than single component interventions [8–10].

A prior pilot demonstration of depression care management along with cost analyses of health plan members with medical and psychiatric comorbidities helped create the business case for the Colorado Access Board of Directors and executive leadership to support program implementation on a larger scale [1, 11]. Within the Colorado Access health plan, the existing intensive care management services delivery system was redesigned to incorporate the depression care management intervention.

2. Methods

2.1. Identification of Targeted Care Management Population. The majority of depression care management members were identified through a risk stratification method that identified high risk, high cost health plan members. These members had chronic, often multiple, medical illnesses (e.g., diabetes, congestive heart failure) and were at risk for high future health care costs as evidenced by Chronic Disability Payment System scores at the 90th percentile [12]. Based on the prior cost analyses, it was predicted that improved management of both depression and other medical conditions would lead to improved clinical and economic outcomes [11].

In addition to identifying cases via the risk stratification method, Colorado Access providers were able to directly refer their members with depression and comorbid chronic medical illnesses to the program; care management staff screened these members to determine whether they met criteria for enrollment. A third subset of high cost, high risk members with diabetes was identified at the Pueblo Community Health Center (PCHC) clinics in Pueblo, Colorado. Funding from the Caring for Colorado Foundation allowed for the development of a hybrid model of depression care management, in which a care manager was located on site at the PCHC clinics but utilized the same electronic registry, screening tools, protocol, care management educational material, and supervision process as the plan-based Colorado Access care managers.

2.2. Care Management Staff and Training. Registered nurses and health-plan-based consumer navigators were trained in depression care management to complement existing care coordination services to members with medical illnesses. Consumer navigators worked with the nurse care managers in providing additional psychosocial support and connecting health plan members to community resources. The standardized training included the depression care management intervention and protocols, evidence-based treatments for depression, member education and self-management materials, and community resources. Additionally, care management staff received training on motivational interviewing for persons with chronic medical illnesses and depression, developing care plans, and prioritizing treatment goals.

2.3. Clinical Information Systems and Care Management Registry. The health plan information system was systematically analyzed for administrative and claims data to identify high medical risk, high cost health plan members with depression who were likely to benefit from more intensive care management support. Also, care managers were given access to pharmacy, lab, inpatient, and emergency department reports, which assisted in the development of care plans and care coordination strategies. Structured assessment, care plans, care manager followup, and supervision notes were tracked in an electronic health plan registry to aid clinical processes (e.g., timing of follow-up contacts and outcomes tracking). The electronic registry software was internally developed by the Colorado Access health plan and included care manager screens and assessments, individualized care plans, and salient clinical information. The registry helped facilitate supervision and feedback as well as monitor care manager performance (e.g., generate caseload reports) and track clinical outcomes.

2.4. Mental and Physical Health Screening and Intervention. The identified cohort of health plan members was screened telephonically by care managers using a health screening questionnaire that included the Patient Health Questionnaire-9 item depression screen (PHQ-9; [13]). Members with PHQ-9 scores of 10 or above were enrolled into the depression care management program. Additional screens for other psychiatric conditions (dysthymia, anxiety, psychosis, bipolar disorder, and substance abuse), physical health conditions, and psychosocial needs were also conducted during enrollment. Care managers developed a prioritized care management plan utilizing this screening information plus administrative and medical utilization data. Care plans included the domains of medical care self-management, community involvement, and social support. An objective (a measurable treatment goal) and an inter-

vention were established for each domain. Text fields under each identified goal allowed for input of individual member notes/report, care management notes, supervision notes, next steps, and goal resolution reason.

2.5. Supervision. Supervision of care managers was provided by the plan's medical director, a psychiatrist, and a psychologist on a weekly basis using a case conference format. The supervision team reviewed the care management plan, assisted with formulating and prioritizing complex needs, and defined achievable goals. The supervision team also helped the care manager design individually tailored member education and self-management goals for depression and medical illnesses. Additionally, linkages to community resources for depression needs and other services were enhanced by the interaction of medical and mental health staff the supervision meeting. The supervision team also provided education and consultation to health care providers.

The depression care management program used a stepped collaborative care approach, in which the supervision process helped identify those members whose depression could be appropriately treated in a primary care setting and those members with comorbid psychiatric diagnoses who required specialty behavioral health services. Additionally, through careful monitoring of depression symptoms and treatment response, the supervision process allowed for identification of members with treatment resistant depression who needed specialized behavioral health consultation or treatment.

2.6. Member Followup. Members enrolled in the DCM program received a monthly follow-up call to determine whether they had started or continued depression treatment, were making progress towards their individualized self-management goals, were experiencing any obstacles, and to assess their current level of depression using the PHQ-9. A score of 5 or less on the PHQ-9 for 3 months or longer was used as criteria for successful remission from depression. An effort was made to follow all members enrolled in the DCM for a minimum of one year (up to two years maximum) regardless of their depression remission rates.

2.7. Illness Self-Management and Patient Resources. Colorado Access tailored illness management strategies for enrolled program members based on assessments of barriers to accessing care, understanding of specific illnesses (e.g., depression, diabetes), readiness for behavioral change (motivational interviewing/stage of change), and educational materials. Depression self-management and educational materials were modified from the MacArthur Reengineering Systems for Primary Care Treatment of Depression Program (RESPECT-Depression; [6]) and were available in English and Spanish. Colorado Access developed a community resource book with resources for depression treatment, as well as for transportation, additional services, and support groups that care managers used to assist enrolled program members.

2.8. Identification of the Evaluation Cohort. A total of 3,920 adult Medicaid health plan members were identified through the Colorado Access risk stratification algorithm as high risk, high cost members (see Figure 1). Of this group, 2,162 were unreachable by phone or were no longer enrolled in the health plan at the time of screening. The remaining 1,758 members were screened for depression using the PHQ-9; 648 (36.9%) had an initial PHQ-9 score of 10 or above (indicating a positive screen for depression) and were offered participation in the DCM program. A total of 540 agreed to participate and had at least one care management contact (83% enrollment rate). Members enrolled in the DCM program received at least monthly depression assessment and care plan review phone calls and occasional in-person contacts by care managers for up to two years. Of the 540 members enrolled, 370 members (68.5%) were enrolled for at least 3 months; 170 members (57.1%) were enrolled for 3 months or less. Persons in DCM dropped out for the following reasons: unable to be further reached by telephone ($n = 85$), loss of Medicaid eligibility ($n = 74$), and no longer interested in care management ($n = 11$).

2.9. Statistical Analyses. Descriptive statistics were calculated to characterize demographic variables, medical and psychiatric comorbidities, and length of time enrolled in the depression care management program. The primary outcome measures included depression severity as measured by the PHQ-9 < 10 and 50% reduction in depression severity as measured by the PHQ-9 for response rates. Additionally, telephone satisfaction surveys were conducted for a small subgroup of providers ($n = 20$) and health plan members ($n = 81$) enrolled in the depression care management program at 12 months after program implementation.

General linear mixed effects models (random intercept, random slope) were used to analyze trajectories of depression scores over time for members enrolled in the depression care management program [14–16]. Repeated measures within members were modeled as a linear trend growth curve model with time coded as days since baseline PHQ-9 score and converted to month for ease of interpretation; quadratic trend was tested but did not significantly improve fit. Covariates were included if they were significantly associated with depression scores or were associated with length of follow-up interval. Potential moderators of improvement in PHQ-9 scores were tested one at a time by adding two-way interactions to the model. All analyses were conducted with SAS Version 9.3 [17].

2.10. Cost and Utilization Analyses. Cost and utilization data for 12 months prior to enrollment and 12 months after enrollment were estimated for 269 patients with utilization data for both periods. If patients were enrolled for less than a full 12 months, cost estimates were adjusted to reflect the 12-month before or after period prior to analysis. Before and after costs were analyzed using generalized linear mixed effects models (Poisson for counts, gamma distribution for costs) in SAS V9.3 [17, 18] to determine whether utilization differed between the two time periods.

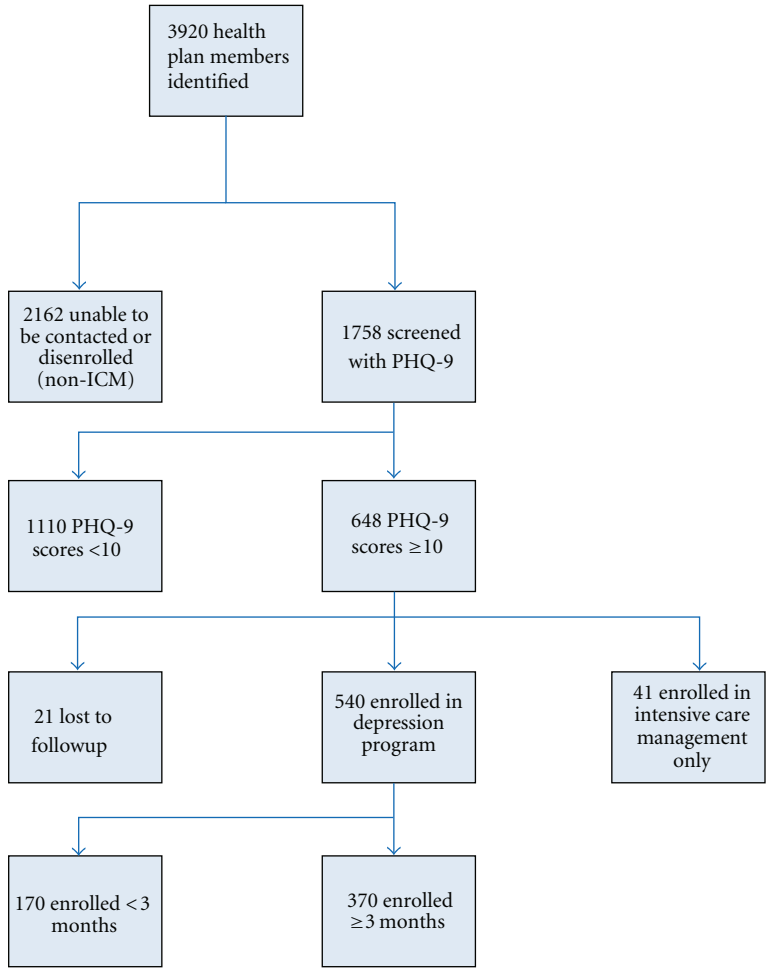

Figure 1: Health plan member evaluation cohort.

3. Results

3.1. Depression Treatment Outcomes. The final depression care management evaluation cohort (370 health plan members who were enrolled in the intervention for 3 months or more) had a mean age of 58 years (range 22–88 years old) and were 81% female and 45% Caucasian.

Linear growth curve models with sociodemographic and clinical covariates were used to evaluate change in depression symptoms over time (see Table 2). DCM members improved at a rate of approximately 0.6 reduction per month in PHQ-9 scores per month ($F(1,110) = 195.74$, $P < .0001$). Longitudinal analyses were adjusted for gender, age, race/ethnicity, marital status, non-English language, bipolar disorder, psychotic disorder, anxiety, diabetes, cardiac disease, and pulmonary disease (See Table 2). At baseline, the following variables were associated with worse baseline PHQ-9 scores: marital status ($P = .02$), non-English language ($P = .04$), and having a positive bipolar disorder screen ($P < .0001$). Longitudinally, there was evidence of differential intervention effects by non-English language ($P = .04$) and anxiety ($P = .04$), with non-English speakers showing more improvement in PHQ-9 scores over time and patients with a positive anxiety screen showing less improvement in PHQ-9 scores over time.

For members enrolled in the depression care management program at 3 months ($n = 269$), 45% had a 50% reduction in PHQ-9 scores, 55.8% achieved a PHQ-9 score below 10, and 57.6% had either a 50% reduction in PHQ-9 scores or achieved a PHQ-9 score below 10 (see Table 3). For members enrolled in the depression care management program at 6 months ($n = 197$), 48.7% had a 50% reduction in PHQ-9 scores, 56.9% achieved a PHQ-9 score below 10, and 58.4% had either a 50% reduction in PHQ-9 scores or achieved a PHQ-9 score below 10. At 12 months, ($n = 84$), 45.2% had a 50% reduction in PHQ-9 scores, 54.8% achieved a PHQ-9 score below 10, and 56.0% had either a 50% reduction in PHQ-9 scores or achieved a PHQ-9 score below 10.

As noted in Table 1 above, psychiatric comorbidities were prevalent among the depression care management members. Over 51% had dysthymia in addition to a current major depression episode ($n = 190$), and 33.2% screened positively for bipolar disorder ($n = 123$). Only 31.4% of the sample ($n = 114$) did not screen positively for a comorbid psychiatric disorder, and it was this group with major

Table 1: Demographics, comorbidities, and length of participation of DCM members.

Variables	DCM $n = 370$
Age (mean years)	57.9
Range 22 to 88 years	
Months in program (mean)	10.4
Range 3 to 27 months	
Mean baseline PHQ-9 score	15.0
Language	
% English	96.4
Gender	
% Female	80.5
Race	
% White	45
% Hispanic	31
% African-American	10
% Other	4
% Unknown	10
Marital status	
% Divorced	33
% Married	19
% Separated	5
% Single	28
% Widowed	5
% Unknown	10
Comorbidities	
% Bipolar	33.2
% Schizophrenia	5.0
% Anxiety	12.7
% Psychosis	8.9
% Dysthymia	51.4
% Substance Abuse	8.9
% Diabetes	41.1
% CHF	10.8
% CAD	13.8
% COPD	21.9
% Asthma	26.2

depression only that demonstrated the greatest improvement in PHQ-9 depression severity scores.

3.2. Medical Utilization and Cost Outcomes. Medical utilization and costs were calculated at 12-month before and after intervention for the DCM members (see Table 4). During the 24-month time period, there was an increase in ER visits (from 0.84 to 1.57 average ER visits per member), outpatient office visits (1.42 to 4.34 average outpatient office visits), and net pharmacy costs ($3528 to $4655) all with P values $< .01$. As a result of increased ER, outpatient visits, and net pharmacy costs, the average net medical and pharmacy costs rose from $11,676 to $13,300 ($P < .05$).

3.3. Provider and Health Plan Member Satisfaction. A baseline survey of a sample of primary care providers ($n = 12$) indicated that about 71% found the care management program helpful to their members and were satisfied with program. 100% of these providers stated that they would refer more members to the program. A follow-up survey conducted 6–8 months later with this sample found that 100% believed that the care management (CM) was helpful in meeting their members' depression needs, 100% believed that their members were benefiting from CM, and 91% were satisfied overall with CM. Providers stated that they found that CM was "helpful with very disorganized and needy members" and that "care manager reassessment of members frequently allowed the provider to know when to make medication adjustments or to add therapy." A sample of members in the depression CM program ($n = 39$) was also surveyed. Baseline and follow-up telephone satisfaction surveys of the subgroup of members with diabetes and depression enrolled 6 months or longer indicated that 100% of members were either very satisfied or satisfied with the help they received from the care manager. Health plan members stated that CM provided encouragement, understanding, and support, which was helpful with self-management goals and medication refills, provided education about depression and diabetes, and assured follow-up care after hospitalization.

4. Discussion

The clinical and economic outcomes of the Colorado Access integrated depression management program have allowed for the sustainability of this intervention. The DCM program positively impacted depression symptom severity scores over time. Although the program increase health care costs by an average of $1624 per health plan member, most of these costs can be attributed to increased outpatient visits and net pharmacy costs rather than ER admissions or acute hospitalizations. Additionally, health plan members enrolled in the program and their primary care providers were generally positive about the program. Importantly, the depression CM program led to long-term system changes within the health plan that supported the sustainability of the program after grant funding ended. Depression care management has become one of the core competencies of Colorado Access health plan's intensive care management model.

The outcome results of this program are limited methodologically in several important ways. Health plan member recruitment was low as most Medicaid members were not able to be reached and some members had disenrolled in the health plan by the time of recruitment. There were several ways that members could be identified for enrollment in the program: through the Colorado Access risk stratification methodology, through provider referral, and through identification of high risk, high cost members with depression, and comorbid diabetes at one health center (Pueblo Community Health Center). Thus, there is likely to be selection bias as providers only referred members for which they were having difficulty in managing or coordinating care. However, the group of provider referred health plan members to DCM was

Table 2: Longitudinal analysis of PHQ-9 scores over time.

	Coefficient	SE	*P* value
Independent variables			
Intercept	10.49	1.60	<.0001
Age	.02	.02	.4908
Race/ethnicity			.8429
Non-Hispanic white (ref) 4	0	—	
African American 3	−.13	.81	
Hispanic 2	−.50	.56	
Other 1	−.29	.91	
Marital status			.0219
Married (ref)	0	—	
Widowed 4	−2.41	1.17	
Separated/divorced 3	.50	.66	
Single 2	−.60	.70	
Unknown 1	−1.62	1.08	
Non-English speaking	2.43	1.16	.0373
Bipolar disorder	2.20	.55	<.0001
Psychotic disorder	.75	.93	.3635
Anxiety	.15	.76	.8465
Diabetes	.62	.50	.2205
Cardiovascular disease	−.07	.62	.9088
Pulmonary disease	.52	.50	.2963
Slope terms			
Change per month in DCM group	−.59	.04	<.0001
Difference in slope for non-English speaking	−.65	.31	.0380
Difference in slope for patients with anxiety	.23	.11	.0418

Table 3: Depression response over time as measured by PHQ-9 severity scores.

	Response in DCM group			
	50% reduction in PHQ-9 score % (*N*)	PHQ-9 < 10 % (*N*)	Either 50% reduction or PHQ-9 < 10 % (*N*)	Total *N*
3 months	45.0% (121)	55.8% (150)	57.6% (155)	269
6 months	48.7% (96)	56.9% (112)	58.4% (115)	197
12 months	45.2% (38)	54.8% (46)	56.0% (47)	84

a small number. Additionally, there was no randomization to the DCM program.

At 6 months, the average PHQ-9 depression severity score was reduced by 37% or an average 5.6 points (from an initial average of 15.1 to 9.5). PHQ-9 change scores of 5 or greater indicate a clinically relevant change in individuals receiving depression treatment [19]. At 6 and 12 months, DCM members had had a successful response rate of 58.4% and 56%, respectively, (as measured by either a 50% reduction in PHQ-9 scores or a PHQ-9 < 10) which suggests that the intervention had an impact on reducing depression scores. These results are consistent with those found for the IMPACT randomized controlled trial and posttrial intervention with older adults which found 6-month reduction rates of 5.6 and 6.3 points, respectively, in PHQ-9 severity scores [20]. It is important to note that, unlike some randomized controlled trials (RCTs) of depression care management (e.g., [21, 22]), the current study cohort was not limited to first episodes of depression, but included persons with recurrent, chronic, and treatment-resistant depression. Also, members who screened positive for psychiatric comorbidities were not excluded in this evaluation. It would be expected that, if the intervention did not affect depression scores, that there would not be a decrease in depression scores similar to those found in RCTs with more homogeneous samples.

One of the biggest challenges in conducting depression CM with a Medicaid population was contacting health plan members over the study period, as this population is highly mobile. Since most care management contacts occurred telephonically, care managers often had difficulty with reaching program members by telephone. The care

Table 4: Medical utilization and costs over time ($n = 269$ patients).

	12 months before enrollment Mean (SE)	12 months after enrollment Mean (SE)
ER visits**	0.84	1.57
ER visit admissions	0.29	0.29
Admits acute	0.41	0.39
Outpatient office visits**	1.42	4.34
Net medical costs	$5847	$5714
Net pharmacy costs**	$3528	$4655
Net medical and pharmacy costs*	$11,676	$13,300

*$P < .05$, **$P < .01$.

managers often had to make multiple call attempts to reach health plan members and would often need to contact primary care clinics to get updated phone numbers. Care managers found that members often lacked consistent phone numbers or addresses and would have to engage primary care clinics and other contacts in order to locate them.

Many members had multiple, complex medical, psychiatric, and psychosocial issues that would prove challenging for the primary health care providers and the care managers to address. The supervision process addressed this challenge by helping the care managers identify two or three high priority issues and balance these with the member's priorities. For example, sometimes the member's medical conditions or transportation issues needed to be treated first before addressing his or her depression treatment needs and vice versa, sometimes a member's depression needed to be treated before he or she could engage in self-management strategies for controlling diabetes. Care managers also had to learn how to balance what they saw as the member's medical and behavioral health treatment needs with the member's perception of their medical and behavioral health needs. Additionally, it was important that the care manager could identify potential barriers to treatment adherence early in the process.

4.1. Lessons Learned. Staff development was a major step in implementing the depression CM program: staff had to learn to assess and monitor depression, screen for other psychiatric comorbidities, and implement care plans that addressed depression treatment and self-management goals. Some were not interested or able to make this change, and staff turnover was high during the course of the two year project. New care managers were recruited for the program, but this took substantial time for recruiting and training. Recruitment efforts sought out nurses who were comfortable working with health plan members, who had complex psychiatric and medical comorbidities, and/or who had previous experience with members with behavioral health issues.

Another lesson learned was that centralized health plan-based depression care management and provider site-based depression care management have different, distinct advantages and limitations. Providing case finding and care management at the health plan allowed efficient incorporation of the program into existing systems allocation of resources across many provider sites and members. In contrast, delivering care management on site at primary care clinics required substantial start up time because each clinic had its own information systems, clinical processes, and unique culture. Colorado Access had found from its previous experience with a randomized controlled trial of site-based depression care management that this model is resource-intensive in terms of staff training and requires developing unique clinical processes and supervision for each clinic.

A hybrid model offered some advantages. In this model, a care manager was located on site at one or more primary care practices while utilizing the plan-based clinical information systems and decision support (e.g., electronic registry, screening tools, protocol, supervision). This allowed for face to face contact with members and easier followup. The care manager was also part of the clinic staff and familiar with staff culture, which made it easier to coordinate care on site for members, utilize local medical record systems, and coordinate with other community resources.

5. Conclusions

The depression care management program showed favorable clinical outcomes and high levels of member and provider satisfaction, leading Colorado Access to adopt the program as one of its core competencies and a valuable service for providers and health plan members. In contrast to other collaborative care models for depression treatment in primary care settings, the program did not require significant changes to primary care practices because member identification, engagement, and followup occurred primarily at the plan level [23, 24]. Providers stated that the psychiatry supervision and consultation provided through Colorado Access' care management team was helpful to them in managing member care as well as facilitating referrals to specialty mental health services.

Colorado Access is continuing its and collaboration with partner providers to develop new care management models and implementation strategies. High volume safety net practices such as the Federally Qualified Health Centers (FQHCs) may be more appropriate for on-site care management models, which fully integrate depression care management into the particular system of care at a given site. This model clearly has advantages, but also potential challenges: differences in the skill sets and day-to-day activities of the care managers at practice sites and variability in training and data collection. One solution may be a hybrid model in which the health plan would hire, train, and provide both on-site and centralized access to data collection tools, member education resources, and a multidisciplinary team of clinicians to provide supervision. In this manner, a standardized care management model could be utilized while accommodating the unique features and needs of each practice. This model would require a contracting platform that allows funding to flow to the primary care site to support

care management and delineates how the site-based care managers will remain integrated with the health plan.

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Research Article

Perspectives on Cognitive Therapy Training within Community Mental Health Settings: Implications for Clinician Satisfaction and Skill Development

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Despite the mounting evidence of the benefits of cognitive therapy for depression and suicidal behaviors over usual care, like other evidence-based psychosocial treatments (EBTs), it has not been widely adopted in clinical practice. Studies have shown that training followed by intensive consultation is needed to prepare providers to an appropriate level of competency in complex, multisession treatment packages such as cognitive therapy. Given the critical role of training in EBT implementation, more information on factors associated with the success and challenges of training programs is needed. To identify potential reasons for variation in training outcomes across ten agencies in a large, urban community mental health system, we explored program evaluation data and examined provider, consultant, and training program administrator perspectives through follow-up interviews. Perceptions of cognitive therapy, contextual factors, and reactions to feedback on audio recordings emerged as broad categories of themes identified from interviews. These factors may interact and impact clinician efforts to learn cognitive therapy and deliver it skillfully in their practice. The findings highlight experiences and stakeholder perspectives that may contribute to more or less successful training outcomes.

1. Introduction

The public health impact and high rates of depression and suicide in community populations are well established [1–5]. Accumulating evidence indicates that providing psychosocial evidence-based treatments (EBTs) such as cognitive therapy (CT; [6]) results in substantial benefits to physical and mental health symptoms, quality of life outcomes, and reduction of health disparities and suicide attempts [7–9]. Training clinicians in community mental health agencies to provide CT for depression can result in improved treatment outcomes [8]. Like other EBTs, however, CT has not been widely adopted in clinical practice. Until recently, few systematic implementation efforts or training opportunities existed in the public sector [10, 11]. In response to the shortage of adequately trained providers [10], policymakers have devoted substantial resources in recent years to train providers in EBTs in the context of large-scale implementation programs [11, 12].

In 2007, the Beck Initiative was formed as a collaborative partnership between the Philadelphia Department of Behavioral Health and Intellectual disAbilities Services (DBHIDS), and the University of Pennsylvania (Penn) to implement CT within the city's behavioral health provider agencies. The mental health system administrators became interested in implementing CT because it has a strong evidence base for multiple disorders and client populations, it can prevent relapse and reduce costs associated with treatment, and

it has been shown to improve quality of life [13–15]. In determining the disorders to target in the first phase of the training program, the partnership members chose depression and suicidal behavior for three reasons. First, a high proportion of consumers in the system have a diagnosis of depression. Second, they believed that training in CT basics as applied to depression would serve as a good foundation for more specialized trainings. Third, because suicide prevention is a high priority, after the results of a recent clinical trial demonstrated significant benefits of CT over and above usual care for highly comorbid suicidal individuals in the community [9], partnership members were interested in rapidly making the treatment available throughout the system. Because psychosocial treatments for depression tend to be complex multisession treatment packages [16, 17], research has demonstrated that one-time trainings without support in the form of expert consultation are insufficient to promote skill development and behavior change [18–24]. Thus, both partners were committed to following up training workshops with an intensive consultation component that included weekly discussion of cases combined with expert review of, and feedback on, clinician's efforts to provide cognitive therapy to their clientele.

Beyond the growing evidence regarding the importance of consultation in EBT implementation, limited information is available about determinants of success, or shortcomings of training and consultation strategies. Research to date has focused on comparisons of front-end training strategies and examinations of the impact of adding consultation. Little research has been conducted to facilitate understanding of the key processes in training and consultation. Qualitative research with stakeholders can complement the existing empirical literature by providing valuable insight into aspects of training and consultation programs that may impact the success of implementation efforts.

The purpose of this study is to identify aspects of the training and consultation process that may be associated with CT skill development and clinician satisfaction with training. To do so, we explored program evaluation data and provider, consultant, and training program administrator perspectives on training and consultation that occurred in the context of a community-academic partnership to implement CT. In contrast with published randomized controlled trials of training and consultation, which have included individually recruited clinicians, this study examined training that occurred with cohorts within ten agencies in an urban community mental health system.

2. Method

2.1. Training Program

2.1.1. Setting. DBHIDS is a large mental health system with over 300 provider agencies that are heterogeneous in size, structure, populations served, and availability of resources. These agencies provide care to serve the mental health and substance abuse needs of the city's 420,000 Medicaid recipients. Recent utilization data indicate that approximately 38% of the clients in the mental health system have a diagnosis of major depressive disorder (28%) or depression NOS (10%), and 87% of these clients receive psychotherapy [25].

2.1.2. Treatment. CT is a psychosocial treatment that identifies and changes dysfunctional patterns of thinking, behavior, and emotional responses by helping individuals develop skills for modifying beliefs, relating to others in different ways, and changing behaviors through the use of a variety of interventions [14]. The structure of the session is intended to reflect the active, goal-oriented, collaborative nature of the treatment. Sessions are structured to include a brief summary or bridge between the previous and current session; efforts to set and follow an agenda; review of practice, or "homework" completed between sessions; summaries of important points; feedback from clients on their experience and understanding of the concepts covered in the session and efforts to identify a way to practice new skills between sessions [26]. Competence at structuring sessions as measured by the structure subscale of the Cognitive Therapy Rating Scale (CTRS; [27, 28]), and the assignment and completion of homework [29, 30], have been shown to predict greater symptom reduction in CT.

2.1.3. Training and Consultation. The training program was designed to teach CT basics, with a particular emphasis on depression and suicidal behaviors. It included extensive guidance on using CT to address commonly cooccurring problems among individuals who present with symptoms of depression. Training consisted of 24 hours of workshops followed by six months of weekly consultation [31]. The program was administered by a project director at Penn and by a full-time operations specialist within DBHIDS. To address financial constraints to participation in training, agencies were reimbursed for time spent in training and consultation activities. A clear expectation of the program was that agencies continue to support the ongoing use of CT after training: clinicians were trained in cohorts within their agency so they could build a community of practice, and throughout the program, the partnership worked with agency leadership to facilitate support [31, 32]. The approach to training was based on information obtained through a needs assessment [33] and a review of literature from a variety of disciplines [34]. Given the evidence that a multilevel approach is critical to implementation, the training program was embedded within a broader program to implement EBTs within the system [31, 32]. External facilitation, a process of interactive problem solving and support [35] that has been shown to be effective in engaging stakeholders, addressing potential barriers to implementation, and increasing the use of EBTs [36–39], was integrated into the training program.

The training model that was developed, the ACCESS training and consultation model, included the following components [32]: *Assess* needs and barriers (engage stakeholders and assess through preliminary meetings, surveys, work samples, interviews) and *Adapt* training content and

materials as required, *Convey the basics* through initial didactics, *Consult* on case material and on strategies to overcome barriers during consultation and through periodic meetings with key personnel, *Evaluate work samples* to provide feedback and refine skills, *Study outcomes* in ways that are feasible and acceptable to the agency, and *Sustain* by anticipating and addressing future barriers, maintaining communication, and making a plan for training future staff. The evaluation of work samples occurred in two formats. Initially, Penn consultants reviewed audio recordings of sessions and provided feedback through telephone consultation with individual clinicians, and a group consultation meeting was held to discuss more general CT skills. Later, in response to concerns about the time, costs, and scalability of this approach, individual consultation was replaced with review and discussion of segments of session recordings in a group consultation format. Additionally, as the goal of the program was to promote ongoing CT skill development and fidelity after training, the group feedback format was viewed as preparation for the groups to transition to ongoing peer-led group session review. During the consultation phase, consultants also provided individualized feedback on one to two full sessions for each participant in the group consultation model. Two clinicians who struggled to master CT in this model were given additional feedback and consultation.

2.1.4. Selection of Participating Agencies and Clinicians. Agencies were nominated for participation in the training program by mental health system administrators, who attempted to make the training available to a variety of programs serving diverse populations throughout the city. The training director at the university made a final selection for each round of training after reviewing information about the agency and the populations that it served and taking into consideration the areas of expertise of available consultants. Key personnel meetings were held with agency administrators to discuss the program, assess fit, and build collaboration. Agencies had latitude to select clinicians for participation internally, although criteria for inclusion set forth by the training program were that participants should have an interest in learning CT and be willing and able to participate fully in the program (e.g., record sessions with training cases and attend training workshops and consultation meetings). Consultation was limited to eight or fewer participants at each agency, regardless of agency size, although some agencies sent additional employees or supervisors to the initial workshop. Participants completed an application that included information about their prior training and reasons for wanting to learn CT. Applications were used primarily to understand clinicians' backgrounds prior to training, and no clinicians who were selected by their agencies were denied participation in the training program. To assess and facilitate engagement, prior to the workshops, preliminary meetings were held with the clinicians (with no management present) to describe the training program, emphasize the voluntary nature of the program, and discuss any questions or concerns that clinicians expressed. Training generally occurred in groups of providers from a single agency, but on two occasions, trainings included groups of providers from two agencies. A total of 99 providers of adult outpatient services at ten agencies enrolled in the basic training program.

2.1.5. Criteria for Successful Completion of Training. Providers were eligible for designation as skilled providers of CT (hereafter described as "passing" for brevity's sake) if they attended at least 80% of the weekly consultation sessions over 6 months, submitted at least 20 recordings of sessions with clients who agreed to serve as training cases, and achieved a rating of at least 40 on the CTRS, a validated measure of competence in CT [40]. A score of 40 was chosen as the passing score because it is the standard minimum required competence score for clinicians who serve as therapists in clinical trials of CT for depression [41].

2.2. Study Procedures. The study was approved by the Penn and City of Philadelphia Institutional Review Boards. All of the clinicians who participated in one of twelve training programs at ten agencies were invited to participate in interviews regarding their use of CT in adult outpatient service settings. Forty clinicians expressed interest in participating, but after multiple attempts, twenty-six clinicians were able to be scheduled for posttraining interviews. Clinicians who participated in interviews consented to allow their CTRS scores to be linked to their interview data. Training consultants ($n = 6$) and program administrators from the university ($n = 3$) who were involved in the program were also interviewed. To ensure that our sample would reflect a broad range of perspectives, we also evaluated anonymous feedback forms (free response and numeric ratings) from training and consultation that were collected as program evaluation data.

Participants were scheduled for interviews at times that were convenient for them and that would not interfere with their clinical and work-related responsibilities. Semistructured interviews were conducted over the telephone or in person and interviews were digitally recorded. An interview guide included open-ended, scripted questions that were based on the Promoting Action on Research Implementation in Health Services (PARIHS) Framework [42]. Participants were given the opportunity to elaborate on issues that they considered particularly relevant or about which they expressed strong sentiments. Interviews typically lasted 45 minutes to one hour. Participants received financial compensation or a gift card for their participation. Interviews were transcribed and transcripts were reviewed and checked for accuracy by at least one of the authors.

2.3. Coding Procedures. Clinician interviews included questions about a variety of factors, but for the current paper, we will focus on responses that address training and consultation. Transcripts of interviews and program evaluation data were subjected to qualitative analysis rooted in grounded theory [43], using the ATLAS.ti software package [44]. First, study investigators developed a list of a priori themes and emergent themes were added after reading the interview script and several transcripts. After saturation was achieved

(i.e., the coding of additional transcripts did not identify any further themes to be coded), a preliminary codebook was developed based on the identified themes. This preliminary codebook was then used by all of the study researchers to rate two additional transcripts, resulting in discussion and revisions to the codebook based on group consensus. Using this revised codebook, two study researchers rated the remaining transcripts. A subsample of transcripts was coded by both raters, and disagreements regarding coding were resolved via consensus of the study team in weekly coding meetings. This process also identified several additional subcategories of codes. A process of axial coding suggested ways in which some codes could be combined or collapsed into one another, and arranged all of the codes into a treelike, hierarchical structure. The result of this process was a finalized codebook, with links specified between key concepts. The two primary raters reviewed transcripts and updated their ratings to reflect the themes from this finalized codebook. Program evaluation data was integrated with interview and free response data, and through a process of triangulation and constant comparison, the categories were organized around the major emergent themes.

3. Results

3.1. Participant Characteristics. The 26 clinicians who participated in interviews were 66% female and had an average of 5.7 years of experience working in mental health treatment settings (sd = 1.3). Eighty percent had a Master's degree, 7% had completed some graduate work (e.g., towards a Master's Degree), and 13% had a Bachelor's degree. Participants were 70% Caucasian, 19% Black, 4% Asian, and 7% were multiracial or endorsed a different race or ethnicity. Seven percent of the participants were Latino. Participating agencies varied in size, with anywhere from 5 to over 50 clinicians serving their adult outpatient clientele. Most agencies provided general outpatient mental health services, but four agencies, or subprograms within the agencies, that served specific populations participated in the training. These populations included individuals with severe mental illness, specific minority populations, and individuals in recovery from substance use disorders. Additionally, one agency included clinicians from their specialized program for severe mental illness as well as from their general outpatient mental health program.

3.2. Training Program Outcomes. Table 1 provides an overview of the proportion of clinicians who passed at each agency, the feedback and consultation format used, information about whether the agency specialized in treatment for specific client populations or diagnoses, and information on retention in the program. Overall, approximately 80% of the clinicians who completed consultation passed. At four agencies, one or two clinicians did not complete consultation. Program evaluation data revealed that attrition was due to relocation, layoffs due to budget constraints, medical leave, or taking a new position. At two agencies, approximately half of their clinicians passed the trainings; the other agencies had higher pass rates. One of the agencies with lower pass rates provided specialized services and the other provided general mental health services. Of the 26 clinicians who participated in interviews, seven clinicians from five different agencies did not pass. Due to the sensitive nature of some of the information that participants disclosed, and to ensure that agencies could not be identified, we have not revealed exact numbers of training participants or clinicians who passed the training, or linked quotations to agency IDs or more specific information about the agencies.

Program evaluation data indicated that overall satisfaction with the program was generally high. The mean overall quality rating for the individual feedback model was 4.88 (SD = 1.4) on a 6-point Likert scale, and the group feedback model was rated 5.63 (SD = .52). After training, clinicians who participated in the individual model rated their comfort in applying CT to be a mean of 3.81 (SD = 1.5) and participants in the group format expressed a mean comfort score of 4.88 (SD = .64).

3.3. Themes Related to Training Success. As described above, an axial coding process was used to identify major themes from the qualitative interview data. Five themes relevant to training success emerged during the coding process, which were grouped into three broad categories: perceptions of CT (relevance to agency clientele and perceptions of CT structure); contextual factors (agency involvement and impact of clinician selection process); and experience of consultation and feedback on recordings.

3.3.1. Perceptions of Cognitive Therapy

Relevance of CT to Agency Clientele. In light of pre-training findings that some clinicians within the system had doubts that CT could meet the needs of some of their clients [33], efforts were made to match consultants who had clinical experience with similar populations and to identify appropriate video and case examples. All five consultants described efforts to use relevant case material and demonstrate ways in which case conceptualization could facilitate the appropriate application of CT strategies to common cooccurring presenting problems. Interview data indicated that this strategy was somewhat successful. Most clinicians expressed openness to the use of CT with their clientele. At an agency that provided general mental health services, a clinician stated the following.

> *Clinician: We watched tapes of lots of the cognitive therapists conducting sessions with clients that were more similar to the ones we dealt with. Certainly I could see where that was helpful, where it worked... I feel that it could work absolutely with our population... but only if the therapists were as invested in the technique.*

Clinicians in some agencies also expressed appreciation that consultants appeared to have experience in working with clients like theirs. In contrast, at an agency where fewer clinicians passed, a consultant for that agency described

Table 1

Agency ID	Consultation and feedback model	Attrition from consultation?†	Proportion of completers who passed	Offered specialized treatment for a specific population
A	Group	yes	70%	✓
B	Individual	0	83%	✓
C	Individual	0	100%	
D	Individual	0	50%	✓
E	Individual	0	100%	
F	Group	yes	70%	✓
G	Group	0	65%	✓
H	Group	yes	70%	
I	Group	0	50%	
J	Group	yes	85%	

Note. Numbers of clinicians who received training and passed the program are not provided to decrease the likelihood that the identities of agencies with clinicians who participated are discerned.

†At agencies with noncompleters, noncompletion rates ranged from 10–25%. Reasons for not completing include leaving the agency, personal circumstances, moved to another division of the agency that was not participating in training (e.g., intake department). No clinicians reported reasons for dropping out that were related to the training or consultation.

challenges in addressing concerns about the use of CT with the clientele at that agency.

> *Consultant: Training was very difficult at that agency because from the beginning we had low buy-in from the staff and they had difficulty seeing the application of CT for their clients and they really struggled with taping, with utilizing CT techniques.... (The other consultant) and myself tried to discuss clients that we had seen with very similar levels of functioning.... it was kind of general community mental health depression, kind of the multi-disordered. And then also some people with psychotic disorders.... I do not see that population being any different from the other agencies.*

However, a clinician at that agency expressed a very different perspective, "my biggest struggle was with [the consultants], [who] really never gave ample time or conversation to my population and that might be because they never had any experience in it." At another agency where fewer clinicians passed, clinicians expressed skepticism that CT was presented as applicable to a variety of presenting problems and felt that consultants were not open to their efforts to discuss the limitations of CT.

Interviews with three of the consultants and two training program administrators suggested that the strategy of teaching CT basics as applied to depression and suicide may have generated some impatience among clinicians. Many expressed interest in guidance on addressing issues that they perceived to be more difficult to address in treatment, such as psychosis, Axis II diagnoses, and active substance dependence. A consultant described this concern at an agency that offered specialized services.

> *Consultant: Although they really were open and interested and invested in learning, I think they struggled with the fit and they were sort of assured along the way, "let us get the basics down and then we will think about how to apply it to this very challenging population." But they struggled I think with that, to the extent that the training program rethought that approach to some degree.*

Reactions to CT Structure during Training. Despite previously documented concerns within the system about the potential for CT to be rigid [33], most clinicians did not express strong concerns about its structure. One clinician found that the training disabused her of stereotypes in this domain: "... it's really supportive, and it's pretty flexible, so I think the training was good to break that stereotype that CT is going to be very structured and rigid [without] a lot of room for other opportunities to connect with people." Some clinicians found the structure to be beneficial for clients, with one indicating on the program evaluation survey, "Agenda setting has helped me organize the sessions and helped my clients focus and create their own solutions to their problems, which is very efficient and respectful." Additionally, some noted the positive impact of using the CT structure on with clients who presented as disorganized or "scattered."

Some negative reactions to CT structure were described, however, particularly at agencies where fewer clinicians passed. Consultants identified challenges related to providing feedback to clinicians who demonstrated ongoing discomfort with the structure of CT. A consultant explained that structuring sessions was challenging for some clinicians.

> *Clinician: I do not think that she was as comfortable with the structure or with delivering the therapy. It took a fair amount of work to get her to really start delivering the intervention with the training cases that she had.... it was kind of a hard sell for her to implement it.*

Without the structure in place, consultants stated that sessions "did not look like CT sessions" and CT interventions

were delivered sporadically or unsystematically. Consultants described efforts to balance this feedback regarding structure with their ongoing efforts to simultaneously emphasize case conceptualization and selection of appropriate interventions.

> *Consultant: I did not want anything that I did to turn them off to [CT] so I tried to hear out their concerns…. but then [it was also important to] make sure that they got what they needed to really be able to deliver the treatment….*

However, at the two agencies with lower pass rates, clinicians expressed concern that training overemphasized the structure of CT, to the detriment of patient-centeredness; as one clinician concluded, "it seemed that the structure was more important than helping the client."

CT structure was initially perceived by some clinicians who ultimately passed to be intimidating or challenging to master.

> *Clinicians: I think when I started the training I was kind of afraid of all of it because… it was so much for me… in terms of me thinking about the structure and knowing where I was, and pacing, and summarizing, and mood check. But now that I do it fairly regularly, I think it's okay.*

Perhaps due to the perception that the CT structure was challenging to implement, some clinicians who maintained structured sessions during the training indicated that they "loosened up" the structure soon after they completed training.

> *Clinician: When I would have a consultation session I was doing pure CT. And when I know that no one's going to be supervising me—listening, and so forth—I do not feel that pressure. I feel like I can relax a little more. And relaxed to me means it's okay if I do not hit all the points.*

3.3.2. Contextual Factors

Administration and Supervisor Involvement. Although the training model included initial and periodic meetings with agency administration and supervisors to assess needs, obtain feedback, and discuss progress, clinicians and consultants perceived varying levels of day-to-day involvement and enthusiasm. For example, at an agency at which most clinicians passed, a consultant noted the following.

> *Consultant: [Clinic leaders] were really supportive and excited, and the head of the agency was very involved in preliminary meetings and was definitely present. She went to all of the check-in meetings and then they put a fairly high level administrator and supervisor in the training… so that [they] could support CT within the agency.*

In contrast, at an agency at which fewer clinicians passed, a consultant noted, "we were concerned about how things were unfolding and [the administration] seemed not particularly concerned… it was problematic for the training. Without agency buy in, we're asking a lot of these therapists…." Administration at agencies where more clinicians passed set aside protected time for CT training, invited board members and other administrators to celebrations to express appreciation to the participants in the program, effectively engaged in problem solving, and continued to allocate time for CT-trained clinicians to meet for ongoing peer consultation after training was completed.

In contrast, at three agencies, two of which had lower passing rates, upper level management voiced, and at times demonstrated, support for the training program, but mid-level management appeared to be less invested. At one agency with low clinician engagement and low CTRS scores at the midpoint of the training, consultants attempted to discuss progress, get feedback, and problem solve with the clinicians. When this was not effective, they attempted to work with supervisors and management to improve the training process and increase engagement. At one agency, this process appeared to backfire.

> *Consultant: [The supervisors] went back and said [to the clinicians], "well the consultants said you aren't doing this right so fix it." And the result of that was that the trainees got really frustrated with us and really angry with us because they thought that we went over their heads.*

The consultant described the upper management's subsequent efforts to try to support the process, but "We did not see much result from that. Maybe a little bit more participation for a week or two but then it kind of died down."

Perceived Pressure or Mandate to Participate in Training. A salient issue raised by clinicians and consultants at three agencies was a mandate, or a perception of a requirement, by their agency to participate in the training program. One clinician felt uncomfortable with the feeling of pressure to participate, but nonetheless found the training helpful.

> *Consultant: Had I felt free to decline, that would have been more helpful because I would have [declined the training], not because I did not appreciate the training, but because I felt that it could have been somebody else who might have utilized it.*

In contrast, the mandate to attend the training was particularly onerous for clinicians whose initial attitudes toward CT were unfavorable.

> *Clinician: We were not told, "Hey, do you want to do this thing? Do you want to learn about CBT?" We were told, "You are going to this." So, it was mandatory, so I really wasn't on board with that because I did not really have an interest in learning about it.*

The apparent mandate from some agencies to complete CT trainings was also noted by the consultants. For example,

one consultant described it as a "major issue" for one agency and then described a consultation meeting at which it was discussed.

> *Consultant: That was the top [concern] on their list-was that they had been required, mandated by their agency to do this and that that had sort of set the wrong tone for them, and I had a lot of conversations with them about our intentions . . . that it was important that this be voluntary. And they said that if we went back to their agency and said that they had admitted that they had been mandated to do it that they were afraid that they'd lose their jobs. And so that really ties our hands. . . it set the tone in sort of a negative way to be forced to do this.*

After this experience, individual interviews with clinicians were added to assess their interest in the program and their training needs. Despite these steps, clinicians appeared to perceive pressure to participate at an agency that subsequently participated in the program. As a consultant stated "We did do the interviews prior to starting . . . And I remember that I personally did the interview for the person that was the hardest and she swore up and down how much she loved CT." Notably, at two of the three agencies at which clinicians described a perception of pressure to participate had lower passing rates.

3.3.3. Experience of Consultation and Feedback on Recordings. Consistent with program evaluation data on satisfaction, nearly every clinician stated that recording sessions were ultimately beneficial. Participants expressed appreciation for individual feedback, with one clinician stating that "The consultation with [consultant] was probably one of the best supervisions that I've ever experienced. I was able to learn things from her and take it and put it into action." Many commented that they felt that the feedback, whether in group or individual format, was supportive and nonjudgmental. Advantages to group feedback that were noted by consultants and clinicians who participated in the group format included hearing how their colleagues applied CT to a variety of cases and supporting one another's challenges and success as they learned. Perhaps surprisingly, clinicians expressed little resistance to group review of their session recordings. Program evaluation data and interviews also indicated that more time spent in role plays during workshops and consultation would have been appreciated, indicating that clinicians were willing to engage in potentially uncomfortable training experiences if it could improve their skills. Despite apprehension about playing sessions for peers, clinicians' and consultants' anxiety decreased over time, and ultimately this supervision format increased their skills. As one clinician stated that "Peer and consultant feedback is crucial to my learning. While humbling and at times anxiety provoking, the feedback is always supportive and gives me great direction for ongoing learning, in addition to validating what I am doing well."

At an agency where fewer clinicians passed, though, some clinicians did not appear to perceive the group feedback model to be sufficient or supportive.

> *Consultant: We were getting frustrated because we would play [examples of CT] that were clearly different from tapes [a clinician] would play. And she would say "I just did the same thing and you're saying that that's good and what I'm doing is not good." And even when the other clinicians would try to point out the differences, she would just get really shut down and really annoyed to the point that I think the other clinicians were afraid to say anything to her.*

A therapist at the same agency stated that if more individual feedback on his or her own cases had been provided, the recordings would have felt more useful, "If you're not getting feedback on a regular basis and you're not hearing a whole session then you do not get the complete feedback that you need."

Some clinicians who did pass expressed a desire for ongoing feedback after training was complete, suggesting that this aspect of training was particularly valued. They indicated that they believed that the quality of the treatment they provided could be improved by ongoing recording and feedback after training was completed. One clinician, for example, stated that "I would say when I was getting regular supervision from [the consultant] and my sessions where being taped, they were working pretty well; now I think it's hit or miss at best to tell you the truth."

4. Discussion

This study reported on the experiences of clinicians, consultants, and administrators during a CT training and implementation program in an urban behavioral health system. Unlike previous studies, this study examined training that occurred with cohorts within agencies rather than individually recruited clinicians. This difference allowed us to investigate the ways in which organizational context may influence the experience of training. Our findings are illustrative of the PARIHS model, which suggests that successful implementation is a function of perceptions of the intervention and its effectiveness, context, and facilitation [42], and they suggest ways in which these three elements may interact and influence the process of training and consultation. Feedback and opportunities to discuss session recordings were identified as important facilitators of clinician skill and comfort in delivering CT, and administrative support appeared to play a role in success. At agencies with lower pass rates, however, pressures that may have been felt by some administrators (e.g., to encourage attendance at trainings), consultants (e.g., to facilitate CT skill development), and clinicians (e.g., to attend trainings despite misgivings about CT) may have led to patterns of interactions that reduced the likelihood of successful training outcomes. Perceived mandates and agency climate, combined with initial concerns about CT, may have set up a dynamic in which doubts

about CT's structure and its relevance to a given population resulted in a greater struggle, or less desire, to utilize CT on the part of the clinicians. The resulting feedback, focusing on increasing the use of CT interventions and procedures, may have simply confirmed initial, negative perception of CT as structured and rigid, and set up a dynamic by which consultants and clinicians became increasingly discouraged with the training experience. Future study with a larger sample is necessary to investigate this hypothesis more systematically.

These findings provide a richer explanation of processes that may underlie previous findings that indicate that agency context and administrative support can influence clinician attitudes [45, 46] and the implementation of EBTs [47]. Supportive actions and the provision of resources by leaders (e.g., protected time for trainings and public acknowledgments of clinicians undergoing the training) were perceived as helpful. On the other hand, administrative mandates or pressure to enroll in training did not appear to be successful, and more research on the impact of mandates on clinician attitudes and experience of training is warranted [48]. However, our results do not suggest that training programs should rule out potential participants solely because they have initial doubts about the potential effectiveness of CT. Such doubts were expressed by some clinicians who willingly participated, experienced a change of opinion, and ultimately passed the training. Future research should investigate whether the addition of an assessment of psychological safety or organizational social context (c.f., [47]) prior to the selection of participating agencies can decrease the likelihood of pressure or compulsory participation. Addressing organizational context can be a sensitive and challenging issue, and allowing or encouraging uninterested clinicians to opt out of consultation requires sensitivity to the organizational climate, the potential impact on partnerships and relationships with agencies, and clinician morale. For agencies with more challenging organizational contexts, facilitation may be insufficient and more intensive organization-level interventions might be necessary to promote successful outcomes [49]. In other contexts, particularly after a training program matures and publicizes success, clinicians may be more likely to volunteer for training. Since the initial twelve trainings that were the focus of this report have occurred, more clinicians in the system have been approaching their agency administration with requests to participate in the training program.

Some of our findings may suggest the possibility that a less structured EBT or a more modular approach would be better received by some clinicians [50, 51]. However, some clinicians ultimately viewed session structure to be helpful for clients. Achieving a balance between emphasis on structure as a key element of CT and guidance on how to personalize treatment and increase clinician comfort appears to be crucial, yet challenging, particularly in light of concerns about the treatment that may be present prior to training [33, 52, 53]. The tendency of some clinicians to "loosen" the structure of the sessions after training was completed also warrants attention, as doing so may decrease the intervention's effectiveness and ultimately contribute to or reinforce perceptions that CT is not effective in community settings. Followup strategies such as ongoing consultation or fidelity monitoring may be effective methods of supporting sustained implementation [32, 54].

The results of this study highlight an important challenge in providing training in depression treatments in community behavioral health settings and systems. A significant proportion of individuals enrolled in publicly funded mental health systems are diagnosed with depression [25]. Yet the strategy of providing a general depression- and suicide-focused training as a foundation for future, more specialized trainings appeared to prove unsatisfying to some clinicians. Interviews with consultants and clinicians revealed that they perceived a need for training to address challenges related to severe mental illness, comorbidities, and diagnostically complicated clients. In response to stakeholder feedback on the training program, considerable effort was devoted to finding video clips of individuals who resembled the populations served by the agencies. Professionally produced video materials did not meet all of the needs expressed by training participants, but some videos of clients from clinical trials who agreed to allow their case material to be shared for training purposes were identified. However, to meet stakeholder needs, the training program has also expanded to include more specialized training programs for psychosis, substance dependence, and personality disorders.

Overall, a majority of clinicians interviewed for this study reported having a good experience with the training program for depression and suicide. Most viewed the review of session recordings as a critical component of their training. This finding is particularly important because some large-scale EBT training programs do not include the use of session recordings [11]. Further investigation is warranted to determine whether this component improves training outcomes over and above consultation without review of work samples. Clinicians reported appreciation for feedback, including group-based feedback on recorded sessions, despite some initial discomfort with sharing their work in a group setting. While the mean rating for confidence in using CT appeared to be higher among clinicians who participated in group consultation sessions than for those in individual consultation, the sample size and nesting of clinicians within cohorts precluded an appropriate statistical comparison between groups. It is possible that there are some benefits to a group feedback model, such as cost efficiency, exposure to examples of the use of CT with a wider variety of cases, and supportive feedback that may increase confidence. Additionally, after expert consultation is complete, ongoing peer group consultation may help clinicians maintain their adherence to CT. However, as some clinicians noted, the tradeoff to this condition is less intensive individualized feedback. Future comparisons of the two consultation models in terms of costs, fidelity, and client outcomes would be useful in determining the most advantageous models.

Findings from this study should be interpreted in light of several limitations. Our interview sample was relatively small, and individuals with stronger or more extreme opinions may have been more likely to participate. We attempted to mitigate this limitation by coding anonymously

provided program evaluation data as well. This study was not designed to test hypotheses, but rather to inform further investigation of potential determinants of successful training outcomes, and to reveal potential reasons for the variations in the numbers of clinicians who passed at different agencies. Despite these limitations, we identified several directions for future research. The relative benefits and disadvantages of providing training in evidence-based interventions to clinicians within their organizational setting should be further explored. It will be important to test strategies to address organizational climates that are less favorable for training and implementation. Additional research is needed to determine whether feedback on work samples enhances clinician skills over and above consultation alone.

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Research Article

Leading from the Middle: Replication of a Re-Engagement Program for Veterans with Mental Disorders Lost to Follow-Up Care

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Objectives. Persons with mental disorders experience functional impairments and premature mortality. Limited continuity of care may contribute to disparities in this group. We describe the replication of an evidence-based outreach program (Re-Engage) to reconnect Veterans with mental disorders into care who have dropped out of services. *Methods*. Using the Enhanced Replicating Effective Programs framework, population-based registries were used to identify Veterans lost-to-care, and providers used this information to determine Veteran disposition and need for care. Providers recorded Veteran preferences, health status, and care utilization, and formative process data was collected to document implementation efforts. *Results*. Among Veterans who dropped out of care ($n = 126$), the mean age was 49 years, 10% were women, and 29% were African-American. Providers determined that 39% of Veterans identified for re-engagement were deceased, hospitalized, or ineligible for care. Of the remaining 68 Veterans, outreach efforts resulted in contact with 20, with 7 returning to care. Providers averaged 14.2 hours over 4 months conducting re-engagement services and reported that gaining facility leadership support and having service agreements for referrals were essential for program implementation. *Conclusions*. Population-level, panel management strategies to re-engage Veterans with mental disorders are potentially feasible if practices are identified to facilitate national rollout.

1. Introduction

Persons with mental disorders (e.g., bipolar disorder, schizophrenia, and recurrent major depressive disorder) experience a disproportionate burden of functional impairment, morbidity, and premature mortality from preventable causes, notably heart disease [1, 2]. Acute mental health symptoms can predispose this population to gaps in care as well as increase access barriers due to stigma, limited insurance, or difficulty navigating health care systems [3].

Evidence shows that even in integrated health care systems, continuity of care remains problematic. For example, one national study of patients diagnosed with mental disorders in the Department of Veterans Affairs (VA) health care system found that 21% had experienced a 12-month gap in contact with the health care system while 42% had a 12-month gap in mental health care [4]. Similarly, another study found that VA patients with schizophrenia who had little VA utilization in the prior year had a twofold increased risk for death relative to patients without schizophrenia [5].

A persistent barrier to improving access and continuity of care among patients with mental disorders has been the lack of a systematic process for identifying and engaging those who have dropped out of care and providing meaningful data to frontline providers on the patients who are most at risk of poor outcomes [6, 7]. Subsequently, the VA Office

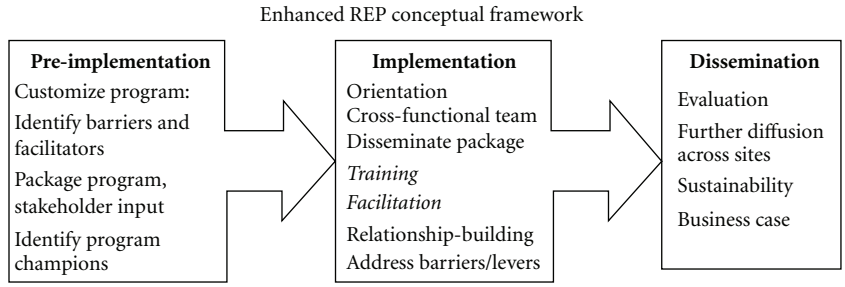

Figure 1

of the Medical Inspector (OMI) launched a national quality improvement (QI) initiative in 2007 to determine whether targeted outreach services using VA registry data could improve patient access to medical care and reduce premature mortality in Veterans with mental disorders who were lost to follow-up [8]. VA administrative databases were used to identify Veterans with chronic mental disorders and points of contact at each VA facility attempted to contact these Veterans and re-engage them in VA care services. Of the 3,306 Veterans contacted over a 7-month period, 72% returned to VA care, and those returning to care experienced a 6-fold reduction in mortality risk compared to those not returning to care [8].

Subsequently, VA leaders sought to rapidly translate this initiative into routine care. In preparation for implementing and sustaining this new program, VA mental health leaders sought to replicate the QI initiative based on input from frontline providers as well as from facility- and regional-level leaders. The aim of this paper is to describe the adaptation and findings from a five-site pilot study involving the replication of this QI initiative ("Re-Engage"). We also describe the underlying implementation framework used to adapt Re-Engage that emphasizes input from frontline providers rather than a top-down mandate approach.

2. Materials and Methods

This longitudinal study assessed the implementation of the Re-Engage initiative. Similar to the original QI initiative described elsewhere [8], Re-Engage involved the use of VA national administrative data and local providers to identify and contact Veterans with mental disorders who were lost to follow-up (i.e., had not received VA services for at least one year). However, Re-Engage was adapted based on input from frontline providers using an implementation framework, described below. Five VA facilities participated in this initial replication of Re-Engage. Primary outcomes included the clinical and health status of Veterans with mental disorders lost to follow-up as well as the number of Veterans re-engaged in VA services after the implementation. We also conducted a formative evaluation based on assessment of field notes and provider interviews to inform a larger national dissemination of Re-Engage. A VA medical center (VAMC) Institutional Review Board evaluated the protocol for this evaluation and determined that it was a quality improvement effort and not a research study requiring informed consent. This project was covered by a global IRB to conduct *program* evaluations and secondary data analyses of VA mental health treatment programs. Hence, participating providers and VA leaders did not sign a consent form because the focus the study was on eliciting process data on the implementation of a VA clinical *program* as opposed recruiting providers to a research intervention in which VA providers or patients would be the focus of program outcomes. All patient-level outcomes were obtained as secondary data to the implementation of this clinical program.

2.1. Re-Engage Implementation Framework. Re-Engage was implemented using the Enhanced Replicating Effective Programs framework (Enhanced REP) [9–11] (Figure 1). Enhanced REP is based on the Centers for Disease Control's (CDC) Research to Practice model [9, 11, 12] which incorporates principles from diffusion of innovations and social learning theories [13, 14]. REP was enhanced to address complex healthcare organizational relationships based on principles of Participatory Management [11, 15–19]. Specifically, Enhanced REP takes into account organizational barriers and facilitators to adoption of evidence-based practices through a combination of front-end training and technical assistance support and ongoing input and relationship building among frontline providers to promote effective practice. In this study, Enhanced REP was applied to implement Re-Engage prior to the national rollout of the program in order to identify barriers to implementation and to obtain input from provider endusers of the program.

Enhanced REP consists of three primary phases: (1) translation of program components into nontechnical, user-friendly language referred to as *packaging*, (2) *training* program adopters on how to implement the program and incorporating frontline input on its adaptation, and (3) supporting the *dissemination* of the program across multiple contexts through facilitation (Table 1). Enhanced REP facilitation [11] is an interactive process throughout all three phases that involves helping frontline providers build relationships with other existing providers and identifying opportunities to publicize or leverage the program's successes in order to increase leadership commitment and ultimately, adoption [20, 21]. Staff from the VA Serious Mental Illness Treatment Resource and Evaluation Center (SMITREC) acted as facilitators and provided guidance on implementing Re-Engage to the frontline providers between May and

Table 1: Application of the Enhanced REP framework to Re-Engage.

Enhanced REP component	Key processes	Re-Engage activities
Preimplementation		
Customize the evidence-based practice	Conduct organizational needs assessment of key personnel Working with facilitators, collaborate to make site-specific intervention adaptations (i) Organizational structure (ii) Impetus to transform (iii) Perceptions of the identified problem (iv) Site-specific adaptations Creation of packaged, user-friendly implementation manual/tool kit	Reviewed VA Office of the Medical Inspector QI Project report findings Created demonstration collaborative to pilot Re-Engage protocols (i) "Lead from middle" model (ii) Draft of VA program directive and operational plan (iii) Formative assessment of pilot stakeholders' perceptions (iv) Specified core versus modifiable elements Revised, expanded, and enhanced QI implementation manual/form
Identify champions	Facilitators work with national and local leaders to identify early adopters, past performance	Five LRCs and sites identified based on leader input
Implementation		
Training	(i) Facilitators and VA leaders provide targeted presentations to key leaders and early adopters (ii) Facilitators provide site-specific and staff level appropriate customized training	(i) Conference calls with national, regional, and facility-level leaders (ii) Lead program overview to local recovery coordinators and local leaders at conferences or on conference calls
Orientation	Facilitators organize resources to support implementation with provider input: (i) Staff handbook (ii) Service agreements (iii) Service line leaders Advertise and publicize the program local stakeholders (i) Make an empirical case for program (administrators, staff) (ii) Highlight the potential benefits of the program to the Veterans, VAMC, and VSOs (iii) Advertise (newsletters, poster boards, etc.)	Created Re-Engage handbook with implementation checklists to promote interdisciplinary coordination: (i) referral scheduling, service agreements, and service line leaders/facility directors Developed advertising resources that enabled the LRCs to "lead from the middle" and encourage support for Re-Engage through the following means: (i) Present data from original study project regarding mortality reductions (ii) Educate clinic personnel of program benefits-information sheet (iii) Make in-service presentations—talking points sheet (iv) Share flyers with community partners and patients
Facilitation	Start program Utilize local resources and sustain advertising. Facilitators continue to provide technical assistance to frontline providers to problem solve implementation issues Collect data to measure program impact and to enhance program delivery	(i) Provide adaptable marketing tools and coordinate with services with similar goals (e.g., homelessness) (ii) Facilitators hold regular calls with frontline LRCs (iii) Continuous data collection and implementation of monthly reports and online feedback interface for local providers and policy leaders
Evaluation and sustainability	Reevaluate program successes and ways the program could be further adapted to improve outcomes and customer satisfaction at the site.	Pilot findings reviewed with demonstration sites and national LRC network to: (i) Enhance implementation guide and advertising resources (ii) Provide examples of best practices of local communication and coordination (iii) Revised assessment form and feedback tool (iv) Review business case for ongoing programming

Table 2: Site-level characteristics of VA healthcare systems participating in piloting Re-Engage.

Site	Unique patients	Number of CBOCs[a]	Number of inpatient Beds[b]	Recovery center present[c]	LRC professional background
1	37,018	2	0	No	LCSW
2	56,465	3	105	Soon	Psychologist
3	37,658	2	315/155	Soon	LCSW
4	48,767	3	271	Yes	Psychologist
5	50,730	9	192	Yes	LCSW

[a]CBOC: community-based outpatient clinic.
[b]Includes medical and psychiatric acute care beds.
[c]Recovery center—Presence or planned implementation of a psychosocial rehabilitation and recovery center for veterans that are mandated services for VA medical centers serving a large number of veterans with SMI (e.g., greater than 1,000 unique patients per year).

August 2011. Facilitators specifically provided the frontline providers guidance in: (1) identification and engagement of key stakeholders at all organizational levels, (2) identification of barriers to implementation of Re-Engage and strategies to overcome barriers, and (3) ongoing evaluation and adaptation of the implementation process to further enhance uptake (Table 1). Additionally, formative processes of program evaluation were built into Enhanced REP to help all stakeholders systematically monitor and track re-engagement efforts, identify barriers to program implementation so that alternative implementation strategies could be tested, and share successes with other sites and personnel [22, 23].

2.2. Setting and Procedures. Prior to initial replication of Re-Engage at each of the five sites, VA leaders applied Enhanced REP components to encourage input and engagement from frontline providers. They also identified local recovery coordinators (LRCs) as the natural points-of-contact for the Re-Engage initiative. LRCs are typically psychologists or social workers who facilitate the adoption of recovery-oriented services such as social skills training, psychoeducation, or peer support for patients with mental disorders at each VA facility [24]. LRC positions were mandated in VA in 2006 and were reaffirmed by the VA Uniform Mental Health Services Handbook [25] in 2008. VA Central Office leaders saw the Re-Engage initiative as an opportunity to help raise the visibility and clinical role of this essential VA mental health position.

This paper reports on the pilot implementation of the Re-Engage program by the LRCs at five VAMCs between May and August, 2011. Sites were identified by VA leaders based on their geographic representation that included small- to moderate-sized VA medical centers located in the southeastern and Midwestern United States. In addition, sites needed to have at least 20–30 patients meeting the criteria for program inclusion described below. Site-level characteristics are described in Table 2. A formal email invitation to the LRC and their respective regional mental health leader was sent by VA leadership. Specifically, three regional mental health leaders helped facilitate the recruitment of five LRCs at each of the five facilities. VA central office leaders included three senior leaders in VA mental health recovery services and five staff from VA SMITREC.

Consistent with Enhanced REP, staff from the VA SMITREC developed an initial implementation manual (package) detailing the Re-Engage program (Table 1). Beginning in March 2011, regular conference calls between national and local stakeholders occurred every 4–6 weeks to plan and implement Re-Engage. Provider training in the program was initiated in May 2011, starting with two 1.5-hour conference calls for the LRCs at the five demonstration sites. In addition, a 2-hour orientation and training presentation on Re-Engage was provided at a national LRC meeting in late June 2011 for all LRCs nationally, including the five LRCs who participated in this pilot demonstration program. Ongoing facilitation was provided via monthly conference calls from May through August 2011 and addressed provider and facility engagement (Table 1).

2.3. Participants. Veterans with mental disorders who were using VA services at one of the five sites, who had dropped out of care between FY 07 and FY 09, and who were still alive as of April 2011 based on VA Beneficiary Identification Locator System and Social Security Administration death files were identified by SMITREC staff using the VA National Patient Care Database [8]. Veterans with mental disorders included those with a diagnosis of bipolar disorder (International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes 296.0–296.8) or schizophrenia (ICD-9-CM codes 295.0–295.4; 295.6–295.9). Bipolar disorder and schizophrenia were the focus of the initial Re-Engage implementation due to the clinical severity of these diagnoses. As with the previous QI initiative [8], Veterans were considered to have dropped out of care if they had no VA contact for a minimum of one year and had no outpatient visits or an inpatient stay of two days or fewer within the VA health care system starting in May 2007 (end of the original QI project) through the end of FY 09 (September 30, 2009).

Lists of Veterans who had dropped out of care were created for each facility, and Veterans were assigned to the VA facility where they last received care. To prioritize re-engagement services for the pilot and national implementation, the lists focused on a subgroup of Veterans who dropped out of care and also had at least one inpatient hospitalization prior to drop out and who were less than 65 years of age (i.e., less likely to be in nursing home or covered by Medicare services). SMITREC staff generated and sent contact lists to the LRCs in May 2011. Veteran lists were merged with contact information ascertained from the VA National Enrollment Data file and sent through encrypted

email to the five participating LRCs. A total of 126 Veterans were identified from the five pilot sites (range: 17–30 per site).

2.4. Implementation of Re-Engage. The five LRCs (one from each site) reviewed their lists and updated the Veterans' status using a secure web-based registry. The registry was housed on a VA intranet website that was developed using Inquiste Survey System TM 9.5 software. LRCs were instructed to update Veteran status using information available from local VA medical records and internet websites (e.g., local jail/state prison websites). Veterans found to be deceased, lacking contact information, ineligible for VA services, or receiving care through non-VA institutions were not contacted by the LRCs, but LRCs recorded the status of these Veterans using the web-based registry.

The LRCs contacted the remaining eligible Veterans by phone or mail to determine each Veteran's interest and/or need for continued VA treatment services. For all Veterans desiring VA care, the LRCs were asked to facilitate referrals to appropriate services and to help ensure an appointment was scheduled for the Veteran. All completed re-engagement efforts were documented in the web-based registry that enabled SMITREC staff to generate periodic feedback reports to all stakeholders.

2.5. Data Collection and Measures. Quantitative data evaluating the replication of Re-Engage were ascertained from the web-based registry (patient outcomes). Formative evaluation data were also ascertained from interviews and field notes from the LRCs and program leadership.

2.5.1. Quantitative Data. The LRCs documented all re-engagement services for each Veteran in the registry using a two-part reporting form. The first part included five structured questions that documented the LRCs' efforts in updating the Veteran's status. For Veterans alive and eligible for re-engagement attempts, the second part of the registry included questions that documented outreach attempts, whether contact was made, reasons for not contacting the Veteran, health status, and preference for health care services, whether the Veteran was referred for care, and reasons the Veteran did not want care. The LRCs were also asked to estimate the time expended implementing the Re-Engage program, conducting re-engagement efforts with Veterans, and documenting their efforts for workload capture purposes.

2.5.2. Formative Evaluation. Detailed field notes and telephone call minutes were collected over time to record activities related to the application of the Enhanced REP framework, including collaboration between central and local program stakeholders regarding key implementation decisions, the facilitation process, feedback from stakeholders, and recommendations for protocol improvement to inform national implementation efforts. Beginning at pre-implementation of the pilot, SMITREC staff recorded all conference call meeting minutes that were verified by call participants to ensure accuracy. In addition, participatory feedback on the Re-Engage program was also garnered at the 2011 national LRC conference by having these providers meet in breakout sessions in which the program was presented, audience feedback was solicited, and concerns and suggestions were recorded on large flipchart pages to verify accuracy of provider comments. All technical assistance and facilitation interactions (predominantly emails) between SMITREC and local providers were treated as formative process data to refine outreach protocols.

2.6. Analyses. Descriptive statistics and bivariate analyses were computed for Veteran characteristics and provider (i.e., LRC) workload. All statistical analyses were performed using SAS 9.2 (SAS Institute, Cary, NC, USA). All formative processes data were analyzed inductively on an interactive basis to identify key issues and implementation themes using principles of grounded theory [26]. All process data were coded by two raters (investigators DEG, NWB) to identify key themes, and a third rater (AMK) helped achieve consensus in cases of disagreement. A fourth member of the research team (JPB) performed a member check to verify the validity of the qualitative themes for protocol improvement. Both process and quantitative data were then shared with participating local stakeholders for review and to verify the applicability of implementation protocols to the context of frontline providers.

3. Results

3.1. SMI Re-Engage Pilot Outreach Sample Characteristics. Veterans who initially dropped out of care and were identified for re-engagement ($N = 126$) were predominantly male (90%), had a mean age of 49 years (SD = 11), were Caucasian (71.4%), and unmarried (75.4%), reflecting similar demographic characteristics of all VA patients with SMI [27]. Fifty-two percent were diagnosed with bipolar disorder, and 66.7% were prescribed antipsychotic medications prior to becoming lost to follow up. Nearly a third had been hospitalized 2 or more times during their last year of VA care, with the last VA utilization being for inpatient treatment (32%). The majority (87.3%) had one or more diagnosed medical conditions, while 31.0% had service-connected disability of 70% or greater. Finally, 26.2% had used VA homelessness services in the years prior to their loss to care. Compared to the national cohort of Veterans with SMI ($n = 241{,}976$) [27], those who dropped out of care were more likely African-American (29% versus 22%), diagnosed with schizophrenia (48% versus 37%), or have prior history of homelessness (26% versus 13%).

3.2. Results of SMI Re-Engage Pilot Outreach Efforts. For outreach and re-engagement, 14 individuals were excluded because no contact information was available in national or local administrative databases (Table 3). Of the remaining 112 Veterans, 27 (24.1%) were determined to no longer be alive at the time of the outreach. An additional 11 Veterans (9.9%) were hospitalized ($N = 6$ (5.4%) in prison; $N = 2$ (1.8%) in non-VA hospital; $N = 2$ (1.8%) in nursing home; $N = 1$ (0.9%) in VA hospital), and 4 (3.6%) were no longer

Table 3: Veteran status determined through re-engagement contacts ($N = 112$).

Veteran status	N	%
Inappropriate for re-engagement efforts	44	39.3
Deceased at time of re-engagement	27	24.1
Incarcerated in jail or prison	6	5.4
Hospitalized or housed in institution	5	4.4
Ineligible for VHA services	4	3.6
Veteran re-engaged in VA care independently	2	1.8
Appropriate for re-engagement services	68	
Veteran unsuccessfully contacted	48	70.6
Veteran contacted by phone, mail, or other modality	20	29.4
Services requested by veterans at time of re-engagement contact[a]	20	
Mental health	7	35.0
Medical care	7	35.0
Employment assistance	5	25.0
Transportation	3	15.0
Daily needs (e.g., food, clothing, housing)	3	15.0
Legal services	1	5.0
No services requested at time of re-engagement contact	4	20.0
Result of re-engagement contact	20	
Appointment scheduled	5	25.0
Veteran declined to schedule appointment at time of contact	15	75.0

[a] Percentages do not total 100% as most veterans indicated multiple areas of need.

eligible for VA care. Two Veterans (1.8%) re-engaged in VA care independently prior to the outreach. A total of 68 Veterans (60.7%) remained within the sample targeted for re-engagement.

The 68 Veterans were initially contacted by telephone ($N = 67$, 98.5% of sample) and then mailed letters ($N = 51$, 75.0% of sample). The LRCs also attempted to make contact through the use of Internet searches ($N = 13$, 19.1% of sample), by contacting next of kin ($N = 13$, 18.8% of sample), or by contacting Veterans' spouses ($N = 2$, 3.4% of sample).

Through outreach efforts, the LRCs were able to establish contact with 20 (34.5%) of these 68 Veterans. Among the remaining 48 Veterans, 17 (35.4% of those not contacted) were no longer available at their listed phone number/address, 23 (47.9%) had inaccurate contact information, 6 (12.5%) were unresponsive to being contacted, and 2 (4.2%) were not contacted as they received VA care independently during the outreach process.

Veterans contacted through outreach efforts indicated a variety of service needs. Seven Veterans (35.0%) reported a mental health service need, 7 (35.0%) reported a need for medical care, 5 (25.0%) required assistance with employment, 3 (15.0%) asked for assistance with transportation, and 1 (5.0%) requested legal assistance. Four Veterans (20.0%) did not require any VA services at the time of outreach. At the time of outreach, 7 Veterans (35.0%) reported taking an appropriate medication regimen while an additional 7 (35.0%) were taking no psychotropic medications. Six Veterans (30.0%) did not discuss their medication arrangement during the outreach process. One Veteran (5.0%) was at-risk for becoming homeless at the time of the outreach.

The majority of the 20 contacted Veterans rated their physical health as *fair* ($N = 10$, 50.0%), with an additional 4 (20.0%) in *good* health, 3 (15.0%) in *very good* health, and 3 (15.0%) in *poor* physical health. Similarly, the majority ($N = 12$, 60.0%) rated their mental health as "*fair*," with 3 (15.0%) "*good*," 2 (10.0%) "*very good*," 1 (5.0%) "*excellent*," and 2 (10.0%) "*poor*" in terms of mental health functioning.

After establishing contact, the LRCs attempted to schedule appointments with VA providers for Veterans contacted during the outreach process. Of the 20 Veterans contacted, appointments were scheduled for 5 (25.0% of those contacted during outreach), with 15 (75.0%) unable to be matched to VA appointment. Of the 5 Veterans connected to VA appointments, 3 (60.0%) were scheduled a primary care appointment, 3 (60.0%) were scheduled a mental health appointment, and 1 (20.0%) was scheduled an appointment with VA housing services.

The LRCs indicated multiple reasons for a lack of appointment following outreach contact based on Veteran responses. Appointments were not scheduled for 5 Veterans (33.3% of those contacted but not scheduled) due to a lack of actual or perceived need for VA services by the Veteran. Four Veterans (26.7%) reported a preference for non-VA care. Two Veterans (13.3%) indicated a preference for a walk-in rather than scheduled care. Three Veterans (20.0%) were located in a treatment area outside of the VA facility's catchment area and were given information allowing them to reestablish care at the treatment center nearer to them. One Veteran

Table 4: Recommended strategies to contact Veterans or verify Veteran status.

Utilize internal sources of data to locate updated contact information
(1) Existing notes related to social work interventions often contain current contact information
(2) Psychological assessments regularly contain updated patient contact information
(3) Most recent discharge planning may contain current contact information
(4) Recent treatment notes often contain current contact information that has not been updated in patients' overall information
Utilize external data sources to locate patients
(1) Review local newspaper databases for patient information (e.g., obituaries, marriages notices, etc.) that are not always reflected in patient charts and cross reference with telephone books
(2) Access state and local websites for the status of incarcerated veterans
(3) Telephone-based information services (e.g., 411) can provide patients' last known phone number
Carefully track efforts aimed at contacting patients
(1) Maintain a running log of attempts to re-engage patients, including dates and methods of outreach
(2) Utilize certified mail as a way to verify if the patient received the letter (and verification of address)

indicated that distance/transportation presented a barrier that would prevent them from participating in VA care at this time.

3.3. Workload Associated with Outreach Efforts. Across the five pilot sites, the LRCs reported an average of 5.1 hours (range: 1.5–3.0 hours) spent setting up outreach efforts, 10.6 hours (range: 6.7–16.0 hours) spent engaging in outreach efforts, and 1.3 hours (range 0.5–2.0 hours) spent documenting outreach efforts. Overall, sites reported that outreach efforts required an average of 14.2 hours, with a range of 8.2 to 19.0 hours across the sites participation in the re-engagement outreach efforts.

3.4. Formative Evaluation. LRCs identified three core strategies to facilitate re-engaging Veterans with mental disorders: (1) utilize internal sources of data to locate updated contact information; (2) utilize external data sources to locate Veterans; (3) carefully track outreach efforts (Table 4).

LRCs also identified several barriers to Veteran appointment attendance following successful outreach contact. Four central barriers were identified: (1) reluctance to prioritize treatment slots for these Veterans; (2) problems achieving timely follow-up appointments with chronically backlogged services; (3) transportation issues experienced by Veterans living in rural areas; and (4) difficulties coordinating appointments between multiple sites/treatment teams (Table 5). However, the LRCs and facilitators also identified a number of strategies for overcoming these barriers (Table 5).

Table 5: Barriers and solutions related to appointment attendance following outreach contact.

Barriers	Solutions
(1) Service chiefs are reluctant to prioritize spots to re-engagement patients	(1) Emphasize incentives for timely appointments
(2) Difficult to achieve timely referral appointments for chronically backlogged services	(2a) Coordinate referrals through integrated care teams to increase ability to deliver immediate care
	(2b) Set up appointments between patient and outreach provider as a last resort
(3) Patients have difficulty attending appointments due to transportation issues (e.g., rural settings)	(3a) Proactively identify and coordinate resource to address logistical barriers (e.g., transports) to support referral uptake
	(3b) Outreach staff work with patients to identify and problem-solve logistical issues related to appointment attendance
(4) Coordinating referrals, appointments, and follow up with distant facilities can be challenging	(4a) Establish within network referral protocols and network with other points of contact to facilitate patient re-engagement
	(4b) Re-engagement staff directly facilitate the scheduling of appointments between patients and needed clinics
	(4c) Clearly document appointments and referrals within VA electronic medical record

Overall, among Veterans who desired to be seen, local providers faced barriers to making appointments primarily because they did not have control over the appointment scheduler and because of limited clinic slots. Nonetheless, key strategies identified by local providers that facilitated appointment scheduling included leveraging relationships with other coordinators who were part of VA programs that needed to demonstrate workload, including mental health care management (Primary Care-Mental Health Integration) [28] and homelessness programs.

4. Discussion

To our knowledge, Re-Engage is the first example of a national population management program that has been implemented to improve care for persons with mental disorders. The use of formative pilot work and local provider engagement was essential to translating this promising quality improvement research into clinical practice and ensuring its successful replication over time. This study reports on the initial replication of this program in order

to inform the national rollout of Re-Engage, which was approved as a national policy directive in January 2012 by VA Central Office. The Enhanced REP implementation framework provided a framework with which to develop the Re-Engage handbook, training program, and facilitation program, as well as garner feedback from providers and leaders throughout the implementation process. Notably, facilitation provided by SMITREC staff and VA leaders encouraged local providers (LRCs) to engage with their local leaders and other local providers to enhance opportunities to identify and bring back into care Veterans who had been lost to followup.

To date, this is one of the first studies to implement a population management model (i.e., use of electronic registries to identify and intervene on high-risk patients) to promote outreach and re-engagement in care for persons with mental disorders. Previous efforts to implement quality improvement initiatives focusing on services for persons with mental disorders have mainly focused on preventing rehospitalizations (e.g., [29, 30]). We applied, a theory-based implementation framework that included guidance on generating program buy-in at the local level (facilitation). SMITREC staff members' role as facilitators allowed for the cross-site identification of barriers and potential solutions as well as feedback from local sites on successful practices, and this formative information was subsequently used to inform the process of national program implementation.

In comparison with the original QI project previously implemented by the original VA OMI initiative [8], this pilot project had a lower percentage of Veterans re-engaged in care (10% versus 72%, resp.), even though initial rates of attempted contacts were similar (61% versus 68%). These differences point to a number of challenges when replicating an established program once the mandate for the original quality improvement effort had ended. First, unlike the OMI project which implemented outreach to all Veterans with schizophrenia and bipolar disorder who were lost to care, this pilot project targeted Veterans who were believed to be at greatest risk for poor outcomes (prior hospitalization history), and hence, a greater percentage of Veterans in this pilot may have been more difficult to contact and re-engage. In addition, the replication study had a shorter follow-up period (the LRCs were given less than 3 months to contact versus 7 months in the original QI initiative). Moreover, the original OMI initiative was implemented when the both LRC positions were relatively new, and the VA had recently expanded mental health hiring. Hence, time commitments and priorities probably enabled full attention to the quality improvement initiative at the time of its initial implementation.

Through the process of replicating Re-Engage, we learned several lessons that will be applicable not only to the national implementation of Re-Engage but to the implementation of other large-scale, population-based outreach programs. First, top-down support for initiatives such as Re-Engage is crucial, but frontline support is also needed to maintain enthusiasm and provider buy-in over time. At the time of the pilot, the Directive for the Re-Engage project had not undergone final concurrence (approval) for national implementation; hence, some LRCs may have met resistance in obtaining appointment times for Veterans lost to follow-up due to competing priorities. Nonetheless, the LRCs were able to identify workarounds to leverage appointments with existing priorities such as the VHA's mandate to see Veterans with a mental health need within 14 days. This ability to "lead from the middle," while observed in other implementation efforts [31, 32], is a potentially complementary factor to top-down mandates to enhance the uptake of quality improvement initiatives.

In addition, local provider input was essential in creating practical documentation tools that were necessary for the program's eventual national rollout, including a web-based survey that can adequately capture the complexity of Veteran re-engagement cases and simplify outreach documentation. The data gathered through local providers' outreach efforts were also used to improve the accuracy of Veterans' current information and status in VA administrative databases. Moreover, through local providers' documentation, we were able to capture the amount of time they allocated to the program. Providers' ability to complete the program tasks in a relatively small amount of time suggests that the processes piloted may help to increase the sustainability of Re-Engage. Additional improvements to Re-Engage include the simplification of the web-based registry tool, establishment of national benchmarks for Re-Engage uptake (including percentage of Veterans with updated information on status, percent in which contact was attempted, and percent referred to for care), and the development of an LRC mentoring team. These features are currently being tested in the national rollout of Re-Engage.

Although the present study yields useful information regarding how to pragmatically and rapidly implement a new national policy at local sites, there are several limitations that warrant acknowledgement. Given the pilot nature of the project, the sample of Veterans identified for outreach was small, and only five sites participated in the pilot. Although this may limit the generalizability of results, it is also important to acknowledge that the experiences of the local providers at these five sites yielded important formative information which will be used to improve the larger implementation process of Re-Engage. Similarly, the practical implementation of Re-Engage lacked the rigorous design and data collection methods that characterize randomized controlled trials, making it difficult to infer the causal influence of the intervention. In addition, the findings from this implementation study may not generalize to settings outside of a closed healthcare system such as the VA, which has a common electronic medical record system and access to a national provider network. Despite these limitations, findings from this study will likely enhance the translation of Re-Engage into practice and inform additional efforts to establish implementation strategies at the national level.

5. Conclusions

On January 10, 2012, VHA Directive 2012-002 was signed by the VA Undersecretary for Health authorizing Re-Engage to become standard clinical practice to promote continuity

of care among Veterans diagnosed with mental disorders. While the goal is to first contact Veterans with major mental disorders including bipolar disorder, VA leaders have discussed the expansion of Re-Engage to other Veterans with major depression, PTSD, or other mental disorder diagnoses, once the national rollout has been fully implemented. These initiatives are crucial steps toward the promotion of measurement-based care and ultimately, improved quality and outcomes for persons with mental disorders [6, 7]. Overall, this implementation pilot demonstrated the potential barriers to implementing a national initiative when no national mandate exists, as well as solutions that involve facilitating partnerships at the local level to empower frontline providers. Moreover, relatively straightforward information technology resources such as administrative databases and web-based surveys can be used to implement population management in mental healthcare settings, thus encouraging this cultural shift towards systems redesign. Further support in building relationships with other providers to effectively refer Veterans to care in a timely manner (i.e., "leading from the middle") is needed to sustain the program and subsequent systems redesign. Ongoing evaluation of the national implementation and outcomes of Re-Engage will ultimately determine the most successful strategies for using population-based registries to improve health outcomes for persons with mental disorders.

Authors' Contribution

All authors have made substantial contributions to conception and design or acquisition of data or analysis and interpretation of data, have been involved in drafting the manuscript or revising it critically for important intellectual content, and have given final approval of the version to be published. J. P. Burk and A. M. Kilbourne conceptualized the study, acquired funding, and oversaw the implementation of the re-engagement program. D. E. Goodrich contributed to the initial draft, oversaw the data collection and analyses, and oversaw the intervention; S. Visnic and Z. Lai collected, analyzed, and interpreted the data; N. W. Bowersox and K. M. Abraham developed study measures, interpreted analyses, and contributed to the paper draft and final revisions.

Conflict of Interests

The authors declare no conflict of interests.

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Research Article

Building a Community-Academic Partnership: Implementing a Community-Based Trial of Telephone Cognitive Behavioral Therapy for Rural Latinos

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Concerns about the appropriate use of EBP with ethnic minority clients and the ability of community agencies to implement and sustain EBP persist and emphasize the need for community-academic research partnerships that can be used to develop, adapt, and test culturally responsive EBP in community settings. In this paper, we describe the processes of developing a community-academic partnership that implemented and pilot tested an evidence-based telephone cognitive behavioral therapy program. Originally demonstrated to be effective for urban, middle-income, English-speaking primary care patients with major depression, the program was adapted and pilot tested for use with rural, uninsured, low-income, Latino (primarily Spanish-speaking) primary care patients with major depressive disorder in a primary care site in a community health center in rural Eastern Washington. The values of community-based participatory research and community-partnered participatory research informed each phase of this randomized clinical trial and the development of a community-academic partnership. Information regarding this partnership may guide future community practice, research, implementation, and workforce development efforts to address mental health disparities by implementing culturally tailored EBP in underserved communities.

1. Introduction

Despite substantial efforts by researchers, policy makers, and federal funding sources to improve access to mental health care for ethnic minority patients, disparities in access to, quality of, and outcomes of mental health interventions persist [1–4]. For example, Latinos suffer a disproportionate burden of disability from depression compared to Whites [5] because they are less likely to receive depression treatment and the treatment they do receive is often of poorer quality compared to treatment received by Whites [6–8]. In research studies, implementation of culturally tailored evidence-based practices (EBPs) has been shown to reduce disparities [9, 10]. However, there is little evidence that dissemination of EBPs into real-world practice settings has substantially reduced disparities in the access and utilization of mental health services across many racial and ethnic minority groups [11, 12].

Several reasons have been identified as contributing to the muted impact of evidence-based interventions within underserved communities of color: (1) the lack of inclusion of ethnic minority participants in randomized clinical trials

(RCTs) which serve as scientific gold standard of effective practice, (2) the failure to include communities of color and the health systems that serve them in the processes of defining, implementing, and evaluating EBPs, (3) the dearth of ethnic minority researchers within academia, (4) the shortage of ethnic minority mental health providers to deliver EBPs, and (5) the lack of responsiveness to cultural context and norms of ethnic minority communities within the content and structure of the EBPs themselves [13].

Historically, persons of color have been substantially underrepresented in RCTs. The U.S. Department of Health and Human Services (2001) report, *Mental Health: Culture, Race, and Ethnicity. A supplement to Mental Health: A Report of the Surgeon General,* examined controlled clinical trials used by professional associations and government agencies to establish treatment guidelines for four major mental health conditions (bipolar disorder, schizophrenia, depression, and ADHD) and to form the science base for evidence-based practices [5]. From 1986 to 1994, nearly 10,000 subjects participated in RCTs evaluating the efficacy of interventions for the aforementioned disorders; in total, only 561 African Americans, 99 Latinos, 11 Asian Americans/Pacific Islanders, and 0 American Indians/Alaskan Natives were identified [14, 15]. This lack of inclusion of adult ethnic populations is similarly found among 27 studies from 1986–1997 forming the evidence base for the American Psychiatric Association guidelines for depression care. Among the nearly four thousand participants in these studies, there were only 27 African Americans, 2 Asians, and 241 nonwhite participants [16]. The failure to include meaningful numbers of persons of color in RCTs makes it unclear whether these EBPs are effective in these populations. Furthermore, if RCTs of EBPs are not conducted with ethnically diverse participants, they have typically been normed or standardized void of cultural context and realities, thus challenging the ability of the EBP to later be successfully implemented among diverse populations [13].

"The development of evidence-based practice strategies, a hallmark of clinical-services research, typically starts with development and evaluation of treatment and service-delivery interventions by researchers without strong community participation" [17]. This linear top-down approach—with knowledge generated in academic settings with highly trained specialist providers—then transferred to community practitioners who often work in systems with limited resources may have limited application to community practice settings with diverse patient populations. Even within academia, there is a dearth of ethnic minority researchers, especially as principal investigators. This scarcity contributes to a dominant culture and outsider perspective in engaging communities of color in research and clinical trials rather than a culturally informed perspective and understanding of the context of such communities that seek meaningful change in the availability and delivery of mental health services.

Other contributing factors that thwart the distribution of treatment to address disparities include the lack of linguistically and culturally responsive mental health providers to deliver quality mental health services [18] and the lack of opportunities and funding for community partners to be trained in EBPs. Related to these factors is the reality that ethnic minority patients are often served in safety net health care systems that often lack resources to implement and sustain those culturally appropriate EBPs that do exist. Also, few community providers and practices have the requisite resources and research infrastructure to evaluate the effectiveness of their community-developed, culturally-informed practices in order to have them considered to be evidence-based. As a result, most evidence-based practices on the various Federal lists that may have any applicability to communities of color were not designed specifically for those communities [19]. Use of scarce resources to implement evidence-based practices that do not appropriately address the needs and cultural values of ethnic minority patients or the resource limitations of the clinical settings in which they are served may perpetuate disparities in care, as patients may not enter or remain in care, and health systems may not be able to sustain them [13, 20].

In 2004, the Institute of Medicine's Clinical Research Roundtable recommended the promotion of public participation and community partnership in all phases of research to increase the relevance of clinical research and promotion of research findings in ethnic minority populations [21]. Community-based participatory research (CBPR) and a variant, community-partnered participatory research (CPPR), are two approaches seeking to address the identified shortcomings of traditional research and dissemination methods [17, 22, 23]. Both approaches emphasize the active participation of community members, specifically, the inclusion and engagement of diverse community stakeholders in meaningful and equitable power-sharing and collaboration in all phases of research. A major difference between these inclusive approaches is their understanding of community members. Whereas CBPR models empowerment and leadership of grassroots community members, CPPR relies on community agencies as brokers for community members and emphasizes the adaptation of evidence-based practices [17].

In this paper, we highlight the processes of development and engagement in a community-academic partnership to adapt and pilot test an evidence-based practice demonstrated to be effective for urban, middle-income, English-speaking primary care patients with major depression and translated and culturally tailored for rural, low-income, Latino (primarily Spanish-speaking) primary care patients identified with major depressive disorder. We successfully completed a randomized pilot test of telephone-based cognitive behavioral therapy (CBT) for depression in a primary care site in the Yakima Valley Farm Workers Clinic (YVFWC), a network of 17 community health centers serving primarily low-income Latino patients in rural Eastern Washington and Oregon. We have reported previously the clinical outcomes of the randomized trial in which one hundred adults, including twenty men, with major depression were recruited from a rural primary care practice and randomized to an eight-session manualized telephone CBT intervention delivered by bilingual social workers versus care as usual [24]. In brief, in intent-to-treat analyses, patients randomized to

CBT by phone were more likely to experience improvement in depression scores over the six-month follow-up period compared with patients randomized to usual care ($\beta = -.41$, $t = -2.36$, df = 219, $P = .018$, for the SCL; $\beta = -3.51$, $t = -2.49$, df = 221, $P = .013$, for the PHQ-9). A greater proportion of patients in the CBT group than in the usual care group achieved treatment response at three months ($P = .017$), as indicated by a 50% improvement in SCL depression score or a score <.75, and reported high satisfaction with treatment ($P = .013$) [24]. Throughout the planning and implementation phases, this study was informed by the values of CBPR, nevertheless, our community-academic partnership more accurately reflects the CPPR model.

2. Methods

2.1. Setting and Study Procedures. This study was approved by the Human Subjects Committees of the UW and the YVFWC. In 2008, the study site, the Family Medical Center in Walla Walla, WA served 8,559 unduplicated medical/pediatric patients; of these 53.3% Latino, 44.4% Spanish-speaking, 20.7% Seasonal Farm Workers, 6.5% Migrant Farm Workers, and 30.7% uninsured.

2.2. Recruitment. The study employed 3 part-time bilingual, bicultural recruiters hired from the local community and from existing clinic staff. Trained by the academic investigators and clinic administrator, these recruiters approached patients in the waiting room and asked if they would like to hear about a depression research study; if they agreed, patients were taken to a private area near the waiting room for verbal informed consent and screening. Clinic providers could also refer patients for screening. Adult patients were study eligible if they had a primary care provider (PCP) in the clinic, self-identified as Latino, spoke English, or Spanish, and screened positive for current major depressive disorder. Patients were excluded if they screened positive for bipolar disorder, cognitive impairment, current or lifetime psychotic symptoms or disorder, current substance abuse, or acute suicidal ideation. Following discussion of study procedures and written informed consent in the patient's preferred language, enrolled patients completed baseline surveys. Patients were then randomly assigned to receive the eight-session, manualized telephone cognitive behavioral therapy intervention or usual care (UC). Randomization was stratified by referral source and gender. All patients were asked to complete 3- and 6-month follow-up surveys to assess clinical characteristics and depression outcomes.

Qualitative data was obtained over the telephone by trained interviewers from patients who received the CBT intervention and from primary care physicians at the clinic site. Each patient randomized to the CBT intervention was asked to complete a semistructured qualitative exit interview 6 months after baseline. This interview sought to elicit the patient's perspective and experience regarding their satisfaction with the intervention, sociocultural appropriateness of the treatment, and barriers to treatment adherence. After all study patients completed treatment, five primary care physicians at the clinic site were asked to complete a qualitative interview via the telephone. The provider interview sought to elicit provider opinion about: the care their patients received, their interactions with the therapist, benefits of the treatment to their patients, barriers to study treatment, and additional components or services needed.

Semistructured interviews followed well-established procedures and consisted mostly of open-ended, qualitative questions but also included some close-ended questions [25, 26]. At the beginning of each interview, interviewers began with what Spradley (1979) calls the "grand tour question" and asked each participant to describe in their own words their experiences with the program [27]. Trained interviewers used nonspecific prompts (e.g., "can you tell me more?" "can you elaborate?") to encourage participants to be as detailed as possible. This broad (and intentionally) undirected questioning allowed participants to indicate what aspects of the program were most salient to them and why. Open-ended questions were asked before prompts and close-ended questions to minimize bias, allowing interviewers and respondents the opportunity to explore new leads and related topics [26, 27]. Following broad questions, interviewers used standard probes, such as verification and compare and contrast questions. The interviews were audiotaped and transcribed then professionally translated. Bilingual study personnel from at least 2 different Spanish-speaking countries reviewed the translated interviews. They were then back-translated, and all differences resolved through study meetings.

Coding of patient and provider interviews was done by a doctoral level research assistant. The lead author separately examined a small number of random transcripts to promote reliability. The qualitative data analysis strategy drew on principles of grounded theory [28], which involves examination of narrative data, searching for patterns and themes that help explain a given phenomenon, and then coding the data to further corroborate or modify themes. Atlas/ti software was used to review each transcript and mark instances of each theme.

3. Results

3.1. Partnership Development. One of the academic investigators (EA), who is himself bilingual and Latino, initially contacted YVFWC staff via the University of Washington (UW) Liaison in Yakima, WA. The purpose of the visit was to introduce himself following his arrival in Washington State. He learned that due to earlier experiences, YVFWC personnel were initially reluctant to partner with UW researchers because previous research projects had not resulted in tangible or lasting benefits to YVFWC clinics or patients. Their experience of the traditional paradigm of the researcher coming into the community and collecting data and publishing the findings was oppressive and not mutually beneficial. Following this initial visit, the investigator (EA) travelled to the rural region of Eastern Washington State

approximately every six weeks and met with administrative and clinical representatives of the YVFWC. These face-to-face meetings were crucial to build rapport and dispel the legacy of mistrust built by years of noninclusion and non-partnership. After a year of face-to-face meetings in which staff educated him about salient issues for the local rural Latino population, sufficient trust developed that YVFWC staff asked the UW investigator to consult with them regarding the implementation of multi-systemic therapy for adjudicated Latino youth.

In the midst of this successful collaboration, YVFWC staff then began expressing concern about untreated depression in their clinics, especially among patients with diabetes. YVFWC staff identified depression as a significant under-addressed problem in part due to a shortage of mental health practitioners and difficulty accessing community mental health centers focused on treatment of severe mental illness. Systematic screening for depression was not conducted in any of the clinic sites, and treatment options were often limited to prescribed medications. Clinic staff acknowledged that nearly fifty percent of all patients identified as suffering depression either failed to pick up their medications or did not take them according to the treatment regimen. This identification of gaps in service by YVFWC was a crucial starting point for the partnership. Rather than being determined by academic researchers and outsiders to the local community, YVFWC staff identified the need and defined the issue to be addressed. They were respected as experts of their experience.

Soon after, another academic investigator with experience in primary care depression interventions for Latinos (MDJ) arrived at UW. Also, colleagues at the Group Health Research Institute published findings from a trial of telephone CBT [29]. The lead author informed these colleagues about the desire of YVFWC to address depression care. They were very open and committed to partner with the YVFWC and contribute their expertise. UW investigators (EA and MDJ) presented the evidence-based telephone CBT intervention to YVFWC staff as a possible strategy to address barriers to depression treatment such as lack of transportation and limited availability of local Spanish speaking therapists. Later, in-person meetings were held at two YVFWC clinics, with primary care physicians and administrators participating. One of these clinics, which had no onsite mental health services, expressed interest in participating in a pilot trial of telephone CBT. Subsequently, study partners engaged in discussion regarding the design of the proposed study and then the UW investigators and YVFWC staff collaborated in writing and submitting a grant proposal to obtain funding from the National Institute of Mental Health to support such a trial. This randomized clinical trial focused on a study population that has little access to depression care services in the community and is underrepresented in intervention trials. Few Latinos have access to evidence-based psychotherapies (EBPs), especially in primary care where they are most likely to seek depression treatment [7, 8, 30].

Buy-in from the primary care physicians and staff at the selected study site was crucial to the study's outcomes. The study's format of use of telephone to provide depression care allowed for implementation in a rural primary care clinic that lacked onsite mental health specialists, especially bilingual and bicultural ones. The study facilitated engagement with a trained bilingual mental health provider and promoted access to evidence-based depression care to rural Latinos in a region where psychotherapeutic services for depression were nearly nonexistent. These were key features supported by the physicians and YVFWC personnel. Conducting this trial in a primary care setting among low-income rural Latino patients, many with comorbid conditions and competing life priorities also helped address concerns of community providers about the feasibility and acceptability of this intervention in real-world settings and populations.

A central feature of this phase was a shift from a "research into practice" model to a "research in practice" model in which clients and YVFWC staff partnered with researchers in the generation of knowledge about the effectiveness of the telephone CBT intervention. This paradigm shift required that the history, experiences, and wisdom of people of color along with the expertise of practitioners be valued in much the same way as is the science of efficacy [31]. Consistent with the values of CBPR and CPPR, resources and expertise were shared. YVFWC partners took the lead in hiring study recruiters and study therapists, some of whom were internal to the organization and others who were external to it, and provided ongoing administrative supervision. This level of involvement from the community clinic was especially important given the physical distance between the academic investigators and the community site and allowed the investigators to quickly and safely address clinically urgent situations, such as suicidal ideation detected during recruitment. Local bilingual-bicultural study staff were able to inform academic partners of local values and customs that were incorporated into study procedures, such as recruitment.

Ongoing and consistent communication with the YVFWC and study site personnel was a key feature of our mutually beneficial partnership. It enhanced shared decision making in addressing important issues such as the recruitment of study participants at the clinic site in a way that was valued by the primary care physicians and seamless with existing clinic practice. It confirmed the importance of the efforts and expertise of community partners and deepened academic partners' understanding of depression as experienced by low-income rural Latinos. In addition, it enhanced the quality of the rigorous research.

3.2. Therapist Training. We trained and supervised five Latino/a bilingual and bicultural part-time therapists ranging from social work students with little clinical experience to an experienced MSW therapist. With upfront training, telephone role play, and weekly supervision novice therapists were able to competently deliver the structured intervention and adapt manual content to address patients' needs. Initial training of study staff in manualized CBT intervention was conducted in person at a designated clinic of the YVFWC

network by the academic partners. Nonstudy clinical staff of YVFWC were intentionally invited to participate in this training. This outreach and inclusion were viewed positively by the community partner since it provided concrete benefits to staff and patient populations. Mentoring and training study staff were also a way for academic partners to invest in the community. One study recruiter hired when she was a bachelors' student, later became a study therapist when she enrolled in a Masters of Social Work program. Several study therapists, trained in evidence-based treatment through our pilot study, subsequently gained employment in the community and currently provide important leadership in mental health services in the community and in schools. In both instances, academic partners provided strong letters of recommendation on their behalf.

Further evidence of our strong community-academic partnership was the provision of ongoing supervision to the study therapists. It was a collective responsibility, with representatives from the YVFWC and researchers providing weekly telephone-based supervision to the study therapists. Weekly supervision promoted consistent delivery of manual content, allowed therapists to make changes in practice quickly, supported outreach efforts, and allowed supervisors to monitor patients' clinical status and provide support for crisis management. In general, patients completed the session modules in order, but the schedule was sometimes modified for a few participants—for example, to switch the order of modules or to use two sessions for a single module.

3.3. Intervention Adaptation. The collaborative efforts to revise the study manual were instrumental in enhancing its usefulness and meaningfulness to participants randomized to the intervention arm of the study. The original English language telephone therapy manual required revision which was done in collaboration with YVFWC clinical staff. It was initially revised by a MSW student and back-translated by the lead author. The text was revised at a 6th-grade reading level in Spanish. Also, the content of examples and vignettes was tailored to rural Latinos, including the use of Latino names, and reflected situations relevant to rural Latinos, including family and parenting themes. An implicit assumption underlying the activity schedules in the original intervention was "taking time for one's self." Because this individualistic orientation runs counter to an emphasis in Latino culture, especially for women, of putting the needs of family members first, the pleasant activities presented in the original manual were modified to reflect activities that could be engaged with children and family members and are accessible in time and cost to low-income rural Latinos. Bilingual members of YVFWC (some with farm worker backgrounds) reviewed the translated manual to ensure that language, idioms, and vignettes were appropriate for the local Latino context and culture. They made several important suggestions to strengthen the relevance of the vignettes and homework activities for the rural Latino population. Other adaptations included the provision of case management services as needed to assist patients to navigate the health system, address practical barriers, and access community-based resources [32, 33]. In response to the cultural value of *personalismo,* (interpersonal rapport), we modified the original manual to provide the opportunity for the patients to meet the therapist in person prior to engagement in the CBT protocol.

3.4. Patient Response. See Table 1 for a description of the participants' characteristics at baseline. The revised study's manual sought to engage Latino patients' understanding of depression and address depression in the context of the patient's culture and life experiences, in particular, the patient's life within the family. In qualitative exit interviews, nearly all participants felt that the stories contained in the manual reflected and captured their lived experiences. They remarked that the stories were useful to them and helped them learn new and relevant skills. Learning skills to identify and change negative thinking was one of the major strengths of the program. One participant described how the therapist encouraged her to write about positive things in her life instead of only focusing on the negative. In this way, the skills from positive thinking transferred to her writing; an activity she already enjoyed. Several participants indicated that they learned new things directly from the manual, including new knowledge about depression.

Patients reported several additional benefits. Most patients reported that they had developed a trusting relationship with the therapist, regardless if they had an initial in-person session with their study therapist. The vast majority of participants reported very positive feelings about their relationship with their therapist. Therapists were described as "understanding," "professional," "patient," "encouraging," "comfortable," "good communicator," "trusting," and "easy to relate to." Several respondents expressed they felt like they really mattered to the therapist. Also, participants rated the ability of their therapist to explain new concepts very high.

The majority of the clients reported positive strong social support for their participation in the program particularly from family members or friends who knew about their involvement in the program and supported them, for example, helping them complete homework. Patients did not find privacy concerns to be a barrier as most had cordless telephones that allowed them to find a quiet place inside or outside the home for sessions.

Overall, most participants reported very good experiences with the telephone-based delivery of CBT. Respondents noted that the telephone delivery was "convenient," "comfortable," and "private." Several expressed that they were at greater ease in their own homes and therefore able to speak more freely and openly in the sessions. The telephone broke down barriers for those who were shy or felt embarrassed about participating in the program. This was especially true for the participants who were men—the anonymity provided by the telephone contact enhanced their sense of safe participation and lessened their sense of stigma. In addition, the telephone was convenient for many clients who were balancing hectic work, child-caring and domestic responsibilities since sessions were held at

Table 1: Characteristics at baseline of 101 patients who received telephone-based CBT or enhanced usual care.

Variables/Category	Overall $N = 101$		Intervention $N = 50$		Usual care $N = 511$	
	N	%	N	%	N	%
Age						
Mean ± SD	39.81 ± 10.56		41.17 ± 9.69		38.54 ± 1.27	
Female	79	78	39	39	40	78
Nativity						
USA (excluding Puerto Rico)	4	4			4	8
Mexico	92	91	47	94	45	88
Other	5	5	3	6	2	4
Primarily Spanish speaking	84	84	43	86	41	82
Education						
<6 yrs	27	27	14	29	13	26
6–11 yrs	50	50	24	49	26	51
HS graduate	14	14	7	14	7	14
Some college or higher	9	9	4	8	5	10
Employed full/part time	50	50	26	53	24	47
Uninsured	42	41	16	32	26	51
Married	62	62	31	63	31	61
Annual household income						
≤ $5000	8	9	2	2	6	14
$5001–$15,000	36	40	23	48	13	30
$15,001–$25,000	31	34	16	33	15	34
≥ $25,000	17	19	7	15	10	23
Agricultural worker status						
Migrant worker	10	10	7	14	3	6
Seasonal worker	32	32	15	30	17	33
Baseline SCL depression scale score[1]						
Mean ± SD	1.79 ± .77		1.77 ± .77		1.81 ± .78	
Anxiety disorder	58	57	23	46	35	67
Probable alcohol or substance disorder	13	45	5	39	8	50
≥3 medical problems	30	39	17	44	13	33

[1] Hopkins Symptom Checklist—scores range from 0 to 4 with higher scores indicating more severe depression.

the time that was preferred by the client, even if beyond normal clinic hours. Finally, the use of the telephone for delivery of the manualized intervention addressed the barrier of transportation. Several participants noted that they did not have access to transportation, which would have been an insurmountable barrier if required to come to the clinic for face-to-face therapy.

In terms of suggestions, several respondents recommended that the manual contains more review of depression as well as a brief summary of the main highlights of each session. Also, a few participants expressed a desire for a longer intervention to address more serious depression or personal problems.

3.5. Primary Care Provider Response. Qualitative feedback from the clinic's five primary care physicians highlighted the strengths of the telephone-based program and their satisfaction with it. They valued the team's consistent and ongoing feedback and communication with them about patient recruitment and the study's progress. They indicated that the waiting room screening process was efficient and did not delay their appointments with patients. Uniformly, providers expressed strong satisfaction with the participation and retention of clients and the marked improvement of their patients in a relatively short period of time. This success was noteworthy due to the fact that prior to the study it was customary that nearly fifty percent of patients would fail to pick up their medications or follow treatment protocol. Providers made two principal recommendations: (1) to expand the criteria of eligibility to participate in the program to include patients with more severe symptoms, for example, patients with bipolar disorder, and (2) to increase the availability of case management services.

3.6. Ongoing Partnership. In this phase, community partners copresented the findings of the pilot study and lessons learned at esteemed regional and national conferences. They collaborated in publishing study findings and shared authorship. Also, they collaborated in additional efforts to secure funding in order to expand the use of the

telephone-based manualized intervention across the YVFWC network. This participation promoted leadership by YVFWC representatives in knowledge building and in research. In preparation for future trials, we have further modified the manual to include optional guidelines for involving family members to support behavioral activation and plan to expand case management services to assist some patients to access additional community resources as warranted. The participation of YVFWC representatives was a visible and tangible confirmation of the meaningful and authentic partnership enjoyed by our community and academic partners.

4. Conclusion

This study adds to the scant empirical research regarding the adaptation of EBTs to promote their fit for specific ethnic communities by addressing: (1) lack of representation of persons of color in RCTs, (2) lack of representation of service settings that serve communities of color in the development and testing of EBPs, (3) the lack of ethnic minority academic researchers leading RCTs, and (4) resulting lack of representation of cultural values for persons of color in the EBPs themselves. Our study comprised of 101 low-income Latino patients, 20 of whom were male. Our experience highlights how an authentic community academic partnership can promote successful implementation of effectiveness trials and begin to address existing disparities in the access and utilization of mental health services.

Engagement with community partners was valued by researchers and deemed essential in the successful implementation of the telephone CBT program. Our experience illustrates that listening well is crucial to developing a trusting relationship between academic and community partners. Such efforts should be initiated before pursuing specific goals. Allowing the community partner to identify unaddressed needs also promotes community investment in the successful outcomes.

Community-academic partnerships are not always easy to develop and maintain due, in part, to historical mistrust arising from the practice of academic researchers who gather and publish their data but fail to leave tangible benefits for the community or the collaborating community-based agency. It is crucial that the community partners engage in meaningful and authentic ways. Researchers must engage communities of color as legitimate partners in the pursuit of advancing knowledge and transforming the provision of mental health systems of care and services. Acknowledging the lack of ties between the community and researchers, the National Institute of Mental Health in its 2006 report, *The Road Ahead*, called for such collaborative and sustainable partnerships among diverse stakeholders [34]. Such partnerships need to ensure community participation and cultural tailoring for successful intervention development and promotion of quality of care. Key characteristics of successful partnerships involving community-based agencies and academic institutions include shared decision making, equitable sharing of resources and power, and mutually beneficial goals and reciprocity [35]. Meaningful inclusion of communities of color at the table in the definition, planning, development, and dissemination of EBP that is culturally responsive with regards to cultural, linguistic, familial, and unique mental health service needs is crucial. Further research regarding the development and effectiveness of community-academic partnerships is clearly warranted.

The results of our randomized trial [24] suggest that telephone-based CBT is effective in reducing depressive symptoms among rural Latino primary care patients, and the qualitative results described here show its great promise to effectively address many of the known sociocultural barriers to treatment in this population [36–45]. It fostered engagement with patients who might not be reached by traditional in-person treatment as it eliminates travel, waiting time, and allows for more flexible scheduling, even beyond normal clinic hours. In rural settings where access to psychotherapists is limited telephone intervention may allow treatment by therapists in a different location. Because the stigma attached to visiting a mental health provider may be greater in small rural communities where anonymity is not characteristic and privacy is a concern, telephone treatment can provide more confidential treatment. Also, telephone intervention may have an advantage over clinic-based intervention as it can allow for "*in vivo*" instruction and modeling to the client in the home environment as issues surface during the phone intervention and are immediately addressed. In addition, use of the telephone to provide weekly supervision enables sharing of scant resources as supervisors do not need to reside in the same locales as the study therapists.

Our experience and the literature on implementation of EBPs [11, 46] corroborate the need for workforce development to implement and sustain EBPs in primary care settings serving Latinos. Given the limited supply of licensed practitioners and the vast need for bilingual and culturally responsive services, it is crucial to support the development of community-academic partnerships and increase their number. Such efforts require increasing the number of ethnic minority students entering the behavioral health professions, as they are more likely to practice in communities of color, to be bilingual, and to be culturally informed [47]. To date, such efforts have focused on bringing ethnic minority students to the academy, often distant from their home communities and sources of social support. New initiatives are warranted that bring the academy to the community to promote skill development of practitioners who are committed to addressing the mental health needs of their communities. Rather than requiring rural practitioners to come to a distant university, it is crucial to provide training in the rural community allowing trainees to learn from local and national experts while maintaining connections to their culture, context, and systems of support. Increasing the number of bilingual, bicultural therapists in the community will support dissemination of established EBPs and create opportunities for developing and testing culturally tailored EBPs *within* diverse communities. Concrete support for the development of authentic community-academic partnership is thus paramount since it takes substantial time and effort. The investment of time to build an effective partnership

is not often valued by the academy, particularly if one is seeking to gain tenure. Without active support, scholars seeking to engage in the development of community-academy partnership will continue to face a potent barrier. To engage communities of color and to enhance the provision of culturally competent mental health services policy makers and practitioners must listen to and learn from these communities and their contextual realities. Information regarding our partnership and our recognition of the importance of the culture, context, and environment of rural Latinos may guide future community practice, research, implementation, and workforce development efforts to address behavioral health disparities by implementing culturally informed EBPs in underserved communities.

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Research Article

Sustained Adoption of an Evidence-Based Treatment: A Survey of Clinicians Certified in Problem-Solving Therapy

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Training models that incorporate case supervision in addition to didactic instruction appear to be effective in maximizing clinicians' proficiency in evidence-based treatments (EBTs). However, it is unknown the extent to which these models promote sustained adoption of EBTs. We describe the results of an online survey on post-training utilization of an EBT, problem-solving therapy (PST), among 40 clinicians highly trained in PST. Seventy-five percent of the survey's 40 respondents reported that they continued to use PST in their clinical practices. Many PST-trained clinicians reported that they had modified the PST protocol in their clinical practices according to patient characteristics or preferences. Considering these results, we recommend emphasizing patient variability and treatment tailoring throughout the training process as a means for promoting clinicians' sustained adoption of EBTs.

1. Introduction

Implementing evidence-based treatments (EBTs) into community settings is a well-recognized priority in mental health services research, but the evidence base on implementation strategies that work is still limited [1]. Many factors are theorized to influence the success of implementation efforts, including characteristics of the intervention, inner and outer practice settings, individual clinicians, and the implementation process itself [2]. Training models that incorporate didactic instruction, case supervision, and assessment of fidelity appear to be effective in maximizing clinicians' proficiency in EBTs [3, 4]. However, the extent to which this model of training promotes clinicians' sustained adoption of those interventions is unknown.

Problem-solving therapy (PST) is an EBT for major depression [5, 6]. A version of PST was manualized for the Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) study [7], a randomized trial of integrated depression care management for older adults [8]. A rigorous PST training and certification protocol, involving both didactic and case supervision components, was developed to train clinicians for IMPACT and has since been used in other controlled studies [9, 10], as well as community implementation projects.

In the context of ongoing efforts to implement PST and other evidence-based interventions using similar training models, it is important to understand how clinicians apply these treatments in practice. A background in and stronger adherence to the principles and methods of cognitive-behavioral therapy (CBT) has been found to be associated with better patient outcomes in studies of CBT and PST [11, 12]. At the same time, successful community implementation of EBTs is most likely under conditions of "mutual adaptation," that is, when the treatment can be adapted to the needs of patients, clinicians, and organizations without losing integrity or effectiveness [13]. The aim of this study was thus to "follow" PST-trained clinicians into the community and ask them how frequently they continued to use PST in their clinical practices and in what ways, if any, they had chosen to adapt the PST protocol.

2. Method

2.1. Intervention and Training. Problem-solving therapy addresses depression by teaching people a series of steps to

approach and manage life problems, thus increasing self-efficacy and improving mood and hopefulness [14]. Using the IMPACT training model, the didactic portion of PST interventionist training consists of the provision of a treatment manual and participation in a day-long workshop with opportunities to role-play PST. The supervised experience component requires trainees to apply the PST approach with 2-3 clients and provide video or audio recordings of the first, third, and sixth sessions with each client to their PST trainer. Trainers review the recordings and provide feedback and case supervision to trainees on each recorded session. Trainers rate trainees on their execution of each step of the PST model using the Problem-Solving Treatment Adherence and Competence scale [15]. Each step is rated on a six point scale as follows: 5 = very good, 4 = good, 3 = satisfactory, 2 = borderline, 1 = poor, and 0 = very poor. Only trainees who demonstrate "satisfactory" performance on their 2-3 cases are certified. Between 2000 and 2009, 66 clinicians from various disciplines have attained certification-level training in PST using the IMPACT training model; 57 of 66 (86%) were trained in PST as part of a research study.

2.2. Participants and Procedure. These 66 clinicians with certification-level training in PST were eligible for the study. Contact information was available for 58 of the 66 eligible clinicians, of whom 40 completed the survey, for a response rate of 69%. We emailed clinicians a description of the study and a link to the survey site, which provided further information and the choice to opt into or out of the survey. Respondents who completed the survey had the option of entering their names into a drawing for a $100 gift certificate to an online bookseller. Clinicians who had not completed the survey 3 weeks after receiving the initial email request were sent a reminder email. Data were collected between May and August 2009. All study procedures were approved by the institutional review board at the University of California, San Francisco (UCSF).

2.3. Instrument. We developed the survey with feedback and suggestions from PST trainers at UCSF, Dartmouth, and Duke Universities and pilot tested it with three PST-certified clinicians at UCSF. The survey consisted of a mix of closed- and open-ended questions on clinicians' professional background, training in PST and current use of PST in clinical practice, outside of work on a research study. Frequency distributions are reported for the 8 closed-ended questions (Questions 1–8; see Tables 1 and 2), and qualitative summaries are presented for the 2 open-ended questions (Questions 9–10; described in text).

Table 1: Professional background and training in PST.

Characteristic	Survey respondents (N = 40 PST-certified clinicians)
Professional background	n = 40
Clinical or counseling psychology (PhD, PsyD, or EdD)	18 (45.0%)
Licensed clinical social worker or masters of social work	10 (25.0%)
Masters level nurse or clinical nurse specialist	4 (10.0%)
Other (e.g., MA, MD, MS)	8 (20.0%)
Unknown	0 (0.0%)
Used PST in research	n = 40
In the past	18 (45.0%)
Currently	17 (42.5%)
Never	5 (12.5%)
Years clinical experience	n = 39
0–5	13 (33.3%)
6–10	9 (23.1%)
11–15	6 (15.4%)
15+	11 (28.2%)
Theoretical orientation	n = 37
Cognitive behavioral	18 (48.6%)
Psychodynamic	6 (16.2%)
Eclectic/integrated	8 (21.6%)
Family therapy	1 (2.7%)
Medical	1 (2.7%)
Self psychology	1 (2.7%)
Physical rehabilitation	1 (2.7%)
Early childhood	1 (2.7%)
Years since PST certification	n = 40
0–5	22 (55.0%)
6–10	17 (42.5%)
11	1 (2.5%)
Satisfaction with amount of training in PST	n = 40
Too much	1 (2.5%)
Too little	1 (2.5%)
Just right	38 (95.0%)

3. Results

3.1. Professional Background and Theoretical Orientation. Table 1 presents details on survey respondents' professional backgrounds and training in PST. Respondents represented a range of professional disciplines and varied considerably in years of postdegree experience, with a range of 2–37 years and a mean of 12.8 years. Nearly half of the respondents who responded to the question on primary theoretical orientation reported that their orientation was cognitive behavioral (18/37; 49%). The others were most likely to identify as psychodynamic (6/37; 16.2%) or eclectic/integrative (8/37; 21.6%). Thirty-five of the 40 respondents (88%) reported having used PST as part of a research study, either currently (18; 45%) or in the past (17; 43%). The amount of time that had elapsed between training and taking part in the survey ranged from several months to 11 years, with a mean of 3.4 years.

Table 2: Survey respondents' current use of PST in clinical practice.

Question	Response options	Number (percent)
Do you still use the following elements of PST in your clinical practice? (n = 34 clinicians who still used PST in clinical practice)	Problem orientation	
	Reframe problems as challenges	29 (85.3%)
	Discuss the relationship between depression and problem solving	31 (91.2%)
	Make a problem list at the outset of therapy	26 (76.5%)
	Problem definition	33 (97.1%)
	Goal-setting	32 (94.1%)
	Brainstorming	33 (97.1%)
	Evaluation of solutions	29 (85.3%)
	Action plan	30 (88.2%)
	Evaluation of outcome	30 (88.2%)
	Problem-solving materials	
	Original forms	21 (61.8%)
	Own forms	15 (44.1%)
How often do you use PST (or elements of PST) with clients/patients who you see for therapy OUTSIDE OF a research context? (n = all 40 survey respondents)	Frequently	16 (40.0%)
	Occasionally	14 (35.0%)
	Rarely	4 (10.0%)
	Not at all	6 (15.0%)

3.2. Current Use of PST in Clinical Practice. Table 2 presents data on respondents' posttraining use of PST. In response to the close-ended question asking how often clinicians used PST in their clinical practice outside of a research context, thirty of 40 respondents (75%) reported either "frequently" or "occasionally" using PST. All six of the respondents who said that they used PST "not at all" and one of the four who said they used it "rarely" explained, in response to the open-ended question on factors influencing decision to continue using PST in clinical practice, that they do not have a clinical practice outside of a research setting, and therefore did not have the opportunity to use PST. Among the 34 clinicians who still used PST in their clinical practices, over 80% reported that they continued to use each of the seven basic steps of PST. Self-reported adherence was lower with respect to associated elements of the protocol. For example, only 68% reported using a PST homework form.

All 40 respondents provided comments in response to the open-ended question, "What factors have influenced your decision to continue or not to continue using PST in your clinical practice?" In favor of its continued use, several common themes were noted.

(i) Clients' needs and preferences (14 comments). For example, "PST can be relevant if they are particularly stuck or wanting a more solution focused intervention for a specific problem."

(ii) The intervention's focus on concrete change (7 comments). For example, "[PST is] a practical approach that works well for...those less interested in insight or those who are overwhelmed by life circumstances like lack of housing or unemployment."

(iii) The intervention's seamless ease of integration with other approaches (5 comments), for example, CBT, dialectical behavior therapy (DBT), and motivational interviewing.

Three respondents shared reasons for rarely or never using PST. They included: client disinterest, lack of fit with implementer's theoretical orientation, and poor fit for persons with advanced cognitive impairment (i.e., model too complex).

Thirty six respondents provided comments in response to the second open-ended question, "We know that as clinicians gain experience with PST, they may adapt it to better suit the needs of their clinical population or work setting. What changes have you yourself implemented to the format and process of PST in your clinical practice?" The following themes were noted.

(i) Adaptations to the PST homework forms (10 comments). For example, respondents described not using the forms at all, using them to explain the concepts but not for homework, or creating new forms to individualize the treatment.

(ii) Integration of PST as one component of an eclectic intervention (7 comments). For example, "I use [PST] in a more ad hoc fashion, without structuring

psychotherapy around the PST steps or making the problem solving the primary goal of treatment."

(iii) Changing the language used to educate clients in the model, for reasons related to mental health stigma (3 comments). For example, "get away from the word "problem" and substitute the words "issues," "challenges," or "something that you would like to see changed in your life."

4. Discussion

The current study provided data on the sustained adoption of an evidence-based treatment, problem-solving therapy (PST), among 40 clinicians trained to a high degree of proficiency. Most of the PST-trained clinicians surveyed reported using PST in their clinical practices either frequently or occasionally, and many reported having modified PST according to patient preferences and characteristics. Our findings extend the results of an earlier study, in which nearly all of a group of 11 family medicine residents trained in PST reported they continued to use PST three years after receiving training, often in modified form [15].

Limitations of the present study include its small sample size, moderate response rate, and reliance on clinicians' self-reported behavior. Given that almost 90% of clinicians in our study had been trained in PST as part of a research study, it is possible that our sample may have been more highly motivated than clinicians without this background to continue using an evidence-based approach like PST after training. It is also possible that clinicians who responded to the survey were more likely to use PST than those who did not respond. Nevertheless, there was considerable variability within our sample concerning clinicians' theoretical orientation, years of experience, and the manner in which clinicians chose to apply PST in their clinical practices. Indeed, it was interesting that so many clinicians reported modifying PST despite their research background.

Tailoring an evidence-based treatment according to client needs and preferences, as well as provider expertise and resources, is consistent with the principles of evidence-based behavioral practice. Evidence-based behavioral practice, or EBBP, has been described as a process whereby clinical judgment and client-specific needs are integrated with empirical evidence concerning various treatment approaches in the selection and application of interventions [16]. If, as our results suggest, modification of a structured treatment protocol is common, it may be useful for trainers and supervisors to explicitly discuss how to individualize EBTs for diverse clients while maintaining fidelity to the treatment's core components (cf. the use of a modular approach to training, [17]). Trainers might emphasize the rationale and empirical justification for each component of an EBT so that clinicians can judiciously apply or adapt each component. For example, the empirical evidence supporting the use of "homework assignments" in behavioral therapies [18], including PST [15] might be used to reinforce the rationale for asking clients to work on solving problems outside of sessions.

Feedback from clinicians with experience using the treatment in the field, such as that provided by the clinicians in our survey, may help to identify treatment components that are easier or more difficult to implement and provide rich examples of creative applications of core components [19]. For example, several PST-trained clinicians noted that they had developed new homework forms to meet the needs of the client and/or setting. In future studies, it would be useful to elicit specific examples of the ways clinicians had adapted PST. The questionnaire could be modified to focus on each of the seven steps of PST in turn, asking about ease and frequency of use as well as examples of modifications they have made to those steps. We might acquire a more objective, in-depth understanding of sustained adoption of PST by observing video or audio tapes of therapy sessions recorded months or years after training. In addition, we might track other factors that may influence implementation, such as characteristics of the clinical population or the setting in which the treatment is provided (cf., [2]).

Our results provide initial support for the IMPACT training model as a means to promote sustained adoption of PST, but must be replicated in larger studies where adherence and modifications to the structured protocol are assessed objectively. Given the documented scarcity of research on what happens to evidence-based treatments after dissemination [4], the current study represents an initial attempt to "follow" an EBT into regular clinical practice. Effective dissemination and implementation of EBTs depend on an understanding of how the therapists who will ultimately deliver those treatments respond to and use the training they receive.

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Research Article

Consumer Feedback following Participation in a Family-Based Intervention for Youth Mental Health

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Background. This paper presents findings derived from consumer feedback, following a multicentre randomised controlled trial for adolescent mental health problems and substance misuse. The paper focuses on the implementation of a family-based intervention, including fidelity of delivery, family members' experiences, and their suggestions for program improvements. *Methods*. Qualitative and quantitative data ($n = 21$) were drawn from the Deakin Family Options trial consumer focus groups, which occurred six months after the completion of the trial. Consumer focus groups were held in both metropolitan and regional locations in Victoria, Australia. *Findings*. Overall reductions in parental isolation, increases in parental self-care, and increased separation/individuation were the key therapeutic features of the intervention. Sharing family experiences with other parents was a key supportive factor, which improved parenting confidence and efficacy and potentially reduced family conflict. Consumer feedback also led to further development of the intervention, with a greater focus on aiding parents to engage adolescents in services and addressing family factors related to adolescent's mood and anxiety symptoms. *Conclusions*. Participant feedback provides valuable qualitative data, to monitor the fidelity of treatment implementation within a trial, to confirm predictions about the effective mechanisms of an intervention, and to inform the development of new interventions.

1. Introduction

There is an increasing recognition of the need for early identification and intervention for youth mental health problems such as depression, anxiety, and substance use. These problems are of growing community concern given their high prevalence [1–3]. The field of youth mental health research now faces a major task of translating a growing body of research into effective clinical practice and service development [4, 5]. Youth mental health disorders are associated with increased health problems, and with problems in family functioning [6–10]. Recent estimates of treatment for depression suggest that only 20% to 30% of the years lived with disability due to depression are averted by current treatment programs, suggesting room for substantial improvement in either service delivery or effective prevention of new cases of depression [11, 12]. One means of enhancing the efficacy of interventions is to shift the focus from outcomes to issues of implementation which arise in the translation of clinical findings to service delivery systems. In doing so interventions can be developed in directions which are well aligned with relevant government policy, as well as being acceptable and engaging for client groups.

The current paper reports on implementation issues in the "Deakin Family Options" (DFO) multicentre randomised controlled trial (RCT) which compared two interventions for youth depression, anxiety, and substance use. We report qualitative information gathered from participants following the completion of their psychological treatment in the DFO trial. The two treatments in the trial were both designed to reduce adolescent depression and substance use and included an individual CBT program and a family-based program known as "BEST-Plus"

(Behaviour Exchange Systems Training for parents "Plus" youth) [13]. The aim of the paper is to evaluate participant feedback on the intervention experience, particularly within BEST-Plus; in order to assess treatment fidelity, effective treatment mechanisms, and potential future program modifications.

Traditionally, RCTs have been concerned with clinical efficacy. However, evaluation of the real world effectiveness of interventions delivered in community settings requires examination of direct feedback from those undertaking the interventions [14, 15]. In addition to the traditional RCT outcomes such as quantitative statistical analyses of group differences, collecting, and analysing qualitative data on individual consumer experiences can provide useful insights. Qualitative data collected from participants undergoing psychological treatments can be used to aid in the translation of research into practice. By capturing the lived experiences of study participants, researchers can gather information on the perceived mechanisms and barriers to change, and suggest further ideas for improving and enhancing interventions [16, 17].

The DFO trial was delivered in a community setting and designed in a manner that attempted to enhance its relevance to parents in the general community who had concerns about the mental health of their adolescents. As such, the DFO trial adopted inclusion criteria which were directly aligned with clinical referral patterns by recruiting young people (aged 12 to 25 years) if they presented with depression and/or anxiety and/or substance use problems. Both the age range of participants and the presenting issues were as inclusive as possible to fit directly with the Australian service delivery system for youth mental health. The purpose of the trial was to evaluate the relative efficacy of three treatments: (1) a family-based treatment program (BEST-Plus); (2) a cognitive-behavioural therapy (CBT), individual treatment program for the youth; (3) receiving both interventions. This paper primarily focuses on families' experiences of BEST-Plus. Much of the data from the consumer focus groups is based on these parent's experiences in the BEST-Plus groups, including their feedback and insights into the perceived mechanisms and barriers for change in themselves and their young person.

The BEST-Plus program is based on an earlier version of the program known simply as BEST, developed by Toumbourou, Bamberg, and colleagues [18]. It was initially developed as a professionally led, multifamily group education program for parents, with content focussed on alcohol and drug use by adolescents. The BEST program was shown to reduce parental mental health symptoms and family stresses [19]. To increase program efficacy, the second stage of development (BEST-Plus) included all family members and focused on inviting siblings, who joined their parents in the group for the final four weeks of the eight-week program. Evaluations showed that additional positive changes in the family system were produced in mental health and stress symptoms, family cohesion, and increases in action by young people to address their substance use and thus improve their mental health [20, 21].

Family-based interventions are less common in the mental health system than psychological therapies focussed on individuals. However, family-based interventions have a number of potential advantages for adolescents in terms of engagement and capacity to address the impact of mental health problems in the family's transition across key developmental periods. There are many circumstances where, for a variety of reasons, an adolescent refuses to participate in a mental health service; this poor uptake of services by youth is extremely common in current Australian youth mental health services [22]. One of the primary aims of the current study was to evaluate how a family-based intervention model can be used to address legitimate concerns raised by parents about the mental health of their adolescent to the benefit of the family as a whole.

Our research questions for this evaluation focused on participant's responses to the BEST-Plus interventions. We were interested in examining how these groups might have benefited parents, and the mechanisms which participants identified as being effective. We were also interested in attempting to understand how family-based groups helped parents to address the mental health needs of their young person, and whether these mechanisms and interventions had been faithful to the treatment manual for BEST-Plus. Finally, we were interested in new ideas that parents in particular had to improve the efficacy of this intervention approach.

2. Method

2.1. Study Design and Sample. While the overarching DFO study was designed as a RCT, the current paper reports mainly on the qualitative data collected from participants during focus groups held 6 months after their treatment in the DFO study. Participants were invited to the focus groups if they completed one of the trial interventions. The experimental treatment was the BEST-Plus program which is a fully manualised treatment. It consists of an eight-week, professionally-led group program designed to assist parents concerned with youth substance use-related problems. The parent/s receive 4 sessions of weekly intervention and then the parent/s, sibling/s, and young person complete 4 sessions of a weekly intervention together, where the family members are willing to attend. The control condition was the CBT intervention for the young person alone. Only one participant in the focus groups received the combined treatment arm (such that they received both the BEST-Plus intervention for the family, and the individual CBT treatment for the young person), and therefore, these results were combined with the results of the rest of the attendees who had participated in the BEST-Plus treatment arm. All interventions were delivered by trained and supervised clinical psychology trainees who were undertaking Masters level training. All therapists received supervision, training; and therapy manuals. A total, of $n = 186$ individuals participated in the DFO trial which consisted of $n = 71$ adolescents (38.2%); $n = 70$ mothers (37.6%); $n = 29$ fathers (15.6%); $n = 13$ siblings (7.0%) and $n = 3$ step-parents. In total $n = 86$ family units were recruited, of which 13 families participated in the focus groups. Participants in focus groups were compensated with vouchers for their time.

Compared to the families who did not participate in the focus groups, the current sample were not significantly different in level of family income, level of education, or in terms of the type of family member who participated (mother or father), but did differ significantly in terms of being more likely to be intact families (married) and more likely to have completed all study questionnaires.

2.2. Measures. A set of ten questions were used in the focus groups as prompts for group discussion. These questions were as follows: (Q1) What were the most valuable aspects of being a participant in the BEST-Plus group? (Q2) Were there any negative aspects of being a participant in the BEST-Plus group? (Q3) How did your initial expectations relate to what the BEST-Plus group delivered for you? (Q4) Has what you learned from the group impacted the way you parent your young person? (If so, how?) (Q5) Is there anything you would like to see included or changed to improve the program? (Q6) Would you recommend the program to other parents? (Q7) When invited, did your young person or other children in the family attend the BEST-Plus group at session four; if so, what might have helped to allow the young person to attend? (Q8) What aspects of the group did you implement in your family life? (Q9) What additional services, if any, have you accessed since your involvement in the study? (Q10) How are things at present in your family?

Quantitative measures were also administered. At the commencement of focus group meetings, participants were also asked to fill out a brief feedback survey. This consisted of questions concerning the intervention received and the level of satisfaction with (1) the intervention received, (2) improvements in your family/home life since completing the program (3) overall satisfaction with the experience of the Deakin Family Options program; each rated on a scale of 1 to 10, where 10 represents complete satisfaction. Participants were also asked whether they were still implementing the skills and knowledge gained from the program in their daily lives and "Did you feel the program adequately addressed your needs?" and "Would you recommend participating in this program to a friend experiencing similar problems" with Yes/No response options.

2.3. Procedures. Three consumer-reference groups were run at the end of 2011 with 7 or 8 participants in each group. Groups were facilitated by the same people that had facilitated the BEST-Plus group. The focus groups ran for 1.5 hours. The focus groups were recorded with consent and transcribed and verified by two observing researchers. Participants were also asked to fill out a brief feedback survey. Most participants ($n = 21$) in the focus groups were referring to the time they spent in the BEST-Plus groups. In one focus group, two young people from the same family attended with their parents.

2.4. Data Analysis. Descriptive statistics were used to report quantitative data derived from a consumer satisfaction survey and data collected on treatment engagement. The analytical approach we took to the qualitative data was broadly phenomenological in that the emphasis was on the subjective experience and personal interpretation. In line with the phenomenological theory of qualitative research, we were particularly interested in allowing the voices to be heard in order to gain insight into what motivated and engaged the participants [23, 24]. The interviews were transcribed verbatim for analysis, which initially entailed reading the transcripts several times to capture the essence of the data. This process was completed by two members of the research team who then reread the text to draw out emerging themes or meanings embedded in the participants words and discussed their findings to reach consensus on any of the points where disagreement occurred.

Table 1: Demographic features of participants in the consumer reference groups ($n = 21$).

Demographic feature	*M*	SD
Age of participant (yrs)	48.8	9.04
	n	%
Family member		
Mother	12	4.8
Father	8	57.1
Youth (male)	1	38.1
Marital status		
Married	13	61.9
Divorced	3	14.3
Separated	1	4.8
Family annual income		
Less than $50000	3	14.3
$50000–$80000	3	14.3
Over $80000	9	42.9
Missing	6	28.6
Level of education		
Completed year 10	2	9.5
TAFE diploma or certificate	5	23.8
Undergraduate degree	3	14.3
Postgraduate degree	1	4.8
Other	3	14.3
Missing	7	33.3
Number of BEST-Plus sessions attended		
1	1	4.8
3	2	9.5
4	1	4.8
5	1	4.8
6	1	4.8
7	10	47.6
8	5	23.8

3. Findings

Sample characteristics of participants in the reference groups are presented in Table 1.

3.1. Engagement of Young People in Mental Health Services. All participants in the focus groups received the BEST-Plus

intervention and engagement rates are presented in Table 2. Overall, 53% of participants engaged in a treatment offered to them after an assessment. Engagement in the present context refers to completing the majority of treatment sessions. This figure may seem low but includes many circumstances where a parent would agree to participate, that is, their adolescent randomised to enter the CBT service, but the young person in their family would refuse to participate.

As presented in Table 2, young people were disproportionately less likely to engage in treatment (i.e., 60–70%) versus parents (20–30%) who do not engage. This difference was statistically significant ($\chi^2(5) = 28.8$, $P < .001$). It is also interesting to note that although a larger number of mothers than fathers presented for service within the study, those fathers who did present were more likely to be engaged in a given treatment.

3.2. Focus Group Themes

We are not alone...

Participants enjoyed the collegial atmosphere of the BEST-Plus groups where they felt that the group process and sharing of experiences helped them to feel that that they were "not alone". Parents considered this to be helpful in that it showed them that other young people went through similar experiences. Participants also commented that they appreciated the safe space that was created by the facilitators so that they could talk and contribute their experiences. The contribution of their own understanding to try to help others in the group was also a key aspect of the group experience. Participants noted that groups worked well when they were very participatory, making the groups a "give-and-take" experience. Parents felt that they learned most from each other. The most common benefits that were mentioned in both focus groups were the advantage of being with others with similar issues, the support, and advice they were able to give and receive as well as not feeling so isolated and alone. This exchange of experiences and help, some participants felt, also helped in reducing levels of self-blame and guilt.

> *I was just feeling so beaten up and battered...so coming here on my own and listening to the other stories of parents, their stories, I felt I wasn't as really as bad as I'd escalated it into my head...I just felt really secure and um, able to say what I felt and felt supported... and It is quite hard for me to let go.*

It is their Journey

A dominant theme that ran through both of the focus groups was learning to let go and allow the young person to take responsibility for their own life journey. The group had helped parents to understand the importance of separation and individuation in the family developmental process. The way this was expressed was in terms of the ability to "stand back and let go". Parents described how prior to this realisation there was a sense of helplessness, not knowing what to do for, or how to be with their young person, and being constantly caught up in conflict with their young person. They found that by stepping back and allowing young people to experience consequences it helped to defuse the "weapons" (as one participant called them) that their child would use to provoke them. Parents considered that one of the key processes through which they changed their relationship with their adolescent was learning to act rather than always reacting to a situation. This suggested an increased confidence and a greater focus on more authoritative and proactive parenting. Parents also realised that such changes occurred as they experienced reduced levels of distress and anxiety. Letting go also gave rise to opportunities for parents to take time out and to consider their own needs.

> *I felt that what we got out of the group was the letting go part and realising that it is their (the young person's) journey. I think we also approach things in a much different way than what we did... and Just more time out. More time out.*

Self-Care

The group spoke about the importance of self-care. It was suggested in the focus groups that self-care was something that parents were still implementing after the course had finished; that despite their situation, they recognised the need to look after themselves in order to better care for their child. This recognition emerged from the understanding that, no matter how much they wanted to help make everything better for their child, that ultimately their child needed to own his/her life and embark on that journey, the process was not always easy and the need to intervene often overwhelming. One woman related how her daughter would say "everythings ok ... and then she'll tell me she's not great—and I'm just ... my stomach drops". In the past, what might have led the parent to want to step in and take over became a recognition that she needed to support her child, to be there, but in order to do that she needed to attend to her own well-being.

> *But I had the chance to go away on my own, which was nice and think just about myself and I keep thinking about what (facilitator) said—that it's her journey and that's probably the most helpful thing I took out of it [the program]. It's her journey and I need to be there, but ultimately it's her life—it's not my life.*

Metaphors to live by

One of the notable features of the BEST-Plus program is the use of several metaphoric parables which are presented by group facilitators, often with an illustration, designed to evoke themes relevant to the key developmental processes and challenges facing a family during their children's adolescence.

> *It sounds flippant, but it's funny to think that such a small diagram can put you in a mindset to think yes, we did launch off on our own when we were young, and kids have to do that...*

Table 2: Cross tabulation of engagement in treatment and type of family member.

	Did not engage in treatment	Engaged in treatment
Identified Youth	47 (66%)	24 (34%)
Sibling	9 (69%)	4 (31%)
Father	6 (21%)	23 (79%)
Mother	22 (31%)	48 (69%)

This quotation from a parent exemplifies the power of the metaphor. Having one's situation that seemed so insular likened to a familiar and shared situation helped participants picture their own world from a different perspective. Participants in the focus groups found the metaphors employed in the BEST-Plus groups gave them a new outlook that they were able to continue to employ. They still remembered them and still found them useful. The use of the metaphor tied their situation to something more positive, helped give them context, and make the situation more concrete.

The Young person's perspective

There were two young people from one family who attended the Melbourne focus group with their parents. One of the young people who had been through the CBT arm of the program reflected that the self-initiated effect of gaining independence by moving out of home had been the most significant thing for him. As well, both felt that they now addressed issues with their parents in a more upfront manner, which they felt was positive. They also felt that their parents had changed how they "dealt" with them.

> *If I have a problem I address it now, like if they have a problem with me they address it straight up, we get it over with, so yeah it might be a bit confrontational but it gets it over and done with.*

The BEST-Plus program consists of eight sessions. In the first four sessions the focus is exclusively on the parents. In the final four sessions parents invite their children to attend. One of the issues raised by group attendees was the low-levels of participation of the young people in the second half of the BEST-Plus groups, although this was mitigated to an extent by some parents engaging their young people within family discussions about their attendance at the group. Such discussion was done primarily so that the young person would know that they were being proactive about finding solutions to the family challenges. This reflects a proactive change in parenting styles that was commented on by many participants.

Many participants would also have liked some continuation of the group because they found the parental support to be very valuable. Some parents suggested that running parent support groups that they could transition into would be beneficial. Generally, participants mentioned that they had started the group with the idea of changing the behaviour of their young person. For many this initial goal had given way to parents thinking that the greatest benefit of the groups was rearranging how they parented and changing their ways of handling family situations and challenges.

Program development

Participants offered a number of suggestions on what needs to change to make the BEST-Plus program more relevant to their own and their adolescent's mental health. Parents commented that there was too much information in the groups focused on managing "externalising" behavioural issues such as violence and crime in their young people, and some parents with young people that had depressive or anxious children sometimes found that the information about challenging behaviour was less relevant to their situation.

> *There was such a diverse range of problems in the group. I found that a lot of the problems and strategies were for behavioural issues where as we are dealing [with] mental illness. The group did not really cater for mental illness.*

However, parents generally acknowledged that they derived considerable benefit from the program. All of the participants of the focus group would recommend the Deakin Family Options program to others. Some even felt the BEST-Plus group was better than they had expected.

> *One other thing I think I had, we approached another school counsellor and then another school counsellor and then we were referred onto 1, 2, 3 places so that's five lots of people, so I had very low expectations of actually like, anything actually engaging with our reality so I was a bit blown away that it did and it did it in a way, not quite the way we expected...*

Participant direct recommendations

(1) Weekly sessions should be longer; some participants felt that 2 hours was not long enough. Participants would have liked an extra half an hour or so to extend their discussions.

(2) Participants would like on-going support; the majority of the participants would have liked the group to continue beyond the 8-week program. Some considered follow-up sessions once a month would be valuable.

(3) There needs to be an improved balance in the focus on behavioural *versus* mental health issues. All participants felt that they had gained something from the BEST-Plus program, but parents whose young person had depressive and anxious disorders would have liked some of the weekly group focus directly on how to address these issues rather than spending too much time on behavioural and drug use issues.

Table 3: Results of consumer satisfaction survey for parents participating in BEST-Plus ($n = 20$).

Satisfaction			Range	
	M	SD	High	Low
With the intervention received	7.66	1.58	10	3
With any improvements in your family/home life	6.64	1.65	10	3
Overall satisfaction with program	8.30	1.49	10	4
			n	%
Felt the program adequately addressed your needs		(yes)	12	57.1
		(somewhat)	8	38.1
Would recommend participating in this program to a friend		(yes)	20	95.2
Is still implementing the skills and knowledge from the program		(yes)	20	95.2

(4) Earlier intervention was highly recommended. Interventions need to be offered to parents before major problems arise. Participants felt that having something set up as an early intervention would be very helpful to them. This would help them to address parenting and potential challenges with adolescents before the problems arise. Parents suggested that similar content would be helpful if it commenced in early primary school years and was offered within a school setting.

4. Results from the Feedback Survey

Results from the consumer satisfaction surveys completed on the same evening as the focus groups are presented in Table 3. The young person in attendance did not complete the questionnaire. Overall most participants were satisfied both with the intervention and their experience of the Deakin Family Options program. Satisfaction with the improvements in their family life since completing the program scored slightly lower. However, when asked the question, "would you recommend participating in this program to a friend experiencing similar problems?" all participants ($n = 20$) answered yes. The majority of parents felt that the Deakin Family Options program had adequately addressed their needs, for others, the lack of behavioural change by their young person impacted on their satisfaction with the program. No participant responded that the program had not addressed their needs at all. Nearly all ($n = 20$) participants were still implementing the skills and knowledge that they gained from the program in their daily life approximately six months after completing the intervention.

5. Discussion

There were four major themes that consistently came out of the focus groups. Participants pointed to the advantage of meeting with like-situated parents and being able to safely share their experiences under facilitation. The advantage of this was to break down the sense of isolation. From the weekly sessions, the participants felt they learned or relearned the skill of taking a step back from the situation. Acknowledging the responsibility their young person had to take for their own lives and actions was also a powerful therapeutic moment for many parents. This helped alleviate the guilt and sense of helplessness that was a common experience described by participants. Further, participants took away the idea of the importance of self-care. The role of metaphor within the program was also confirmed as a valuable element, helping parents to situate themselves and their young person in a developmental context with the hope of a positive outcome. Each of these themes are congruent with themes that have consistently been reported by BEST-Plus participants, from the initial implementation of the program over a decade ago [18].

In terms of evaluating the BEST-Plus groups within the RCT, these findings suggest that parents received many of the key features of the intervention as presented in the BEST-Plus manual and training materials. The consumer feedback consistently suggests that what parents received corresponds closely with what the manual intended. In this sense, the findings presented add to the probability that the intervention was delivered in a way that was consistent with the treatment manual. These findings also add to the evidence that the BEST-Plus training and supervision provide an effective transmission of the program logic to a diverse range of mental health clinicians. The effective implementation of the program logic can be seen in terms of the changes in parenting style reported by a majority of the focus group participants. However, given the small sample who participated in these focus groups, it remains unknown the degree to which this finding can be generalised to the full RCT sample, or to other groups who undergo BEST-Plus programs. Often parents had expected a change in the behaviour of their young person through participation in the group but generally they found the greatest change was in how they viewed situations and how they responded to their young people. This illustrates the systemic mechanism through which change is often achieved in family-based interventions.

The DFO study was designed as a multicentre trial, and included a wide range of referrals from clinical services, community services, and community organisations such as schools; to further enhance generalizability of findings. The study design was initially developed under the expectation that the referred youth would be motivated to attend

a treatment, and that their parents would enter the treatments if they were randomly allocated to the family intervention. Unexpectedly, many of the referrals to the DFO study came from concerned parents where the young person was unwilling to initially engage in a treatment program for their depression. Rather than excluding these families, the research team decided to allow the parents to access the only possible treatment (BEST-Plus, as it can be completed with the parents alone or with whole families), and to evaluate the outcomes for these families following the program. This was an attempt to prevent the exclusion of a relevant and large cohort of needy families, who appear to be underresearched and underserviced under the current Australian mental health system, given the reluctance of the young person to attend a standard treatment [22, 25].

The current study has a number of implications for the effective implementation of family-based interventions for youth mental health. Diagnostically, the current sample shows considerable heterogeneity in youth mental health issues, with both internalizing and externalizing profiles represented. This reflects the common referral patterns of clinical practice. Typically, referral to mental health services in this age group is initiated by parents, or at the very least strongly encouraged by parental support. Both intake and initial assessment procedures in youth mental health could thus benefit from a stronger family focus to reflect this common circumstance. The other key finding from our study is the clear capacity to achieve considerable transformation of family functioning within a relatively brief, intensive, and highly structured group format. Feedback from parents suggests that developmental themes of separation individuation remain highly salient, and that many families are receptive to interventions designed to facilitate the transition from adolescence to early adulthood.

One of the key outcomes of the DFO study was that the BEST-Plus model was modified to encourage the identified youth to attend the program with their parents and siblings, and to provide support for families whose young person presents more of an internalizing profile (where depression and anxiety are the dominant presenting issues). Previous versions of BEST tended to focus more on externalizing problems associated with substance use and employed behavioural management techniques and boundary setting. Focus group participants as well as the research team were also concerned by the high rate of nonparticipation of the young people in the second half of the BEST-Plus group. However, nonattendance was mitigated by parents engaging their children in discussion about the group and the flow on effect by their changed parenting styles and view of their situation. Many participants would also have liked some continuation of the group because they found the parental support valuable. They also felt that this sort of program should become more preventative, acting as an early intervention in schools. The Deakin Family Options program, and in particular, the BEST-Plus group, led to a number of positive changes according to the focus group participants.

Based on the findings in the DFO study, and the feedback from consumers described in the current paper, the BEST-Plus program has subsequently been extended to a third stage of development, known as BEST-MOOD [26]. The BEST-MOOD program has integrated much of the feedback presented in this paper and is aimed at addressing the problem of engaging young people in mental health treatments via the family system, and delivering relevant and effective interventions in the community. Notably there was a departure from the stated intention of the BEST-Plus manual in terms of young people directly impacted by mental health issues attending the youth component of the groups in the DFO study. This was consistently adopted across the interventions in the DFO trial and then integrated into the current revised BEST-MOOD model, so it is less of a "limitation" as perhaps a development that occurred within the DFO trial.

There are a number of important limitations to the present study that should be considered when appraising its findings. The findings do not explore the perspective of families that did not engage and thus may miss an important contrary perspective. There was limited information available from young people whose parents were in BEST-Plus and the findings are based mostly on the views of parents. It is also notable that the BEST-Plus facilitator was in many cases also focus group leader which may have biased discussion in a positive direction—and yet it is notable that significant suggestions and criticisms of the program were still forthcoming. In general, it should be noted that while a focus group is an effective way of gathering a large number of views, there is always the possibility that a large group may not allow dissenting voices to be expressed.

6. Conclusions

There is a clear recognition by governments that the cost of depression is high and effective depression prevention and early intervention programs are likely to be worth implementing (1). However, to implement these plans of action, there needs to be substantial investment to build the knowledge and infrastructure for prevention and early intervention including research capacity, prevention, and early intervention program development, evaluation and implementation frameworks. Our experience with gaining qualitative evaluation of consumer experiences within a RCT convinces us that such evaluation ought to be routinely used for gathering and analysing participant feedback in order to improve treatments.

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Research Article

Postpartum Depression: Screening, Diagnosis, and Management Programs 2000 through 2010

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The value and appropriateness of universal postpartum depression (PPD) screening remains controversial in the United States. To date, several PPD screening programs have been introduced and a few have been evaluated. Among those programs that have been evaluated, most report screening rates, diagnosis rates, or treatment initiation rates. Only four studies included patient outcomes such as the level of depressive symptoms at 6 to 12 months postpartum, and only two reported success in improving outcomes. Program characteristics that appear to result in low rates of diagnosis and followup after PPD screening include requirements for a formal psychiatric evaluation, the need to refer women to another site for therapy, and failure to integrate the PPD screening into the care provided at the woman's or her child's medical home. The two programs that reported improved outcomes were both self-contained within primary care and included specific followup, management, and therapy procedures. Both resulted in the need for outside referrals in less than 10% of women diagnosed with postpartum depression. Future studies should be based on the successful programs and their identified facilitators while avoiding identified barriers. To affect policies, the future program must report maternal outcomes going beyond the often reported process outcomes of screening, referral, and therapy initiation rates.

1. Introduction

Postpartum depression (PPD) is common, reported to be experienced by 15% or more of women during the 12 months after they deliver [1–4]. Despite nearly universal health care encounters at some time during this period, only about 50% of women with significant depressive symptoms are recognized [4–6]. PPD occurs among women of all ages, parities, races, and socioeconomic groups [7, 8]. Untreated and unresolved PPD adversely affects the woman, her infant and her relationship with family members [9–12]. Therefore, universal screening for PPD is an attractive approach, and several groups have made recommendations regarding universal PPD screening in the maternity or early well child care setting [2, 13–19].

Many United States (US) as well as international programs have attempted to implement universal postpartum depression screening with or without followup care. Some programs have included formal evaluations, but few have resulted in improved patient outcomes [20–30]. Reviews by several evidence-based guideline groups have reported insufficient or inconclusive information regarding improved outcomes with PPD screening, preventing them from recommending universal PPD screening. While these reviews provide summary assessments, they fail to assess program design, context, setting, or components of the program as

potential factors influencing success or failure [2–4, 15, 18, 25].

This paper also reviews the published evidence regarding PPD screening and follow up, describing the methods and outcomes reported for recent published PPD studies [20–24, 27–30]. Unlike the reviews completed for the guidelines panels, our goal is to summarize elements of program design, program setting, and program components as they may relate to program success in not only providing PPD screening but improving outcomes of women judged to have PPD.

2. Methods

We reviewed PPD screening programs described in the English language peer-reviewed literature between 1998 and 2011 [20–24, 27–32]. Studies were identified from Medline/PubMed, PsychINFO, and Cinahl using title, abstract and keyword searches for the terms "postpartum depression," "maternal depression," and "perinatal depression," each independently and then linked to "screening." We also identified work published in the same time frame from the references in the Institute of Medicine's (IOM's) report on parental depression [1]. Finally a Google search using the phrase "postpartum depression screening programs" was completed to identify reported puslihed in nonindexed health care and social science journals. Only programs that reported an intervention and some type of outcomes such as screening rates, rates of screen failure, diagnosis rates, or maternal depression outcomes were included. The programs described here vary from small studies done in three to seven clinics in a single city to regional, state, and national programs. The published reports of several US programs were supplemented by additional information from the first or senior author of the paper(s) describing the programs (personal communications Kim Yonkers, MD, Dwenda Gjerdigen, MD and Ardis Olson, MD).

3. Results

Overall, reports on 54 programs were identified but only eight of those had both clearly stated interventions and outcomes resulting in their inclusion in this report (Table 1). The total number of women included in these programs is difficult to ascertain since little data was provided on the number of potentially eligible women in some of the largest of the programs [22, 28–32]. All of the programs were designed to address postpartum women from less than a week after birth [20, 21] to 6 months postpartum [22]. Five programs were limited to patients literate in English. The Hong Kong program was limited to Chinese [26]. Two programs, the New Haven [22] and the family medicine program [27], allowed either English or Spanish. Characteristics of the women enrolled, such as insurance, marital and socioeconomic status (SES) were variably reported and when reported differed by program and country. In the US, Medicaid was the most common insurer and coverage often ended at 6 to 8 weeks postpartum [29]. The New Jersey program was open to all women, but only those with Medicaid insurance were included in the outcomes assessment [29]. In Australia and in Hong Kong, national health insurance assured that all enrolled women received insurance coverage for the entire prenatal and postpartum period [26, 28, 30].

4. Program Characteristics

4.1. Screening. All programs used the EPDS [21, 27, 33], the PHQ-9 [27, 34], or the PHQ-2 [35–38] for PPD screening. One program used a combination of the EPDS with all elevated scores being further assessed by the PHQ-9 [27, 39]. The cutoff scores for normal versus elevated were similar for all programs: an EPDS of 10 or greater or a PHQ-9 of 10 or greater [33, 34, 39].

Screening was most often reported to be initiated at the site of well child or maternal postpartum care [21, 23, 26–32]. The New Haven program was an exception. Designed as a community-based program, women were referred or self-referred to the community program office where they were screened and could be further evaluated [22]. Screening rates varied from a low of 33% to over 95% of eligible women in the US clinic-based programs [21, 27]. In Australia, the screening rate was estimated to be approximately 40% in one region of the country [31, 32]. The New Haven and New Jersey programs did not report screening rates [22, 29]. However, screening was assumed to be limited since participation in the physician educational offerings for these programs was low, with only 58% of obstetricians, 13% of pediatricians, and 12% of family physicians attending PPD education offered to support the New Jersey statewide program [29].

Procedures for further evaluation of elevated screening scores were not uniform across the programs and not all programs included plans for management or monitoring of women with diagnosed depression. For example, the screening programs in Australia, New Jersey, and Olmsted County, MN, US [23, 24, 28–32] did not report any specific follow-up procedures for further evaluation of elevated screening scores. In three programs procedures for evaluation of women with elevated screening scores required referral to an offsite mental health clinics or to delayed visits to staff at the screening site [20, 22, 33]. Those referrals were reported to include the Structured Clinical Interview for DSM Disorders (SCID) which is a formal interview that requires 30 to 45 minutes to complete and is usually administered by a psychologist or psychiatrist (http://www.SCID4.org/) [40]. Only two programs maintained screening and evaluation within the same site. Both of these programs also included specific procedures and support for PPD management and monitoring. Neither included evaluation with the SCID [26, 27].

5. Outcomes

All programs except the New Haven program reported one or more process outcomes such as screening rates (see above).

Table 1

Site	New Haven Healthy Start Program [22] (n = 1,336)	Minneapolis and St. Paul, MN, screening at well child programs [21] (n = 506)	Australia, universal PPD screening [28, 30–32] (n unknown)	US family medicine practices [27] (n = 1,263)	Olmsted County, MN universal PPD screening program [23] (n = 342)	New Hampshire, screening at all well child visits in pediatric practices [20, 33] (n = 1,398)	New Jersey State wide initiative [29] (30,955 analyzed)	Hong Kong Program [26] (n = 462)
Enrollment criteria	Low-income women within 6 months of delivery (i) self-referred (ii) referred by outreach worker	Women bringing children to 0-1 month to well child visits at family medicine or pediatric clinics	All postpartum women in all practices in the country	All women between 4 and 12 weeks PP coming for PP or well child visit to 28 enrolled practices	All women between 4 and 9 wks PP coming for PP visit to OB or FM to Olmsted County, MN provider	All women bringing children 0–18 years for well child visits for 6 month time period in three enrolled pediatric practices	All women with Medicaid insurance for during pregnancy and 1st yr PP were used in analyses, all women in state delivering an infant during time of interest were in program	All women visiting maternal and child health centers for 2 month well child check. Exclude if already receiving mental health care
	(English or Spanish)	(English only)	(English only)	(English or Spanish)	(English only)	(English only)	(Unknown)	(Mandarin only)
Site characteristics	New Haven Healthy Start initiative—a community-based program not within any clinic	Seven family clinics, 4 urban family medicine, and 3 suburban pediatric clinics	All clinics providing postpartum care in the country	28 US FM practices including rural, urban, and residency practices	All OB and FM postpartum care providers in the community	Rural Peds practices, all pediatric providers (pediatricians and nurse practitioners)	All maternity and well child practices in New Jersey	One maternal and child health clinic in Hong Kong, nurse run and staffed. Support from local psychiatrists
	Screening by staff	Screening by staff	Screening by staff	Screening by clinic staff and physician review	Screening by staff, review by physician	Screening by staff, review by clinicians	Screeners unknown	Screening by nurses
Screening tools	PHQ-9 (cutoff for followup 10), PTSD screener, anxiety and alcohol screener	PHQ-2 and then PHQ-9	EPDS	EPDS follow by PHQ-9 for all scores greater than 10 versus usual care with no formal screening	EPDS, score >9 considered high risk for PPD	PHQ-2, (scored 0–6) with cut point of 3 or more for positive screen	Left to the practice following an educational program to introduce screening and PPD management to physicians and other clinicians	EPDS, score >9 considered elevated compared to usual clinical assessment by nurse

Table 1: Continued.

Diagnostic methods	Telephone interview by master's level clinical social worker	Referral for SCID to mental health clinic	Unknown, primarily screening program	PHQ-9 and physician assessment	Physician or other clinician choice	Clinician discussed and offered referral resources	Physician or other clinician choice. Education covered both PPD care and referral	Onsite counseling by nurse trained with short program. Could go for additional referral
Followup program	Referral for therapy and calls by social worker at 1, 3, and 6 months for further referral suggestions Community education	As per mental health care professional to whom the patient is referred	Unknown	Detailed follow-up program and tools to support care, medication, and counseling use and schedule nurse calls	None provided	As per mental health professional to whom the patient is referred	Followup as determined by care providers	Followup was single session by trained nurse with optional additional counseling
Outcomes	Rates of therapy, levels of symptoms monthly after referral	Rates of screening completion including SCID	Rates of screening	Rates of screening, diagnosis, therapy initiation, levels of depressive symptoms at 6 and 12 months PP	Rates of PPD diagnosis and rates of PPD therapy initiated	Rates of screening completed and screen positive status, and rates of women willing to take action plus rates of pediatrician support offered	Rates of depression care initiation and continuation of care after 90 and 120 days	Levels of depressive symptoms at 6 and 18 months PP
Results	No change with program (before and after assessments)	Less than 33% completed screening and assessment with SCID	Rates of screening <40% in several regions	Increased rates of PPD diagnosis, therapy initiation, and lower levels of depressive symptoms at 12 months PP	Increased rates of PPD diagnosis and increased rates of PPD therapy initiated	Screening completed at 67% to 74% of well child visits. 6% of women had scores ≥3 Among screen + mothers: 47% thought might be depressed and willing to take action. 28% thought stressed, not PPD. Clinician action in 62%	No change in rates of care initiation or continuation (before and after the onset of the statewide program assessment)	Risk ratio of EPDS <10 was 0.50 for intervention versus usual care and NNS was 25 to prevent one EPDS of >10 at 12 months

Table 1: Continued.

Study design	Pre- and post-"open label"	RCT	Cohort	RCT	Pre- and post-cohort	Cohort	Pre- and post-study of Medicaid subset of population	RCT
Depression monitoring metrics	PHQ-9 score	Unknown	None	PHQ-9 score	None	N/A	None	None
Support systems and tools	Social worker phone calls, weekly drop in programs for behavioral health or pharmacological services, provided at no cost	None	None	IAP, medication table, nurse call scripts, self help tools, father's pamphlet, and monitoring schedule	None	N/A	Education attended by 38% of obstetrical care physicians and other clinicians and 16% of pediatricians and 12% of family physicians in New Jersey	Nurses doing counseling had 12 hours of training and could refer to psychiatrist if desired
Reported barriers to success	Adding mental health people into practice without integration may have decreased physician role as screener and evaluator, low SES population	Need to refer offsite for SCID	Unable to get EPDS screening integrated into many practices. A national program without incentives	Time barriers for clinic nurses to make calls, loss of insurance at 6 to 8 weeks PP for many of the women, failure to address PPD as chronic condition	No followup program included	Pediatrician role limited to screening, discussing impact on child, referral and short-term followup	Less than one-third of clinical care providers participated in the educational program	More than half of the women attending the clinic were ineligible including several who had already undergone PND screening

The Olmsted County, MN program reported increased rates of PPD diagnosis and treatment initiation following universal PPD screening [24]. The New Hampshire program, based in pediatricians' offices, reported "referral or maternal support from the pediatrician" in 67% of women with elevated screening scores. Buist et al. reported some increase in PPD diagnoses and therapy initiation in a subset of women screened in the Australian program [31, 32].

Four programs reported maternal outcome information [22, 26, 27, 29]. Both the New Haven Healthy Start and the New Jersey state programs reported no increases in any PPD-related clinical activities including no increases in rates of diagnoses or numbers of PPD related office visits [22, 29]. The Hong Kong and US primary care program reported both improved process outcomes and improved maternal outcomes at 6 or 12 months [26, 27]. Both reported declines in maternal depressive symptoms at either 6 or 12 months as well as high rates of screening, increased rates of PPD diagnosis and therapy initiation.

5.1. Reported Barriers to Success. In the New Haven [22] and Minneapolis and St. Paul studies [21], evaluation of women with elevated screening scores required an in-person or telephone-based referral to a mental health professional for an SCID assessment. The requirement for an SCID assessment appeared to be a major barrier [40, 41] for completion of PPD evaluation with a low percentage of women in the Minneapolis/St. Paul study program completing the referral visit for this SCID assessment. A similar pattern of failure to participate in the SCID evaluation was seen among the women in New Haven even though they could do the interview by telephone (personal communication Kim Yonkers, MD, February 21, 2012).

5.2. Possible Facilitators of Success. The Hong Kong and US family physician programs both introduced specific evaluation procedures to be completed with women with elevated screening scores and management and monitoring systems for those with diagnosed depression [26, 27]. In both cases, the procedures and care systems changes were based in the usual care site and usually began immediately after screening. To support the follow-up procedures and care system changes, the Hong Kong program provided a 12-hour educational experience for the nurses who completed screening in the well child visits. The nurses were taught some basics of supportive therapy and motivational interviewing [26]. In the US family medicine program short staff educational sessions (2 hours total), support tools for diagnosis, therapy selection and initiation, schedules of recommended management and monitoring visits, content outlines for nurse calls as well as an immediate action plan (IAP) to guide assessment of suicidal ideation [42] were provided to the practices. The PHQ-9 was used as a metric for assessing response to therapy and timing of remission in both the Hong Kong and US programs [26, 27]. Referral for complex problems occurred in about 6% of the women in each of the studies [26, 27].

6. Discussion

While the impact of PPD screening clearly differs among published studies, so do the programs that support that screening. To assess the reported results without considering the context in which screening was completed is likely to miss opportunities to identify parameters of successful translation of PPD screening into daily practice. It is important to recognize the complexity of the process of changing both clinician behavior and establishing effective office systems to consistently screen and intervene. In addition, the type of results reported must also be considered [43–47]. Screening rates, therapy initiation, or intent to treat are important preliminary results but must be followed by studies that assess and report patient outcomes [1, 12, 15, 16, 19]. Patient outcomes such as the level of depressive symptoms or rates of remission need to be assessed and reported in the context of the full program that achieved those outcomes [26, 27]. With a limited number of outcome studies published to date, the controversy surrounding the value of universal PPD screening continues.

Among the studies reviewed here, four programs reported screening at least two-thirds of eligible women and in all instances the programs were conducted within a woman's or her infant's usual care site [20, 23, 26, 27]. In these practices, PPD education was provided to the clinical and support staff within the practice site [20, 23, 26, 27]. In the largest programs, all of the state of New Jersey and all of Australia, plus the New Haven Healthy Start program, educational support for community physicians was not tailored to individual practices and only modestly attended. Providing education alone has been shown previously to not facilitate practice change [43–46, 48, 49].

Screening alone has not been shown to improve patient outcomes and may be unethical [13, 50]. Dealing with PPD is limited to adding ten questions to a patient care visit. Even a negative screening result requires some discussion. A positive screening result should trigger a cascade of events that change the visit content and practice work flow. Practice tools are required to facilitate these changes. Olson and her colleagues have developed a set of tools to facilitate the introduction and implementation of routine PPD and maternal depression screening into pediatric practices. The information is available on a website [51, 52] and has been widely disseminated through an American Academy of Pediatrics Task Force report [53]. Yawn et al. also developed primary care specific tools to support diagnosis, medication therapy initiation, and PPD followup and monitoring plan [27, 42]. Programs that support practice system changes such as universal PPD screening appear to benefit from local education and support for the practice change and its implementation. Without tools and support for system change, dissemination is likely to be slow with each practice reinventing similar work flow, education and support systems [45, 54].

Four studies did report patient outcomes, two without improvement (New Haven and New Jersey) [22, 29] and two with improved outcomes (Hong Kong and US family physicians) [26, 27]. Two important aspects that appear to differentiate successful and unsuccessful programs are

the ability to provide the majority of care within the screening practice and the provision of education, tools and support for depression diagnosis and ongoing management to facilitate systems change. Primary care practices can provide care for major depressive disorder [47–49]. The Hong Kong and US family medicine studies suggest that this can include care of maternal depression [26, 27]. Referral to mental health specialists will continue to be necessary for the most complex patients and those who do not respond to primary care therapy. In both of the successful programs the referral rate to psychiatrists was 6% of screen positive women [26, 27]. However, with the worldwide shortage of mental health professionals [55] it is important that these resources be used for complex cases and that efforts are made to integrate mental health into primary care [42, 56, 57]. While some integration may mean bringing mental health professionals into primary care offices, an alternative may be to provide mental health services by the people already within the practice, the primary care physician supported by the primary care team [27, 43–45, 48, 49, 57, 58].

Requiring a SCID to diagnose PPD requires women to go outside their usual care sites and appears to be a major barrier to evaluation and diagnosis [21, 41]. Gjerdingen and others have similarly reported this potential barrier to PPD care [21, 57]. The need for the SCID assessment is based on results from studies of high-risk patients with complex mental health problems and who are referred to psychiatrists [1, 2]. These results may not be generalizable to a lower-risk primary care population being assessed within their continuity practices. The benefits of requiring a SCID for PPD diagnosis must be weighed against the risks of missing PPD and a chance to provide therapy and care to the women identified by screening without a SCID confirmation. Implementation of PPD care in primary care practices is feasible. Screening linked with appropriate and patient acceptable evaluation, monitoring, and depression management support can improve outcomes at 6 to 12 months postpartum. With education and support, primary care is likely to be able to provide the required evaluation and care for the majority of women with PPD leaving the limited numbers of mental health professionals to care for more complex cases. To date, the number of studies demonstrating positive patient outcomes is limited and additional studies and dissemination programs with careful evaluation will be required to confirm these results. In the future, primary care management of depression, including postpartum depression could be similar to primary care management of other chronic conditions such as hypertension, diabetes, and asthma where most patients can receive most of their care within the primary care setting and that care can meet the high standards of quality metrics [59].

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Research Article

Grounded Theory of Barriers and Facilitators to Mandated Implementation of Mental Health Care in the Primary Care Setting

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Objective. There is limited theory regarding the real-world implementation of mental health care in the primary care setting: a type of organizational coordination intervention. The purpose of this study was to develop a theory to conceptualize the potential causes of barriers and facilitators to how local sites responded to this mandated intervention to achieve coordinated mental health care. *Methods*. Data from 65 primary care and mental health staff interviews across 16 sites were analyzed to identify how coordination was perceived one year after an organizational mandate to provide integrated mental health care in the primary care setting. *Results*. Standardized referral procedures and communication practices between primary care and mental health were influenced by the organizational factors of resources, training, and work design, as well as provider-experienced organizational boundaries between primary care and mental health, time pressures, and staff participation. Organizational factors and provider experiences were in turn influenced by leadership. *Conclusions*. Our emergent theory describes how leadership, organizational factors, and provider experiences affect the implementation of a mandated mental health coordination intervention. This framework provides a nuanced understanding of the potential barriers and facilitators to implementing interventions designed to improve coordination between professional groups.

1. Introduction

Recent years have seen increasing recognition that the integration of mental health services into the primary care arena is an essential step for improving quality of mental health care [1, 2]. Based on this evidence, the Veterans Health Administration of the Department of Veterans Affairs (VA) has undertaken one of the largest implementations of Primary Care Mental Health Integration (PC/MHI) in the world [3]. The purpose of this integration was to improve the coordinated identification and treatment of prevalent mental health and substance use disorders in the VA primary care context [4].

At its broadest level, PC/MHI involves the implementation of structural organizational changes to policies, procedures, and practices that are intended to promote collaboration between primary care and clinical mental health experts in the assessment, treatment, and management of common mental health conditions [4]. As such, PC/MHI constitutes an organizational intervention to improve the coordination of patient care by effecting changes in care processes. The systematic implementation of PC/MHI across VA began with the first large-scale request for proposals occurring in 2007 [4]. Since then, spread of PC/MHI has been swift: as of 2011, over 85% of the more than 140 VA medical centers nationwide report some level of integration of mental health services into primary care. A 2010 issue of *Families, Systems, and Health* described many aspects of this national mandate within VA [4, 5].

Along with the rapid spread of PC/MHI throughout VA medical centers, research has investigated the factors important for successful PC/MHI implementation. For example,

recent studies have explored the challenges faced by providers and clinics (within and outside VA) in transitioning to a PC/MHI model. These challenges include clarifying the responsibilities of PC/MHI versus specialty mental health clinics [6], balancing the availability of different types of appointments within PC/MHI [7], adjusting the timing and length of PC/MHI sessions [8], and establishing guidelines for smooth coordination between providers [9]. In addition, others have investigated factors that are important to consider when implementing large-scale changes across networks of VA medical centers [10].

With a few exceptions, PC/MHI research has been conducted in the context of implementations aimed at maintaining fidelity to a specific model or form of PC/MHI [8, 10, 11]. For example, the St. Louis Initiative for Integrated Care Excellence or SLI^{2}CE [6] carried an explicit emphasis on the integrated-collaborative-care model (e.g., time-limited interventions for a broad spectrum of disorders). VA, however, did not mandate one way of accomplishing PC/MHI. Instead, VA provided initial funding and allowed local site discretion in the implementation of at least one of three foundational models of integrated care: colocated collaborative care [12] and two models of care management [13, 14]. These models were similar in the introduction of a multidisciplinary treatment team but differed with respect to format (e.g., phone versus in-person), scope (e.g., depression versus broad range of mental health conditions), and types of care emphasized (e.g., triage versus care management versus brief interventions) [5]. The majority of VA facilities implemented some form of colocated care, with some sites including elements of care management, but rarely with strict fidelity to a theoretical model [5]. Thus, the conceptual differences in models may not be as pronounced in the local adaptations of PC/MHI. Despite isolated case studies [7], little is known about locally varied implementation of PC/MHI in response to the 2007 nationwide VA mandate.

The potential conflict between top-down-planned organizational changes and the autonomy of local practices has long been a concern in integrated health care systems such as VA, but the question of how to balance local needs for adaptation to mandated organizational changes with standardizing pressures is also broadly important to the private sector. For example, the Systems of Care program for children's mental health is similar to PC/MHI in that both are national programs that provide funding and guidelines for integrated care, while granting considerable autonomy to local sites/communities in tailoring the organizational changes [15]. More broadly, as part of the accreditation process, The Joint Commission often mandates certain outcomes and allows sites to determine the appropriate structure and processes for achieving them [16]. In addition, medical home and accountable care organization innovations in the US health care system are creating environments where these kinds of interventions are highly likely to be more common, particularly for psychotherapy interventions that have been poorly translated into community settings and/or limited to specialist mental health clinical settings [17].

The present paper addresses this gap in knowledge about the ability of local sites to respond to mandated organizational changes regarding mental health coordination processes. Rather than focus on fidelity to a specific model of PC/MHI (e.g., SLI^{2}CE), this study extends the scope of extant PC/MHI research by investigating the factors that may affect the ability of local clinical leaders to implement the structures and processes needed to coordinate mental health care across different VA clinics. There are several implementation models that have been used in the VA context [18, 19], but none of these models provide guidance as to how organizational factors (e.g., leadership, communication, staffing, physical space) may affect the ability of local sites to respond to a mandated organizational intervention. The concept of organizational coordination in health care was used to explicate the operational processes in PC/MHI and examine how organizational barriers and facilitators affected the ability of local sites to respond to the PC/MHI mandate.

1.1. Organizational Coordination in Integrated Care. The current study used an organizational coordination framework to guide our inquiry. We conceptualized the coordination processes involved in managing interdependent tasks across professional and team/unit boundaries to achieve integrated care. Organizational coordination can be achieved through standardized or interpersonal coordination processes [20, 21]. Standardized coordination processes (e.g., referral systems) are used to manage common coordination needs and interpersonal coordination processes (e.g., communication between providers, curbside consults) are used to manage less predictable coordination needs. Research has shown that both coordination modalities are needed for high-quality care [20]. Organizational coordination theories are well suited to elucidate the relationship between organizational structures, processes of care, and health outcomes [22] because they provide opportunities to identify organizational factors relevant to the PC/MHI implementation without unnecessarily constraining the data to conform to existing organizational models/structures.

Effective integrated care must be clinically appropriate as well as financially and operationally viable [23].The current study only examines the operational factors that influence implementation of coordination procedures. However, we acknowledge that operational factors are only one dimension of integrated care. Regarding the clinical dimension, we conceptualize both patient experiences and quality of care as important clinical outcomes of integrated mental health care. Outcomes of integrated mental health care include clinical outcomes such as increased identification and treatment of mental health symptoms and patient subjective experiences such as perceived access to mental health care and reduced stigma [24], but it is possible for organizational changes intended to promote integrated care to be implemented in ways that serve the needs of providers and administrators more than patients. Regarding the financial dimension, we acknowledge that improvements in quality of care should be cost effective, and thus cost is an important criterion for judging PC/MHI [25]. We conceptualize PC/MHI as an organizational coordination intervention that has the potential to impact access to mental health care, patient experiences of their care, quality of patient care, and healthcare costs.

Table 1: Interview questions and specific probes.

Interview question	Specific probes
(1) Imagine that a patient with depression symptoms comes to the clinic. Can you walk me through a typical process of care	Referral process, differences between diagnoses?
(2) How has this process changed over the past 10 years? (or since you arrived in the clinic)?	Recent changes, challenges, failures, leadership support, referrals, interpersonal interactions, physical structure?
(3) Tell me about your sense of the need for coordination between PC and MH.	Examples of good and poor coordination?
(4) How would you change your clinic to better coordinate care?	Communication, collaboration, resource barriers?
(5) Have you or anyone you know had to develop your own coordination procedures to ensure that patients receive the best care?	Work-arounds, ad-hoc coordination procedures?
(6) Can you tell me about the relationship between the people in the PC and MH clinics?	Face to face contact, trust?
(7) In what situations would you say that teamwork is most important?	Coworkers back each other up

Table 2: Sampling of key informants across the sixteen sites.

	Leaders	Physician	Psychologist	Psychiatrist	Nurse	Social worker	Physician assistant
Hospital-based clinics							
Site 1	2	1	2				
Site 2	2	2	1				
Site 3	2	1	1				
Site 4	2	1	2				
Site 5	1	1	1				
Site 6	2	1		1			
Site 7	2	1	1				
Site 8	2	1	1				
Large outpatient clinics							
Site 9	2		1		1		
Site 10	2	1		1			
Site 11	2					1	1
Site 12	1				1	1	
Site 13	2	1				1	
Site 14	2			1	1		
Site 15	2			1	1		
Site 16	2	1		1			

Psychologists, psychiatrists, nurses, social workers and the physician assistant were all associated with the PC-MHI clinic. These providers represent 51% of PC/MHI staff at these sites.

Regarding the operational dimension, we conceptualized PC/MHI as an organizational coordination intervention because it involves planned changes to the task-based standardized and interpersonal interactions between healthcare staff across team or unit boundaries (i.e., primary care and mental health). These operational changes represent structural integration of services that are exogenous to our framework of PC/MHI. Structural integration has been identified as a mechanism to promote coordination of patient care, but as noted in recent reviews, organizational changes that are intended to integrate services may not translate into either improved patient experiences [26] or effective collaborative care [27]. In order to build theory regarding how structural integration may or may not impact coordinated care, we focused our study on the processes of coordination (i.e., standardized and interpersonal) and allowed the organizational factors to emerge from the interviews. As shown in Table 1, our interview questions and data reflect this conceptual framework.

2. Methods

2.1. Participants. Key informants included 30 clinic leaders (12 PC physicians, 10 psychologists, 5 psychiatrists, 4 nurses, 3 social workers, 1 physician assistant) who were recruited from 16 PC/MHI clinics across eight VA medical centers as shown in Table 2. Interviewees were recruited from a hospital-based clinic and up to two large outpatient clinics

(more than 10,000 unique patients) in each of eight medical centers. Informants varied in their tenure both at VA and also in the current position. Tenure in VA ranged from 1 to 32 years (Mean = 10.03, SD = 7.40). Tenure in current position ranged from 1 to 23 years (Mean = 5.53, SD = 5.07). Leaders were predominantly male (i.e., 12 female, 16 male), whereas staff were predominantly female (23 female, 10 male). The interviews were conducted as part of a managerial evaluation of the implementation of PC/MHI in these medical centers. Institutional review board approval was obtained to report this managerial evaluation data.

2.2. Data Collection. Semistructured telephone interviews were conducted between July and August 2009 to measure influences of implementation progress and effectiveness. Stratified purposeful sampling was used by first interviewing both PC and MH leaders who then, respectively, identified primary care and colocated mental health staff. Leaders used their understanding of the local clinic contexts to select professionals representing different clinical backgrounds who could best speak to coordination procedures or who were most closely involved with mental health treatment based on their local context judgment. The purpose of these interviews was to understand the implementation of colocated, collaborative care in local sites. Although some sites also implement depression care management, these models are less common in VA. Interviews required up to 45 minutes with a note taker instructed to record responses verbatim where possible.

In-depth interviews allow for intensive exploration of a phenomenon with individuals who have experienced it [28]. The evaluation team developed seven interview questions and specific probes to gather information on the processes used to coordinate primary care and mental health staff, how those processes changed over time, and how processes could be further improved (Table 1). Questions were generated based on management literature on coordination and were designed so the conversation became progressively more focused on the important aspects of informants' experiences they chose to discuss in the initial open-ended questions. Interviewers first asked two "grand tour" questions [29] that allowed informants to describe the present and evolved/past processes of care used in their sites openly and without a researcher-imposed framework. These questions focused informants on the processes used to provide depression care in the primary care setting and in particular on the changes in those processes. Interviews then turned toward interviewer-driven topics related to characteristics of the intervention (e.g., interpersonal relationships and coordination procedures), and how the intervention could be improved (e.g., communication, collaboration, resource barriers). These follow-up questions allowed us to explore our research questions in more detail [30, 31].

2.3. Data Analysis. The data analysis methodology was chosen to elaborate extant theory regarding the role of organization and leadership factors in intervention implementation. Very little theory has been developed regarding how healthcare organizations react to mandated organizational changes; however, we recognized that research on intervention implementation [17, 32–34] and organizational coordination [22] would likely be relevant. We used grounded theory techniques to identify emergent concepts and specify relationships between these theoretical concepts [35]. Specifically, we used NVivo [36] to analyze the data iteratively in four stages.

The purpose of the first two stages was to immerse ourselves in the data. In the first stage, we read through the interviews in their entirety to develop site summaries in order to begin theorizing about the factors that impacted PC/MHI implementation and to understand the gestalt PC/MHI implementation. These site summaries were needed to ensure that coded data were interpreted within the specific context of each site. In the second stage, the first author coded the raw data without any preconceived framework, looking for similarities across our key informants and across our sites. The purpose of this step was to identify similar types of data that could be analyzed in more depth. The output of this step was a set of codes that represented descriptive characteristics of PC/MHI (e.g., types of referral processes).

The purpose of the last two stages was to develop conceptual codes that represented potential causal factors that might impact the PC/MHI implementation (see Table 3) and identify how these codes are connected. Our knowledge of theoretical concepts from implementation science as well as the leadership and organizational psychology literature served as a foundation for our analysis. The concepts and framework presented here, however, were grounded in and emerged from the data analyses [37]. In the third stage, we reanalyzed the raw data associated with each descriptive code. Two coders (one, [blinded], trained in the organization sciences and a second, [blinded], an expert in mental health services) sequentially recoded the evaluation data in NVivo (version 2) to identify potential causal relationships among the codes [38]. Each first coder identified the relevant concepts through an iterative process of coding emergent concepts, reviewing the concepts, revising the conceptual codes, and developing a coding guide for the second coder, who then also coded the emergent concepts. The two coders discussed all disagreements, referred to the overall site summaries as needed and reached consensus for the definitions and application of each code. Thus, the codes represented a consensus between these two disciplinary perspectives. The fourth stage of analysis focused on establishing the connections between the concepts represented in this set of codes. Specifically, the data were divided between four authors such that each author was responsible for the data associated with 4-5 conceptual codes (e.g., one author reviewed only comments in the leadership factor). The authors then individually analyzed their set of data to identify how their conceptual codes were related to the other conceptual codes listed in Table 3. The outcome of this process was a summary of each conceptual code that detailed the empirical support for causal links with other conceptual codes. With input from all other authors the first author then led a process of integrating these analyses to formulate the emergent theory presented in Figure 1. The first author created an initial path diagram that detailed all of the possible

Table 3: Emergent codes.

Code	Definition
(A) Leadership	Leadership does/does not provide direction, coordinate between different services, obtain needed resources, make timely decisions, communicate with staff.
(B1) Resources (space)	Lack of space includes barriers due to physical structure of facility, includes lack of space and distance barriers.
(B1) Resources (staffing)	Not enough staff available to provide coordinated mental health care.
(B1) Resources (knowledge and skills)	Specific mention of staff knowledge, skills, or abilities. It includes general comments such as "good staff"
(B2) Training	Training for MH procedures, including training of admin personnel
(B3) Work design	Intentional choices regarding how care is provided; description of how tasks are divided between staff and/or clinics including informal systems work systems designed to overcome other barriers, including mandated tasks and same day appointments
(C1) PC/MH boundaries	Perceived physical and/or psychological barriers between primary care and mental health clinics provide barriers to care.
(C2) Time pressure	Overworked staff, working through admin/lunch time
(C3) Staff participation	Staff "buy-in", perceptions of mutual PC and MH participation, comfort with PC/MH referrals. It includes the use of formal and informal meetings to increase participation.
(D) Referral systems	Processes used to coordinate care may include specific barriers to the referral process. It including the use of electronic medical record, paging systems, checklists.
(E) Communication	Interpersonal communication, communication between PC and MH.
Patient complexity	Challenges due to complicated mental health conditions and/or medical comorbidities; patients have many health needs, including noncompliance issues

links between concepts suggested by the data. The authors refined the model through an iterative process of reviewing the data and group discussion.

Triangulation is valued in qualitative research because parallel perspectives across key informants can increase the credibility of qualitative analyses [39, 40]. We expected variability in how the intervention was implemented across sites because the design of work is path dependent, that is, the way that structure is modified is influenced by history and prior structure [41], and so work practices are likely to vary greatly by site. We also expected variability in the barriers and facilitators to implementation across sites. Therefore, we compared responses across sites to enhance the credibility of results and we specifically noted where conclusions were based on the report of key informants at only one site.

3. Results

We have developed a theory to understand that the leadership and organizational factors create barriers and facilitators to a locally adapted intervention designed to provide mental health care in the primary care setting (Figure 1). Definitions of emergent codes are presented in Table 3. Our analyses focused on factors associated with leadership (Factor A), organization (Factor B), and provider experiences (Factor C) as they were reported to impact both referral systems (Factor D) and communication (Factor E). The role of referral systems and communication with coordinated mental health care (Factor F) was not measured, but informed our conceptual framework and study design, and were discussed as important by participants. Below, we begin by discussing the two modes of coordination in PC/MHI, interpersonal communication between providers, and standardized referral systems. We present evidence regarding the influence of provider experiences on communication (Path C → E), and how referral systems are affected by both organizational factors (Path B → D) and provider experiences (Path C → D). We then review the evidence regarding how provider experiences are affected by organizational factors (Path B → C), and discuss how leadership can affect both organizational factors (Path A → B) and provider experiences (Path A → C). Finally, we conceptually discuss the role of patient factors in our model, depicted as the surrounding environment in Figure 1.

3.1. Communication between Primary Care and Mental Health. Communication between providers was relational, starting at the front lines. Primary care providers reported interacting with mental health staff on a personal level, building relationships, in order to generate trust and effective communication. At some sites, where the mental health worker was a psychologist rather than a psychiatrist, primary care providers indicated that they would have preferred MD to MD relations with a psychiatrist. Yet reported communication patterns varied. The source of this variation was not

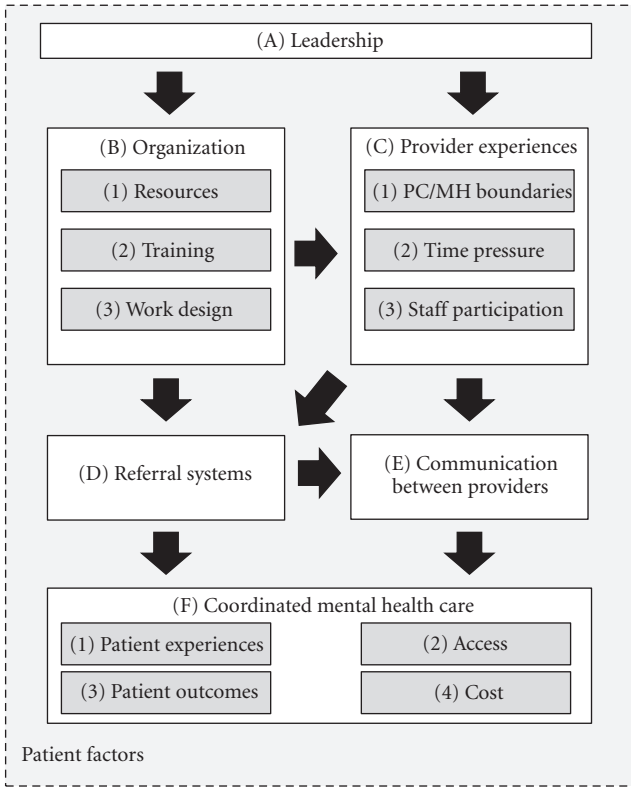

Figure 1: Theoretical framework of barriers and facilitators to locally-adapted PC/MHI implementation.

clear from the analyses, but may have been due to individual differences in preferences and attitudes.

Primary care providers who discussed communication barriers indicated that time pressures made it difficult to build relationships (Path C2 → E). Communication between PC and MH typically increased incrementally during the implementation of PC/MHI as the psychological boundaries between services decreased and staff increased their participation and involvement in integrated mental health care. As mental health staff started to work to address primary care needs, primary care began communicating more with mental health (Path C3 → E).

3.2. Referral Systems. The VA electronic medical record provides tools and templates so PC and MH providers can better communicate about patients and, when necessary, see patients sooner. Some examples included a consult screen being successful in increasing patient access and referrals; a triage checklist for PC to handle patients in crisis right away; and integrated medication lists to flag medication interactions. The electronic medical record provides information about how PC and MH are coordinating services for a patient through automated notification processes. This electronic communication appeared to facilitate interpersonal communication regarding patient care (Path D → E). Staff reported barriers due to inadequate information in the electronic medical record which included the quick consult screen not being detailed enough to provide needed information, follow-up appointments not being scheduled appropriately by specialists, and lack of certain fields which could provide increased coordination (e.g., the name of the primary mental health provider).

Appropriate staffing and funding to hire new employees were reported as important for referral system effectiveness (Path B1 → D). Some sites emphasized the need to hire more MH and PC providers. Staffing limitations were reported as barriers to implementing the desired work design for PC/MHI. For example, staffing limited colocation of psychologists that in turn limited the availability of same day access to mental health care or short-term therapies. Space resources were needed to allow staff to be colocated within the same space (Path B1 → B3) and to provide the staff needed to handle the additional mental health consults (Path B1 → D). Notably, leaders often reported that available space in primary care limited the amount of mental health staff that could be hired. Other staffing issues which may impact referral system effectiveness were staff turnover, inability to fill vacant positions, and Human Resources delays inhibiting timely hiring.

Referral systems were also reported to be affected by time pressure and training. Referrals through the electronic medical record were seen as more efficient when workload was high (Path C2 → E). Other sites reported that a lack of knowledge of the appropriate mental health referral processes limited the effectiveness of electronic referrals. Strategies for increasing referrals mentioned were training primary care staff (Path B2 → D) and developing referral templates (i.e., standardizing coordination) for the electronic medical record (Factor D). Primary care staff reported needing additional training for evidence-based mental health treatment. Staff from various sites reported receiving broad training regarding changes in work design (Path B2 → B3) and referral processes (Path B2 → D) but not necessarily in-depth training for how to handle specific problems (Path B2 → F). In one site, staff reported that training was needed for nurses (e.g., dealing with crisis patients during triage) and clerks (e.g., interacting with angry patients) in addition to primary care providers.

Unresolved conflicts between work design and patient mental health needs were identified as barriers to patient access that limited referral system effectiveness and efficiency. Primary care providers noted that formulary restrictions often made it difficult for them to adjust medications for mental health conditions (prescribing authority in VA is often limited by provider specialty) that increased the need for specialty care referrals (Path B3 → D). One mental health clinician reported that competing demands to focus improvement efforts on returning Veterans and traumatic brain injury led to a divided focus on primary care integration (Path B3 → D). Having an on-site mental health clinician was noted to help alleviate same day appointment concerns through warm hand-offs (Path B1 → B3 → D), where primary care providers would introduce patients to MH staff, who would then perform a short assessment. However, some primary care participants reported the use of beepers as an alternative method to manage scheduling and same day appointment access (Path B3 → D). Mental health at many

sites responded to high demand for care by designing work (i.e., templates and protocols) to manage this demand (Path B3 → D). For example, at one site, mental health required a patient to be on the maximum medication dosage before being seen. Another site handled high demand for substance abuse care by mandating that mental health conditions be resolved before addressing substance abuse. In some sites, primary care staff reported ad-hoc workarounds to meet the criteria of the template to manage these access restrictions.

The intentional choices regarding how primary care and mental health work are organized (i.e., work design) created the potential for conflicts when coordination procedures were revised. Conflicts between intended improvements to work design with the broader patient care system created unintended consequences in referral systems (Path B3 → D). One type of conflict was observed between the design of routine and urgent mental health care. Some sites implemented an electronic scheduling system where open slots are available and patients in need of MH services can be given immediate access, but increasing the number of open appointment slots was reported to decrease access for regularly scheduled patients. A second type of conflict was observed in how referral systems were specified between services. Interservice referrals in VA were specified by formal or informal agreements, and these prior agreements set the context for unintended consequences when PC/MHI was implemented. In two sites, emergency room staff reacted to the addition of PC/MHI staff by attempting to shift responsibility for urgent mental health care to primary care. Other sites reported that specialty mental health staff began restricting access to only patients with the most severe conditions. Yet another site reported difficulties managing referrals to substance abuse for patients who also had mental health conditions.

3.3. Organizational Factors Influence Provider Experiences. The knowledge, skills, and abilities of staff were frequently mentioned as an important organizational resource for integrated care. Some examples of key relevant staff characteristics were motivation to work with and care for Veterans in particular, primary care providers who understand psychology, and competent mental health liaison nurses. Interviewees reinforced the need for collaboration among providers with differing levels and types of primary care and mental health skills. Interviews suggested that mutual awareness of collaboration opportunities was sufficient to create interactions. Persistence of colocated mental health staff in developing relationships and learning about how to address mental health needs in primary care was reported to slowly change primary care providers' participation (Path B1 → C3). At the point of the interviews, mental health staffing was not yet sufficient to handle the volume of work in many sites (B1 → C2). Time pressure was closely related to work design, where several sites reported efforts to redistribute workload across PC and MH (B3 → C2).

Mental health staff members were frequently colocated with primary care staff. Colocation was perceived as improving integration, referrals, and clinician accessibility in part because proximity increased familiarity between primary care and mental health staff (B3 → C3). Mental health providers reported that informal conversations with primary care providers, such as in hallways or over lunch, were particularly important in engaging primary care providers. Preexisting collaborative relationships between primary care and mental health were reported to facilitate the intervention (Path B3 → C3). In sites without these preexisting relationships, mental health providers reported actively seeking opportunities to demonstrate how mental health could help primary care. Mental health staff attendance at monthly primary care meetings was reported to increase primary care participation and engagement (Path B3 → C3). Employees noted that during these meetings, discussions about appropriate consults occurred, and leadership could provide a consistent message regarding the importance of coordinated mental health care.

Cultural norms and work patterns differ between PC and MH, so defining the boundaries of patient care responsibilities and dealing with preconceived notions of how patient mental health care should be coordinated are challenges that require on-going upkeep. Deterioration of interactions across PC and MH boundaries that arose over time was repeatedly described as turf wars and sometimes attributed to lack of resources (Path B1 → C1). For example, primary care providers were reported to be worried that PC/MHI would increase demand on their scarce resources, and at one site mental health providers were reported to redirect large numbers of patients to primary care for treatment who were previously treated in specialty mental health (e.g., personality disorders). Colocated mental health staff, who worked on the boundary between primary care and mental health, provided detailed information regarding these conflicts. The general theme is that boundary issues are not static but require continuing attention over time so as not to break down as staff and circumstances change.

3.4. The Role of Leadership in Integrated Care. PC/MHI implementation required collaboration between service leaders. At a minimum, engagement of both primary care and mental health leaders in a collaborative effort was needed to support the intervention. Clinic leaders indicated that the intervention benefitted from collaboration with leaders in administration, human resources, nursing service, and specialists in the needs of Veterans returning from Iraq and Afghanistan. Leadership was reported to be effective in bridging boundaries between services, resolving conflicts, requesting and allocating resources, and setting responsibilities for new staff.

PC/MHI is designed to act for multiple constituencies (e.g., PC, MH, and patients), and changes to work design and resources through the PC/MHI intervention affected how those constituencies perceived the intervention. In some cases, these issues were resolved by leader involvement and interservice negotiations. Leaders helped clinicians cross boundaries between PC and MH through formal and informal meetings (Path A → C1). In contrast, other leaders maintained or even strengthened these boundaries between PC and MH by acting as an intermediary between services rather than promoting direct interaction. Leaders were

particularly important when conflicts arose across these PC/MH boundaries (i.e., turf wars) over responsibility for patients with urgent mental health needs.

Leadership was broadly identified as important in focusing available resources toward PC/MHI goals (Path A → B1). Sites that reported leaders to be supportive indicated that leadership was particularly valuable for staff recruitment and space allocation. Informants who reported poor leadership support reported long delays for necessary resources, such as changes in the referrals systems that would improve communication. Further, leaders at all levels (e.g., service chiefs, nurse managers) were reported to have an important role in developing training programs that provided mental health knowledge, skills, and abilities needed for the intervention (Path A → B2 → B1).

Informants also reported that leadership was an important factor in adjusting work design to improve patient access to mental health care (Path A → B3). Leadership was also reported to have some impact on staff participation (Path A → C3). Leaders were reported to have minimal direct influence in the intervention as changes in care required changes to provider behaviors, but active frontline leader engagement was reported as critical in supporting highly motivated providers (e.g., providing co-located space, supporting work redesign) thereby maintaining but not necessarily creating staff participation (Path A → B1 → C3).

3.5. Patient Factors. Data indicated that patient factors may affect the utilization and effectiveness of referral systems (Factor D), as well as the amount of communication needed between providers (Factor E). Informants reported the importance of differentiating patients with on-going chronic needs who need to see providers in a MH setting versus patients with short-term needs that can be handled in a PC setting. Providers would like to refer some of these complex patients to treatment programs or long-term care facilities but sometimes have difficulty finding the open slots. Regarding the effectiveness of referral systems, staff reported that patients were frequently noncompliant to prescribed treatment and missed appointments. In addition, complex patients require medication coordination that may increase the amount of communication needed between primary care and mental health.

4. Discussion

We developed a theory that posits leadership, provider experiences, and organizational factors as key influences on the successful implementation of new mental health coordination practices in real-world healthcare settings. Specifically, factors associated with leadership and organizational characteristics shaped provider experiences, all of which affected the degree to which mental health care was coordinated through referral mechanisms and communication among providers. Organizational factors and provider experiences were important because they set the structural and relational conditions that facilitated and hindered PC/MHI implementation. Though the relationships between individual provider attributes and intervention implementation are often meaningful, our findings suggest that the organizational processes supporting/constraining implementation are extremely important.

Leaders were able to affect provider experiences by providing opportunities for staff to work across professional boundaries, by resolving conflicts, and otherwise supporting staff who were working to implement the intervention. Leaders also were able to modify organizational factors by obtaining and allocating critical resources (e.g., personnel, space), developing training to close staff knowledge or skill shortages, and adjusting work responsibilities to address implementation challenges as they arose. Provider experiences and organizational factors directly impacted how referral systems and interprovider communication were implemented.

4.1. Practical Significance. This study is a first step toward an explanatory model of organizational coordination intervention implementation that could be applied to a wide range of mental health coordination problems. For example, in addition to outpatient coordination of depression care, transitions of mental health care between inpatient settings and primary care are important. A recent VA study suggests that transitions of mental health care after general medical hospitalizations are particularly important for patients with mental health conditions [42]. We propose that the implementation of coordination procedures between inpatient medicine and an outpatient mental health service is likely to be affected by the same set of factors (i.e., leadership, organization, and provider) as the PC/MHI intervention.

This study has direct, practical implications for mental health providers and managers who are considering implementing changes to how patient care is coordinated across multiple healthcare providers and especially when those providers operate across organizational boundaries (i.e., professional silos). In the context of local responses to a mandated intervention, both leadership and organizational factors (i.e., resources, training and work design) were identified as potential antecedents for the implementation of new referral systems and patterns of communication across providers. Provider factors (i.e., perceived PC/MHI boundaries, and staff participation in the intervention) were reported to be important but only indirectly affected by leaders. Sites in the current study either took advantage of preexisting collaborative relationships between primary care and mental health or utilized highly engaged key individuals to attenuate the boundaries between services and increase staff participation.

The PC/MHI intervention was designed to cross intraorganizational boundaries in that coordination procedures were implemented across PC and MH units within one healthcare facility. However, organizational boundaries can also be interorganizational. For example, coordination procedures could be implemented between independent fee-for-service PC and MH providers or provider groups. We propose that our model is also relevant for these types of interventions. That is, communication patterns between independent facilities such as these will likely depend on the strength of organizational boundaries, the time pressure

experienced by staff, and the degree to which staff choose to participate in the intervention. Without a common health system as in VA, organizational boundaries may be stronger and participation may be more variable, but we suggest that the concepts will be similar. Accountable care organizations and medical homes being created in the private sector, for example, may have environments amenable to these types of interventions. Resources, training, and work design may also vary more across independent units and therefore implementing standardized referral procedures may be more challenging, but the key relationships between these concepts are likely to be the same. Because we expect increased variation in both organizational factors and provider experiences when implementing interventions across independent facilities, we expect that leadership will be even more important. Shared vision for the organizational change across independent facilities is likely to be particularly important when redesigning work, allocating resources, and bridging interorganizational boundaries.

4.2. Limitations and Future Research Directions. The dependent variable for our study was coordination, an operational dimension of integrated care, but we acknowledge that the clinical and financial dimensions of integration are important outcomes of PC/MHI. Patient experiences, patient access, patient outcomes, and cost data would be needed to judge whether the intervention was successful or not. Our study was only able to identify the factors that influenced the implementation process. That is, leadership, organization factors, and provider experiences may be important in changing coordination processes, but those processes may have negligible impact on outcomes. Thus, further research on the clinical, financial, and patient-centered impacts of the PC/MHI model in actual practice settings is recommended.

We did not design this study to measure the impact of patient factors on the intervention implementation. Healthcare integration is typically conceptualized as an organizational factor, but patient experiences of integrated care are an important dimension that is often overlooked in both theoretical and empirical work [26]. We acknowledge that patient preferences and mental health diagnoses vary in the types of referrals and amount of communication needed, and therefore patient factors may moderate the impact of leadership, organization factors, and provider experiences. For example, depression may be entirely managed within the primary care setting, particularly if colocated short-term therapy is available, whereas other mental health disorders, such as schizophrenia, may be managed in specialized clinics. Thus, the characteristics of the patient panel involved are likely to have considerable impact on leadership support, resources, and provider experiences. Our study was not designed to identify these links and thus our data is limited regarding how patient factors influence the delivery of mental health care in the primary care setting.

This study was limited in that sites were all sampled from VA, a healthcare network with unique organizational structures compared to other healthcare providers in the United States. Aspects such as its hierarchical structure and the influence it has on different medical centers, the degree to which it is a closed system, and its size, may limit the transferability of findings to other settings [41]. However, the purpose of the current study was theory building rather than theory testing and therefore purposeful sampling to identify the processes of interest was appropriate rather than random sampling to identify population parameters [43]. Our use of multiple sites strengthens the emergent theory because identified processes are not limited to a single group of healthcare providers. Theory building is an iterative process that involves analysis of multiple cases and additional research is needed to determine whether and how certain dimensions of the current theory are limited to VA. Some reported barriers (e.g., turf wars) may not be as relevant for coordination between fee-for-service facilities, but we propose that the concepts presented are likely to generalize across contexts. Because our theory is based on local responses to a national mandate to provide integrated mental health care, results may be most directly applicable to responses to national or state-level policy changes (e.g., licensure scope, mental health equity) but may also apply to any local organizational changes intended to improve coordination. Although the specific factors may vary, the concepts identified in the current study are common in studies of organizational intervention barriers and facilitators [32–34]. We propose that our framework of leadership, organization factors, and provider experiences is relevant to the implementation of any intervention designed to create coordination procedures.

We acknowledge that clearly specified interventions with stronger evidence may be more easily marketed to clinicians and may be viewed as easier to adopt by local leaders [18], but research has not focused adequately on understanding situations where "evidence-based" interventions are not available or do not fit with local conditions. Intervention implementation research in clinical settings tends to focus on either adoption [18, 19, 34] or spread [44–46] of evidence-based practices. This type of implementation research is designed to identify the factors that maximize implementation fidelity of a standardized intervention that is being promoted as a best practice. However, establishing fidelity to a standardized guideline may not be optimal for all sites [44]. Recent research suggests that interventions that are tailored to be consonant with local norms, resources, and patterns of practice may be more sustainable than standardized interventions [45]. Furthermore, healthcare settings face problems for which there may not be clear evidence-based solutions available [46, 47]. There are many studies of implementation barriers and facilitators but no general framework to explain how these barriers and facilitators affect organizational changes [32–34]. The current study provides a framework of barriers and facilitators that can be used to study local tailoring and adaption of planned organizational changes.

Future research on the implementation of interventions designed to improve coordination would benefit from careful initial measurement of the identified organizational, leadership and provider/cultural/social factors to assess baseline capacities relevant for implementation. Repeated measurements of these and related factors over time would allow for exploration of the extent to which they mediate/moderate

key intervention outcomes. For example, organizational boundaries due to social and cognitive differences between professions may interfere with intervention implementation [48]. Leadership was the only factor that we identified as an exogenous variable; that is, our interviews did not indicate that leadership was influenced by organizational or provider factors, but rather that leadership influenced each of those factors. Repeated measurement of leadership behaviors and communication across these boundaries could provide evidence that leadership can improve implementation of a coordination intervention by interpersonal interactions between professions. Future research would benefit from exploring the qualities and practices of leaders who effectively support the boundary spanning activities of providers that are essential to providing coordinated mental health care.

5. Conclusions

We used grounded theory to develop a conceptual framework that identifies leadership, provider experiences, and organization factors as key antecedents to local changes when new coordination practices are implemented in healthcare settings. Our results suggest that current organizational resources, training, and work design along with psychological barriers between units, time pressure, and barriers to staff participation in the new coordination procedures at a site are each important factors to consider before implementing an organizational coordination intervention. Results may apply to any local changes intended to improve organizational coordination.

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Research Article

Exercise for Adolescents with Depressive Disorders: A Feasibility Study

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Objectives. Adolescence is associated with increased depressive symptoms and decreased aerobic exercise, yet the relationship between exercise and clinical depression among adolescents requires further examination. This study assessed the feasibility of a 12-week intervention designed to increase exercise for adolescents with depressive disorders: Will a teenager with depression exercise? *Methods*. Participants were 13 adolescents with depression reporting low levels of aerobic exercise. They completed a 12-week intervention (15 supervised exercise sessions and 21 independent sessions). Exercise was measured through the aerobic exercise Questionnaire, actigraphy, and heart-rate monitoring. Depression was measured with the Children's Depression Rating Scale, Revised, and Quick Inventory of Depressive Symptomatology, Self-Report. *Results*. All participants who started the intervention completed the protocol, attending all supervised exercise sessions. Actigraphy verified 81% adherence to the protocol's independent sessions. Analysis of secondary outcomes showed a significant increase in exercise levels and a significant decrease in depression severity. Initially, ten participants were overweight or obese, and three were healthy weight. After 12 weeks of exercise, the number of participants in the healthy-weight category doubled. *Conclusions*. Adolescents suffering from depression can complete a rigorous protocol requiring structured increases in aerobic exercise. Participants showed significant increases in exercise, and significant decreases in depressive symptoms.

1. Introduction

Adolescent depression has long-term consequences and is often associated with additional depressive episodes in adulthood [1]. The presence of a major depressive disorder (MDD) in adolescents can negatively affect academic, social, and family functioning [2]. Evidence-based psychotherapies and medication are indicated for children and adolescents with moderate-to-severe depression [3], but greater than one-third of adolescents with depression do not show an adequate clinical response to antidepressant medications [4]. In the Treatment for Adolescents with Depression Study, the response rates after 12 weeks of treatment were 35% for placebo, 43% for cognitive behavioral therapy (CBT), 61% for fluoxetine, and 71% for combination treatment. However, the rates of full remission after 12 weeks of treatment were only 17% for placebo, 16% for CBT, 23% for fluoxetine, and 37% for combination treatment [5].

In addition to low rates of response and remission, there is concern regarding the safety of antidepressant medications. In 2005, the Food and Drug Administration issued a black-box warning stating that antidepressants may increase the risk for suicidal thinking and behavior in children and adolescents. This regulatory decision was based on a meta-analysis of 24 trials involving over 4,500 patients which indicated an increased risk of suicidality (risk ratio = 1.95; 95% CI = 1.28–2.98) during the first few months of initiating antidepressant medication treatment [6]. This warning has been associated with a decline in youth and young adults seeking treatment with antidepressant

medications, prompting patients and parents to consider alternative, nonpharmacologic interventions [7].

One alternative treatment option currently under investigation is exercise. A randomized controlled trial (RCT) of older adults with mild-to-moderate depression compared supervised exercise, home-based exercise, sertraline, and pill placebo [8]. In this study, Blumenthal and colleagues demonstrated that exercise was as effective as medication for decreasing depressive symptoms. In a study of young adults with MDD, Dunn et al. assigned participants to one of five treatment conditions that varied by intensity (public health dose exercise, low-dose exercise, stretching control) and frequency (three or five times per week) [9]. In this DOSE study, all exercise sessions were conducted individually in a structured, supervised setting. After the intervention, an intent-to-treat analysis of participants' scores on the 17-item Hamilton Rating Scale for Depression ($HRSD_{17}$) showed a reduction of 47% for participants in the public health dose exercise condition compared with 30% for the participants in the low dose condition and 29% for those in the stretching control condition.

While vigorous exercise appears to be an effective treatment for depression in adults, a Cochrane Review suggests that the effect of exercise as treatment for depression in children and adolescents requires further investigation, as evidence-based research is lacking [10]. In nonclinical samples of adolescents, there is evidence to support that increases in leisure-time physical activity are associated with decreases in depressive symptoms [11]. Intervention research targeting health behavior change in the areas of physical activity and nutrition among adolescents in primary care has shown a positive impact on several health behaviors with the exception of vigorous physical activity [12]. Meanwhile, the strength of evidence in the use of exercise as treatment for depression in adults supports an emphasis on higher levels of aerobic activity [13]. Based upon these research findings showing that exercise is effective as treatment for adults with major depressive disorders, we chose to examine the feasibility of conducting similar research in adolescents with depression. We began by designing an intervention that required aerobic exercise three times per week.

There are multiple challenges encountered when investigating exercise as treatment for depression in adolescents, including: (1) the adolescent desire for autonomy versus authoritarian demands of adults such as parents and medical professionals [14]; (2) the time commitments of adolescents with academic, social, and family demands; (3) expectations in society for quick-fix solutions to complicated medical illnesses like depression; (4) limited access to exercise facilities or safe environments for some youth [15]; and (5) sociocultural factors that may undermine some adolescents' efforts to change activity levels [16, 17]. There are additional challenges for the many adolescents who struggle with both depression and obesity. In children, depression is a risk factor for the development of obesity [18]. At the same time, obesity in childhood increases risk for later depression [19]. The factors that predispose individuals to depression, such as sleep disturbance and decreased activity levels, are some of the same factors that predispose individuals to obesity. Exercise may be more difficult to initiate and maintain for youth with both depression and weight issues.

A major concern in this area of research is the potential drop-out rate due to adolescents' many time commitments and potential loss of motivation. In reviewing the drop-out rates using exercise as treatment for adults with depression, Dunn's 2005 DOSE study reported that of the 80 randomized participants, 72 began exercise treatment and 53 completed 12 weeks, representing a drop-out rate of 34% [9]. In Blumenthal's 2007 SMILE study, supervised exercise and home-based exercise participants had drop-out rates of 20% and 6%, respectively [8]. Other research on exercise and depression in adults has proposed a combination of supervised and independent exercise sessions to reduce participant burden [20]. In designing our study protocol, we felt that requiring a combination of independent and supervised exercise sessions would encourage our adolescent participants to incorporate exercise into their lives. At the same time, we expected that adherence to, and completion of, our intervention protocol would still be potential challenges.

The primary aim of this research study was to assess the feasibility of participant recruitment and retention in an exercise intervention for adolescents with depressive disorders. We hypothesized that there would be approximately a 25% drop-out rate during the study. Secondary outcomes included changes in levels of exercise and depression severity. Increases in exercise, as measured by actigraphy, heart rate monitoring during supervised sessions, and self-report, would suggest compliance with the protocol's requirements. Our corresponding secondary outcomes' hypotheses were that the frequency of exercise would increase and that depression severity would decrease for all participants.

2. Materials and Methods

2.1. Study Design. This study required adolescent participants with depressive disorders to complete a 12-week exercise intervention. The intervention included three supervised exercise sessions in the first week, two supervised exercise sessions in the second week, and one supervised exercise session in weeks 3 through 12. Participants were expected to complete one independent exercise session in week 2 and two independent exercise sessions in weeks 3 through 12. A final assessment was conducted three months following the conclusion of the exercise intervention. Beginning with the baseline appointment for the first participant and continuing through the three-month followup for the final participant, this study took 11 months to complete.

2.2. Participants. Institutional Review Board (IRB) approval was obtained to recruit participants through flyers distributed in local mental health clinics and high schools. Telephone screens were conducted with 25 adolescents to assess their levels of depression severity and physical activity, using the Quick Inventory of Depressive Symptomatology and the Physical Activity Questionnaire. If the adolescent reported symptoms of clinical depression and low levels of physical activity, he or she was invited to come in for a clinical baseline screening, at which the Children's Depression Rating

Scale, Revised (CDRS-R) interview was conducted. A raw score of 36 or greater (T-Score of 61 or greater) on the CDRS-R was required for acceptance into the study. Screening took place over a four-month period to recruit 14 participants who met study eligibility. Eleven screened adolescents were excluded due to the following: elevated activity levels ($n = 4$), lack of willingness to exercise at required level ($n = 2$), failure to respond to research staff's attempts to set up initial interviews ($n = 2$), lack of depression ($n = 1$), unwillingness to ask parent for consent ($n = 1$), and diagnosis of bipolar disorder ($n = 1$). The adolescent with a prior diagnosis of bipolar disorder was excluded in order to maintain diagnostic homogeneity and due to a lack of published data regarding the effects of exercise on youth with bipolar disorder.

Adolescent assent and parental consent were obtained from 14 adolescents and basic demographic information was collected. One participant sustained a major orthopedic injury prior to initiating the exercise intervention. Thus, the intervention phase was initiated with 13 participants (see Table 1).

Table 1: Demographic characteristics of participants at baseline.

Baseline demographics	($N = 13$)
Age	13–17 years, $M = 15.2$, SD = (1.4)
Sex	
Males	4
Females	9
Race	
Caucasian	7 (54%)
African American	3 (23%)
Biracial/MultiEthnic	2 (15%)
Hispanic	1 (8%)
Medical diagnoses	
Major depressive disorder	11 (85%)
Depressive disorder NOS	2 (15%)
Co-morbid diagnoses	
Attention deficit/hyperactivity disorder	2 (15%)
Anxiety disorder, NOS	2 (15%)
Medications	
None	7 (54%)
Selective serotonin reuptake inhibitor	5 (38.5%)
Fluoxetine	4 (30%)
Sertraline	1 (8%)
Stimulants (also on SSRIs)	3 (23%)
Body mass index—CDC category	
Healthy weight	2 (23%)
Overweight	5 (38.5%)
Obese	5 (38.5%)

These 13 participants included nine females (69%) and four males (31%) who ranged in age from 13 to 17 years ($M = 15.2$, SD = 2.4). Ethnicity and race were consistent with regional demographics: Caucasian (54%), African American (23%), biracial or multiethnic (15%), and Hispanic (8%). Eleven participants met criteria for MDD (85%), and two for Depressive Disorder, Not Otherwise Specified (15%). Four participants had MDD and a comorbid diagnosis: one with Attention-Deficit/Hyperactivity Disorder (ADHD); one with Anxiety Disorder, Not Otherwise Specified; two with both ADHD and Anxiety Disorder, Not Otherwise Specified.

At baseline, nine of the 13 participants (69%) were in psychotherapy and/or medication treatment for their depression. Seven participants (54%) were taking no psychotropic medications during the study. Five participants (38.5%) were on selective serotonin reuptake inhibitors (SSRI) at the beginning of the intervention (four on fluoxetine and one on sertraline) and continued on them throughout the intervention. Three of the five participants on SSRIs at baseline were also taking stimulants. During the intervention, two participants initiated psychotherapy, and one participant began taking an SSRI (sertraline) during the intervention at approximately the week 3 time point. Two unmedicated participants terminated their psychotherapy treatment for depression during the intervention, both citing an improvement in mood as the reason for termination.

2.3. Measures

2.3.1. Physical Activity Questionnaire for Older Children (PAQ-A) [21]. The PAQ-A is a self-administered questionnaire which asks informants to recall activities which made them "sweat or make your legs feel tired, or games that make you breath hard" in the past seven days. A score of 1 on the PAQ-A is equivalent to no exercise in the last seven days. A score of 5 is equivalent to exercise greater than five times in the last seven days. The questionnaire assesses participation in specific activities and sports (e.g., walking, running, football, and basketball) as well as specific times (e.g., physical education classes, after school, evenings, and weekends). The PAQ-A was modified to include common types of physical activity in the study region. The PAQ-A has good internal consistency [22], and it has been shown to have convergent validity with concurrently used physical activity measures, including self-report questionnaires and motion sensors [23].

2.3.2. Children's Depression Rating Scale, Revised (CDRS-R) [24]. The CDRS-R consists of a semistructured interview with strong concurrent validity, demonstrated by associations with other measures of child and adolescent depressive symptoms. It has shown high internal consistency (alpha = 0.85) in cross-sectional samples and good interrater reliability [25]. In this study, two staff participated in the administration of the CDRS-R at all time points and recorded their ratings separately. Interrater reliability proved to be high. Across 17 items with a possible total raw score ranging from 17 to 113, total ratings within five points of

each other were considered as being in agreement. Inter-rater agreement was 89.7% over all three time points. After each clinical assessment, the clinicians compared ratings, discussed differences, and determined a consolidated score. Raw score ratings are 30–42 for mild depression, 43–57 for moderate, 58–72 for severe, and 73 or higher for very severe depression [26].

2.3.3. Quick Inventory of Depressive Symptomatology (QIDS) [27]. The QIDS has highly acceptable psychometric properties which support the usefulness of this brief rating of depressive symptom severity in both clinical and research settings. Internal consistency is high for the self-report version, the QIDS-SR (Cronbach's alpha = 0.86). In a 2010 study of 140 adolescent outpatients, all versions of the QIDS (except the parent interview) were shown to have high reliability in use with adolescents [28]. Ratings on the QIDS-SR are 6–10 for mild depression, 11–15 for moderate, 16–20 for severe, and greater than 21 for very severe depression[27].

2.3.4. Actigraphy (Actiwatch-LTM, Mini Mitter Co., Inc., Bend, OR) [29]. The actigraphs are worn on the wrist like a watch and electronically measure the number of movements that exceed 0.01 g (gravitation force per minute of recording). Data were downloaded from the actigraphs at the end of each recording period. Initial data analyses were conducted with on-board Mini-Mitter software.

2.3.5. Body Mass Index (BMI). The Center for Disease Control and Prevention promotes using BMI as a way of assessing body fat for children and adolescents. The CDC Teen BMI Calculator was used to determine categories for participants pre- and post-intervention. A healthy weight for a teen is indicated by being in the 5th to 84th percentile; one is considered overweight if in the 85th to the 94th percentile; and an adolescent is considered obese if he or she is in the 95th percentile or above [30].

2.4. Procedures

2.4.1. Pre-Intervention Assessment. Baseline interviews were conducted with eligible adolescents and a parent or legal guardian. Self-report measures were completed by the participants, and clinical staff conducted the CDRS-R interview. Height and weight were measured at baseline, week 12, and three months post-intervention. The same scale (Scaletronix Model #5002) was used for all weight measurements.

The participants wore an actigraph for one week to document activity levels and sleep schedules prior to the intervention. Participants were told to keep the actigraph on 24/7 for this week, as well as weeks 3 and 12. Those subsequent weeks of actigraphy provided us with data to confirm compliance with planned independent exercise sessions. This was conducted by reviewing the actogram and verifying the independent exercise sessions as reported by the participant.

2.4.2. Intervention. Medical clearance was obtained from each participant's primary care physician prior to initiating exercise. In the first week of the exercise intervention, the adolescents came to the exercise laboratory three times for supervised sessions using a treadmill, an elliptical, and/or a stationary bike. These were individual sessions with only study staff present to collect self-report measures, monitor safety, and record heart rate. Participants were allowed to listen to music; many brought MP3 players or iPods, and a radio and CD player were provided for those without their own electronic devices. All pieces of exercise equipment had surfaces on which to put a book or magazine, so reading was allowed. One participant brought his laptop and watched online television programs during his exercise session. Listening to music was the most common activity.

Participants were encouraged to warm up slowly, to try all exercise equipment and develop their own preferences, and to increase the length of their workouts gradually. Each participant was asked to exercise for at least 30 minutes in the first supervised session and to exercise for 45 to 60 minutes by the second or third session and thereafter. Heart rates were recorded every 10 minutes using the Polar F55 BRO model heart rate monitor. Both the elliptical and the treadmill also had cardiogrip readings which helped the participants to be aware of their heart rate throughout the session.

Initially in this study, there was an expectation that working out on the available equipment (treadmill, elliptical, and stationary bike) would lead to an aerobic exercise session for participants. However, after six participants completed the 12-week intervention, it became apparent that the intensity of the supervised exercise varied greatly among the adolescents. It was determined that a target heart rate would be established for each participant. The algorithm used was 220 minus age, multiplied by 0.85. From that point forward, participants were told their target heart rate and were encouraged to hit that rate multiple times during their session. If that was accomplished easily within the first 10 to 15 minutes, they were encouraged to maintain that heart rate for as long as possible. The emphasis was on aerobic exercise. If participants hit and maintained their target heart rate during the first 40 minutes of the session, they were allowed to exercise using free weights for the last 10 minutes of their session. For participants who expressed interest in using the weights, this was used as an incentive to maintain aerobic levels in the first 40 minutes of their session.

In the second week, the participants had two supervised sessions at the exercise laboratory, and completed one exercise session independently. Suggestions were made for independent workouts, including using available equipment (at home, school, local gyms), jogging in safe neighborhoods or on tracks at school, or working out with exercise videos. Some participants made suggestions of their own: jumping rope, dancing with friends, and working out with exercise shows on cable television stations.

In weeks 3 through 12 of the intervention, the staff reviewed with the participant what exercise sessions had been accomplished independently in the past week, and assisted the participant in planning the independent sessions for the following week. For each of the next 10 weeks, the participants had one supervised session at the exercise laboratory and exercised twice on their own.

2.4.3. Post-Intervention Assessment. Three months after the intervention, participants wore an actigraphy watch for one more week before returning for a final clinical assessment. They then had an interview during which the CDRS-R was administered and completed measures assessing levels of exercise and depression.

Participants received five $25 cash payments at baseline; weeks 4, 8, 12, and at the three-month post-intervention time point.

2.5. Statistical Analysis. Paired samples t-tests were conducted to compare baseline and post-intervention outcomes. Pearson's two-tailed correlations were used for the analysis of exercise level and depression severity. Cohen's d was computed to evaluate the effect size of changes in exercise and depression severity [31].

3. Results and Discussion

3.1. Results

3.1.1. Feasibility. Every participant completed this exercise intervention. On average, it took 14.25 (SD = 3.1) weeks to complete the 15 supervised exercise sessions and the 21 independent sessions. Six participants completed the intervention in 12 consecutive weeks. Other participants took extra time to complete the study due to transportation problems, illness, vacations, and demands of high school academics. Adverse events which were reported to the IRB included minor orthopedic injuries and one suicide attempt. Additional negative life events also impacted time to completion, including temporary homelessness, parental separations (two participants), and a police arrest.

Consistent with our aim to assess feasibility of participant retention, the adolescents were asked to give reasons for their participation so that we might better understand the motivational factors involved in getting adolescents with depression to exercise. The request was verbal, no menu of options was offered, and multiple answers were allowed. Reasons given by participants were to have structured exercise ($n = 5$), to lose weight ($n = 5$), for incentive money ($n = 5$), to fight their depression ($n = 4$), to be involved in research ($n = 2$), and to help other people ($n = 1$). In four cases, either parents or participants stated that they initiated participation in this research project as an alternative to antidepressant medication.

3.1.2. Exercise Outcomes. In our study, heart rates were monitored every 10 minutes during the supervised exercise sessions, with averages ranging from 124 to 181 beats per minute. For participants exercising prior to the establishment of a heart rate goal (220 − age × 0.85), target heart rates were achieved in 39% of the supervised exercise sessions. After target heart rates were calculated and participants were encouraged to hit those rates, in the remaining supervised sessions of the study, they hit their targets in 79% of those sessions. As seen in Figure 1, scores on the adapted PAQ-A increased significantly during the intervention phase

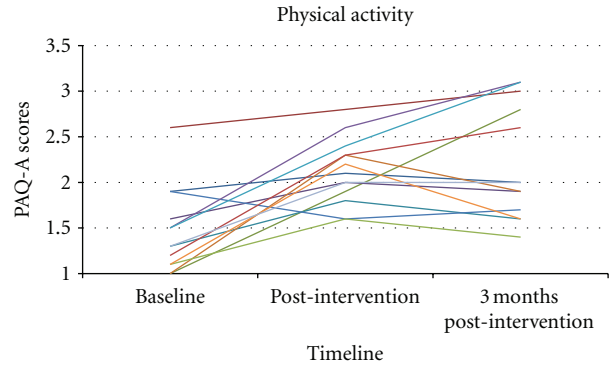

Figure 1: Adapted Physical Activity Questionnaire for Older Children scores at baseline, post-intervention, and three-month post-intervention time point.

($P = 0.001$). At baseline, the mean score on the adapted PAQ-A was 1.46 (SD = 0.48) with an increase to 2.10 (SD = 0.37) as measured during the final week of the intervention. The effect size based on Cohen's $d = 1.6$ was large, indicating robust effects. At the three-month post-intervention assessment, the mean score for the total sample on the adapted PAQ-A continued to rise to 2.21 (SD = 0.62).

Actigraphy recordings during weeks 3 and 12 were used to verify independent exercise sessions for those two weeks. Of the 52 expected independent physical activity sessions during those weeks, 42 sessions (81%) were verified by actigraphy. Of our 13 participants, one showed no actigraph data for both weeks 3 and 12; another had no actigraphy recorded for one of the two expected weeks. Absence of data was due to either technological malfunction of the actigraph or participant noncompliance (i.e., not wearing the actigraph as requested). Excluding the missing actigraphy, 91% of the expected independent exercise sessions were verified.

3.1.3. Depression Outcomes. The depression outcome measure was change in the CDRS-R score from baseline to completion of the exercise intervention, as seen in Figure 2. Depressive symptoms decreased significantly during the period of supported exercise ($P < 0.001$).

The mean score on the CDRS-R for these 13 participants was 48.9 (SD = 9.7) at baseline, and 28.5 (SD = 10.4) post-intervention, a decrease of more than 20 points. The effect size associated with depression improvement was also large, indicating robust effects on depression (Cohen's $d = 2.0$). Remission (CDRS-R < 28) was achieved by 62% of participants at the conclusion of the intervention. Three months after their final supervised exercise session, nine of the 13 participants had either maintained the same CDRS-R score or had a further decrease in depressive symptoms; mean score three months post-intervention was 25.9 (SD = 6.5). In this study, the mean score on the QIDS-SR was 10.2 (SD = 4.5) pre-intervention, 7.8 (SD = 5.5) post-intervention, and 6.2 (SD = 2.2) at the follow-up assessment three months after the intervention.

3.1.4. Body Mass Index. At baseline, five participants (38.5%) were obese, five (38.5%) were overweight, and only three

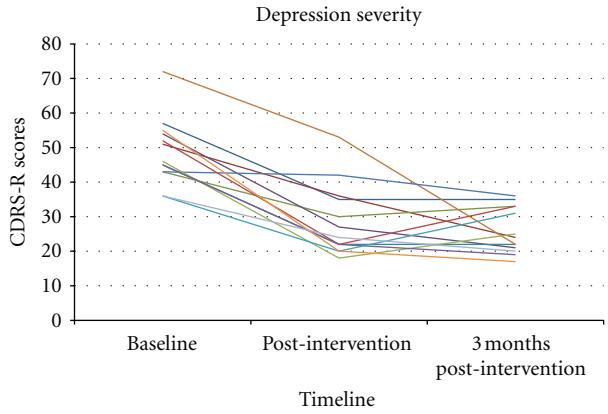

Figure 2: Children's Depression Rating Scale scores at baseline, post-intervention and three-month post-intervention time point.

(23%) were at a healthy weight. Between the baseline assessment and the conclusion of the exercise intervention, eight participants had a reduction in BMI while five participants had an increase in BMI. Following the intervention, three of the participants who had been in the overweight category were in the healthy-weight category. Of the three participants who moved to the healthy weight category, their mean BMI scores changed from 24.4 (SD = 1.4) pre-intervention to 23.6 (SD = 1.4) at 12 weeks.

Baseline BMI values ($r = -0.66$, $P = 0.03$) and post-intervention BMI values ($r = -0.75$, $P < 0.01$) were negatively correlated with average heart rates recorded during the supervised exercise sessions. Higher heart rates were positively correlated with change in BMI ($r = 0.75$, $P < 0.01$); the overweight adolescents who reached higher heart rates showed greater reductions in BMI.

3.2. Discussion. In this exercise intervention, adolescents with clinically significant depression were capable of completing a rigorous protocol requiring structured increases in exercise. Despite adopting a combination of supervised and independent exercise sessions, we expected that compliance with, and completion of, our intervention protocol would still be major challenges. However, 100% of these adolescent participants completed the 15 individual, supervised sessions required in our intervention protocol. Furthermore, adolescents reported ongoing exercise at the three-month post-intervention assessment, with six participants reporting an increase in exercise beyond the level reported at the conclusion of the intervention. This suggests the acceptability of incorporating exercise into their daily lives.

Given that our participants' compliance exceeded expectations, we reviewed the feasibility challenges we had expected to encounter and sought to identify which parameters of our study may have positively impacted those compliance and completion rates. First, the adolescents' independence was encouraged throughout our study. While parents or guardians were required to be involved in the consent process, during the period of exercise intervention all research staff communicated directly with the adolescent whenever possible rather than with the parents or guardians. Each week, participants reported to staff how they had met the independent exercise requirements, and goals for the following week were discussed. If parents asked if they should supervise or encourage the participant's independent sessions, research staff told them they were "off duty" for the independent sessions and that the teen would deal directly with the research staff regarding completion and reporting of the independent exercise. This helped to avoid having research expectations become a control issue or power struggle between adolescents and parents. The adolescents came up with creative ways of completing their independent sessions and were often proud of their exercise.

Second, having the exercise facilities in the same building as the outpatient psychiatric clinic building made the supervised sessions convenient for those participants who were also patients at that clinic. Third, research staff were extremely flexible in accommodating appointment hours outside of school, offering times during afternoons, evenings and weekends. To implement exercise as treatment for adolescents with depression in real world clinical practice, attention must be paid to issues such as encouraging adolescent autonomy, keeping appointment options flexible and suited to adolescents' demanding schedules, and establishing equitable access to facilities (e.g., onsite equipment, discounted or free passes to local gyms). Lastly, our experience is consistent with other researchers who report that compliance with the protocol is developed and maintained through an excellent therapeutic alliance between research staff and participants [32].

In addition to examining the factors that made this research study feasible, we also examined our secondary outcomes to understand the changes in exercise levels and depression severity. These 13 participants significantly increased their aerobic exercise levels as evidenced by the monitoring of heart rates in the weekly supervised exercise sessions; heart rates were even higher when specific targets were set for the participants to achieve. Actigraphy was recorded during weeks 3 and 12, verifying 81% adherence to the protocol's independent exercise sessions. Actigraphs were downloaded following the week of recording and did not provide any feedback to the participants. However, in future studies, independent exercise sessions and other increases in exercise will be verified using data from pedometers to provide more consistent monitoring of activity levels. The use of pedometers may help to reinforce positive health behavior by providing real-time feedback regarding one's level of activity. Furthermore, adolescents wearing pedometers could make a connection between their level of activity and their mood state.

Changes in depression severity were also assessed as a secondary outcome. Recognizing that previous research investigating exercise for adolescents with depression had been inconclusive in part due to a lack of repeated measures of depression severity [13], the design of this feasibility study included both clinician-rated and self-report measures of depression at multiple time points. All participants had reductions in their depression on both self-report (QIDS-SR) and the clinician-administered measure (CDRS-R). Of note,

there was no control group in this research study. There is no way to confirm that the changes in depression were directly related to the exercise intervention. At the same time, several of these adolescents with depression had been engaged in psychotherapy and medication treatment for many months and in some cases for several years. Some of the adolescent participants reported that the exercise intervention had been the reason for their reduction in depressive symptoms.

Although weight was not considered in our inclusion criteria, 10 of our 13 participants were either overweight or obese at baseline. Also, five participants reported that losing weight was a motivating factor for their participation in this research. In this study, we found it feasible to both recruit and retain participants in all weight categories. For most participants, weight and BMI did not show significant change. However, several participants reported changes in how their clothing fit and felt positively about their change in physical appearance irrespective of a change in weight or BMI.

Alternative and augmenting treatment options, such as exercise, should be explored for all adolescents with depression, especially those who are overweight or obese. Obesity alone predisposes individuals to coronary heart disease, type 2 diabetes, certain cancers, hypertension, dyslipidemia, stroke, sleep apnea, respiratory problems, osteoarthritis, gynecologic problems, and liver and gallbladder disease. For adolescents dealing with depression, a positive health behavior change such as increasing exercise could prove to promote self-management of depressive symptoms while also serving to prevent nonpsychiatric medical comorbidity.

In addition to including adolescents with a range of body mass indices, we allowed participants to continue concurrent treatment with medication and/or psychotherapy. By including participants with varying symptom profiles and at various stages of treatment, the results of this study suggest that it is feasible to consider exercise as a primary treatment for certain patients and as an adjunctive treatment for others. Of these 13 adolescents with depression, eight participants (62%) achieved remission of their depressive symptoms following the exercise intervention. However, one participant, with a minimal decrease in depression, showed a greater treatment response after fluoxetine was initiated during the three-month follow-up period. For this individual, exercise alone did not appear to be the most effective treatment, supporting the ongoing need to consider multiple modalities of treatment. Interestingly, the five participants who were on antidepressant medications at the start of the exercise intervention had impressive reductions in CDRS-R scores, with three achieving remission. This suggests that the exercise may have been a useful adjunctive treatment to pharmacotherapy in these individuals. Future studies, with efficacy as the primary focus, should consider starting with untreated adolescents with depression to more clearly delineate the antidepressant effects of exercise from those of medication and psychotherapy.

Research on exercise and depression in adolescents will also need to address the challenging issues associated with control conditions, considering both scientific and safety questions. What is an appropriate control or "sham" condition in exercise research? Is it ethical to enroll adolescents with depressive disorders in a research protocol that includes randomization to conditions with unproven effectiveness in treating depression (i.e., exercise or placebo)? Previous researchers have explored several strategies to address these questions. Some have chosen to use stretching as a control condition which showed antidepressant effects similar to those of low-dose exercise [9]. In Blumenthal's SMILE study comparing exercise and medication, one of the conditions was a placebo control [8]. It has been suggested that the prospect of direct benefit to the participant is present even in RCTs with placebo conditions, as "the randomized design offers a prospect of active treatment to each participant" [33]. Many adolescents show a response to placebo [5] and a consensus statement of depression researchers stressed that placebo should not be considered as an absence of treatment [34]. Furthermore, a meta-analysis of studies in depression concluded that up to one in five participants in a wait-list control may experience remission of depression [35]. In combination with these published articles, the results of our study, which included both medicated and unmedicated participants, suggest that research investigating exercise as treatment for depression in adolescents is feasible and that randomized controlled trial designs should be considered.

3.2.1. Study Limitations and Strengths. Methodological limitations included the lack of an objective measure of acceptability, the lack of a control group, and the lack of blinding for clinical staff administering assessments. We also acknowledge that these participants were self-selected and that these results may not be generalizable to all adolescents with depressive disorders. In addition, these data from 13 participants lack statistical power for additional analyses that might further explore gender differences and other questions about the relationships among exercise, depression, and obesity.

In this study, exercise was measured via self-report, through heart rate monitoring, and with intermittent actigraphy. Despite the periodic use of actigraphy, there was no objective measure of exercise for the majority of the independent exercise sessions. In future research, we will strengthen this element of our investigation with the use of pedometers throughout the study period, which can assess more continuous compliance with the protocol as well the intensity of exercise.

4. Conclusions

Our primary aim was to assess the feasibility of recruiting and retaining adolescents with depression in an exercise intervention. In short, can you get a teenager with depression to exercise? These adolescents with clinically significant depression completed a rigorous research protocol examining the role of exercise in the treatment of depression. The feasibility of research in this area is supported by the 100% completion of 15 supervised exercise sessions, and the strong adherence to the protocol's independent

sessions. During supervised sessions, the documented heart rates confirmed the participants' ability to achieve elevated levels of aerobic activity. Examination of secondary outcome measures showed that these adolescents had a significant increase in their exercise levels and a significant decrease in their depressive symptoms.

Ongoing research on depressive disorders and exercise is urgently needed to address the emerging epidemics of adolescent depression and obesity. Once the effectiveness of exercise is established as a treatment for depression in adolescents, the research must then focus on strategies to facilitate the implementation of this knowledge in the adolescents' world (e.g., psychiatric settings, school environment), and making the research results a catalyst for real behavioral change. If regular exercise can be proven to decrease depressive symptoms in adolescents, the information can and should impact clinical practice, encouraging the inclusion of exercise as part of the treatment plan. The ultimate goal is to use evidence-based research on exercise to influence the course of depressive illness during this vulnerable developmental stage.

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