



The Interconnections Project: Development and Evaluation of a Community-Based Depression Program for African American Violence Survivors

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BACKGROUND: Multi-faceted depression care programs based within the healthcare system have been found to be effective, but may not fully address the needs of African American Intimate Partner Violence (IPV) survivors, many of whom are not seeking depression care in healthcare settings.

OBJECTIVES: To develop and evaluate a multifaceted, community-based depression care program (the Interconnections Project) for African American women with a history of IPV.

METHODS: We used a community-based participatory research (CBPR) approach to develop, implement, and evaluate the intervention. Participants were African American women who had current depressive symptoms and a lifetime history of IPV. They participated in a 6-month intervention where a peer advocate provided education, skills training, and case management services, and used Motivational Interviewing to support self-management behaviors. We conducted pre-intervention and post-intervention assessments using quantitative and qualitative data.

RESULTS: Fifty-nine women participated, with 92 % attending any sessions and 51 % attending at least 6 h of intervention activities. Intervention changes made to better accommodate participants' unpredictable schedules improved participation rates. Participants noted high levels of satisfaction with the program. There were significant improvements in depression severity (PHQ-9 13.9 to 7.9, $p < 0.001$), self-efficacy, self-management behaviors, and self-esteem (all $p < 0.001$), but no increase in use of antidepressants. Common themes related to why the program was helpful included that the program was by and for African American women, that it fostered trust, and that it taught self-management strategies with practical, lasting value.

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CONCLUSION: Culturally specific, community-based interventions led by peer advocates may be a promising way to help African American IPV survivors effectively address depression.

KEY WORDS: community-based participatory research; depression; intimate partner violence; African Americans; community interventions.
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INTRODUCTION

African Americans experience significant healthcare disparities, including in depression care. They are less likely than non-Hispanic whites to seek mental health services, consider antidepressants or counseling acceptable treatments, or to receive guideline-concordant depression care.^{1–5} Similarly, African American women bear a disproportionately high burden of violence, including intimate partner violence (IPV).^{6–9} Not only has IPV been strongly associated with depression,^{10–19} but depressed IPV survivors are less likely to seek mental health care than those without a history of IPV.^{20,21} African American IPV survivors may face particularly strong barriers to obtaining effective depression care.

Over the past decade, many efforts to improve depression care have focused on the use of the Chronic Care Model (CCM)^{22–24} to address depression as a chronic illness. Systematic reviews of such multifaceted interventions²⁵ and collaborative care models²⁶ for treating depression have noted strong evidence for its effectiveness. However, such programs may not address the needs of African American IPV survivors, many of whom are not seeking depression care in the healthcare setting. Furthermore, though the CCM talks about the importance of using community resources, few depression care programs have partnered with the community in any significant way. Most depression care

models and guidelines do not address issues of race, ethnicity, or IPV.

Our community–academic partnership (the Interconnections team) has worked together, using a Community-Based Participatory Research (CBPR) approach,²⁷ for over 5 years to reduce depression care disparities. We previously conducted a needs assessment with our target population of primarily low-income, depressed, African American IPV survivors in Portland, Oregon.²⁸ Participants' discussions about healthcare revolved around perceptions of racism, with a deep mistrust of the healthcare system as a "white" system. Participants held strong negative attitudes toward antidepressants and expressed preferences for self-care. They wanted a community-based program by and for African Americans, and asked to work with providers who had experienced depression and IPV.

Although our group originally intended to create a depression care program within the healthcare system, input from community team members and findings from our needs assessment led us to house the intervention in a culturally specific, community-based domestic violence drop-in center. This paper describes the development of a multifaceted community-based depression care program for African American IPV survivors, and presents data on the program's feasibility and acceptability, potential magnitude of effectiveness, and participants' views on how and why the program affected their depression.

METHODS

Intervention Development

The intervention was developed by the Interconnections team, an academic–community partnership between Oregon Health & Science University, Portland State University, and Bradley–Angle House, a domestic violence agency which runs the Healing Roots Center (HRC), a culturally specific domestic violence drop-in center for African American and African women. A related partnership with the Latino community (*Proyecto Interconexiones*) is described separately.²⁹ Team members included a physician principal investigator (PI), a social work researcher, four African American community members with personal experience as domestic violence advocates or IPV survivors, administrative personnel from Bradley–Angle House, and several research assistants (RAs). Bradley–Angle House hired an African American IPV survivor and domestic violence advocate as the "Health Advocate" to deliver the intervention.

The full team conducted monthly meetings to design and implement the intervention. The group discussed priorities, brainstormed solutions, thought through pitfalls, discussed issues of cultural relevance and scientific validity, and decided on next steps. The PI, the RAs, and the Health Advocate then implemented the decisions and brought products back to the group for revisions or final approval. We collaboratively defined our research questions and

objectives, designed and refined our intervention, identified constructs to measure, chose instruments for the intervention assessment, created recruitment materials and protocols, and interpreted and disseminated findings.

Our goal was to use key concepts of the CCM, but to place the African American community and its resources at the core of the program. Our program was not intended to invent new depression care therapies; rather, it aimed to create an environment that empowered and supported African American IPV survivors to take best advantage of existing depression care strategies. Given the developmental nature of the project, we used an iterative process, intermittently assessing process data and refining the intervention to better meet participant needs.

The intervention centered around a peer Health Advocate, who served in the role of the health-system–based care manager, educating participants, supporting self-management behaviors, providing case management, and linking participants to the healthcare system. She met individually with participants and used motivational interviewing (MI) to help women set and meet self-management goals related to their depression or safety.²¹

Each participant could receive ongoing services from the Health Advocate over a period of 6 months. While each woman was participating in the intervention, the Health Advocate provided the majority of the case management services that would normally have been offered by other domestic violence advocates. The Health Advocate did so individually with participants, either in conjunction with MI or in separate sessions. Participants were welcome to utilize other services at the HRC (e.g., support groups), but due to a series of management, staffing, funding, and program changes unrelated to the pilot-intervention, services at the drop-in center were variably available.

Originally, the Health Advocate also facilitated a series of nine interactive workshops based on Cognitive Behavioral Therapy (CBT) approaches to managing depression. The group workshops built self-management skills and taught participants about depression and depression care. However, due to low attendance at group sessions, our team phased out the group workshops after the first 40 participants. For the last 20 participants, the Health Advocate incorporated the CBT-based materials into the individual MI sessions, using an "options tool" and "road map" developed by the social work researcher.²¹

Additional details about the intervention, including the training and supervision of the Health Advocate, how the Health Advocate combined CBT-related concepts and case management into MI sessions, and the fidelity of the MI are discussed separately.²¹

Intervention Evaluation

We conducted a small pilot study, with a pre-post intervention design, to assess the feasibility and accept-

ability of the intervention and to explore its potential effectiveness. We used a mixed-methods (QUANT-qual) approach, where qualitative data was used to help explain quantitative results about the intervention.³⁰

Recruitment and Eligibility. Community partners led recruitment efforts using fliers, announcements, referrals from domestic violence services providers, and word of mouth. Potential participants were asked to contact the HRC, where they completed a screening questionnaire which included the depression scale of the Patient Health Questionnaire (PHQ-9),^{31–33} the Women’s Experiences of Battering Scale (WEB)³⁴ (modified to ask about lifetime experiences), and two items about lifetime experiences of physical or sexual IPV. Eligible participants were English-speaking African American women in the Portland, Oregon metropolitan area, aged 18 or older, with moderate to severe depressive symptoms and a current or past history of IPV. Depressive symptoms were defined as a PHQ-9 score of 15 or greater. This cut-off has been found to have a sensitivity of 0.80 and a specificity of 0.92 for Major Depressive Disorder.³¹ IPV was defined as a yes response to at least one of the items on physical or sexual IPV, or a score of 20 or higher on the WEB. Women were ineligible if they had a history of schizophrenia, mania, or other psychotic illness, or if they, a domestic violence advocate, or a healthcare provider indicated that participation would endanger their health or safety. Eligible participants were scheduled to meet in-person with the domestic violence advocate within 1–2 weeks to sign written, informed consent and participate in a full baseline assessment prior to starting the intervention.

Data Collection. Participants completed a survey at baseline and at the end of the intervention period. They also participated in a semi-structured exit interview. To not bias results, African American community members who had not been a part of the Interconnections team conducted the follow-up assessments. Participants who could not complete the follow-up in person were offered the chance to participate over the telephone, using telephone safety protocols. Women received \$20 for each assessment.

We collected information on demographic characteristics, healthcare utilization, child abuse,³⁵ lifetime experiences of community violence,³⁶ and alcohol³⁷ or substance abuse³⁸ in the past 6 months. We also used the Conflict Tactics Scale–Revised³⁹ and the WEB³⁴ to measure lifetime and past 6-month experiences of IPV.

Feasibility and Acceptability. To assess feasibility of the intervention, the Health Advocate logged information on attendance in group sessions, individual MI sessions, and case management activities. Ten percent of the individual sessions were audio-recorded, assessed for content and process, and coded for MI fidelity using the MITI 3.0.⁴⁰ The advocate also kept detailed notes for each participant,

including time spent in each activity and topics addressed. We assessed the proportion of women who participated in any intervention activities, and the proportion who directly participated in at least 6 h of intervention activities. During exit interviews, we collected qualitative information about barriers to participation.

We collected satisfaction data to assess acceptability of the intervention. During the exit interviews, participants rated aspects of the program using 5-point Likert scales and answered open-ended questions to further explain ratings.

Intervention Effectiveness. In order to explore the potential effectiveness of the intervention and possible mechanisms, we compared pre-intervention and post-intervention measures of

- 1) Depression severity using the PHQ-9,^{31–33}
- 2) Attitudes toward depression using the treatment effectiveness, treatment problem, patient education, and intrinsic spirituality subscales of the Patient Attitudes Toward and Ratings of Care for Depression scale (PARC-D 16);⁴¹
- 3) Acceptability of antidepressant medications and mental health counseling using two single items developed by Cooper et al.;³
- 4) Self-efficacy using the Depression Self-Efficacy Scale;⁴²
- 5) The presence or absence of five self-management behaviors described by Ludman et al.;⁴²
- 6) Self-esteem using the Self-Esteem Subscale of the Prenatal Psychosocial Profile;^{43–45}
- 7) Stress using the Stress Subscale of the Prenatal Psychosocial Profile;^{43–45} and
- 8) Healthcare utilization using five de novo items.

We also asked participants a series of open-ended questions during the exit interviews to better understand why they felt the intervention was or was not effective.

Data Analysis. Process measures and survey data were analyzed using summary statistics. To assess for bias related to low follow-up rates, we compared baseline characteristics for women who did and did not complete a follow-up assessment using unpaired t-tests and two-group tests of proportions, for continuous and dichotomous variables, respectively. To assess for changes in outcome measures, we compared pre-intervention and post-intervention data using paired t-tests and McNemar’s test, for continuous and dichotomous variables respectively. To assess for a dose-response relationship, we divided the sample into four quartiles based on the number of hours women participated in the intervention. Analyses were conducted using STATA software (version 11, College Station, Texas).

An external data analyst transcribed participants’ answers to the open-ended questions in the exit interviews, and conducted a thematic analysis⁴⁶ using Text Analysis

Markup System software, (Version 4.1, <http://tamsys.sourceforge.net>), under the guidance of the PI. Graphs and tables were generated to map relationships across themes, and themes were organized into categories using a subjective heuristic for determining significance. A significant theme needed to: 1) be expressed by multiple women; 2) be expressed as a central concern; and 3) relate to an important aspect of the program or program goals. Since the quantitative measures showed poor retention but also an improvement in depression severity, the analyst was instructed to focus on themes related to barriers to participation and participants' views on how and why the intervention may have affected their depression. The analyst compiled a summary with multiple representative quotes from the corpus for each of the preliminary themes. She worked with the academic and community members of the team to decide on a final thematic structure. The group met several times to review and discuss the materials, adding their personal experiences and observations and collaboratively deciding on final themes.

RESULTS

Participant Characteristics

Sixty women were recruited to the study between 11/12/2008 and 7/30/2010, one of whom was ineligible due to lack of proficiency in English. Participant characteristics are described in Table 1. Although 70 % of participants had health insurance, a majority had not sought any type of healthcare in the past 6 months for their depression. Only 20 % had used antidepressants and only 29 % had received counseling in the past 6 months. All had a lifetime experience of physical or sexual IPV, with 50 % experiencing it in within the past 6 months. A majority also had a history of child abuse and almost half experienced community violence.

Thirty-two women (54 %) completed a follow-up assessment. Participants who did not complete a follow-up had higher levels of stress at baseline than completers (31.4 vs. 27.3, $p=0.01$), and trended toward more severe depressive symptoms (PHQ9 16.6 vs 13.9, $p=0.07$). Completers were also more likely to have successfully engaged in the intervention and participated in a greater number of hours of activities. Completers and non-completers did not differ in age, marital status, education, income, insurance status, sex of abuser, prior depression treatment, views on depression, depression self-efficacy, depression self-management behaviors, self-esteem, severity of IPV victimization, experience of battering, history of child abuse or community violence, or use of alcohol or drugs. Follow-up rates improved over the course of the project, with 75 % of the last 20 participants completing follow-up assessments.

Table 1. Participant Characteristics at Baseline

Demographics		
Age		
mean (range)	38.4 (20–66)	
STD	12.5	
Marital Status		
married	5 (9 %)	
separated	8 (14 %)	
divorced	9 (16 %)	
widowed	1 (2 %)	
never married	33 (59 %)	
Education		
< high school	6 (11%)	
high school	16 (28 %)	
some college	26 (46 %)	
Bachelors degree or more	9 (16 %)	
Annual Household Income		
< \$10,000	24 (46 %)	
\$10,000 – <\$25,000	13 (25 %)	
\$25,000 – <\$40,000	12 (23 %)	
\$40,000 or more	3 (6 %)	
Health Insurance		
government	25 (42 %)	
private or other	15 (38 %)	
none	14 (25 %)	
unsure	3 (5 %)	
Mental Health Coverage		
yes	30 (60 %)	
no	6 (12 %)	
unsure	14 (28 %)	
Prescription Medication Coverage		
yes	37 (74 %)	
no	8 (16 %)	
unsure	5 (10 %)	
Healthcare Utilization Past 6 Months		
sought depression care	21 (36 %)	
antidepressants	11 (20 %)	
counseling	16 (29 %)	
Substance Use Past 6 Months		
problem alcohol use*	22 (42 %)	
drug use†		
any illicit drug use	25 (48 %)	
drug abuse	7 (20 %)	
Violence Victimization		
Intimate Partner Violence‡	Past 6 months	Lifetime
physical – minor	23 (43 %)	56 (98 %)
physical – severe	13 (25 %)	44 (77 %)
sexual – minor	15 (27 %)	33 (58 %)
sexual – severe	7 (13 %)	26 (45 %)
injury – minor	21 (38 %)	49 (84 %)
injury – severe	7 (13 %)	24 (42 %)
any	27 (50 %)	57 (100 %)
Experience of Battering§		
Mean (range)	30 (10–60)	43 (12–60)
STD	18.4	15.6
Child Abuse		
physical		38 (64 %)
sexual		40 (68 %)
any		47 (80 %)
Community Violence¶		
physical		14 (25 %)
sexual		24 (42 %)
any		27 (48 %)

* Problem alcohol use: One of more “yes” responses on the AUDIT-C³⁷

† Drug abuse: Composite International Diagnostic Interview (CIDI) stem items³⁸

‡ Intimate partner violence: Conflict Tactics Scale–Revised,³⁹ adapted to measure 6-month and lifetime experiences

§ Experience of battering: Women’s Experience of Battering (WEB), adapted to measure 6-month and lifetime experiences.³⁴ Scores can range from 10 to 60. A score of greater than 19 indicates battering

|| Child abuse: previously validated 2-item screening tool for childhood sexual and physical abuse³⁵

¶ Community violence—items selected from the Negative Life Events Questionnaire³⁶

Feasibility

Fifty-four women (92 %) attended at least one intervention session. Thirty women (51 %) successfully engaged in the program, as defined by receiving at least 6 h of services from the Health Advocate (individual MI, group workshops, or case management). On average, participants received a total of 10 h of services, though there was a wide range of participation, with some women receiving as many as 40 h of MI and 10 h of case management.

Appendix A (available online) describes participation in intervention activities. The most common topics women chose to address during MI sessions were self-care, depressive symptoms, relationships, goal setting, and parenting. Case management interactions addressed a wide variety of issues, the most common being housing and shelter, legal services, and safety.

Women discussed many specific barriers to participation, including unemployment, homelessness, and poverty. For example, one woman described how poverty affected her ability to attend sessions, "I wasn't working or nothing, I'm like dude, you're spending your last little dollars...on gas." Other women discussed how the symptoms of depression presented barriers to participation, "...some days I...just didn't wanna get out of bed, didn't wanna leave the house."

As time progressed, rates in intervention and evaluation activities greatly improved, potentially in part from changes in the program, allowing the Health Advocate to devote more attention to accommodating participants' complicated lives. For example, many women intended to come to group sessions, but missed sessions due to last-minute crises related to violence, housing, court appearances, parenting issues, or transportation problems. By moving exclusively to individual sessions, the Health Advocate could reschedule missed appointments or see women on a drop-in basis. The last 20 participants all participated in at least some intervention activities, with 75 % receiving at least 6 h of services. Originally, women commonly related scheduling as a barrier to participation in intervention activities, whereas only one of last 20 participants mentioned scheduling as a barrier.

Acceptability

All participants who completed a follow-up assessment said they were satisfied with the program. Almost all (94 %) of women said they found the program to be useful, and 90 % said they would recommend it to a friend.

Open-ended answers overwhelmingly indicated women liked the program, felt it was important, and that it had greatly impacted their depression. For example, one woman stated: "[My depression] has really changed.... I don't fall in as quick. And when I do, I don't stay as long. Because I got some tools. I'll pick up my folder and start reading through it just, just reading through it. And I find myself moving and changing, you know."

Women noted less of an impact regarding interactions with the healthcare and social services systems. When asked why, most said they didn't need assistance or that the topic never arose. Impact was noted by a few women who the Health Advocate helped with insurance, employment, housing, or bill payment.

Intervention Effectiveness

Table 2 shows a comparison of pre-intervention and post-intervention outcome measures for participants who completed a follow-up assessment. We found significant improvements in depression severity (PHQ-9 13.9 to 7.9, $p < 0.001$), views about depression, depression self-efficacy, and depression self-management behaviors ($p < 0.001$ for all). In addition, women showed an increase in self-esteem ($p < 0.001$) and decrease in stress ($p = 0.004$). There was no change in women's behavior in terms of seeking depression care, or use or acceptability of antidepressants. While more women used counseling during the intervention period ($p = .05$), only half of participants used formal counseling services (including those of an on-site counselor), and there was little change in participants' views regarding the acceptability of counseling.

There was a modest dose response relationship in outcomes, based on hours of participation in intervention activities. Women in the lowest quartile of participation (less than 3.25 h) generally did not have significant improvement in outcomes. There was not a consistent difference in outcomes between women in the top three quartiles (Appendix B).

We identified several common themes around why participants thought the program was helpful.

African-American focus and community setting:

Many of the women talked about the importance of the program being by and for African American women. "I really connected with [the program] because it was more based in African American women. That attracted me most, you know. And I was talkin' to someone, another African American woman who knew how I felt. Who knew, whereas, you know, talkin' to someone that's not African American is kinda... A woman of color is complicated." The community space also facilitated participation, "I always felt invited and welcome even in the space."

Women felt they could relate to the Health Advocate, the program staff, the program content and approach, and to the other women in the program. One participant said, "When I come in here I see people that look like me. I see people that think like me. And even if they don't look like me and think like me, I know that they know me."

Ability to trust:

Women talked about how the program engendered an important sense of trust. "Whoever made this program up

Table 2. Intervention Outcomes

Outcome	Baseline vs. Follow-up:		
	Baseline Mean (STD)	Follow-up Mean (STD)	p-value
Primary Depression Outcome			
Depression Severity (PHQ-9)*	13.9 (5.4)	7.9 (5.7)	< 0.001
Depression Self-Management Outcomes			
Attitudes About Depression (PARQ-D)†	30.1 (4.6)	32.5 (6.2)	0.02
Depression Care Self-Efficacy‡	29.0 (9.6)	40.5 (12.7)	< 0.001
Self-Management Behaviors§	0.8 (0.9)	2.4 (1.3)	< 0.001
Healthcare Utilization Outcomes			
Sought Depression Care	21 (36 %)	10 (31 %)	0.63
Used Anti-Depressants in Last 6 Months	11 (20 %)	6 (19 %)	0.92
Used Counseling in Last 6 Months	16 (28 %)	15 (50 %)	0.05
Acceptability of Anti-Depressants	31 (53 %)	14 (45 %)	0.47
Acceptability of Counseling	57 (97 %)	28 (88 %)	0.09
Other Mental Health Outcomes			
Self-Esteem	18.6(4.9)	24.9(6.2)	< 0.001
Stress¶	26.6(5.1)	22.7(4.5)	0.004

*Depression scale of the Patient Health Questionnaire.^{31–33} Possible range 0–27, with higher scores indicating greater depressive symptoms

†Ten attitude-related items of the Patient Attitudes Toward and Ratings of Care for Depression scale (PARC-D 16), corresponding to the treatment effectiveness, treatment problem, and intrinsic spirituality subscales.⁴¹ Possible range 10–50, with higher scores reflecting more favorable attitudes

‡Six-item scale on self-efficacy related to depression care.⁴² Possible range 0–60, with higher scores indicating greater self-efficacy

§Number of depression self-management behaviors from a total of five behaviors:⁴² 1) participating in pleasant activities at least several times a week; 2) participating in social activities at least several times a week; 3) keeping track of depressive symptoms; 4) looking out for early warning signs of depression; and, 5) anticipating and planning for situations that were likely to cause depression or make depression worse

|| Self Esteem scale of the Prenatal Psychosocial Profile.^{43–45} Possible range 4–44, with higher scores indicating greater self-esteem

¶Stress scale of the Prenatal Psychosocial Profile.^{43–45} Possible range 4–44, with higher scores indicating greater stress

seemed to have the understanding that I don't trust people, I don't trust the system. And them having that understanding, I think, really helped me to be able to work through some and heal some of the issues that I was working through at the time. 'Cause I'm coming from a real distrustful place.... 'Cause me as ... an African American woman, it's really, really important that I can trust somebody. I don't trust doctors, I don't trust anybody.... That's what I liked most. I feel like I was in a safe, safe place."

Information and strategies with practical, lasting value:

Participants described increased knowledge of depression and depression self-management: "I started to really recognize more the symptoms.... I started to then...be able to recognize when I was going into a depression. Which before I couldn't recognize. I didn't know what was goin' on."

Many discussed gaining increased self-awareness: "It allowed me to tune into myself a lot more. Create my environment. See—it actually allowed me to see patterns. Serious. I've seen some I need to stop, too. And I am. I am."

Women described specific tools that they continued to apply to their lives after the program had ended. For example, "I write [affirmations] on those stickies all the time [laughs]. I go to church and then the pastor will say something, and I'll reflect on what he's saying, and then I might go home and write somethin' on a little sticky and put it on the door where I can see it every day."

DISCUSSION

Our academic-community partnership used a CBPR approach to develop and pilot-test a community-based depression care program for African American IPV survivors. We used concepts common to many multifaceted interventions based on CCM, but we housed our intervention within a culturally specific, community-based domestic violence drop-in center and placed a lay, peer advocate in the role traditionally filled by a professional care manager. This allowed us to more effectively incorporate the community's values, strengths, and resources into the depression care program and reach a particularly vulnerable population facing many barriers to receiving depression care. To our knowledge, this is the first community-based intervention to address depression in African American IPV survivors.

Our preliminary assessment using pre-post comparisons found significant improvements in our primary outcome of depression severity, with a decrease in mean PHQ9 scores from 13.9 to 7.9 (effect size 1.1). That magnitude of effect is comparable to what has been found with other multifaceted interventions, based on the CCM,²⁶ or in other studies that use the PHQ-9 to measure treatment effectiveness.⁴⁷ Intermediate outcomes, process measures, and qualitative data suggest that changes in women's depressive symptoms were likely related to changes in their own attitudes, knowledge, self-management skills, and self-management behaviors, with little change in their use of the formal healthcare system or antidepressants. This finding is in contrast with what has been found in other CCM-based interventions. A meta-analysis of collaborative care interventions for depression found that compliance with medications predicted depression outcomes with credible certainty.²⁶ Although our intervention attempted to increase use of the formal healthcare system and antidepressants, the peer advocate had conflicting feelings about antidepressants and felt frustrated by the lack of African American mental health providers to whom she could refer participants, so may have focused less on these parts of the intervention. In

the future, it might be useful for researchers or project administrators to assess a potential health advocates' openness to suggesting antidepressants or other aspects of the intervention up front, or to decide not to include those components in the intervention. Given the well-documented negative attitudes amongst African Americans toward antidepressants and the "white" healthcare system,^{3,28} it is encouraging that an intervention focused largely on self-management supports appears to have had a similar magnitude of effect as other health-system-based interventions.

Our qualitative findings identify the program's focus on African American women, the community setting, and the fostering of trust as key elements to the program's success. These findings are consistent with prior calls in the literature for culturally specific, community-based interventions, be it to address violence^{48,49} or health.⁵⁰ The difficulty in establishing trust with providers has long been identified as a key barrier to IPV survivors obtaining optimal healthcare.^{51,52} Similarly, numerous studies have noted lower levels of trust in the healthcare system amongst African Americans compared to whites.^{53–55} However, few interventions make use of these data. Our intervention serves as a practical example of how to use community resources to increase trust.

Our study has several limitations. As a small, single-site, pilot study, we were mostly interested in assessing the feasibility and acceptability of our community-based intervention. Our study did not include a usual care group, so it is unclear if changes in outcomes were due to the intervention, effects of other IPV services, or the natural history of depression. Some participants had a slight drop in their PHQ-9 scores between the screening and baseline assessments, suggesting that their depression may have already begun to improve without intervention. Our assessment for a dose–response relationship between hours of participation and intervention outcomes was limited by the lack of data on women who did not participate in the intervention and the small N. However, results support at least a modest dose–response relationship, with little improvement in outcomes in women who participated in the intervention for less than 3.25 h. Moreover, participants' qualitative comments support the idea that they learned specific skills for use in managing their own depression.

We had significant challenges, especially in the first part of the study, with retention and follow-up. Over time, we learned that the Health Advocate had to focus a greater proportion of her time on retention activities (such as frequent phone calls to participants), and be more flexible with scheduling of intervention activities. In the future, we would recommend allocating more resources, training, and supervision to retention activities from the start of the project, and reassessing strategies sooner if retention is below target. As a developmental project, we chose to adapt the intervention partway through the study period to better meet the needs of participants. As such, all participants did not receive exactly the same intervention. Data from the early part of the project may be particularly affected by attrition bias. Lastly, due to a

misunderstanding of data collection protocols, we were unable to reliably assess changes in violence exposure during the intervention period. One would expect that there were complex relationships between participants' experiences of IPV, their depression, the domestic violence services they were receiving at the HRC, and our depression care intervention. Our study was not designed to explain those relationships, but simply to explore the feasibility of adding a depression-focused intervention to the services they would normally receive in that setting.

Our study included a sample of participants living with particularly great challenges. For example, at baseline, women in our study scored two standard deviations higher on the stress scale and three standard deviations lower on the self-esteem scale than general samples of African American women.⁴⁴ Our experience both highlights the challenges inherent in conducting research with this population, but also offers promising data to encourage the use of a CBPR approach, culturally specific, community-based programs, and lay facilitators. Such programs could play an important role in treating depression in African American IPV survivors who may not be receiving care within the traditional healthcare system. Larger-scale randomized trials are needed to further evaluate the effectiveness and generalizability of such programs

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REFERENCES

1. Carrington SBP, Fletcher J, Richards D, Sutton AJ. Clinical depression in African American women: diagnoses, treatment, and research. *J Clin Psychol.* 2006;62(7):779–791.
2. Miranda J, Cooper LA. Disparities in care for depression among primary care patients. *J Gen Intern Med.* 2004;19(2):120–126.
3. Cooper LA, Gonzales JJ, Gallo JJ, et al. The acceptability of treatment for depression among African-American, Hispanic, and white primary care patients. *Med Care.* 2003;41(4):479–489.

4. **Jackson A.** The use of psychiatric medications to treat depressive disorders in African American women. *J Clin Psychol.* 2006;62(7):793–800.
5. **Young AS, Klap R, Sherbourne CD, Wells KB.** The quality of care for depressive and anxiety disorders in the United States. *Arch Gen Psychiatry.* 2001;58(1):55–61.
6. **Tjaden P, Thoennes, N.** Extent, Nature, and Consequences of Intimate Partner Violence: Findings From the National Violence Against Women Survey: National Institute of Justice; Center for Disease Control and Prevention; July 2000.
7. **Rennison M, Welchans S.** Intimate Partner Violence. Bureau of Justice Statistics special report. Washington, D.C.: U.S. Department of Justice; May 2000.
8. **Cunradi CB, Caetano R, Schafer J.** Alcohol-related problems, drug use, and male intimate partner violence severity among US couples. *Alcohol Clin Exp Res.* 2002;26(4):493–500.
9. **Sorenson SB, Upchurch DM, Shen H.** Violence and injury in marital arguments: risk patterns and gender differences. *Am J Public Health.* 1996;86(1):35–40.
10. **Marais A, de Villiers PJ, Moller AT, Stein DJ.** Domestic violence in patients visiting general practitioners—prevalence, phenomenology, and association with psychopathology. *S Afr Med J.* 1999;89(6):635–640.
11. **Roberts GL, Lawrence JM, Williams GM, Raphael B.** The impact of domestic violence on women's mental health. *Aust N Z Journal of Public Health.* 1998;22(7):796–801.
12. **Petersen R, Gazmararian J, Andersen Clark K.** Partner violence: implications for health and community settings. *Women's Health Issues.* 2001;11(2):116–125.
13. **Golding JM.** Intimate partner violence as a risk factor for mental disorders: a meta-analysis. *J Fam Violence.* 1999;14(2):99–132.
14. **McCauley J, Kern DE, Kolodner K, Derogatis LR, Bass EB.** Relation of low-severity violence to women's health. *J Gen Intern Med.* 1998;13(10):687–691.
15. **McCauley J, Kern DE, Kolodner K, et al.** Clinical characteristics of women with a history of childhood abuse: unhealed wounds. *JAMA.* 1997;277(17):1362–1368.
16. **McCauley J, Kern DE, Kolodner K, et al.** The "battering syndrome": prevalence and clinical characteristics of domestic violence in primary care internal medicine practices. *Ann Intern Med.* 1995;123(10):737–746.
17. **Nicolaidis C, Curry M, McFarland B, Gerrity M.** Violence, mental health, and physical symptoms in an academic internal medicine practice. *J Gen Intern Med.* 2004;19(8):819–827.
18. **Houry D, Kemball R, Rhodes KV, Kaslow NJ.** Intimate partner violence and mental health symptoms in African American female ED patients. [see comment]. *Am J Emerg Med.* 2006;24(4):444–450.
19. **McGuigan WM, Middlemiss W.** Sexual abuse in childhood and interpersonal violence in adulthood: a cumulative impact on depressive symptoms in women. *J Interpersonal Violence.* 2005;20(10):1271–1287.
20. **Scholle SH, Rost KM, Golding JM.** Physical abuse among depressed women. *J Gen Intern Med.* 1998;13(9):607–613.
21. **Wahab S, Trimble J, Mejia A, et al.** Motivational Interviewing at the Intersection of depression and intimate partner violence among African American women. *J Evid Based Social Work.* In press.
22. **Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A.** Improving chronic illness care: translating evidence into action. *Heal Aff.* 2001;20(6):64–78.
23. **Bodenheimer T, Wagner EH, Grumbach K.** Improving primary care for patients with chronic illness. *JAMA.* 2002;288(14):1775–1779.
24. **Bodenheimer T, Wagner EH, Grumbach K.** Improving primary care for patients with chronic illness: the chronic care model, Part 2. *JAMA.* 2002;288(15):1909–1914.
25. **Williams J Jr, Gerrity M, Holsinger T, Dobscha S, Gaynes B, Dietrich A.** Systematic review of multifaceted interventions to improve depression care. *Gen Hosp Psychiatry.* 2007;29(2):91–116.
26. **Gilbody SBP, Fletcher J, Richards D, Sutton AJ.** Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Arch Intern Med.* 2006;166(21):2314–2321.
27. **Israel BA, Schulz AJ, Parker EA, Becker AB.** Review of community-based research: assessing partnership approaches to improve public health. *Annu Rev Public Health.* 1998;19:173–202.
28. **Nicolaidis CTV, Thomas MJ, et al.** "You Don't Go Tell White People Nothing": African American women's perspectives on the influence of violence and race on depression and depression care. *Am J Public Health.* 2010;100(8):1470–1476.
29. **Nicolaidis C, Perez M, Mejia A, et al.** "Guardarse las cosas adentro" (keeping things inside): Latina violence survivors' perceptions of depression. *J Gen Intern Med.* 2011;26(10):1131–1137.
30. **Hanson WE, Creswell JW, Clark VLP, Petska KS, Creswell JD.** Mixed methods research designs in counseling psychology. *J Couns Psychol.* 2005;52(2):224.
31. **Kroenke K, Spitzer RL, Williams JB.** The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med.* 2001;16(9):606–613.
32. **Spitzer RL, Kroenke K, Williams JB.** Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary care evaluation of mental disorders. Patient health questionnaire. *JAMA.* 1999;282(18):1737–1744.
33. **Spitzer RL, Williams JB, Kroenke K, Hornyak R, McMurray J.** Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: the PRIME-MD Patient Health Questionnaire Obstetrics-Gynecology Study. *Am J Obstet Gynecol.* 2000;183(3):759–769.
34. **Smith PH, Earp JA, DeVellis R.** Measuring battering: development of the Women's Experience with Battering (WEB) Scale. *Women's Health.* 1997;1(4):273–288.
35. **Thombs BD, Bernstein DP, Ziegelstein RC, Bennett W, Walker EA.** A brief two-item screener for detecting a history of physical or sexual abuse in childhood. *Gen Hosp Psychiatry.* 2007;29(1):8–13.
36. **Pitzler JK, Drummond PD.** The reliability and validity of empirically scaled measures of psychological/verbal control and physical/sexual abuse: relationship between current negative mood and a history of abuse independent of other negative life events. *J Psychosom Res.* 1997;43(2):125–142.
37. **Bradley KA, DeBenedetti AF, Volk RJ, Williams EC, Frank D, Kivlahan DR.** AUDIT-C as a brief screen for alcohol misuse in primary care. *Alcohol Clin Exp Res.* 2007;31(7):1208–1217.
38. **Cottler LB, Robins LN, Grant BF, et al.** The CIDI-core substance abuse and dependence questions: cross-cultural and nosological issues. The WHO/ADAMHA Field Trial. *Br J Psychiatry.* 1991;159(5):653–658.
39. **Straus MA, Hamby SI, Boney-McCoy S, Sugarman D.** The revised Conflict Tactics Scale (CTS2). *J Fam Issues.* 1996;17:283–316.
40. **Moyers T, Martin T, Manuel JK, Miller WR.** Motivational Interviewing Treatment Integrity (MITI) code 3.0. <http://casaa.unm.edu/code/miti.html>. Accessed October 15, 2012.
41. **Cooper LA, Brown C, Vu HT, et al.** Primary care patients' opinions regarding the importance of various aspects of care for depression. *Gen Hosp Psychiatry.* 2000;22(3):163–173.
42. **Ludman E, Katon W, Bush T, et al.** Behavioural factors associated with symptom outcomes in a primary care-based depression prevention intervention trial. *Psychol Med.* 2003;33(6):1061–1070.
43. **Curry MA.** The interrelationships between abuse, substance use, and psychosocial stress during pregnancy. *JOGNN.* 1998;27(6):692–699.
44. **Curry MA, Burton D, Fields J.** The Prenatal Psychosocial Profile: a research and clinical tool. *Res Nurs Heal.* 1998;21(3):211–219.
45. **Curry MA, Campbell RA, Christian M.** Validity and reliability testing of the Prenatal Psychosocial Profile. *Res Nurs Heal.* 1994;17(2):127–135.
46. **Braun VCV.** Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3:77–101.
47. **Kroenke K, Spitzer RL.** The PHQ-9: a new depression diagnostic and severity measure. *Psychiatr Ann.* 2002;32(9):1–7.
48. **Bell CC, Mattis J.** The importance of cultural competence in ministering to African American victims of domestic violence. *Violence Against Women.* 2000;6(5):515–532.
49. **Bent-Goodley TB.** Health disparities and violence against women: why and how cultural and societal influences matter. *Trauma Violence Abuse.* 2007;8(2):90–104.
50. **Freedman TG.** "Why don't they come to Pike Street and ask us?": Black American women's health concerns. *Soc Sci Med.* 1998;47(7):941–947.
51. **Feder GS, Hutson M, Ramsay J, Taket AR.** Women exposed to intimate partner violence: expectations and experiences when they encounter health care professionals: a meta-analysis of qualitative studies. *Arch Intern Med.* 2006;166(1):22–37.
52. **Nicolaidis C, Gregg J, Galian H, McFarland B, Curry M, Gerrity M.** "You always end up feeling like you're some hypochondriac": intimate partner violence survivors' experiences addressing depression and pain. *J Gen Intern Med.* 2008;23(8):1157–1163.
53. **Halbert CH, Armstrong K, Gandy OH, Shaker L.** Racial differences in trust in health care providers. *Arch Intern Med.* 2006;166:896–901.
54. **LaVeist TA, Nickerson KJ, Bowie JV.** Attitudes about racism, medical mistrust, and satisfaction with care among African American and white cardiac patients. *Med Care Res Rev.* 2000;57:146–161.
55. **Boulware LE, Cooper LA, Ratner LE, LaVeist TA, Powe NR.** Race and trust in the health care system. *Public Health Rep.* 2003;118(4):358–365.

APPENDIX B

Table 3. Intervention Outcomes by Hours of Participation in Intervention

Outcome Measure	Change in Outcome Measure from Pre-Intervention to Post-Intervention, by Quartile of Hours of Participation in Intervention			
	Lowest Quartile (< 3.25 h)	2nd Quartile (3.25 to 7.3 h)	3rd Quartile (7.3 to 16.5 h)	Highest Quartile (> 16.5 h)
Depression (PHQ-9)*	13.3 to 11.9 ($p=0.7$)	17.0 to 6.2 ($p=0.0001$)	10.8 to 8.8 ($p=0.4$)	14.5 to 6.9 ($p=0.009$)
Attitudes About Depression (PARQ-D) [¶]	28.3 to 28.3 ($p=1.0$)	31.6 to 32.9 ($p=0.3$)	28.3 to 31.7 ($p=0.1$)	30.8 to 34.8 ($p=0.01$)
Depression Care Self-Efficacy [†]	26.2 to 30.2 ($p=0.6$)	28.2 to 47.6 ($p=0.0006$)	32.3 to 41.1 ($p=0.07$)	29.5 to 38.5 ($p=0.4$)
Self-Management Behaviors [‡]	1.6 to 3.4 ($p=0.4$)	1.0 to 3.8 ($p=0.001$)	1.75 to 4.0 ($p=0.003$)	2.6 to 3.8 ($p=0.04$)
Self-Esteem [§]	23.0 to 23.8 ($p=0.8$)	17.3 to 27.5 ($p=0.001$)	19.2 to 27.0 ($p=0.04$)	17.1 to 21.1 ($p=0.1$)
Stress	26.6 to 22.0 ($p=0.2$)	29.4 to 22.7 ($p=0.06$)	24.4 to 23.1 ($p=0.5$)	26.3 to 22.7 ($p=0.7$)

*Depression scale of the Patient Health Questionnaire.^{31–33} Possible range 0–27, with higher scores indicating greater depressive symptoms

[†]Six-item scale on self-efficacy related to depression care.⁴² Possible range 0–60, with higher scores indicating greater self-efficacy

[‡]Number of depression self-management behaviors from a total of five behaviors:⁴² 1) participating in pleasant activities at least several times a week; 2) participating in social activities at least several times a week; 3) keeping track of depressive symptoms; 4) looking out for early warning signs of depression; and 5) anticipating and planning for situations that were likely to cause depression or make depression worse

[§]Self Esteem scale of the Prenatal Psychosocial Profile.^{43–45} Possible range 4–44, with higher scores indicating greater self-esteem

^{||} Stress scale of the Prenatal Psychosocial Profile.^{43–45} Possible range 4–44, with higher scores indicating greater stress

[¶]Ten attitude-related items of the Patient Attitudes Toward and Ratings of Care for Depression scale (PARC-D 16), corresponding to the treatment effectiveness, treatment problem, and intrinsic spirituality subscales.⁴⁷ Possible range 10–50, with higher scores reflecting more favorable attitudes