I. Introduction

A. Nature of the research problem

Perinatal depression (PD; the period between pregnancy and the first year postpartum) is a significant public health problem. Rates of major depression peak during the childbearing years, placing women at greater risk for developing PD. Women disadvantaged by poverty and racial and ethnic minority status are also at higher risk for developing PD. PD, both at the diagnostic and symptom level, has been found to have detrimental consequences for both the mother and her developing child. The strongest risk factors for PD are past history of psychopathology, especially mood disturbance during pregnancy, marital difficulties, lack of social support, and negative life events. These risk factors are markers that can be identified through screening. Although there are identifiable risk factors and effective treatments, few women, especially low-income ethnic minority women, receive screening or treatment during this critical period. Reliable screening tools for perinatal depression are readily available and recommended for use in public health settings, yet screening remains limited in practice, in part due to the lack of coordination of services available to women seeking care during pregnancy and postpartum. As one of several federal programs that serve women and infants across the perinatal period, the Women, Infants, and Children (WIC) program can bridge this gap in screening and preventive services for their low-income populations.

B. Purpose, scope, and methods of the investigation

This project builds on an 8-year partnership between researchers at George Washington and Georgetown Universities and practitioners from the Mary’s Center—a community-based federally qualified health center (FQHC) serving low-income ethnic minority families. In a previously funded MCHB grant, we conducted a randomized controlled trial to evaluate the effectiveness of an 8-week cognitive-behavioral preventive intervention (i.e., the Mothers and Babies/MB course) delivered during pregnancy, with promising results in reducing depression in low-income Latinas (Le, Perry, & Stuart, 2011). For this project, we modified the MB course into a 6-week perinatal curriculum, aimed at reducing depressive symptoms and the onset of major depression for both pregnant and postpartum women. Through a community based observational study, the specific aims were to:

1. Integrate routine screening for perinatal depression in the Mary’s Center WIC program;
2. Expand the prenatal MB course and adapt it for both pregnant women and mothers in the first postpartum year (MB course/Perinatal version: MB-P);
3. Evaluate the effectiveness of the MB-P on preventing perinatal depression and improving the health and well-being of women and their infants; and
4. Assess the impact of the MB-P on WIC participation and outcomes up to the first year postpartum.

The proposed project addresses 3 of the 4 MCHB Strategic Research Issues for MCH populations: I: improve public health systems; II: develop systems of care to eliminate health disparities; and IV: promote the healthy development, as well as the Healthy People 2010 goals for increasing access to mental health services.

C. Nature of the findings

We conducted a community-based observational study, embedding routine perinatal depression screening for all WIC pregnant and postpartum women with infants <1 year old (aim 1). As part of aim 1, we conducted 6 focus groups with staff and clients in WIC, and the mental health,
and home visiting programs at Mary’s Center and informant interviews with program directors (WIC, mental health) to determine the needs of the women receiving WIC and the barriers to their getting screened. Findings revealed structural and individualized barriers to screening for perinatal depression (Perry et al., 2012, detailed below). Based on these findings, nutritionists were identified as the best individuals to screen WIC clients for perinatal depression. Specifically, we trained nutritionists to screen WIC clients using a validated depression screening tool: the two-item Patient Health Questionnaire (PHQ-2; Kroenke et al., 2003). Consequently, more than 1100 screens were completed over 16 months in both Spanish and English. Women who endorsed one of two items (depressed mood, anhedonia) on the PHQ-2 also completed the PHQ-9, a 9-item questionnaire evaluating the severity of depressive symptoms and criteria for a major depressive episode (Kroenke et al., 2001). More than 80% of women with a positive PHQ-2 successfully completed a follow-up PHQ-9 with the Mary’s Center social services team. More than half (53.9%) of these women reported depressive symptoms in the mild to moderate range, and an additional 8% had symptoms serious enough to meet criteria for a major depressive episode (Perry, Le, Villamil, Yengo, & Boateng, in press).

For Aim 2, we expanded the core content from the prenatal MB course to include the needs of ethnically diverse postpartum women, as this was intended for use with both low-income English and Spanish-speaking women. The result is a 6-week MB course that is included for both pregnant and postpartum mothers, a MB course—Perinatal version (MB-P; Le & Muñoz, 2013), based on cultural and linguistic adaptation of the materials with input from the focus groups and key informant interviews with staff and community participants, consultants, and pilot testing. We also created an instructor’s manual (both in English and Spanish) that will be available on our website for free dissemination.

For aim 3, women identified as high-risk from the PHQ-9—but not clinically depressed—were invited to participate in a study to evaluate the effectiveness of the MB-P course on reducing perinatal depression and improving health outcomes. A total of 101 Latina women enrolled in the effectiveness study. Data on psychological and physical health, utilization, and risk and protective factors for perinatal depression were collected at baseline (T1), post-intervention (T2), and at 3 months post-intervention (T3). Preliminary results revealed that overall, there were no main effects on depressive symptoms. However, mixed methods analyses, with a subset of women who completed qualitative interviews (n=27), suggested that the women who were most likely to benefit from the MB-P course were those who had the highest depressive symptoms at baseline, attended all 6 classes, and demonstrated a high level of motivation to obtain additional support services. Women who were least likely to benefit from the intervention were those who experienced multiple stressors and had limited coping skills at baseline. In addition, utilization and outcomes data for mothers and their infants were also extracted from the electronic medical records for a usual care/comparison group (aim 4, in progress). Overall, this project demonstrates the feasibility of and need for WIC programs to integrate reliable and valid depression screening into their ongoing practice. It also underscores the importance of mixed methods approaches to understanding subgroup variations in response to interventions.

II. Review of the Literature

Perinatal depression is a significant public health concern, particularly for low-income ethnic minority women. The leading cause of disease-related disability among women is major depression (Kessler, 2003). Childbearing women are at an increased risk of developing depression in the perinatal (i.e., pregnancy to first year postpartum) period (Weissman & Jensen, 2002). Approximately 10-15% of women experience depression during the year following childbirth (O’Hara & Swain, 1996). In particular, women disadvantaged by poverty or racial and ethnic minority status are more likely to develop depression (Kessler, 2003) and postpartum depression (Chaudron et al., 2005; Gress-Smith et al., 2012; Howell et al., 2005; Rich-Edwards et al., 2006).
There are well-documented negative consequences on the health of mothers, infants, and the quality of the mother-infant relationship (National Research Council & Institute of Medicine, 2009). Perinatal depression is associated with both short- and long-term effects on the mother, her partner (Diaz et al., 2007), and her child (Goodman & Brand, 2009). A mother’s ability to care for her newborn child may be compromised by attitudes of disinterest, over concern, or fearfulness of being alone with the newborn infant (Wisner et al., 2002). Infants of depressed mothers experience multiple negative outcomes, including birth complications, more difficult infant temperament (e.g., McGrath et al., 2007), delays in emotion regulation (e.g., Field, 1995), and cognitive and language development (Grace et al., 2003; Johnson & Flake, 2007). Studies suggest that these impairments persist even after postpartum depression remits (Gunlicks & Weissman, 2008). Children of depressed mothers also experience increased symptomatology, poorer school and work performance, and impaired social function well into adulthood (Weissman et al., 2006). Finally, research has shown that perinatal depression disrupts parenting practices and undermines the formation of positive infant attachments (Downey & Coyne, 2000; Toth et al., 2006).

Few women receive depression screening or treatment during the perinatal period due to poor access to services, limited or no health insurance, and cultural barriers including stigma (Flynn, Blow, & Marcus, 2006; Leis, Mendelson, Tandon, & Perry, 2009; Nadeem et al., 2007). However, effective tools are available to screen for PD (Boyd, Le, & Somberg, 2005). Mary’s Center has chosen to use the Patient Health Questionnaire and its two versions as their tool systemwide: The 2 item version (PHQ-2; Kroenke et al., 2003) screens for depression using two questions (depressed mood, anhedonia) and the PHQ-9 (measuring all 9 items of major depression; Kroenke et al., 2001) have been recommended for use in primary care and obstetrics/gynecology settings (Bennett et al., 2008; Kroenke et al., 2003; Woolhouse et al., 2009). Overall, the high prevalence of PD and its documented harmful impacts, combined with the existence of effective screening tools, makes PD a pressing public health concern that warrants the development of preventive interventions.

The WIC program offers a gateway to reach high risk perinatal populations who could benefit from depression screening and appropriate referrals. WIC serves families with incomes up to 185% of the federal poverty level. It enrolls pregnant women, serves them during the first year postpartum, and provides services for their infants and young children up to the first five years (U.S. Department of Agriculture, Food and Nutrition Service, 2012). The program targets women who are at nutritional risk, provides vouchers for a monthly package of nutritious foods, and serves as a gateway to other services through referrals (Richardson, Porter, & Jones, 2004). WIC is also one of the few federal programs that does not require documentation of legal/US citizenship status. As a result, WIC serves approximately 53% of all the infants born in the U.S and nearly 70% of low-income pregnant and postpartum women (U.S. Department of Agriculture, Food and Nutrition Service, 2012). Moreover, PD is increasingly being recognized as an important issue for WIC women. Women receiving WIC services reported higher than expected rates of subclinical symptoms that might disrupt positive parenting (Cordero & Kurz, 2006; Kurz, 2005; Kurz & Hesselbrock, 2006). One recent study found that the prevalence of postpartum depressive symptoms was 13.8%:19.8% among WIC participants, 16.3% among non-participants eligible for WIC, and 6.8% of women not eligible for the program. The prevalence of postpartum depressive symptoms was higher among younger, less educated, and poorer women, as well as those engaging in risky behaviors during pregnancy (smoking and binge drinking), and those with an unintended pregnancy and who experienced intimate partner violence during pregnancy (Pooler, Perry, & Ghandour, 2013).

WIC is also an important partner in efforts to identify and treat PD because untreated depression can interfere with WIC achieving its goals for promoting breastfeeding, healthy eating and good nutritional habits. PD is associated with lower rates of breastfeeding initiation, adoption, and shortened duration (Dennis & McQueen, 2009; Watkins, Meltzer-Brody, Zolnoun, & Stuebe,
Moreover, there is an established link between lower weight gain and nutritional deficiencies among infants of mothers with depressive symptoms (Gress-Smith et al., 2011; Hart, Jackson, & Boylan, 2011). WIC also serves as a critical portal for women and children to get access to referrals to needed health care, including mental health.

By partnering with the WIC program that is co-located at Mary’s Center, we are able to focus this project on a population of low-income, ethnically diverse families. In particular, Mary’s Center serves a large percentage (~80%) of Latino immigrants who are from understudied groups. These “New Latinos” are recent immigrants from El Salvador, Colombia, and the Dominican Republic (Logan, 2001) and are qualitatively different from the more established Latino groups (i.e., Mexicans, Puerto Ricans, and Cubans) in demographic characteristics and risk for mental health. Census data reveals that New Latinos are the Spanish-speaking populations with the fastest growth in population (Logan, 2001; U.S. Census Bureau, 2010). These Central American immigrants are more likely to experience higher rates and symptoms of PTSD, and higher levels of depression, than did either Central Americans who immigrated for other reasons, or Mexican immigrants (Salgado de Snyder et al., 1990). A unique risk factor for depression in mothers from Central America is the loss and guilt they experience related to leaving children behind in their home country (Paris, 2008). Miranda et al. (2003) reported higher rates of depression among those mothers who reported children being raised by family members in their country of origin.

This project builds on an 8-year partnership between researchers at George Washington and Georgetown Universities and practitioners from the Mary’s Center. The specific aims are to: (1) Integrate routine screening for PD in the Mary’s Center WIC program; (2) Expand the prenatal MB course and adapt it for both pregnant women and mothers in the first postpartum year (MB course/Perinatal version: MB-P); (3) Evaluate the effectiveness of the MB-P on preventing PD and improving the health and well-being of women and their infants; and (4) Assess the impact of the MB-P on WIC participation and outcomes up to the first year postpartum.

III. Study Design and Methods
A. Study design: A community based observational study and an effectiveness study.
B. Population studied: This study included a predominantly Central American perinatal sample.
C. Sample selection: Perinatal WIC women were invited to participate in focus groups (phase 1). As part of phase 2, eligible participants for the effectiveness study (phase 2) included: (a) ages ≥ 18; (b) Spanish- or English-speaking; (c) pregnant women or mothers with infants less than 1 year of age; and (d) high risk for depression (9-14 on PHQ-9). A subset of intervention participants were also invited to participate in exit qualitative interviews, to assess their experience with the study. As part of phase 3, medical records were collected for participants in the intervention group. In addition, medical records data from a randomly selected sample based on similar demographic criteria as the intervention group were collected and comprised the “usual care/comparison” condition.
D. Instruments used. Participants in phase 2 completed a variety of measures over a 3-time period: pre (T1) and post 6-week (T2) intervention, and 3 months after the T2 interview (T3). These measures assess psychopathology, risk and protective factors, functioning, barriers to mental health, and general mental health and physical health (e.g., nutrition, breastfeeding) of women and infants. In addition, utilization and outcomes data were also extracted from the electronic medical records for a usual care/comparison group.
E. Statistical techniques employed. A mixed methods approach was used, including quantitative data analysis of Phase 2 and 3 data, and qualitative data analyses of the exit interviews.
IV. Detailed Findings

A. Phase 1

The formative data consisted of six focus groups and five key informant interviews. Focus groups were convened separately with WIC clients (n=10), WIC staff (n=7), mental health (n=6), and home visiting staff (n=6). Parallel forms of the focus group protocol were developed for each stakeholder group including questions about: perceptions of and barriers to mental health services, challenges making referrals and engaging clients, cultural issues, understanding the immigrant population, and depression screening tools. The key informant interviews were conducted after the focus groups and provided an important forum for gaining insights from the leadership team about the issues being raised in the focus groups. The key informants represented the leadership team across different departments within the Mary’s Center (i.e., mental health, social services, home visiting) as well as the WIC program.

We engaged in a rigorous qualitative analysis of the data gathered from the focus groups and key informant interviews using NVivo qualitative analysis software. We approached our analysis with the goal of identifying unique themes in the concerns of different stakeholder groups as well as exploring area of alignment across stakeholders. Our analysis of these qualitative data was shared with the key informants at the Mary’s Center as a form of fact-checking. Through this process, the partners identified important psychological and structural barriers to embedding depression screening and referrals into the WIC program (Perry et al., 2012).

Several themes emerged from these interviews. Not surprisingly, WIC participants expressed concern about the stigma of mental health in their community. But they also said they felt comfortable talking about their feelings with the WIC staff, many of whom they had a long-term relationship with and saw frequently to pick up their vouchers. In contrast, WIC staff voiced concerns about their own lack of mental health training and expertise. They expressed worries about their inability to manage participants who might become highly emotional. The WIC staff also expressed concerns about a lack of follow-up on participants they did refer to mental health. Once the referral was made, there was no feedback loop in place to communicate if the participant followed through with the referral and received services. The mental health staff was concerned about getting too many referrals for participants who were not going to meet diagnostic criteria for a clinical disorder, which was necessary for billing purposes. They were also concerned about the extent to which participants, even if in distress, were motivated to enter treatment. These concerns were based upon a high rate of no-shows for many participants who did not self-refer for mental health.

The WIC staff raised other important barriers to screening including their lack of comfort with the electronic Clinical Works (eCW) system. This electronic medical records program is the primary way that mental health referrals are documented, tracked and followed up on. While the WIC staff had access to eCW at their desks, their primary data system for tracking WIC program activities was a proprietary data system issued by the District of Columbia Department of Health. For some of the WIC participants—those who were not enrolled in other health or social services at the Mary’s Center—WIC staff have to toggle between the two data systems in order to enroll them as a Mary’s Center participant. This included having to re-enter their demographic data into eCW before making a referral for mental health services. This was perceived to be very time-consuming for the WIC staff, and they identified this as a primary barrier to their conducting ongoing depression screening with their participants. It also resulted in double enrollment for some participants who may have changed their last names in eCW but not with WIC.

Screening data.

Based on these findings, WIC nutritionists were identified as the best individuals to screen their clients for PD. Specifically, we trained the Mary’s Center nutritionists to use a validated depression screening tool: the two-item Patient Health Questionnaire (PHQ-2). As in Figure 1
below, more than 1100 screens were completed over 16 months in both Spanish and English. Women who endorsed one of two items (depressed mood, anhedonia) on the PHQ-2 also completed the PHQ-9, a 9-item questionnaire evaluating the severity of depressive symptoms and criteria for a major depressive episode. More than 80% of women with a positive PHQ-2 successfully completed a follow-up PHQ-9 with the Mary’s Center social services team. More than half (53.9%) of these women reported depressive symptoms in the mild to moderate range, and an additional 8% had symptoms serious enough to meet criteria for a major depressive episode (Perry et al., in press).

Figure 1. Number of Perinatal Screenings Completed from July 2011 – December 2012

B. Phase 2.

Participants were recruited from two WIC sites associated with Mary’s Center, a federally qualified health center, in Washington, DC (for more information on the center and screening criteria, see Perry et al., in press). Eligibility criteria were: (a) ≥ 18 years; (b) pregnant or up to 1 year postpartum; (c) Spanish speaking; and (d) at high risk for depression, defined as scoring between 9-14 on the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), a self-report measure of frequency of the nine symptoms of the DSM-IV criteria for a Major Depressive Episode. The only exclusion criterion was having a diagnosis of Major Depressive Disorder (MDD).

Eligible and consenting women were all invited to attend the Mothers and Babies Course, Perinatal version (MB-P), a cognitive behavioral program designed to prevent the onset of PD and enhance mother-child well-being and relationships. The MB-P consisted of six weekly two-hour CBT psychoeducational group sessions, teaching mood regulation and relationship skills (Le & Muñoz, 2013). This intervention was based on previous work by Muñoz et al. (2007) and by Le, Stuart, & Perry (2011). The MB-P was taught in Spanish by one or two post-bachelor’s trained bilingual and bicultural research staff and one staff member from Mary’s Center, who received weekly supervision from the first author. All sessions were videotaped and reviewed for fidelity to the manuals (Snyder, Lorente Molina, Perry, & Le, 2013).

One hundred and one eligible women consented to participate in the study. Six women withdrew from the study or did not complete the three required interviews. Six women were diagnosed with MDD during their T1 interview; these women were referred for treatment and were ineligible to complete the study. Three women experienced a miscarriage prior to completing the study and therefore withdrew. Thus, the final sample consisted of 86 eligible and consenting participants. Upon entry into the study, participants were, on average, 27.7 years of age (SD = 5.5), most were pregnant (67%). They had an average of 9.5 years of education (SD = 4.0). Most participants were married or living with a partner (72%). The monthly personal income averaged to $887 (SD = $468). The majority were more Central American (77%) and had been in the U.S. for 6.8 years (SD = 4.9). A third of the women (35%) had a lifetime history of psychopathology, including major depression (19%) and PTSD (22%).
Depressive symptoms were assessed at each time point with the Postpartum Depression Screening Scale, Short Form (PDSS-SF; Beck & Gable, 2000). The PDSS-SF assesses various dimensions of depressive symptomatology during the postpartum period, including: sleeping/eating disturbances, anxiety/insecurity, emotional lability, cognitive impairment, loss of self, guilt/shame, and contemplating harming oneself. Respondents rate the degree to which they agree that they have felt each statement (regarding presence of symptomatology) during the past two weeks, on a scale of 1 to 5, resulting in total scores that range from 7 to 35. Higher scores indicate greater presence of depressive symptomatology, and research has indicated that scores of 14 or higher may be indicative of major depressive disorder (Gillian, 2008).

Results indicate no significant differences on PDSS-SF scores across groups (by attendance: completers: 4-6 classes, non-completers: 1-3 classes, zero classes) emerged at any time point (see Figure 2). However, a significant time effect on depressive symptom scores was found, such that, overall, scores decreased from T1 to T3 for all participants, $F(2, 78) = 13.53 \ p = .00$.

Figure 2. Mean Depressive Symptom Scores by Timepoint

*Exit interviews.*

We conducted semi-structured exit interviews with a randomly selected subsample (n = 27) of Latina women at high risk for depression who completed participation in the effectiveness study (phase 2). The 27 participants completed all interview time points, regardless of class participation. At the time of the exit interview the average age of participants was 28.6 years (SD = 5.9). Most of the women were living with their partners at the time of the exit interview (a result of our secondary goal of this phase to explore the impact of PD on partners). All interviews were conducted at the Mary’s Center in Spanish, either by a bilingual doctoral student or research assistant, lasting between 60-90 minutes and participants consented for the interviews to be audiotaped. Women answered questions regarding their experiences with: (a) the WIC program, (b) the Mothers and Babies (MB) research study, (c) barriers to participation in the MB study.

Results from the qualitative data analyses revealed that women who were most likely to benefit from the MB-P course were those who had the highest depressive symptoms at baseline,
attended all 6 classes, and demonstrated a high level of motivation to obtain additional support services. Women who were least likely to benefit from the intervention were those experienced multiple stressors, and had limited coping skills at baseline, but were unable to attend many classes.

V. Discussion and Interpretation of Findings

A. Conclusions to be drawn from findings.

There are several conclusions to be drawn from this study: (1) brief depression screening can be successfully integrated into WIC; (2) there is variability in responsiveness to a CBT group intervention in terms of different risk characteristics; and (3) the MB-P course can be successfully implemented in a community based setting with minimal support from the research team.

The first conclusion from this study is supported by the screening data presented in figure 1: specifically, two WIC nutritionists from the Mary’s Center completed more than 1,100 PHQ-2s during the 18-month study period. Of the women who were able to complete the follow-up PHQ-9, more than half were reporting moderate to severe depressive symptoms (Perry et al., in press). This has significant implications for policy and practice discussed below in sections D and E.

Second, we found that while there were not overall mean differences in depressive symptoms for the women who completed the classes versus those that did not complete the classes (figure 2), there were subgroups of women who seemed to derive greater benefits than others. Our mixed methods analyses suggest that this differential susceptibility to the intervention may be related to initial baseline risk and protective factors (Le et al., in preparation). This finding has implications for future research discussed in section F below.

Finally, this study demonstrated that the MB-P course can be successfully implemented in a federally qualified health center with minimal support from the research team. Unlike in our prior MCHB-funded R40, where the research team led the groups and collected all the data (Le, Perry, & Stuart, 2011), this observational study explicitly sought to build the capacity of the FQHC staff to continue to implement the intervention on their own after the study was over. Staff co-led each of the eight MB groups over the course of the study and their mental health team was able to provide the supervision and support to the group facilitators in the latter cohorts. This has implications for scalability discussed in section D below.

B. Explanation of study limitations

This study was under-powered to detect small differences that might have emerged from the participants attending the MB-P classes. The findings may not be generalizable to all WIC clinics nationally, since some are not embedded within an FQHC.

C. Comparison with findings of other studies

PD is increasingly being recognized as an important issue for WIC women. Women receiving WIC services reported higher than expected rates of subclinical symptoms that are associated with negative parenting (Cordero & Kurz, 2006; Kurz, 2005; Kurz & Hesselbrock, 2006) and decreased breastfeeding initiation rates (Racine et al., 2009). One recent study found that the prevalence of postpartum depressive symptoms was higher among WIC participants (19.8 %) compared to non-participants eligible for WIC (16.3 %) and women not eligible for the program (6.8 %) (Pooler et al., 2013). In light of these findings, screening for PD can and should be systematically integrated in WIC settings. Findings from our study indicate that screening for PD can and should take place in WIC. In particular, WIC nutritionists, with appropriate training and support, can play an important role in this process (Perry et al., in press).

To our knowledge, there has been one intervention trial conducted with WIC women that has targeted PD. Surkan et al. (2012) conducted a randomized, controlled trial to examine whether an intervention, Just for You (JFY), designed to promote healthy eating and increase physical activity through home visits and phone calls reduced depressive symptoms among low-income,
ethnically diverse women (>70% Latina, 8-10% African American) receiving WIC. The 12-month JFY intervention included five home visits, delivered by paraprofessionals from USDA’s Expanded Food and Nutrition Education Program, and monthly motivational phone calls from intervention staff. Results indicated that compared to women receiving usual care in WIC, women in the intervention reported fewer depressive symptoms at 15 months postpartum. However, only 41% of the women were able to complete all intervention sessions of this comprehensive intervention. In contrast, we did not find a statistically significant reduction in depression (incidence or depressive symptoms) in our 6-week intervention, suggesting perhaps that a longer intervention with more intensive staff support are necessary to result in a significant change over time.

D. Possible application of findings to actual MCH health care delivery situations

This study has important implications for other MCH health care delivery settings, especially WIC clinics across the country. With the high levels of depressive symptoms reported by women in WIC, WIC can serve as a critical portal to referrals for mental health and other support services. In our data, 8% of screens completed had high enough scores on the PHQ-9 to warrant a mental health referral; and another 53% of completed screens indicated moderate depressive symptoms that could interfere with parenting, breastfeeding and bonding with their babies. Given WIC’s reach—serving more than half of all infants in this country, and more than 70% of low-income pregnant and postpartum women—efforts should be made to train WIC staff to integrate the PHQ-2 and PHQ-9 to their routine practice.

Another important application of these findings to MCH practice comes from the strong feasibility data for implementing the MB-P course in FQHCs. We videotaped every session of all 8 cohorts. Independent observer ratings of the fidelity of the intervention of the 6-week MB-P intervention were overall positive; specifically, ratings for instructors’ adherence to the delivery of the intervention content and participants’ engagement with the intervention were all well above average (Snyder et al., 2013). Toward the end of the study, we also transitioned the supervision for the MB groups from the university lead researcher to a mental health clinician at the FQHC, further building their capacity to sustain the intervention after the research project is completed. These data suggest that there was no decline in fidelity once the supervision was transferred to the Mary’s Center mental health clinician.

E. Policy implications

As communities continue to expand their coverage for preventive services under the Affordable Care Act (ACA), there is a growing need for evidence-based, effective preventive interventions. This study contributes to a growing evidence base for the Mothers and Babies course as an effective intervention for perinatal populations at high risk for depression (Le, Perry, Mendelson, Tandon, & Muñoz, under review). In fact, the National Registry of Effective Programs and Policies is currently reviewing our application for the MB course to be added to that list. As policy makers seek to expand the continuum of care available to high risk mothers, this study suggests that the MB course could be an effective model of prevention.

As this study came to a close, federal policy makers at the U.S. Department of Agriculture that oversee the WIC program issued guidance to the field about the importance of considering maternal mental health and encouraging State WIC programs to integrate depression screening. The findings and materials from this study (see posters and brochures) provide some tools that WIC workers can use as they seek to adopt this new federal guidance on PD. Relatedly, Perry (co-investigator) et al. (2013) recently created a toolkit to increase awareness and provide guidance for service providers regarding the impact of maternal depression; the cognitive behavioral skills highlighted in this toolkit are based largely on the Mothers and Babies Course. This toolkit is available online for free and funded by SAMHSA (http://store.samhsa.gov/shin/content//SMA14-4878/SMA14-4878.pdf).
F. Suggestions for further research

Our lessons learned from this project have informed several new directions for this work. Firsts, results from the intervention study suggest a need for more studies with larger sample sizes to explore the intra-group variability in response to the intervention. Second, additional studies using mixed methods would enable researchers to further understand the complexities of women’s lives, who are at high risk for multiple stressors. Third, there are individual and structural barriers to integrating screening and prevention services for women in WIC. These can be addressed through multiple ways, including working with staff at the ground level as well as with policy makers to evaluate the best ways to provide comprehensive physical and psychological services for this population. Overall, we continue to be optimistic about the potential to prevent PD in low-income ethnically diverse women and encourage further work toward this end.

VI. List of products

Peer Reviewed Articles


Resubmitted

In preparation

Presentations (peer reviewed, posters or presentations)


**Intervention Manuals**


**Pamphlets, Brochures, or Fact sheets**


Le, H. N. & Perry, D. F. (2014). *How to talk to families about depression: A resource for staff in WIC programs.* Brochure for WIC staff. Currently under review by WIC staff at the Department of Health.

