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Online prevention of postpartum depression for Spanish- and English-speaking pregnant women: A pilot randomized controlled trial

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ABSTRACT

Background: Postpartum depression (PPD) is a maternal mental health problem that affects women from all regions of the world. Unfortunately, even in developed countries, half of the cases go undetected and, consequently, untreated. Individuals from low and middle income countries trend toward underutilization of mental health services, partly due to the limited number of available psychological resources. The primary aims of this pilot randomized controlled trial were to adapt to the Internet using the Mothers and Babies Course/*Curso Mamás y Bebés*, a prevention of PPD intervention, to describe the characteristics of the pregnant women who engaged in the intervention site, and to obtain preliminary data on the efficacy of the Internet intervention to reduce the risk of PPD.

Methods: Pregnant women, 18 years or older who were interested in using the site for themselves were recruited and randomly assigned to a fully-automated self-help Internet intervention or to an information-only control condition. Randomized participants were invited to complete monthly depression assessments up to six months postpartum. To examine the prevention effects of the Internet intervention, pregnant women who did not meet current criteria for a major depressive episode, who engaged with the study website, and who provided depression data during the postpartum follow-up period were included in the study analyses.

Results: Participants were 111 predominantly Spanish-speaking (82.9%) and Latino/Hispanic (71.3%) pregnant women residing in 23 countries worldwide. The effect of the prevention intervention condition failed to reach significance at the a priori alpha-level. However, the observed coefficient trended in the hypothesized direction ($b = -0.514$, χ^2 (1) = 3.43, $p = .061$; HR = 0.598). The benefits of receiving the e-MB Internet intervention were greater for pregnant women reporting high (vs. low) levels of prenatal depression symptoms ($b = -0.605$, χ^2 (1) = 5.20, $p = .023$).

Conclusions: This study provides preliminary evidence that Internet interventions are a promising method toward expanding the reach of psychological resources to perinatal women at-risk for PPD.

1. Introduction

Major depression is a chronic and debilitating mental health problem that affects up to 16% of individuals worldwide during their lifetime (World Federation for Mental Health, 2012). It is the leading cause of disability among women (Ferrari et al., 2013) and, compared to men, women are at higher risk of experiencing major depression during their lifetime (14.0% vs. 7.3%; Steel et al., 2014). An estimated 10–15% of women experience depression during the year following childbirth, with rates as high as 20% in low- and middle-income countries (O'Hara and Swain, 1996). The rate of postpartum depression (PPD) among women in Spanish-speaking countries is elevated, ranging from 17 to 35% (Bonilla-Sepúlveda, 2010; Jadresic et al., 2007; Melo et al., 2012; Tannous et al., 2008). For example, self-reported PPD was up to 20% at 6 months postpartum in a sample of Mexican women (Lara et al., 2014). In Spain, the prevalence of PPD among the general population ranges between 10 and 13% but is higher among Latin American immigrant women living in Spain (17%; Garcia-Esteve et al., 2014). In the U.S., postpartum Latinas[1] are at an increased risk for PPD due to immigration, higher rates of life and economic stressors, and interpersonal conflict (Diaz et al., 2007) with rates among pregnant and postpartum Latinas ranging between 16 and 56% (Chaudron et al., 2005; Lara et al., 2009; Zayas et al., 2003).

Abbreviations: CES-D, Center for Epidemiological Depression Scale; EPDS, Edinburgh Postnatal Depression Scale; e-MB, Mothers and Babies Internet Course/*Curso Internet Mamás y Bebés*; MDE, major depressive episode; PPD, postpartum depression.

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[1] Latino and Hispanic are used interchangeably to reflect individuals who identify with an ethnic background that is from a Latin American country or Spain.

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The negative impact of depression on the well-being of the mother and her ability to care for a newborn child underscores the importance of identifying and treating prenatal and postpartum depression. Unfortunately, however, women often do not receive the level of care needed to address psychological issues during the perinatal (i.e., pregnancy to one year postpartum) period; approximately 50% of cases go undetected and, consequently, untreated (World Federation for Mental Health, 2012). Reduced budgetary allocations and the limited number of trained professionals are likely contributors to this global mental health disparity (World Health Organization, 2009). Thus, the need for widely accessible, low-cost, and innovative psychological resources, specifically focused on perinatal mood and affective symptoms, is needed by women from all around the world.

Prevention interventions are effective at lowering the incidence of depression (van Zoonen et al., 2014; Muñoz et al., 2012) and are effective at reducing the risk of PPD among non-depressed pregnant and postpartum women (Dennis and Dowswell, 2013). The applied theoretical framework of the interventions has varied but most use a cognitive behavioral therapy (CBT; e.g., Muñoz et al., 2007) or interpersonal psychotherapy (IPT; e.g., Zlotnick et al., 2006) approaches in addition to psychoeducational (e.g., Lara et al., 2010) and debriefing approaches (e.g., Priest et al., 2003). These interventions have been delivered in traditional face-to-face individual and group format, over the telephone, and by home visitation by professionals, peers, and trained community members (Dennis and Dowswell, 2013). A limited number of investigations, however, have used innovative methods, such as technology-based tools, to reach perinatal women.

Internet interventions for reducing depressive symptoms among postpartum women are being developed and tested (Danaher et al., 2013; O'Mahen et al., 2013). The *MomMoodBusters*/*MumMoodBusters* (Danaher et al., 2013) was effective at reducing depression symptoms from pre- to post-intervention and up to 6-months in a sample of U.S. and Australian postpartum women. Postpartum women randomized to an 11-session behavioral activation program enhanced by the *NetMums* website reported postpartum depression symptoms below the Edinburgh Postnatal Depression Scale (EPDS) score when compared to those in the control condition (43.8% vs. 63%, respectively; O'Mahen et al., 2013). These Internet intervention treatment studies offer initial evidence that online interventions can be useful to postpartum women who are already struggling with depression. The design, methodology, and outcome of these trials suggest promising future replication and potential dissemination beyond the communities in which they were tested.

The studies described actively recruited postpartum women already experiencing depression. The ability to address the problem of perinatal mood and affective disorders prior to the onset of symptoms among high risk populations is of significant importance. To date, fewer Internet interventions have focused their attention on the prevention of PPD. Haga et al. (2013) described a feasibility and acceptance pilot study of an automated, unguided Internet intervention (*Mamma Mia*) to prevent PPD and to enhance well-being among perinatal women. Of the 103 pregnant and postpartum women recruited, 81 engaged with the 44-session intervention. Pregnant participants completed an average of 7 sessions and postpartum participants an average of 12 sessions. Together, participants rated the intervention to be of high quality (65%), appropriate breadth and depth (67–78%), user-friendly ($M = 4.2$, $SD = 1.3$, range = 1–7), and credible ($M = 5.8$, $SD = 0.09$, range = 1–7). A protocol for an online prevention RCT using the *MoodGYM* Internet intervention, described by Jones et al. (2013), recruited and randomize 175 non-depressed postpartum women to either the 5-week *MoodGYM* intervention or to a health-themed control condition. *MoodGYM* is a well-documented effective Internet intervention for depression prevention and treatment (Christensen et al., 2004; Griffiths et al., 2010). The outcomes of the prevention trial by Jones and colleagues will shed light on how effective it is among postpartum women.

The status of Internet interventions for perinatal women suggests that they are a viable means to reach pregnant women in need of mental health services during and after pregnancy and that they are effective at reducing symptoms among new mothers with moderate to severe symptoms of depression. Whether they are effective in preventing new episodes of PPD is still to be determined. The flexibility of the Internet to reach women makes this an attractive addition to traditional face-to-face approaches to mental health. In many parts of the world perinatal women are already frequent users of the Internet during and after pregnancy. Thus, these online tools are likely to be highly accessible and acceptable. However, there are limitations to the existing studies in terms of global maternal mental health disparities. For example, the studies described were conducted in developed countries where there is likely greater access to healthcare by a majority of the population. Second, they relied heavily on human monitoring by the research team or mental health providers. In much of the world, resources are scarce for the provision of mental health services and the need for such care far outweighs what local providers and community leaders can offer to those who are suffering or at risk for PPD. In some cases, the interventions were lengthy and reliant on participants who were capable of accessing more advanced technologies (e.g., streaming). Finally, none of the referenced interventions were available or examined among Spanish-speaking perinatal women, which is the second most commonly spoken language worldwide (Ethnologue, 2014).

The current study builds on a body of work using the Mothers and Babies Course/*Curso Mamás y Bebés* (MB; Muñoz et al., 2001). Two initial trials to examine the MB using a weekly group format demonstrated reductions in the incidence of PPD which were statistically significant (Le et al., 2010; Muñoz et al., 2007). The original pilot trial examined a twelve session group intervention plus four individual booster sessions among a sample of low-income pregnant women seeking prenatal care in a public sector medical clinic ($N = 41$). Relative to a usual care condition, the MB demonstrated a non-significant lower incidence of major depressive episodes (MDE) at one year postpartum when compared to women in the usual control condition (14% vs. 25%, *ns*). The MB was adapted by Le et al. (2010) to eight weekly group sessions with three individual booster sessions. Among a sample of low-income, Spanish-speaking pregnant immigrant women ($N = 217$), the non-significant cumulative incidence of postpartum depression was lower for women in the MB relative to those in the usual care condition (7.8% vs. 9.6%, *ns*) (Le et al., 2011). More recently, a four session home visitation program of the MB was compared to usual care home visitation services ($N = 78$) among a predominantly African American sample of pregnant and postpartum women (Tandon et al., 2014). Incidence of PPD at the 6-month follow-up was favorable for the home visitation version of the MB when compared to those assigned to the usual care condition (14.6% vs. 32.4%, respectively, $p = .07$). Leis et al. (2015) conducted a pilot study ($N = 10$) where the MB was integrated into a pediatric primary care clinic. The intervention was reduced to 6-weekly, 2-h group sessions, a timely adaptation given the systemic shift in healthcare. Pre/post assessments among group completers (4 or more sessions) indicated that the MB was effective at reducing depression symptoms and increasing women's ability to regulate emotional changes.

The current study focused on adapting the face-to-face MB to a digital format, so that it can be used beyond the usual geographical constraints of studies such as those mentioned above.

The initial goals of this pilot study were a) to adapt the MB intervention to an online platform (e-MB); b) to describe the characteristics of the English- and Spanish-speaking pregnant women who engaged with the fully-automated Internet intervention; and c) to examine whether the e-MB was effective at reducing the incidence of PPD. To the best of our knowledge, this is the first fully-automated Internet intervention report that includes a global sample of Spanish- and English-speaking pregnant and postpartum women.