A therapeutic playgroup for depressed mothers and their infants: feasibility study and pilot randomised trial of Community HUGS

Jennifer Ericksen¹, Elizabeth Loughlin¹, Charlene Holt¹, Natalie Rose², Eliza Hartley¹,
Melissa Buultjens³, Alan W. Gemmill¹, Jeannette Milgrom^{1,4}

¹ Parent-Infant Research Institute, Austin Health, Melbourne, Australia

² Melbourne Children's Trial Centre, Murdoch Children's Research Institute, Melbourne, Australia

³ School of Psychology and Public Health, La Trobe University, Melbourne, Australia

⁴ Melbourne School of Psychological Sciences, University of Melbourne, Australia

Corresponding author:

Professor Jeannette Milgrom

Parent-Infant Research Institute, Department of Clinical & Health Psychology

Heidelberg Repatriation Hospital, Austin Health

300 Waterdale Rd, Heidelberg Heights VIC 3081

jeannette.milgrom@austin.org.au

Acknowledgements: This work was funded by grants from the Department of Social Services and, formerly, by the Department of Families, Housing, Community Services and Indigenous Affairs. Jeannette Milgrom was assisted in the work by an Antonio Meneghetti

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1002/imhj.21723](https://doi.org/10.1002/imhj.21723).

This article is protected by copyright. All rights reserved.

Scientific and Humanistic Research Foundation fellowship. We would like to thank all of the women, and their infants, who took part in this research.

Ethical Approval: The work was approved by the Human Research Ethics Committee of Austin Health, Melbourne Australia.

Conflict of Interest: All of the authors declare they they have no conflicts of interest in relation to this work.

ABSTRACT

Symptoms of depression negatively impact on mother-infant relationships and child outcomes. We evaluated a novel, 10-session mother-infant therapeutic playgroup - Community HUGS (CHUGS) – which combines cognitive and experiential components through psycho-education, play, music and movement.

Participants were mothers experiencing a range of postnatal mental health difficulties, including depression, with infants ≤ 10 months of age. However, the aim was not to treat maternal depression, but to ameliorate associated problems in the mother-infant interaction.

In the feasibility study, all participants received CHUGS. In the pilot RCT, participants were randomised between intervention and a wait-list. Outcomes were the Parenting Stress Index (PSI), Parenting Sense of Competency Scale (self-efficacy sub-scale) and the Depression, Anxiety, Stress Scales (DASS).

In the feasibility study ($n=74$) PSI scores dropped on all sub-scales ($p<.01$ in all cases). Depression, ($p<.001$), anxiety ($p=.01$), stress ($p=.01$) and self-efficacy ($p<.001$) all showed improvements as did observer-rated mother-infant interactions ($p<.001$).

In the RCT, depression ($p<.001$), anxiety ($p=.005$) and stress ($p<.001$) symptoms were significantly reduced for intervention participants ($n=16$) compared to waitlist ($n=15$).

The CHUGS program had high participant satisfaction and produced improvements in self-efficacy depression, anxiety, stress and mother–infant interactions that supported the program’s acceptability and the utility of further roll-out.

Keywords: mother-infant interaction; postnatal depression, anxiety; feasibility study; randomised controlled trial

INTRODUCTION

Up to 20% of women experience major or minor depression during pregnancy and the first postpartum year (Gavin et al., 2005). These figures are based on cases meeting DSM criteria (American Psychiatric Association, 2000). However, in many studies focussed on postnatal depression (PND) self-report tools that assess depressive symptoms suggest an even higher prevalence of significantly disabling but ‘sub-clinical’ symptoms of depression and other postnatal emotional health difficulties. Maternal depression, anxiety and stress elevate the risk for a wide range of adverse child outcomes, including emotional and behavioural problems and impaired cognitive and physical development, some of which are known to endure at least into early adulthood (Barker, Jaffee, Uher, & Maughan, 2011; Giallo, Woolhouse, Gartland, Hiscock, & Brown, 2015; Huizink, Robles de Medina, Mulder, Visser, & Buitelaar, 2003; Kingston, Tough, & Whitfield, 2012; Murray & Cooper, 1997a). Women who have experienced PND have been shown to be at greater risk of recurrent depression (Cooper & Murray, 1995; McMahon, Barnett, Kowalenko, & Tennant, 2006), and children with chronically depressed mothers have poorer outcomes than those whose mothers have had a single episode of depression (Sohr-Preston & Scaramella, 2006). This association is evident even in women with less severe depression (Milgrom, Westley, & Gemmill, 2004).

For many women, depressive symptoms disrupt the process of ordinary, 'good enough' mothering (McMahon et al., 2006). The impact of this on child development can be viewed as a consequence of an impaired pattern of communication between mother and infant (Murray & Cooper, 1997b) which hinders the mother's capacity to provide the attuned nurturing which appears essential for the development of secure infant attachment (Barlow, Smailagic, Huband, Roloff, & Bennett, 2012). Stereotypically, depressed mothers are less responsive, less stimulating and less attuned to their babies than non-depressed women (Hoffman & Drotar, 1991; Reck et al., 2004; Righetti-Veltema, Conne-Perreard, Bousquet, & Manzano, 2002). Depression is commonly accompanied by a range of symptoms which include sleeplessness (unrelated to the infant), lowered mood, irritability, anhedonia, fatigue, insomnia, poor concentration and suicidal ideation. These symptoms are likely to interfere with enjoyment of the mothering role (Cooper, Murray, Wilson, & Romaniuk, 2003; Henderson, Evans, Straton, Priest, & Hagan, 2003) and a less attuned mother may miss subtle infant cues and find herself unable to produce intuitive responses to her new baby (Tronick & Weinberg, 1997). Other studies show that, even after treating PND, in the longer-term, adverse effects on the mother-infant relationship can persist (Milgrom, Ericksen, McCarthy, & Gemmill, 2006; Murray et al., 2003).

Various researchers have suggested that interventions aimed at enhancing the relationship between mother and baby, in addition to the mother's individual need for therapy to manage her mood, have an increased potential to positively impact the mother, the infant, and their mutual relationship (Forman et al., 2007; Nylén et al., 2010).

In practice, such mother-infant interventions tend to target one of four areas: (1) parental sensitivity; (2) parental internal working models; (3) enhancing social supports; and (4)

enhancing the mother's mental health and wellbeing. A meta-analysis comparing these four types of interventions (Egeland, Weinfield, Bosquet, & Cheng, 2000) concluded that for complex, multi-risk families, effective interventions should be well-timed and intensive. However, the notion that 'more is better' is highly debated. In a review of 24 mother-infant intervention studies, van IJzendoorn and colleagues (van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2005) found that, for increasing maternal sensitivity and children's attachment security, shorter interventions (less than 16 sessions) were effective. Even for complex families and infants with disorganised attachment, shorter interventions were more effective than longer interventions.

Given the prevalence of PND and the need to develop accessible pathways to care, effective brief interventions that can make a sufficient improvement are desirable. The majority of existing mother-infant interventions have not specifically targeted depressed women and those that have are often intensive and/or long-term (Ammaniti, 2006; Cicchetti, Toth, & Rogosch, 1999; Cooper et al., 2002; Field et al., 2000; Gelfand, Teti, Seiner, & Jameson, 1996; Toth, Rogosch, Manly, & Cicchetti, 2006).

The Community HUGS program is unique in combining both experiential and cognitive components. In addition, it is designed so that it can be delivered in the community by a range of allied health professionals (not only psychologists) to be easily translatable into the primary care context. Briefly, the 10-week specialised intervention is built on a short mother-infant intervention (HUGS) developed by Milgrom and colleagues (Milgrom et al., 2006; Milgrom, Martin, & Negri, 1999), that was designed to supplement CBT treatment of maternal depression, and on the work of Loughlin (Loughlin, 2009). The Community HUGS

(CHUGS) intervention broadens the theoretical framework for treatment and is designed to specifically target the mother-infant relationship using a playgroup format. In light of literature reviews of both theory and empirical research (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Barlow et al., 2012; Berlin, 2005; Doughty, 2007; Poobalan et al., 2007) the CHUGS program has merged evidence from diverse sources (Beck, 1998; Coulter & Loughlin, 1999; Fraiberg, 1980; Marvin, Cooper, Hoffman, & Powell, 2002; McDonough, 1993; Muir, 1992; Slade, 2002; Slade, Sadler, & Mayes, 2005; Stern, 1985; Winnicott, 1987). As such, it is a novel program that differs from other therapeutic play therapies by targeting four main therapeutic tasks identified as having the capacity to improve attachment relationships:

1. *Parenting Behaviours* - this targets the mother's sensitivity to her infant. A sensitive parent provides care and nurturance in response to their child's cues for comfort, facilitates independent forays in response to a child's efforts to explore and provides a safe haven to return to. These behaviours foster security in a child.
2. *Parent's Internal Working Models of Attachment*- this targets a mother's internal representations of the child, for example being able to take the child's perspective, accurately reading the child's cues, and appropriately responding to these cues; utilising circle of security (Marvin, Cooper, Hoffman, & Powell, 2002) and reflective functioning concepts.
3. *Achieving through new enlivened experiences*- When a mother sees that her infant is captured by the special playful objects, becoming engaged with them, she is consequentially captivated by what she sees as her infant's imaginative response. Dance /movement also animate and help the mother's mood to be more positive and available.

4. *The therapeutic relationship* - The therapist becomes a secure base for a parent, allowing therapeutic change through group or individual experiences in play, movement and thinking together. With understanding, encouragement and support from the therapist, and an embodiment experience of joyful encounters, the parent can try new parenting behaviours and thus begin to create new internal working models.

The aim of the work reported here was to evaluate the feasibility, acceptability and effectiveness of the Community HUGS program. It was hypothesised that a mother-infant intervention targeting the 4 therapeutic tasks above would result in positive changes in the following areas: stress on the parent-infant relationship; mother-infant interactions; parenting skills; maternal self-efficacy; maternal health and wellbeing.

METHOD

Feasibility Study and Pilot Randomised Controlled Trial

We undertook two separate evaluations of the CHUGS program. First, an uncontrolled feasibility study was conducted to explore the practicality, acceptability, rates of adherence to the program and return rates of outcome measures, as well as the feasibility of training community allied healthcare professionals to deliver the program.

This was followed by a pilot parallel two-group randomised controlled trial (RCT) comparing CHUGS to a waitlist control. Both studies were approved by the Human Research Ethics Committee of Austin Health. The pilot RCT was registered prospectively at the Australian New Zealand Clinical Trials Registry (trial number ACTRN12610000256077). All women were resident in the northern region of Melbourne, Australia.

Structure of Community HUGS Therapeutic Playgroup (CHUGS) in Both Studies

Weekly playgroups were run by the program designers in rooms at a public hospital and in community settings, together with newly trained facilitators. In terms of the training of community and allied health professionals, a role play-based method was applied to achieve facilitator competence (Fairburn & Cooper, 2011). This involved the community health professionals being taken through enactment of a series of clinical scenarios, which simulated a group context. Following this, the initial training day was consolidated with an 'apprenticeship' of participation and observation of an existing CHUGS group. A manual of the play and movement experiential content, together with the psycho-education and cognitive activities, was provided to the new facilitators with follow-up on-site supervision and consultation at community sites.

The program was delivered to groups of between four and eight women in a comfortable play space with women encouraged to sit on a blanket in a circle and play and talk, at times standing or moving together with selected music while holding their infants. Participants completed 4 modules over 10 weekly sessions each lasting approximately 60 to 90 minutes, and the content of each module focused on areas of difficulty within the mother-baby interaction and the 4 therapeutic tasks described previously.

Module 1 Let's Play (3 sessions): focuses on group formation, experiencing play and anxiety management. Content includes play activities, introduces finding time to play, moving together with baby in the space, stress busters and baby massage. The play continues as a basic theme all through the four modules.

Module 2 Getting to know each other (3 sessions): focuses on parenting and attachment. Content includes observation of baby in play, practice in face-to-face playful communication, and experiences in mother-infant bodily holding in seated play and movement together that engage with the baby interactively. Information on temperament – consideration of differences from expectations of infant.

Module 3 Know Yourself (3 sessions): focuses on family of origin and cognitive behavioural therapy. Content includes movement for mothers and babies in group circles and individual pathways again to music that attunes with the energetic levels of mother and infant. Lively play with percussion instruments maintains the soft and more dynamic energies of the dyad. Further content includes discussion on: how you parent; hopes and expectations for your infant; individual parenting experiences; interpreting thoughts and feelings and how this affects parenting behaviours; finding time for you; addressing the balance in your life.

Module 4 Happiness, Understanding, Giving & Sharing (1 session): focuses on consolidation in the thinking and movement activities and celebration of progress. Content includes documented brain storming and sharing “what do you do differently” and “what you will take away” from CHUGS.

Outcome Measures in Both Studies

Outcome data were collected at two time points in both the feasibility study and the pilot RCT: at baseline (completed before Session 1) and post-treatment (completed either after Session 10 of the program, or contemporaneously in the RCT waitlist control group). In the RCT women were also followed up 6 months later.

Stress on Parent-Infant Relationship: The Parenting Stress Index (PSI Short form, (Abidin, 1995)) was the primary outcome measure and was used to assess parent–child relationship functioning through parent report. The PSI short form yields scores in the domains of ‘difficult child’, ‘parent-child dysfunctional interactions’ and ‘parental distress’ as well as a total parenting stress score. Coefficient alphas for each PSI short form scale are all above .90.

Parenting self-efficacy: The self-efficacy dimension of the Parenting Sense of Competency Scale (self-efficacy subscale, (Gibaud-Wallston & Wandersman, 1978)) was used to evaluate parental competence, capability levels, and problem-solving skills in the parental role. The seven items relating to efficacy were rated on a Likert-scale from 1 (strongly agree) to 6 (strongly disagree). Reliability coefficient is 0.78.

Facilitator Assessment of Mother-infant Interaction: The Paediatric Infant Parent Exam (PIPE (Fiese, Poehlmann, Irwin, Gordon, & Curry-Bleggi, 2001)) is an observational tool that can be used by community workers to observe the quality of the mother-infant

interaction. It was used here as a quality assurance measure to assist group facilitators in assessing progress. Mothers are observed playing a game with their babies. This interaction was observed and evaluated for the degree of interactional reciprocity and positive affect at the beginning, middle and end of the interaction. Each time point of the interaction was scored on a scale of 1 (more favourable interaction patterns) to 6 (less favourable interaction patterns). A total score for the interaction was calculated by summing the scores. Inter-rater reliability is .74 for exact agreement across all segments of observation, and .92 for agreement within one point.

Depression, Stress and Anxiety: The Depression Anxiety and Stress Scale (DASS, (Lovibond & Lovibond, 1995)); measured depression, stress and anxiety symptoms. Participants indicated the extent to which a statement applied to them over the past week, from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). The total for each subscale was calculated by summing depression, anxiety items and stress items, respectively. The alpha values for the anxiety and stress scales in a normative data set comprising over 2900 people are 0.73 and 0.81 respectively (Lovibond & Lovibond, 1995)

At baseline, the 10 item Edinburgh Postnatal Depression Scale (EPDS, (Cox, Holden, & Sagovsky, 1987)) was also used. On the EPDS, participants indicate how frequently and severely (on a scale scored from 0 to 3) they have experienced a symptom of depression in the past 7 days.

Program Satisfaction: A satisfaction form was given post-treatment. Participants were asked to rate their level of satisfaction with each component of the program on a scale of 1 “not satisfied” to 5 “very satisfied”.

Author Manuscript

Power, Sample Size and Statistical Analyses

For the feasibility study, to detect medium ($d = 0.5$) to large ($d \geq 0.8$) effect sizes at power = .80 and $\alpha = .05$ a minimum sample size of 64 was required (Cohen, 1992). For the pilot RCT, we calculated the sample size necessary to detect the minimum clinically important difference on the PSI, which was the primary outcome measure, based on the average PSI score of postnatally depressed women in previous research (PSI = 282.46, $s = 41.25$: Milgrom et al., 2006). An average between-group difference (δ) of 33 points would take the average scores into the normative range (i.e., ≤ 250). To detect this, the sample size required per condition was projected to be: $n = 15.7(41.25/33)^2 = 24.53$, which rounded to 25 women per group.

In line with CONSORT standards (Moher et al., 2010) data from both studies were analysed on an intention-to-treat (ITT) basis, each analysis being executed twice, once using observed data only, and once after imputing missing values using maximum likelihood methods (Expectation Maximisation). In both the feasibility study and the pilot RCT, missing data were missing completely at random (Little's MCAR test, $\chi^2_{211} = 202.18, p = .66$; $\chi^2_{141} = 123.65, p = .85$ respectively) so that imputation of missing outcome values was a valid approach. Within-subject changes on key outcomes were examined using Paired Samples T-tests. For between-group comparisons continuous outcome variables were fitted in Generalised Estimating Equations (GEEs) that accounted for the clustering of groups and baseline scores.

Alpha was set at .05. Computations were executed in IBM SPSS Statistics 22.

Feasibility Study

Seventy-four women and their infants participated in the feasibility trial of the CHUGS therapeutic playgroup. Women were included if they had a child less than 1 year old and had recently consulted with a health professional about their mental health. Presenting difficulties included symptoms of depression or anxiety, difficulties adjusting to parenthood, difficulty managing their baby, lack of social/emotional support and poor early childhood experiences of parenting. Maternal Child Health Nurses (MHCNs), primary health professionals and other community agency staff recruited women. Women offered referral to the study were invited to an interview by a psychologist/group facilitator, and informed consent was obtained.

One group was run at Austin Health by the program's designers (a psychologist and dance therapist) and 14 groups were run in a community setting by the program designers with additional facilitators (Maternal and Child Health Nurses, occupational therapists & family support workers).

Pilot Randomised Controlled Trial

Inclusion and recruitment methods were the same as in the feasibility study. Participants were thirty-one women and their infants. In the pilot RCT, a total of six groups were run at Austin Health by the program's designers (JE, EL) with a minimum of four women in each group. A computer-generated permuted blocks randomised treatment allocation schedule produced by an independent researcher and administered by a hospital administrator was used and remained double-blinded until the point of allocation. Women were randomly allocated to either receive the intervention immediately in the intervention group, or in the waitlist

(control) group 10 weeks later. Those in the waitlist control group received standard routine care from their GP or MCHN for the interim period.

RESULTS

Results are reported below for the feasibility study followed by the results for the RCT.

Results of Feasibility Study

A total of 74 women took part in the feasibility study (Table 1), most of whom were first-time mothers. The average EPDS score at baseline was >12 , which is the recommended cut-off indicating a possible depressive disorder.

Stress on the Parent-Infant Relationship and Parenting outcomes

Mean parenting stress scores at baseline reflected scores above the clinically significant threshold (PSI total >91). Figure 1 shows the mean change in maternal self-efficacy (PSOC) and parenting stress (PSI total) scores from baseline to post-treatment. A paired samples t-test using observed cases revealed a significant improvement in maternal self-efficacy scores ($t_{61} = -5.26, p < .001$), as well as a significant reduction in parenting stress scores (PSI total; $t_{57} = 5.04, p < .001$) with scores dropping below the clinically significant stress range post-treatment. All domains of the PSI showed significant reductions: parent-child dysfunctional interactions [baseline $M = 24.15$ ($SD = 5.88$), post-treatment $M = 21.28$ ($SD = 5.19$), $t_{59} = 4.41, p < .001$]; parental distress [baseline $M = 39.00$ ($SD = 8.49$), post-treatment $M = 34.38$ ($SD = 8.17$), $t_{60} = 4.72, p < .001$]; and difficult child [baseline $M = 29.85$ ($SD = 8.78$), post-treatment $M = 26.29$ ($SD = 7.59$), $t_{58} = 3.82, p < .001$]. These results remained significant in ITT analyses following imputation of missing values.

Depression, anxiety and stress outcomes

Mean DASS scores at baseline reflected scores in the moderate range for depression (14-20), anxiety (10-14) and stress (19-25).

Figure 2 shows the mean change in depression, anxiety & stress (DASS) scores from baseline to post-treatment. A paired samples t-test using observed cases revealed significant reductions in depression scores ($t_{61} = 4.18, p < .001$), anxiety scores ($t_{61} = 2.65, p = .01$) and stress scores ($t_{61} = 2.67, p = .01$) at post-treatment. These results remained significant in ITT analyses following imputation of missing values.

Facilitator Assessment of Mother-Infant Interaction

The reduction in dysfunctional parent-infant interactions was also reflected in scores on the PIPE. Group facilitators were able to successfully collect these data on 47 women and their infants. Results showed a significant reduction in problematic mother-infant interactions [baseline $M = 7.06, SD = 3.02$; post-treatment $M = 5.32, SD = 2.24$], $t_{46} = 4.12, p < .001$].

Adherence

Each playgroup ran for 10 sessions. Of the 10 sessions, 76% of participants attended at least half (≥ 5). No significant relationships were found between the number of sessions attended and baseline depression ($r = -.18, p = .14$), anxiety ($r = -.11, p = .37$), stress ($r = -.03, p = .79$), parental distress ($r = -.06, p = .64$), parent-child dysfunctional interactions ($r = .14, p = .23$), difficult child ($r = .08, p = .48$), or maternal self-efficacy ($r = -.01, p = .65$). However, a significant relationship was found between session attendance and post-treatment depression ($r = -.26, p = .04$), such that women who attended more sessions had lower depression scores post-treatment. No significant relationships were found between session attendance and post-treatment anxiety ($r = -.03, p = .83$), stress ($r = -.09, p = .47$), parental distress ($r = -.12, p =$

.37), parent-child dysfunctional interactions ($r = -.03, p = .84$), difficult child ($r = -.02, p = .87$), or maternal self-efficacy ($r = .06, p = .64$).

Results of Pilot RCT

By the end of the funding period, sixteen women were randomised to the intervention and 15 to the waitlist control condition. Figure 3 shows the flow of participants through the RCT.

Baseline Characteristics

Table 2 shows the characteristics of both intervention and control groups at baseline. As is appropriate in a RCT (Moher et al., 2010), no between-group tests of significance were conducted on baseline variables. While the groups appeared reasonably balanced, the number of women with only one child was approximately 1.5 times higher in the intervention group, a potentially important imbalance. However, there was no evidence that treatment outcome was linked with parity. Independent Samples T-tests comparing participants with one child with those with two or more showed no significant differences on post-treatment depression ($t_{24} = -.28, p = .78$), anxiety ($t_{24} = .45, p = .66$), stress ($t_{24} = -.79, p = .44$), parental distress ($t_{9.45} = .01, p = .99$), parent-child dysfunctional interactions ($t_{11.12} = .20, p = .84$), difficult child ($t_{23} = 1.51, p = .15$), or maternal self-efficacy ($t_{10.26} = -.66, p = .53$).

At entry, the mean EPDS score was >12 for the majority of women (Table 2) and only one woman scored less than 9. Mean EPDS scores in the RCT appeared higher than in the feasibility trial (see Tables 1 & 2)..

Stress on the Parent-Infant Relationship and Parenting Outcomes

On average (see Table 3), parenting stress scores at baseline were markedly higher in the intervention group, averaging above the clinically significant threshold (PSI total >91) for the intervention group and just below the threshold for the waitlist control group. However, average scores on all PSI domains dropped across time in both groups. Whilst no significant post-treatment differences between the groups were found in PSI total scores ($Wald \chi^2_1 = 3.70, p = .06$), parent-child dysfunctional interactions ($Wald \chi^2_1 = .57, p = .45$) or parental distress ($Wald \chi^2_1 = 3.42, p = .06$), average scores on the difficult child domain remained slightly higher in the intervention group and this was statistically significant ($Wald \chi^2_1 = 6.82, p = .01$). Using observed cases, a significant difference between the groups was found in maternal self-efficacy scores after adjusting for baseline values ($Wald \chi^2_1 = 4.51, p < .03$), with waitlist control participants reporting slightly higher levels of maternal self-efficacy at post-treatment. Results were consistent in ITT analyses following imputation of missing values.

Depression, Anxiety and Stress

Mean DASS depression scores at baseline were in the moderate range (14-20) of severity for both the intervention and waitlist control groups. DASS anxiety scores at baseline were in the severe range (15-19) for the Intervention group and the moderate range (10-14) for the Waitlist control group. DASS stress scores at baseline were in the severe range (26-33) for the Intervention group and the moderate range (19-25) for the waitlist control group. Figure 4 shows the mean change in depression, anxiety & stress (DASS) scores from baseline to post-treatment. Generalised Estimating Equations (GEE) were used to compare the groups on depression, anxiety and stress scores post-treatment while controlling for baseline scores. Using observed cases, significant differences between the groups were found in depression scores ($Wald \chi^2_1 = 45.14, p < .001$), anxiety scores ($Wald \chi^2_1 = 7.97, p = .005$) and stress

scores ($Wald \chi^2_1 = 87.63, p < .001$). These differences remained significant in ITT analyses following imputation of missing values. Paired samples T-tests revealed no significant differences between post-treatment and 6-month follow-up scores for intervention participants on depression [6-month follow-up $M = 12.00$ ($SD = 7.09$); $t_7 = -2.25, p = .07$], anxiety [6-month follow-up $M = 7.75$ ($SD = 5.39$); $t_7 = -.44, p = .67$] and stress [6-month follow-up $M = 17.50$ ($SD = 7.54$); $t_7 = -1.07, p = .32$], indicating that gains made over the course of the intervention were maintained at 6-month follow-up. However, when ITT analyses were conducted, significant differences were found between post-treatment and 6-month follow-up for depression ($t_{15} = -2.69, p = .02$), anxiety ($t_{15} = -2.25, p = .04$) and stress ($t_{15} = -2.34, p = .03$).

Satisfaction with the program

Participants gave their ratings on the 15-item Satisfaction Form given at the final session.

Ratings were generally positive with an overall mean score of 4.29 out of a possible five.

Facilitator Assessment of Mother-Infant Interaction

PIPE data were collected for seven women, in the intervention group. There was no significant change in PIPE scores from baseline ($M = 5.14, SD = 2.12$) to post-treatment ($M = 6.21, SD = 3.72$) in this group ($t_6 = -.75, p = .48$). In the waitlist control group, there was again no significant improvement from baseline ($M = 7.4, SD = 2.5$) to post-treatment ($M = 6.00, SD = 1.58$) among the five women for whom PIPE data were available ($t_4 = 2.06, p = .11$).

Adherence

Of the 10 playgroup sessions, 44% of participants allocated to the intervention condition attended at least half (≥ 5). No significant relationships were found between the number of sessions attended and baseline depression ($r = .03, p = .90$), anxiety ($r = -.24, p = .37$), stress ($r = .08, p = .76$), parental distress ($r = -.18, p = .52$), parent-child dysfunctional interactions ($r = -.27, p = .31$), difficult child ($r = -.31, p = .25$), or maternal self-efficacy ($r = .17, p = .54$). No significant relationships were found between session attendance and post-treatment depression ($r = .15, p = .62$), parental distress ($r = .04, p = .89$), parent-child dysfunctional interactions ($r = -.43, p = .14$), difficult child ($r = .10, p = .73$), or maternal self-efficacy ($r = .08, p = .81$).

DISCUSSION

For many women with PND, the evidence suggests that the treatment of maternal mood is not sufficient to improve the mother-infant relationship (Cooper et al., 2003; Forman et al., 2007; Milgrom et al., 2006; Murray et al., 2003). It appears that the mother-infant interaction may need to be specifically targeted, and to date, there is a paucity of research on interventions for mother-infant interaction difficulties in this context. Although a number of reviews and meta-analyses have been conducted collating the evidence for the effectiveness of mother-infant interventions in general (Bakermans-Kranenburg et al., 2003; Barlow, Bennett, Midgley, Larkin, & Wei, 2013; Doughty, 2007), many of these interventions have not been developed or evaluated for mothers with symptoms of PND and other postnatal mental health difficulties. There is an important gap in both services and research. In addition, as most treatment for PND takes place outside of the hospital setting, it seems reasonable that mother-infant intervention should also be readily available to families in a non-clinical environment.

Indeed, by offering depressed mothers (who may be reluctant to accept individual depression treatment but concerned about problematic infant behaviour) an intervention focused on the mother-child relationship, clinicians may be able to establish the trusting relationship necessary for mothers to accept treatment focusing on their own depression Rishel (2012).

The present study aimed to evaluate the feasibility, acceptability and efficacy of the CHUGS intervention for women experiencing a spectrum of postnatal mental health difficulties. Our design allowed for a range of severity and captured a sample that at baseline showed, on average, elevated symptoms of depression, parenting stress, anxiety and stress. CHUGS is designed to be delivered in an accessible way to women as a playgroup in the community, thereby normalising and de-stigmatising mother-infant difficulties. The intervention provides both active and experiential innovation that aims to orient an infant to its mother, and a mother to her infant. To this end, CHUGS was based on a model of interweaving the creative arts (new play experiences with toys/objects) with movement and dance (Loughlin, 1999; Loughlin, 2009) to recover and strengthen psycho-physical and emotional well-being. This is complemented by, and entwined with, cognitive-behavioural components of parent-infant therapy, and opportunities for mothers to observe, reflect and think about their infant's needs. The novel juxtaposition of experiential and cognitive components is speculated to accelerate improvement in the mother-infant interaction as a synergy effect (Coulter and Loughlin, 1999). Through the psycho-educational components, the mother becomes more aware and observant of her baby, increasing her capacity to play which then reinforces the interaction as well as maternal mood and sense of competence. Although the primary outcomes in this study were focused on the program's impact on the parent-infant relationship, parenting skills etc., not on changes in PND-related symptoms, we did apply the DASS as a secondary measure. This showed some positive effects on maternal mental health, consistent with earlier

research that report the success of treatments for postnatal depression which also target the mother–infant relationship to address mothers' depressive symptoms (Forman et al., 2007).

The acceptability and perceived usefulness of the program was supported by women's satisfaction ratings which were high on average. The hypothesis that the intervention would lead to improvements in mother-infant interactions, parenting skills, maternal self-efficacy, maternal health and wellbeing, and parenting stress was modestly supported by the results of the feasibility study. Although we collected some direct observational data on mother-infant interactions (the PIPE), it should be remembered that this was not a blinded measure, the numbers collected were relatively small and there was no formal measurement of attachment security in this study. Significant improvements were found for maternal self-efficacy, and parenting stress scores were no longer in the 'dysfunctional' range after treatment. Parenting outcomes also showed improvement as mother-child dysfunctional interactions, parental distress and difficult child ratings all significantly decreased. These results should be interpreted carefully as some differences which were detected as statistically significant, for example maternal self-efficacy, were relatively small in absolute terms. However, it is also possible that a relatively small change in self-efficacy could be clinically meaningful given the associated positive outcomes for both infant and mother (Troutman, Moran, Arndt, Johnson, & Chmielewski, 2012).

In the pilot RCT, women who received the intervention program had significantly lower depression, anxiety and stress scores than women in the control group after treatment.

As in the feasibility study, average PSI scores fell across the treatment period in both groups.

Post-treatment differences in parenting stress scores and parental distress domains were marginally non-significant between the two groups, as were scores on parent-child

dysfunctional interactions. However, even after adjustment for baseline imbalances between the groups, average scores on the difficult child domain continued to show a small but significant difference favouring the control group post-treatment.

Limitations

The RCT study was stopped (due to funding constraints) prior to collecting the projected sample size of 25 women per group which may have led to a lowering of statistical power to detect true between-group differences. Despite this relatively small sample size we were able to demonstrate a number of clinically meaningful and statistically significant group differences on the outcome measures. The modest attendance at sessions in the RCT raises the possibility that the program might be better packaged in a shorter format with encouragement to practise skills outside of formal sessions e.g., using digital strategies to connect with women between sessions. This could be a focus of future work given the demands of early parenthood which may make it difficult to attend regularly over a longer period. Other possible elements that may be worthy of closer consideration and development include, but are not limited to: cultural relevance; treating parents as ‘experts’ and planning collaborative strategies to support individualised needs, and a better use of peer supports (for a fuller discussion of maximising program attendance see National Academies of Sciences, Engineering and Medicine, 2016).

Implications for practice

The core aim of the CHUGS intervention was to improve mother-infant interactions, but some of its clearest benefits appeared to be its efficacy in reducing depression, stress and anxiety in women with postnatal mental health difficulties. These results were mainly achieved in groups run by allied health professionals outside of a clinical psychology setting indicating the program's potential to be rolled out in the community with initial training and ongoing supervision/consultation.

Conclusions

The Community HUGS playgroup (CHUGS) was able to produce significant reductions in depression, anxiety and stress and some improvements in mother–infant interactions, and parenting self efficacy. Evidence of its impact on parenting stress scores was mixed. These results broadly support the program's acceptability and the utility of further roll-out.

REFERENCES

- Abidin, R. R. (1995). *Parenting Stress Index Professional Manual (3rd ed.)*. Florida: Psychological Assessment Resources.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders - Text Revision (4th ed.)*. Washington, DC: American Psychiatric Press.
- Ammaniti, M. (2006). A prevention and promotion intervention program in the field of mother-infant relationship. *Infant Mental Health Journal*, 27, 70-90.
- Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., & Juffer, F. (2003). Less is more: meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, 129(2), 195-215.
- Barker, E. D., Jaffee, S. R., Uher, R., & Maughan, B. (2011). The contribution of prenatal and postnatal maternal anxiety and depression to child maladjustment. *Depression and Anxiety*, 28(8), 696-702. doi: 10.1002/da.20856
- Barlow, J., Bennett, C., Midgley, N., Larkin, S. K., & Wei, Y. (2013). Parent-infant psychotherapy for improving parental and infant mental health. *The Cochrane Library*.
- Barlow, J., Smailagic, N., Huband, N., Roloff, V., & Bennett, C. (2012). Group-based parent training programmes for improving parental psychosocial health. *Cochrane Database Syst Rev*, 13(6).

- Beck, C. T. (1998). The effects of postpartum depression on child development: a meta-analysis. *Archives of Psychiatric Nursing*, 12, 12-20.
- Berlin, L. (2005). Interventions to enhance early attachments: the state of the field today. In L. J. Berlin, Y. Ziv, L. Amaya-Jackson & M. T. Greenberg (Eds.), *Enhancing Early Attachments; Theory, Research, Intervention, and Policy* (pp. 3-33). New York: The Guilford Press.
- Cicchetti, D., Toth, S. L., & Rogosch, F. A. (1999). The efficacy of toddler-parent psychotherapy to increase attachment security in offspring of depressed mothers. *Attachment and Human Development*, 1, 34-66.
- Cohen, J. (1992). A Power Primer. *Psychological Bulletin*, 112(1), 155-159.
- Cooper, P. J., Landman, M., Tomlinson, M., Molteno, C., Swartz, L., & Murray, L. (2002). Impact of a mother-infant intervention in an indigent peri-urban South African context: pilot study. *British Journal of Psychiatry*, 180, 76-81.
- Cooper, P. J., & Murray, L. (1995). Course and recurrence of postnatal depression evidence for the specificity of the diagnostic concept. *British Journal of Psychiatry*, 166, 191-195.
- Cooper, P. J., Murray, L., Wilson, A., & Romaniuk, H. (2003). Controlled trial of the short- and long-term effect of psychological treatment of post-partum depression. I. Impact on maternal mood. *British Journal of Psychiatry*, 182, 412-419.
- Coulter, H., & Loughlin, E. (1999). Synergy of verbal and non verbal therapies in the treatment of mother-infant relationships. *British Journal of Psychotherapy*, 16(1), 58-73.
- Cox, J., Holden, J., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British journal of psychiatry*, 150, 782 - 786.
- Doughty, C. J. (2007). Effective strategies for promoting attachment between young children and their parents. *NZHTA Technical Brief*, 6(2).
- Egeland, B., Weinfield, N. S., Bosquet, M., & Cheng, V. K. (2000). Remembering, repeating, and working through: lessons from attachment-based interventions. In J. Osofsky & H. E. Fitzgerald (Eds.), *WAIMH handbook of infant mental health*: (Vol. 4. Infant mental health in groups at high risk pp. 35-89). New York: Wiley.
- Fairburn, C. G., & Cooper, Z. (2011). Therapist competence, therapy quality, and therapist training. *Behaviour Research and Therapy*, 49(6-7), 373-378. doi: <https://doi.org/10.1016/j.brat.2011.03.005>
- Field, T., Pickens, J., Prodromidis, M., Malphurs, J., Fox, N., Bendell, D., . . . Kuhn, C. (2000). Targeting adolescent mothers with depressive symptoms for early intervention. *Adolescence*, 35(138), 381-414.
- Fiese, B., Poehlmann, J., Irwin, M., Gordon, M., & Curry-Bleggi, E. (2001). A pediatric screening instrument to detect problematic infant-parent interactions: Initial reliability and validity in a sample of high-and low-risk infants. *Infant Mental Health Journal*, 22, 463-478.
- Forman, D. R., O'Hara, M. W., Stuart, S., Gorman, L. L., Larsen, K. E., & Coy, K. C. (2007). Effective treatment for postpartum depression is not sufficient to improve the developing mother-child relationship. *Development & Psychopathology*, 19(2), 585-602.
- Fraiberg, S. (1980). *Clinical studies in infant mental health*. New York: Basic Books.
- Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: a systematic review of prevalence and incidence. *Obstetrics & Gynecology*, 106(5 Pt 1), 1071-1083.

- Gelfand, D. M., Teti, D. M., Seiner, S. A., & Jameson, P. B. (1996). Helping mothers fight depression: Evaluation of a home-based intervention program for depressed mothers and their infants. *Journal of Clinical Child Psychology*, 25(4), 406-422. doi: 10.1207/s15374424jccp2504_6
- Giallo, R., Woolhouse, H., Gartland, D., Hiscock, H., & Brown, S. (2015). The emotional-behavioural functioning of children exposed to maternal depressive symptoms across pregnancy and early childhood: a prospective Australian pregnancy cohort study. *European child & adolescent psychiatry*, 24(10), 1233-1244.
- Gibaud-Wallston, J., & Wandersman, L. P. (1978). *Development and utility of the Parenting Sense of Competence Scale*. Paper presented at the meeting of the American Psychological Association, Toronto.
- Henderson, J. J., Evans, S. F., Straton, J. A. Y., Priest, S. R., & Hagan, R. (2003). Impact of postnatal depression on breastfeeding duration. *Birth: Issues in Perinatal Care*, 30(3), 175-180. doi: 10.1046/j.1523-536X.2003.00242.x
- Hoffman, V., & Drotar, D. (1991). The impact of postpartum depressed mood on mother-infant interaction: like mother like baby? *Infant Mental Health Journal*, 12(1), 65-80.
- Huizink, A. C., Robles de Medina, P. G., Mulder, E. J. H., Visser, G. H. A., & Buitelaar, J. K. (2003). Stress during pregnancy is associated with developmental outcome in infancy. *Journal of Child Psychology and Psychiatry*, 44(6), 810-818. doi: 10.1111/1469-7610.00166
- Kingston, D., Tough, S., & Whitfield, H. (2012). Prenatal and Postpartum Maternal Psychological Distress and Infant Development: A Systematic Review. *Child Psychiatry & Human Development*, 43(5), 683-714. doi: 10.1007/s10578-012-0291-4
- Loughlin, E. (1999). The Shared Dance. *Dance Therapy Collections*, 2, Melbourne: Dance Therapy Association of Australia, 37-42.
- Loughlin, E. (2009). Intuitive Mothering: Developing and evaluating a dance therapy model for mothers with postnatal depression and their vulnerable infants. *Dance Therapy Collections*, 3, Melbourne: Dance Therapy Association of Australia, 70-85.
- Loughlin, E. (2017). Dance Movement Therapy: An Aesthetic experience to foster wellbeing for vulnerable mothers and infants. In V. Karkou, S. Oliver & S. Lycouris (Eds.), *The Oxford Handbook of Dance and Wellbeing*. New York: OUP, 803 -820.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behavior Research and Therapy*, 33, 335-343.
- Marvin, R. S., Cooper, G., Hoffman, K., & Powell, B. (2002). The Circle of Security project: Attachment-based intervention with caregiver-preschool child dyads. *Attachment and Human Development*, 4, 107-124.
- McDonough, S. C. (1993). Understanding and treating early infant-caregiver relationship disturbances. In C. H. Zeanah (Ed.), *Handbook of Infant Mental Health* (pp. 414-426). New York: Guilford Press.
- McMahon, C. A., Barnett, B., Kowalenko, N. M., & Tennant, C. C. (2006). Maternal attachment state of mind moderates the impact of postnatal depression on infant attachment. *Journal of Child Psychology and Psychiatry*, 47(7), 660-669. doi: 10.1111/j.1469-7610.2005.01547.x
- Milgrom, J., Ericksen, J., McCarthy, R. M., & Gemmill, A. W. (2006). Stressful impact of depression on early mother-infant relations. *Stress and Health*, 22(4), 229-238.
- Milgrom, J., Martin, P. R., & Negri, L. M. (1999). *Treating Postnatal Depression. A Psychological Approach for Health Care Practitioners*. Chichester: Wiley.

- Milgrom, J., Westley, D., & Gemmill, A. W. (2004). The mediating role of maternal responsiveness in some longer-term effects of postnatal depression on infant development. *Infant Behavior & Development*, 27, 443-454.
- Moher, D., Hopewell, S., Schulz, K. F., Montori, V., Gotzsche, P. C., Devereaux, P. J., . . . Altman, D. G. (2010). CONSORT 2010 explanation and elaboration: updated guidelines for reporting parallel group randomised trials. *BMJ*, 340, c869.
- Muir, E. (1992). Watching, waiting and wondering. *Infant Mental Health Journal*, 13, 319-328.
- Murray, L., & Cooper, P. J. (1997a). Effects of postnatal depression on infant development. *Archives of disease in childhood*, 77(2), 99-101.
- Murray, L., & Cooper, P. J. (Eds.). (1997b). *Postpartum Depression and Child Development*. New York: Guilford Press.
- Murray, L., Cooper, P. J., Wilson, A., Romaniuk, H., Wilson, A., & Romaniuk, H. (2003). Controlled trial of the short- and long-term effect of psychological treatment of postpartum depression: 2. Impact on the mother-child relationship and child outcome. *British Journal of Psychiatry*, 182, 420-427.
- National Academies of Sciences, Engineering and Medicine (2016). *Parenting Matters: Supporting Parents of Children Ages 0-8*. Washington, DC, The National Academies Press.
- Nylen, K. J., O'Hara, M. W., Brock, R., Moel, J., Gorman, L., & Stuart, S. (2010). Predictors of the longitudinal course of postpartum depression following interpersonal psychotherapy. *Journal of consulting and clinical psychology*, 78(5), 757-763.
- Poobalan, A. S., Aucott, L. S., Ross, L., Smith, W. C., Helms, P. J., Williams, J. H., . . . Williams, J. H. G. (2007). Effects of treating postnatal depression on mother-infant interaction and child development: systematic review. *British Journal of Psychiatry*, 191, 378-386.
- Reck, C., Hunt, A., Fuchs, T., Weiss, R., Noon, A., Moehler, E., . . . Mundt, C. (2004). Interactive regulation of affect in postpartum depressed mothers and their infants: an overview. *Psychopathology*, 37(6), 272-280.
- Righetti-Veltema, M., Conne-Perreard, E., Bousquet, A., & Manzano, J. (2002). Postpartum depression and mother-infant relationship at 3 months old. *Journal of Affective Disorders*, 70(3), 291-306. doi: 10.1016/s0165-0327(01)00367-6
- Rishel, C. W. (2012). Pathways to prevention for children of depressed mothers: A review of the literature and recommendations for practice. *Depression research and treatment*, 2012.
- Slade, A. (2002). Keeping the baby in mind: A critical factor in perinatal mental health. In A. Slade, L. Mayes & N. Epperson (Eds.), *Special Issue on Perinatal Mental Health, Zero to Three* (pp. 10-16).
- Slade, A., Sadler, L. S., & Mayes, C. (2005). Minding the Baby Enhancing Parental Reflective Functioning in a Nursing Mental Health Home Visiting Program In Berlin In J. L, Ziv Y, Amaya-Jackson L and Greenberg M,T (Ed.), *Enhancing Early Attachment Theory, Research, Intervention and Policy*. London: The Guilford Press New York
- Sohr-Preston, S. L., & Scaramella, L. V. (2006). Implications of timing of maternal depressive symptoms for early cognitive and language development. *Clinical Child and Family Psychology Review*, 9(1), 65-83.
- Stern, D. N. (1985). *The interpersonal world of the infant: a view from psychoanalysis and developmental psychology*. New York: Basic Books Inc.

- Toth, S. L., Rogosch, F. A., Manly, J. T., & Cicchetti, D. (2006). The efficacy of toddler-parent psychotherapy to reorganize attachment in the young offspring of mothers with major depressive disorder: A randomized preventive trial. *Journal of Consulting and Clinical Psychology*, 74, 1006-1016.
- Tronick, E. Z., & Weinberg, M. K. (1997). Depressed mothers and infants: failure to form dyadic states of consciousness. In L. Murray & P. Cooper (Eds.), *Postpartum Depression and Child Development* (pp. 54). New York: Guilford Press.
- Troutman, B., Moran, T. E., Arndt, S., Johnson, R. F., & Chmielewski, M. (2012). Development of parenting self-efficacy in mothers of infants with high negative emotionality. *Infant Mental Health Journal*, 33(1).
- van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Juffer, F. (2005). Why less is more: from the dodo bird verdict to evidence-based interventions on sensitivity and early attachments. . In L. J. Berlin, Y. Ziv, L. Amaya-Jackson & M. T. Greenberg (Eds.), *Enhancing Early Attachments; Theory, Research, Intervention, and Policy* (pp. 297-312). New York: The Guilford Press.
- Winnicott, D. W. (1987). Communication between infant and mother, and mother and infant, compared and contrasted *Babies and their Mothers* (pp. 89-103). Beverly: Merloyd Lawrence.

Table 1: Baseline Demographics in the Feasibility Study (n = 74)

Mother's age in years ^a , <i>M (SD)</i>	31.52 (5.83)
Range (years)	18-50
Baby's age in months ^b , <i>M (SD)</i>	5.47 (2.82)
Range (months)	1-12
Partnered ^c , n (%)	65 (89)
Parity ^d , n (%)	
1	44 (62)
>1	27 (28)
Education ^e , n (%)	
Did not complete high school	7 (9.6)
Completed high school only	11 (15.1)

Certificate level/apprenticeship	10 (13.7)
Additional qualifications	45 (61.6)
English main language spoken ^f , n (%)	62 (98.4)
Family income bracket ^g , \$AUD, n (%)	
<\$20,000	4 (5.4)
\$20,001 - 40,000	7 (9.5)
\$40,001 - 60,000	22 (29.7)
\$60,000 – 80,000	14 (18.9)
>\$80,000	11 (14.9)
Did not wish to divulge	15 (20.3)
EPDS ^h , <i>M</i> (<i>SD</i>)	12.5 (5.9)

a = 2 missing values; b = 4 missing values; c = 1 missing value; d = 3 missing values; e = 1 missing value; f = 11 missing values; g = 1 missing value; h = 15 missing values.

Table 2: Baseline Demographics in the Pilot RCT (n = 31)

	Intervention (n = 16)	Waitlist (n = 15)
Mother's age in years, <i>M</i> (<i>SD</i>)	32.31 (6.04)	33.00 (6.38)
Range (years)	18-41	21-42
Baby's age in months, <i>M</i> (<i>SD</i>)	4.94 (2.91)	4.87 (1.81)
Range (months)	1-10	2-9
Partnered, n (%)	15 (93.8)	13 (92.9)
Parity, n (%)		
1	13 (81.3)	8 (53.3)
>1	3 (18.8)	7 (46.7)

Education, n (%)

Did not complete high school	0 (0)	1 (6.7)
Completed high school only	1 (5.3)	1 (6.7)
Certificate level/apprenticeship	3 (18.8)	1 (6.7)
Additional qualifications	12 (75.2)	12 (80)
English main language spoken, n (%)	14 (87.5)	14 (93.3)
Family income bracket, \$AUD		
<\$20,000	1 (6.3)	2 (13.3)
\$20,001 - 40,000	3 (18.8)	2 (13.3)
\$40,001 - 60,000	5 (31.3)	3 (20.0)
\$60,000 - 80,000	2 (12.5)	3 (20.0)
>\$80,000	3 (18.8)	3 (20.0)
Did not wish to divulge	2 (12.5)	2 (20.0)
EPDS, <i>M</i> (<i>SD</i>)	16.85 (5.96)	14.54 (3.91)

Table 3: Parenting Stress and Parenting Outcomes in the Pilot RCT

	Baseline		10 Weeks post-randomisation	
	Intervention	Waitlist	Intervention	Waitlist
	<i>n</i> = 16	<i>n</i> = 15	<i>n</i> = 13	<i>n</i> = 13 ^a
Maternal self-efficacy (PSOC)	3.00 (.22)	3.41 (.28)	3.58 (.19)	3.62 (.34)
Parenting Stress (PSI total)	97.83 (24.86)	89.98 (18.98)	81.75 (12.83)	74.17 (16.00)
Parent-child Dysfunctional interactions	26.76 (10.14)	22.33 (7.04)	22.54 (4.31)	21.23 (7.69)

Parental Distress	42.13 (8.04)	39.67 (7.71)	33.31 (5.89)	33.85 (9.83)
Difficult Child	28.94 (10.14)	29.58 (13.06)	25.90 (6.07)	23.92 (7.23)

^a Parenting Stress total & Difficult Child: $n = 12$

Note. GEE was used to compare the groups on post-treatment while controlling for baseline scores. Tabulated data are unadjusted observed values.

Figure 1. Feasibility Study: change from baseline to post-treatment. Mean values are observed values plotted ± 1 SE. -A) Maternal self-efficacy (Parenting Sense of Competence Scale. B) Parenting Stress Index Short Form total.

Figure 2. Feasibility Study: change from baseline to post-treatment. Mean values are observed values plotted ± 1 SE. A) Depression subscale of the Depression Anxiety Stress Scales (DASS). B) Anxiety subscale of the DASS. C) Stress subscale of the DASS.

Figure 3. CONSORT diagram showing participant flow through the pilot RCT.

Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:

Ericksen, J;Loughlin, E;Holt, C;Rose, N;Hartley, E;Buultjens, M;Gemmill, AW;Milgrom, J

Title:

A THERAPEUTIC PLAYGROUP FOR DEPRESSED MOTHERS AND THEIR INFANTS:
FEASIBILITY STUDY AND PILOT RANDOMIZED TRIAL OF COMMUNITY HUGS

Date:

2018-07-01

Citation:

Ericksen, J., Loughlin, E., Holt, C., Rose, N., Hartley, E., Buultjens, M., Gemmill, A. W. & Milgrom, J. (2018). A THERAPEUTIC PLAYGROUP FOR DEPRESSED MOTHERS AND THEIR INFANTS: FEASIBILITY STUDY AND PILOT RANDOMIZED TRIAL OF COMMUNITY HUGS. INFANT MENTAL HEALTH JOURNAL, 39 (4), pp.396-409. <https://doi.org/10.1002/imhj.21723>.

Persistent Link:

<http://hdl.handle.net/11343/284149>