The Perinatal and Infant Mental Health Day Program: A Research Project (2015-16)

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Acknowledgements

The Perinatal and Infant Mental Health (PIMH) Day Program research project was made possible as a result of the support of the following individuals, organisations and funding bodies.

The project was funded through the National Perinatal Depression Initiative (NPDI) as a result of an agreement between the Commonwealth and Queensland State Governments to provide an additional year of funding to further the outcomes of the NPDI in 2014-15.

Additional in-kind support was provided by the Townsville and Cairns and Hinterland Hospital and Health Service (HHS) sites which delivered the PIMH Day Programs.

A panel was established to review the 2009 PIMH Day Program pilot program content. The panel comprised the following clinicians:

**Adult Mental Health**
- Janette Garvey (Townsville HHS)
- Julienne Boddenberg (Gold Coast HHS)
- Emma Wilson (Cairns and Hinterland HHS)

**Community Child Health**
- Tracey Button (CHQ HHS)
- Roslyn McCallum (Cairns and Hinterland HHS)
- Pamela Hueber (Townsville HHS)
- Kathy North (Townsville HHS)

**Infant Mental Health**
- QCPIMH Zero to Four Child and Youth Mental Health Service (0-4 CYMHS):
  - Lynda Knight, Megan Huppert, Ewa Bodnar, Andrea Murray, Meredith Reid, Chris Hodges, Lisa Gannon

We acknowledge Joyce Van der Ham (Metro North Adult Perinatal Mental Health Service) for her role as Project Officer for the PIMH Day Program pilot project (2009) and her ongoing support of the PIMH Day Program research project (2015-16). Thanks are also extended to Ms. Karen Berry, Nursing Director, Child and Youth Community Health Service, Children’s Health Queensland, for her assistance to the project.

Instrumental to the success of the project are the QCPIMH research partners from Townsville and Cairns and Hinterland HHS. With the support of senior management, clinicians from Adult Mental Health, Community Child Health, and Child and Youth Mental Health Services, worked collaboratively to deliver three PIMH Day Programs across each site throughout 2016. Their enthusiasm, commitment and professionalism enabled delivery of the research outcomes. Lynda Knight, psychologist, (QCPIMH) provided invaluable assistance as infant mental health consultant to the Day Program teams.

Dr William Bor, Officer in Charge of the CYMHS Academic Research Unit, Children’s Health Queensland HHS, provided support in the development of the research strategy and statistical analysis. Data coding and input were undertaken by research assistant Alexandra Robbins-Hill.

A meeting was held with the QCPIMH Consumer and Carer Committee to gather their insights on the development of the Day Program. Their interest and feedback in the project is appreciated and they will continue to be consulted on the ongoing progress of the project.
Chief Investigators

Dr Elisabeth Hoehn - Medical Director, Queensland Centre for Perinatal and Infant Mental Health (QCPIMH)

Dr Hoehn has been working in the area of Child and Youth Mental Health for more than 20 years, primarily in community settings. Her area of special interest lies in perinatal and infant mental health where she works in a child centred, family focused model of care. This involves working collaboratively with other service providers and across sectors to optimise outcomes for the child and their family.

Cate Rawlinson – Strategy and Service Development Leader, QCPIMH

Cate is a psychologist working primarily in the Child and Youth Mental Health field in both New South Wales and Queensland. Her roles over the past 20 years have included counsellor, program coordinator, senior project manager and research officer. In her current position Cate has responsibility for oversight of the PIMH Day Program research project.

Adrienne Irvine – Project Coordinator PIMH Day Program, QCPIMH

Adrienne is a social worker with 40 years of experience working in areas of child and family welfare, adult and child and youth mental health, project management and state wide service development. She has a particular interest in early intervention programs that maximise outcomes for children’s development and the social-emotional wellbeing of their families.

Dr William Bor (MBBS, DPM, and FRANZCP) – Officer in Charge, Academic Research Unit, Child and Youth Mental Health Service, Centre for Children’s Health Research, South Brisbane.

Dr Bor’s work includes a range of clinical consultation, research and teaching roles within Children’s Health Queensland as well appointments as Senior Lecturer University of Queensland and Honorary Member Mater Research Institute.

Clinical teams

The Townsville clinical research team included:

- Program Facilitator - Janette Garvey – Adult Perinatal Mental Health Coordinator, Mental Health Service Group.
- Co-Facilitator - Jeanelle Leehy - Child Health Nurse, Child and Family Community Health Service.
- Co-Facilitator - Chloe Shiells - Occupational Therapist, Consultation Liaison Clinician, CYMHS.
- Further support provided by Lisa Phelan (CYMHS), Rose Krutz (CHN)

The Cairns and Hinterland clinical research team included:

- Program Facilitator - Emma Wilson – Adult Mental Health Clinician (Acute Care Team), Mental Health and Alcohol and Other Drugs Service
- Co-Facilitator - Kathy North - Child and Family Health Nurse, Child and Family Community Health Service
- Co-Facilitator - Lucy Dall’Alba - Occupational Therapist, Senior Clinician, CYMHS

Above all, we would like to acknowledge the families who volunteered to participate in the PIMH Day Program research project. Their engagement and feedback has been invaluable to the recommendations for further development of the program. Most importantly, it is a testament to the participants’ commitment to the wellbeing of themselves, their infants and families.
Summary

The Perinatal and Infant Mental Health (PIMH) Day Program is a short-term intensive intervention for mothers with moderate to severe mental health issues and their non-ambulatory infants to 12 months of age. The program is collaboratively facilitated by clinical staff from adult mental health, child and youth mental health, and child health services. The program runs one day per week for six weeks, and includes an evening session for partners. Referral pathways in and out of the program, and the provision of appropriate supports for participants through the collaborating agencies, are integral to program design and delivery.

The PIMH Day Program model was trialled in Metro North Hospital and Health Service (HHS) in 2009 with promising results. In 2016 the model has been formalised and trialled in Cairns and Hinterland HHS and in Townsville HHS. A total of 25 mothers and 26 infants participated, with 10 partners participating in the partner sessions. The trial was conducted as a formal research project: quantitative and qualitative data were analysed to yield recommendations about program effectiveness and sustainability.

In brief, the project results are as follows:

Clinical effectiveness

- Participants’ overall psychiatric symptomatology improved from pre-program to post-program, as rated by clinician observers using the Brief Psychiatric Rating Scale (BPRS), Health of the Nation Outcome Scale (HONOS) and Mental Health Inventory (MHI)
- Participants’ self-rated parenting confidence improved, as measured by the Karitane Parenting Confidence Scale
- Participants’ self-rated anxiety improved, as measured by the Depression Anxiety and Stress Scale (DASS 21)
- Participants’ self-rated stress improved, as measured by the DASS 21 and Parent Stress Index (PSI-4 Short Form)
- The quality of the parent-infant relationship improved, as self-rated by participants using the Maternal Postnatal Attachment Scale (MPAS)
- While there was no statistically-significant improvement in self-rated depression as measured by the DASS 21, this finding is not unexpected given the typical duration of moderate to severe depression and the short-term nature of the intervention
- No significant changes were noted in infant behaviour using the M-ADBB, or in the quality of the mother-infant relationship using the PIRGAS. Both measures rely on video recordings rated by clinician observers. Difficulties with the group environment as a setting for video recording may have impacted on the effectiveness of these measurement protocols

Participant satisfaction

- Mothers reported that they found the program helpful (95%) and would recommend the program to other mothers in similar circumstances (95%)
- Mothers indicated that the program had improved their parenting confidence (80%)
- Mothers reported subjective improvement in their emotional wellbeing (65%)
- Mothers described the group space as safe and non-judgemental, with staff who respected their privacy and helped them feel understood (100%)
Partner satisfaction

- Partners indicated that their knowledge of perinatal and infant mental health improved as a result of attending the partner session (100%).
- Partners agreed that the information received in the session helped prepare them for their role as partner/father (100%).
- Partners indicated that they felt more confident in supporting their partner experiencing perinatal mental illness, as a result of the session (100%).
- Partners said the session helped them think about their own health and wellbeing (100%).
- Partners said the session increased their knowledge of services that can assist them, their partner and their family (100%).

Clinician satisfaction

- Clinicians endorsed the collaborative model as an effective intervention for mothers with a mental illness and their infants (100%).
- Clinicians indicated that their knowledge of perinatal and infant mental health had improved through the program (83%).
- Clinicians indicated that their confidence in working with mothers with a mental illness had improved through the program (83%).

Issues for future implementation

The research identified the following issues as requiring consideration when the model is implemented in future sites:

- referral processes
- barriers to participation
- program adaptations for culturally-diverse consumers and those with special needs
- capacity building across services
- organisational planning and support
- staff training
- resource demands.

Sample participant feedback

- “This has been an invaluable experience… I now feel much less anxious”
- “I now understand more about how my baby communicates with me …. I now talk to her more and spend more time with her “
- “The way I interact with my baby is a lot different to how I used to..”
- “This program was great and I would recommend it to first time mums with a mental health issue”
Introduction

The Perinatal and Infant Mental Health (PIMH) Day Program is a short-term intervention for mothers with moderate to severe mental health issues and their non-ambulatory infants to 12 months of age. The program is collaboratively facilitated by clinical staff from adult mental health, child and youth mental health, and child health services. The PIMH Day Program model was trialled in Metro North Hospital and Health Service (HHS) in 2009 with promising results.

In 2016 the model has been formalised and implemented as a research project in Cairns and Hinterland HHS and in Townsville HHS. The aims of the research were:

1. To assess the outcomes of an intensive collaborative PIMH Day Program in improving maternal mental health and the resulting parent-infant relationship. The purpose of this model of care is to support improvements in the mother’s mental health leading to the development of secure attachments and the physical, emotional and social development of the infant. The PIMH Day Program is seen as potentially a valuable component of a ‘stepped care’ model of service for women experiencing perinatal mental illness, providing an intermediate level of support between existing models of community treatment and inpatient care (see Figure 1 below).

2. To identify program elements associated with more effective outcomes, and factors that modify intervention effectiveness (for example program duration, program delivery, environment, social support).

This report examines the outcomes of the research, and provides recommendations for future implementation of a similar model in the same sites or elsewhere.
Project objectives

While the PIMH Day Program is designed to support perinatal mothers with their mental health issues and parenting, program content focuses on helping mothers understand the importance of the early years of their infant’s life, the infant’s emotional needs, and how to nurture them. Nylen et al. (2006) propose that the most efficacious treatment approaches need to address equally the needs of the mother, the infant and the mother-infant relationship. To date, only a few studies with small samples have tested interventions specific to both maternal depression and the mother-infant relationship (e.g. Goodman, Guarino, Prager, 2013). There is a clear need for the current research, to build the evidence-base.

The PIMH Day Program uses a collaborative interagency approach, combining the clinical expertise of adult mental health services, child and youth mental health services, and child health services, in a holistic and accessible model. The collaborative model aims to:

- improve access to services (continuity of care)
- enhance quality of case management and decision making
- ensure agency demands on consumer/family are not competing or overwhelming
- improve communication between services and the family
- reduce duplication of services
- enable more effective use of resources
- improve consistency of messages from service providers involved with the family
- increase support for clinicians working together
- transfer knowledge across agencies
- strengthen referral pathways
- develop new policy/practice/pathways to care.

Project deliverables

- Review and redesign the PIMH Day Program, a collaborative early intervention model of care for women experiencing moderate to severe mental illness in the perinatal period, with the infant as the focus of intervention.
- Implement the PIMH Day Program in two HHS sites, conducting a total of six programs in 2016.
- Analyse quantitative and qualitative data to assess the clinical effectiveness of the intervention.
- Identify areas for program improvement and recommendations for future implementation from participant feedback.
- Identify strengths and benefits of the collaborative model, areas for improvement, and recommendations for future implementation, from clinician and service feedback.
- Disseminate outcomes of the research through conference presentations and peer-reviewed articles.
- Produce a Program Manual and explore options for online dissemination.

Literature Review

Perinatal and infant mental health can be described as the emotional and psychological wellbeing of women, their infants, partners and family, commencing from preconception through pregnancy up to three years postpartum (Queensland Health 2014). This is the time of highest risk for women to develop mental health problems with a varying degree of severity and impact on functioning. The quality of a woman’s mental health and wellbeing in this period directly impacts on the health and social-emotional wellbeing of her infant and family. This time is critical for the future development of the infant across all domains (Royal Australian and New Zealand College of Obstetricians and Gynaecologists, 2010; Centre on the Developing Child at Harvard University, 2009).
Perinatal mental health problems are common. The prevalence rate of clinically significant perinatal mental health issues is estimated at 15%-17% (Gaynes et al., 2005; Pearlstein, Howard, Salisbury, & Zlotnick, 2009; Yelland, Sutherland, & Brown, 2010) with some estimates up to 20% in disadvantaged groups (Priest et al, 2003). A woman in the perinatal period may have a pre-existing clinical diagnosis of mental illness such as bi-polar disorder or schizoaffective disorder or may develop a mental illness specific to this period for example, postnatal depression. Postnatal distress can be long lasting with persistent depressive symptoms for 1-4 years following depression in the first year postpartum (McMahon, Trapolini, & Barnett, 2008). There is growing evidence of the negative impact of poor mental health outcomes not only for the mother but also for her child and family (Cornish et al., 2005; Halligan, Murray, Martins, & Cooper, 2007; Murray & Cooper, 1997). Milgrom, Ericksen, McCarthy, and Gemmil (2006) identified that 70% of women with postnatal depression have relationship difficulties with their infants.

With the introduction of universal screening for perinatal depression there is an increasing need for evidence based intensive interventions to fill the deficit in responsive services for this population. Until recently, there was no Queensland public psychiatric inpatient facility for mothers and infants leading to separation at a critical period in the infant’s development should the mother require admission to a mental health facility. A day program model providing a weekly intervention addressing perinatal mental health issues provides a stepped model of care that is presently unavailable to this vulnerable group. Evidence shows that maternal mental, emotional and social wellbeing correlates directly to the infant’s mental, emotional and social wellbeing and development (Mason, Briggs, & Silver, 2011; Misri & Kendrick, 2007; Murray & Cooper, 2004; O’Connor, Heron, golding, Beveridge, & Gloevr., 2002). Mothers with a postnatal mental illness increase the risk of their children developing: behavioural and social difficulties; impaired cognitive and emotional development; and long term educational and behavioural problems (Goodman, Guarino & Prager., 2013)

Evidence shows that treating maternal mental illness alone does not improve infant/child development outcomes (Murray et al, 2003; Nylen et al 2006; Forman et al. 2007; Centre on the Developing Child 2009; Cicchetti et al. 2000; Gunlicks & Weissman 2008). Therefore, focussing on both the mother’s wellbeing and the mother-infant relationship through daily interactions is critical. Research (see Berlin, 2005; Cassidy, Woodhouse, Cooper, Hoffman, Powell & Rodenburg, 2005; Stern, 1995) has found that early interventions that focus on developing secure parent-child relationships, improved mental health and safe and supportive social connections for families are more likely to result in improved outcomes for these families. Growing evidence suggests that day programs support maternal mental health and the attachment relationship leading to improved outcomes across the infant’s developmental life span (Egeland, 2009; Gaillo, Cooklin, Wade, D’Esposito, & Nicholson, 2012; Meschino, Philipp, Israel and Vigod, 2015).

Collaboration across services is increasingly being identified as a more effective response to perinatal and infant mental health intervention, with complex issues receiving a coordinated approach to care (Myors, Schmeid, Johnson, & Cleary, 2013). The Perinatal Mental Health Action Plan (2008-2010) recommended “the development of a system of care that is effectively networked, collaborative and responsive to the whole family”. The day program model supports access for the perinatal mother to adult mental health, child health and infant mental health services addressing various needs within a purposeful and coordinated model of care.

This collaborative research project is also supported by the Clinical Guidelines for Depression and Related Disorders in the Perinatal Period (beyondblue, 2011) which state ‘it is clear that addressing the mother’s depression alone is often insufficient to improve outcomes for the infant’ (p.45). Specific recommendations for treatment /interventions for mother-infant interactions and the need for further research are included in the guidelines.
Project Management

Scope
- Provision of an alternative program of psychoeducation and support for perinatal women with a diagnosable mental health issue and their infants under 12 months of age located in Queensland Hospital and Health Service sites.
- Review the 2009 program manual content.
- Programs to be run in 2016 and completed no later than December 2016.
- Programs to be delivered collaboratively by Adult Mental Health, Child and Youth Mental Health and Child Health Services in research sites.
- Critical evaluation of the PIMH Day Program on completion of the clinical phase to determine an evidence base for future implementation.
- Disseminate findings of the research outcomes.

The research aims to provide further evidence of the positive outcomes for mothers and infants indicated by the pilot project conducted in 2009, to support the implementation of an PIMH Day Program service model across Queensland. Outcomes from the research are to be disseminated by QCPIMH through conference presentations and peer reviewed journal articles.

Project Coordinator

A Project Coordinator was employed in June 2015 to develop the research proposal and ethics applications, review the 2009 program for clinical trial, negotiate research sites, train and supervise clinical teams delivering programs, collect and collate research data and provide oversight to the overall research project.

Costs and funding

Table 1 Project Costs

Direct Labour

The table below details all project direct labour costs:

<table>
<thead>
<tr>
<th>Position</th>
<th>Stream/Level</th>
<th>FTEs</th>
<th>Initial annual salary incl oncosts</th>
<th>Total Cost</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Co-ordinator</td>
<td>HP5/NO7</td>
<td>1.0 x 15 months</td>
<td>$133,852</td>
<td>$191,833</td>
<td>NPDI</td>
</tr>
<tr>
<td>Program facilitators x 3 programs</td>
<td>NG7 – Program Facilitator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NG6 – co facilitator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HP4 – co facilitator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Non Labour

The table below identifies available project non labour costs including any contingency costing, accommodation and travel.

<table>
<thead>
<tr>
<th>Additional Requirement</th>
<th>Comments</th>
<th>Rate</th>
<th>Total Cost</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>To support costs directly related to the running of programs</td>
<td></td>
<td>$3,500 per site</td>
<td>$7000</td>
<td>NPDI</td>
</tr>
<tr>
<td>Other program related costs such as: travel/accommodation for research team members, program materials (manuals), printing, postage</td>
<td></td>
<td></td>
<td>$17,500</td>
<td>NPDI</td>
</tr>
<tr>
<td>Total Research Costs</td>
<td></td>
<td></td>
<td>$311,721</td>
<td>NPDI</td>
</tr>
</tbody>
</table>
Program review and consultations

Meetings were held with the 2009 pilot project coordinator, who provided background information on the pilot project and support in developing the follow up study. A meeting was held with clinicians who delivered the 2009 program providing further insights into the long term positive outcomes for clinicians and participants. Further meetings were held with Nursing Director, Child and Youth Community Health Service, (CHQ HHS) who provided assistance in negotiating the child health component of the program. An interview with a mother who attended the 2009 Day Program provided further insights and perspectives on the program and its benefits to participating families.

Representatives from each of the collaborating services were co-opted to join a review panel of the 2009 program manual content. Significant consultations were held in the initial stages of the project with the Officer in Charge of the CHQ HHS CYMHS Academic Research Unit, and the project investigators to determine the scope and research methodology and measures to be used in the project. The QCPIMH Consumer and Carer group, Steering Committee and Reference Group were consulted on program development and were provided with updated information at regular meetings.

The Working Group

On confirmation of the research sites, videoconference meetings were held with the participating clinicians to discuss the issues and requirements relating to the research and delivery of the PIMH Day Programs. Ensuring fidelity of the research was a key issue addressed in the meetings. The project investigators maintained ongoing responsibility for developing, implementing and evaluating the research project. The clinicians delivering the program provided valuable insights throughout the research.

Training

Clinicians delivering the Adult Mental Health and Child Health component of the program had been involved in the 2009 manual review and were familiar with it's content, therefore did not require specific training to deliver the program. The pre-program training focus was to familiarise the CYMHS clinicians with the infant mental health content as they were not involved in the manual review completed by QCPIMH. The CYMHS clinicians attended QCPIMH for two days where they joined the clinical meetings and were taken through the content of the infant mental health program. This was to further ensure fidelity of the program across the two sites. QCPIMH staff attended both sites prior to the commencement of the PIMH Day Program and met with all clinicians facilitating the programs. This was to ensure a common understanding of the project, project deliverables and research protocols.

Reporting

Monthly reporting procedures were established with the QCPIMH Steering Committee, Consumer and Carer Group, CYMHS Management meetings and weekly QCPIMH project coordinators meeting.
**Timeframes**

Table 2 shows the research project was conducted from June 2015 to December 2016. Data analysis was finally completed May 2017 with the final report submitted June 2017.

**Table 2 Project Milestones**

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Description</th>
<th>Dates</th>
</tr>
</thead>
</table>
| Facilitate Implementation of Day Program | • Negotiate Day Program Hospital and Health Service Sites  
• Sign Service Agreements with participating HHS sites  
• Literature review  
• Develop research protocols  
• Establish Working Party  
• Complete and submit HREC application  
• Review, redesign and develop Facilitator Manual and resources  
• Meet with/train program facilitators in research protocol  
• Promote referral pathways                                                                 | July 2015 to April 2016 |
| Deliver Day Programs                | • Run three programs per site across 2 HHS sites                                                                                                                                                           | May 2016 to November 2016 |
| Analyse Data, Publication of Manuals and Final Report | • Data collection and coding  
• Data analysis  
• Final Report  
• Manual publication                                                                                                           | January 2017  
March 2017  
June 2017  
June 2017 |

**Research Protocol**

**Ethics**

Ethics approval was obtained 22/12/2015 from CHQ HHS: HREC/15/QRCH/236. Site Specific approval received from Townsville HHS May 2016: SSA/16/QTHS/80 and Cairns and Hinterland HHS May 2016: SSA/16/QCH/43.

**Hypotheses**

It was hypothesised that participation in the PIMH Day Program would:

- improve maternal emotional wellbeing
- improve the parent-infant relationship
- improve maternal knowledge, competence and confidence in parenting
- improve social networks for participants
- improve maternal use of mental health and health and community services for continuity of care.

**Research sites**

It was originally planned to conduct two PIMH Day Programs in four HHS sites across Queensland covering metropolitan and regional settings. Six HHS sites were approached where a perinatal adult mental health clinician was employed. While interest was high, circumstances prevented uptake of the research in the available timeframe in eligible sites. After consultation with senior management, Townsville and Cairns and Hinterland HHS agreed to conduct three PIMH Day Programs each throughout 2016. Both sites indicated interest in continuing PIMH Day Programs at the completion of the research project.
The PIMH Day Program in Townsville was conducted at the Infant and Mothers Parenting Skills (IMPS) Day Stay facility located within the Townsville Community Health Campus in Kirwan. This facility was provided by Child Health and was well equipped for mothers and infants to meet on group days.

The PIMH Day Program in Cairns was conducted at the Lifeline Community Care Centre North Queensland providing a large group room with kitchen facilities.

Collaborating services

*Adult (Perinatal) Mental Health Service (Townsville)* - provides assessment and treatment for women suffering from mental illness during and after pregnancy. The service is predominantly community based, however also offers inpatient treatment for mothers suffering from more severe mental health issues.

*Adult Mental Health (Cairns)* - provides assessment, formulation and intervention for people presenting with more complex and severe mental health conditions, and where there is risk to life or safety, resistance to treatment, or significant comorbidity.

*Child and Youth Mental Health Service* – aims to support and improve the mental health of young people from 0-18 years. It is a child and family focused service providing primarily community based mental health services, with inpatient services available in more severe and complex cases. The service works collaboratively across many domains relevant to the young person’s needs, including education, health, and community.

*Community Child Health Service* - brings together a variety of specialist community based child health services to help children and their families to lead healthier lives. Services include child, youth and family health, school-based youth health nurse programs and maternal home visiting services. Service and information is for families with children aged between birth and 18 years.

Sample size

Using the Depression Anxiety and Stress Scale (DASS-21) as the primary outcome measure, it was calculated that a sample size >30 would provide sufficient power to yield statistically-significant results. It should be noted that 25 mothers completed pre and post measures. The fact that statistically significant results were obtained even in this smaller sample lends weight to the robustness of the findings.

Participants

Inclusion criteria:

- Mother has a moderate to severe diagnosable mental health condition with capacity to participate within a group environment.
- Mother has the primary care of the infant.
- The infant is < 12 months and is non-ambulatory.

Exclusion criteria:

- Mother has a primary diagnosis of drug/alcohol issues.
- Mother is non-English speaking.
- Mother has a moderate to severe intellectual or hearing impairment.

Participants were referred to the PIMH Day Program by Child Health and Mental Health Services. Twenty-eight women signed consent forms. Three participants who signed consent forms did not attend due to complex mental health issues at the time of program start. Twenty-five mothers attended
with one mother participating with twins. For the purposes of the research, the twins were identified as two mother-infant dyads. Therefore, twenty six mother-infant dyads completed pre and post measures. Participants who missed sessions were provided with catch up sessions by clinicians and were frequently undertaken. Missed sessions were due to:

- mental health issues of the mother
- infant’s or mother’s physical health
- family/life circumstances.

**Program Content and Implementation**

**The PIMH Day Program Model**

The mothers referred to the PIMH Day Program were required to meet the criteria of moderate to severe mental health diagnosis. The collated diagnoses of the attendees indicates this was achieved, with depression (pre and postnatal), anxiety, bipolar disorder and schizoaffective disorder featured in the research group. Two of the participants had had recent hospital admissions with psychosis. Apart from their illness, many participants had a range of complex issues impacting on their lives (family relationships, housing, financial, physical health of mother or infant, employment, social isolation, transport) which, at times, affected their ability to attend. To address these needs, clinicians provided extra support to the participants between group days, liaised with support agencies, communicated regularly and ensured transport was available to and from the group.

The PIMH Day Program is based on a bio-psychosocial model of perinatal and infant mental health that recognises the various elements that may impact on the life of a parent, their infant and family. By acknowledging and working with these issues the PIMH Day Program is designed to address many of the psychosocial factors through a process of collaboration and early intervention. The foundation for this model of intervention lies in the following practice principles:

- Collaborative Interdisciplinary Practice
- Mental Health Promotion, Prevention and Early Intervention Principles
The PIMH Day Program incorporates evidence based knowledge from the following areas:

- Mental Health
- Neuroscience
- Attachment Theory
- Child Development
- Trauma Theory
- Psychological Interventions
- Ecological Systems Theory

Benefits of parent-infant groups

There is strong evidence that group-based programs for parents with a mental illness have many advantages. However, there is limited research on the impact that such groups have on the parent-infant dyad and their relationship (Meschino, Philipp, Israel, Vigod, 2015). The PIMH Day Program is evidence that having mothers and infants attend the group together enables facilitators to observe, assess and provide appropriate and immediate responsive interventions that support the mother-infant relationship. The therapeutic alliance created by the clinicians acted as a safe and secure holding environment for the mother and infant as they explored and navigated their relationship together throughout the PIMH Day Program.

Clinical governance

Clinical governance to manage the wellbeing of the participants was critical to the project. Most participants came with a history of previous mental health issues including past trauma which impacted on their experience. In addition to group sessions, individual sessions were offered to the mothers at the finish of each day and a group session was offered to partners/support persons. The mother and infant were registered on the Adult Mental Health and CYMHS database (CIMHA) ensuring a case worker/mental health intervention was available as required. Case reviews were conducted by the clinical team before, during and after the PIMH Day Program to: discuss/accept new participants, monitor maternal and infant mental health and the progress of the mother-infant dyad, and formulate a discharge plan. An adult and infant psychiatrist attended the meetings to provide clinical oversight.

Group sessions

Venues were chosen to provide a suitable environment for mothers with their infants. Car parking was mostly available and cab vouchers were provided as needed. The groups were run as “closed” groups to support safe and supportive relationships. If a mother was absent on a group day the clinicians offered one-on-one sessions to cover the gap.

The program ran for one day per week for six weeks from 9.30am to 2.30pm. Mothers with school age children were able to leave on time for pick up. Child care was not available for other children. The program was facilitated by the Adult Mental Health (AMH) clinician with co-facilitation from Child Health (CH) and Infant Mental Health (IMH) clinicians. Each clinician was responsible for delivering the information from the manual that related to their area of expertise and covered the following weekly topics:
Perinatal Mental Health session topics
1. Adjusting to parenthood
2. Understanding and managing stress
3. Understanding and managing perinatal mental health disorders
4. What am I thinking?
5. Communication skills
6. Problem-solving

Child Health session topics
1. Building a relationship with your infant
2. Understanding sleep and settling your infant
3. Growth, nutrition and oral health
4. Development and play
5. Injury prevention and safety
6. Where to from here, connecting with your community

Infant Mental Health session topics
1. A message from your baby
2. Explorers and connectors
3. Relationships grow brains
4. Regulation and repair
5. What gets in the way?
6. Connecting with your baby

The manual was designed for each day to have a topic from the above service that provided continuity on themes interspersed with singing with the infant, some brief mindfulness and grounding activities for mothers and general social interaction with lunch provided. The process in which the content was delivered was as important as the information presented. This provided opportunity to:

- role model effective parenting techniques
- provide immediacy in feedback and modelling by clinicians
- develop the mother’s reflective functioning capacity and sensitivity to their infant.

Partners session
Research indicates that the partners of women diagnosed with perinatal mental illness are twice at risk of developing their own mental health pathology. The aim of the partner’s session was to provide information about how they can maintain their own, and their infants’ social and emotional well-being and discuss strategies to support their partner. Sessions were held one evening at the mid-point of the PIMH Day Program group sessions facilitated by the research adult mental health clinician and an adult mental health male clinician. The session was designed predominantly for partners/fathers however other support persons could be nominated.

Program facilitation
The PIMH Day Program requires the clinical expertise of the three services working collaboratively to meet the needs of the participant families. The adult mental health nurse provided the key facilitation role as the first point of contact for the mother. Referrals were received by the mental health clinician who undertook initial mental health assessments and registration of the mother on the Consumer Integrated Mental Health Application CIMHA (if not previously registered). If the mother met the criteria
for the program she was then referred to the infant mental health clinician for registration of the infant on CYMHS CIMHA. Co-facilitation was provided by infant mental health and child health clinicians.

Advantages of shared co-facilitation include the:

- opportunity to respond to issues in relation to a specific topic
- opportunity to observe and identify concerns, issues etc.
- building of rapport and trust with the mothers in the program
- capacity building (knowledge and skills) for health service professionals
- opportunity to identify topic areas that may need further development
- improved networking and collaborative service delivery between services.

Responsibilities related to the implementation of the PIMH Day Program were divided between research clinicians. For this research project the following roles were identified:

**Adult Mental Health Services**

- Completed the participant mental health assessment, registration, and ongoing documentation on CIMHA.
- Provided information and consent forms to participants.
- Ensured research measures were completed and collected.
- Communicated with research investigators.
- Facilitated program requirements – room bookings, catering etc..
- Negotiated meeting times with co-facilitators, case reviews and debriefing sessions.
- Participated in case reviews.
- Provided information session on emotional wellbeing and mental health strategies.
- Supported co-facilitators in delivery of sessions and role modelling positive parenting behaviours.
- Provided ongoing assessment of the mother’s mental health including timely therapeutic interventions.
- Facilitated the information and support sessions for partners.
- Provided individual sessions post program days relating to mother’s emotional well-being.
- Ensured discharge plans were communicated and actioned.
- Took responsibility for identification and referral to child protection services as required.

**Child Health Services**

- Provided parenting information sessions directed at supporting mother’s confidence and capacity to parent.
- Co-facilitated sessions with other clinicians.
- Attended case review meetings and debriefing sessions.
- Provided notes to the mental health clinician to upload to CIMHA as relevant.
- Provided role modelling and feedback to support mother’s relationship with her infant.
- Prepared group resources directed at interactive play and singing.
- Provided feedback to child health case managers supporting the family (with mother’s permission).
- Provided individual support to participants relating to parenting issues.
- Assessed ongoing child health related needs for discharge planning.
Infant Mental Health

- Completed assessment, registration, and ongoing documentation of the infant on CIMHA.
- Provided assessment and early intervention of mother-infant interactions to develop improved attachment relationships.
- Delivered infant mental health information sessions.
- Participated in case reviews and debriefing sessions.
- Provided relevant referral information for discharge plans related to infant mental health and community linkage.
- Provided individual sessions post program days relating to concerns about the infant’s emotional wellbeing.

Case review and discharge

To assist clinical governance three case reviews were held throughout the group process. The case review included an adult and infant psychiatrist with the three group facilitators present. Following assessment and assignment to a PIMH Day Program, participants were reviewed prior to the group commencing, at the mid-point and prior to discharge. This allowed review of their current clinical status, identified issues in relation to their and/or their infant’s wellbeing and management issues that arose from participating in the group. The final case review provided discharge plans, and appropriate referrals were made for each group participant.

Research fidelity

To ensure integrity of the research, it was important that the intervention adhered to the research protocols. The risk of variance or deviation from the original planned study design increases as the intervention design becomes more complex. For this research the following needed to be managed:

- multiple sites (2)
- multiple groups (6)
- multiple sessions (36)
- complexity of participants illness across groups (mental health diagnosis)
- multiple clinicians delivering the program (6+)
- multi-disciplinary clinicians
- participants response to the complexity of measures (illness and literacy).

According to Horner, Rew, & Torres (2006) a number of strategies may be employed to avoid “program drift” across sites and allow replication of the research model sufficient to give confidence to the research findings. The PIMH Day Program research design addressed the following identified strategies to support program fidelity:

- Well-developed intervention manual and research protocols in place.
- Research team members included in the content review and delivery.
- Clearly identified concepts and/or constructs included in the intervention.
- Training in research protocols provided to the research team members.
- Intervention delivered by clinicians with appropriate qualifications.
- “Intervention monitoring” by observing program delivery at both sites (by Project Coordinator and Infant Mental Health Clinician for 2 out 6 sessions per program).
- Regular debriefing of research team members by project coordinator and Infant mental health clinician (QCPIMH).
- Clinician post program feedback survey.
Research Methodology

Design
The research was designed with the assistance of Dr William Bor, Officer in Charge of the CHQ HHS CYMHS Academic Research Unit, using a mixed methodology of quantitative and qualitative pre and post measures. It is important to note that the research design was developed to meet the needs of a general population. Further research and program adaptation may be required for mothers with special needs and specific cultural groups.

Quantitative measures were administered before and after the program, by clinicians involved in delivering the program. Qualitative surveys were collected post-program from participating mothers, fathers/partners, and clinicians (see Measures below).

Measures

**Clinician administered:**

**Maternal mental health**

**Brief Psychiatric Rating Scale Expanded Version (4.0) (BPRS 24)**

The BPRS is a widely used instrument for assessing the positive, negative, and affective symptoms of individuals who have psychotic disorders, especially schizophrenia. It has proven particularly valuable for documenting the efficacy of treatment in patients who have moderate to severe disease. The BPRS Expanded Version consists of 24 symptom constructs and scored from 1 (not present) to 7 (extremely severe). Comparison of pre and post intervention scores are used to measure intervention effectiveness. A decrease in scores indicates improvement in mental health symptoms. It is regarded as having valid and reliable pre and post-test measures.

**Health of the Nation Outcome Scale (HoNOS)**

The HoNOS is a set of 12 scales, each one measuring a type of problem commonly presented by consumers in mental health care settings. A completed HoNOS score sheet provides a profile of 12 severity ratings and a total score. By comparing the severity of each problem recorded at the first rating with the ratings made on a second or subsequent occasion the clinician can measure outcomes following an intervention. A reduction in scores indicates improvement to the consumers mental health outcomes. Severity of symptoms is measured on a five-point scale (0,1,2,3,4). Items on the HoNOS can be categorised in four sub scales covering: behavioural problems, impairment, symptomatic problems and social problems.

**Clinician administered:**

**Parent-infant relationship**

**Global Assessment Scale (PIR-GAS)**

The PIR-GAS is a 90-point scale used to assess the quality of a parent-infant relationship based on a continuum from well adapted to grossly impaired. It should be completed only after a thorough clinical evaluation of the infant’s (0-5) problems. The relationship problems may stem from within the infant, with the caregivers, between the infant and the caregiver or from the larger social environment. PIR- GAS scores are classified as 81-100 Adapted Relationship; 41-80 Features of a disordered Relationship; 0-41 Disordered Relationship. Pre-post intervention scores are rated to indicate a change to the above classification with a higher score indicating improvement in relationships.

**The Modified Alarm Distress Baby Scale (m-ADBB)**

M-ADBB Scale consists of five items related to the infant’s social behaviour, and is primarily used during the clinician’s routine physical examination of the infant. It requires the clinician to engage the infant in social behaviour - by talking to him, touching him, and smiling to him, which are practices normally undertaken during such examinations. The scoring for this research was done by video-taping the interaction and the scoring occurred off-site by an independent scorer. The five items rated as Satisfactory, Possible Problem, Definite Problem are facial expression; eye contact; general level of activity; vocalisations; relationship to the observer. Pre-post intervention scores are compared to identify improvements in the above ratings.

**Self-reports**

**Depression Anxiety and Stress Scale (DASS-21)**

DASS is a set of three seven-item scales designed to measure the negative emotional states of depression, anxiety and stress. Each seven-item set rates the severity of
symptoms over the previous 7 days. The scales can be summed to produce a composite measure of general psychological distress or negative affectivity. Pre and post scores can be measured to determine effectiveness of intervention through a reduction in scores across subscales of depression, anxiety and stress and the cumulative result across the three measures.

**Mental Health Inventory (MHI)**

The MHI is a self-rated questionnaire of 38 questions rated from one to six designed as a measure of general psychological distress and wellbeing. Results are categorized in subscales covering: anxiety, depression, loss of behavioural or emotional control, psychological distress, positive affect, emotional ties, life satisfaction, psychological wellbeing and the mental health index. Intervention effectiveness is measured by an increase in overall scores.

**Karitane Parenting Confidence Scale (KPCS)**

The KPCS is an Australian scale designed to measure perceived parental self-efficacy in parents of infants aged 0-12 months. The KPCS is a 15-item scale in which parents respond using a 4-point Likert scale to indicate how they generally feel in relation to a range of parenting behaviours. The scale has a three-factor structure: Parenting, Support and Child Development. This scale has important clinical and research applications, as an increasing number of studies over the past 20 years have highlighted that parenting confidence perceptions – often called ‘perceived parenting self-efficacy’ (PPSE) – represent a key element of parents’ subjective experience, and are an important resiliency or protective factor (Jones & Prinz, 2005). The research used a cumulative approach measuring the increase in overall parenting confidence.

**Parenting Stress Scale (PSI 4)**

The PSI Short Form (PSI/SF) has 36 items and is a direct derivative of the Parenting Stress Index (PSI) full-length test. The PSI/SF yields a Total Stress score from three scales: Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child. Pre-post intervention effectiveness is measured by the reported decrease in the total parental stress score.

**Maternal Postnatal Attachment Relationship Scales (MPAS)**

A self-report questionnaire measuring the early emotional bond between mother and infant and their attachment. This questionnaire contains 19 items, which are divided over three subscales, indicating ‘quality of attachment’, ‘absence of hostility’ and ‘pleasure in interaction’. A selection of the items start with a part of a sentence and are followed by three, four, or five options that can be checked by the mother to finish the sentence. Intervention effectiveness is measured by an overall increase to pre-post scores.

**Ages and Stages Questionnaire: Social – Emotional (ASQ:SE)**

The ASQ:SE was designed to complement the ASQ by providing information on the social and emotional behaviour of children ranging in age from 3 to 66 months. It is composed of a series of simple to complete questions designed for use by parents/caregivers. It is a screening tool that identifies infants or young children whose emotional and/or social development requires further evaluation and intervention by measuring the cumulative score and comparing the result to a pre-set score. Effectiveness of the intervention is measured by a decrease in the score below the cut-off score.

**Qualitative Surveys**

Clinicians post program questionnaire
Participant post program questionnaire
Partner feedback questionnaire

Qualitative analysis of post program questionnaires was used to identify key elements of program entry, content, process, satisfaction and recommended improvement characteristics for the program. A similar process was used with the clinician post program questionnaire to categorize positive and negative components of the collaborative experience. The partner’s questionnaire provided information on their pre and post knowledge of perinatal and infant mental health and benefits of the session.
Data management and analysis

The quantitative data were coded, de-identified, and double-entered into an encrypted Excel Database, and screened for accuracy and verification. Errors were adjusted, missing entries were coded, and the database was validated for analysis through numerical summaries in R Commander. Data analysis was conducted by an external statistician using STATA software. For analysis purposes, an alpha level of 0.05 was set to identify significance.

As the data for the study population were not normally distributed, the non-parametric Wilcoxon signed-rank test was the predominant statistical test used to compare the pre- and post-intervention data. The data analysis compared the means for each measure used and only the DASS-21, as the primary measure, was broken down into a subscale for greater analysis. The data analysis demonstrates an overall improvement in maternal mental health, parenting confidence, and reduced parental stress suggesting that the PIMH Day Program was beneficial in improving the emotional-social wellbeing for mothers with a moderate to severe mental illness and their infants.

Demographics

Table 3 identifies the age range of participating mothers and infants. 54% of mothers were in the 26-35 years age range and 87% of infants aged between 1-7 months. 61% of mothers were in a relationship with the baby’s father with 69% unemployed. The sample size is insufficient to examine the impact of demographic variables on outcomes.

Table 3 Demographics

| Demographic Information of Participants (Column Percentages, n=26) |  |
|---|---|---|
| **Mother Age** | **n (%)** | **Infant Age** | **n (%)** |
| 18-25 | 10 (39) | 1-3 | 14 (54) |
| 26-35 | 14 (54) | 4-7 | 9 (35) |
| 36+ | 2 (8) | 8-10 | 3 (11) |
| **Total** | **26 (100)** | **Total** | **26 (100)** |
| **Average** | **27 years** | **Average** | **4 months** |
| **No. of Children** | **n (%)** | **Marital Status** | **n (%)** |
| 1 | 14 (54) | Single | 10 (39) |
| 2 | 6 (23) | Married | 6 (22) |
| 3+ | 6 (23) | De Facto | 10 (39) |
| **Total** | **26 (100)** | **Total** | **26 (100)** |
| **Nationality** | **n (%)** | **Employment Status** | **n (%)** |
| Australian | 22 (84) | Unemployed | 18 (69) |
| Japanese | 1 (4) | Casual | 2 (8) |
| Philippines | 1 (4) | Part-Time | 6 (23) |
| Hong Kong | 1 (4) | Full-Time | 0 (0) |
| German | 1 (4) | Retired | 0 (0) |
| **Total** | **26 (100)** | **Total** | **26 (100)** |
| **Household Income** | **n (%)** | **Education Level** | **n (%)** |
| Nil | 0 (0) | Year 9 or below | 2 (8) |
| $1-299 | 1 (5) | Year 10 or equivalent | 3 (12) |
| $300-599 | 5 (23) | Year 11 or equivalent | 4 (16) |
| $600-999 | 6 (27) | Year 12 or equivalent | 9 (36) |
| $1000-1499 | 6 (27) | Trade Certificate | 1 (4) |
| $1500-1999 | 1 (5) | Undergraduate degree | 4 (16) |
| $2000+ | 3 (13) | Postgraduate degree | 2 (8) |
| **Total** | **22*(100)** | **Total** | **25* (100)** |
| **Average Income** | **$600-999 p/week** | **Average Education** | **Year 12** |

*Not all participants responded to question.
Table 4 identifies the mental health diagnoses of the mothers attending the program. Depression and anxiety arising in the postnatal period were predominant with two mothers experiencing recent psychotic episodes requiring hospitalisation.

**Table 4 Mental Health Diagnosis**

<table>
<thead>
<tr>
<th>Mental Health Diagnosis</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression arising in the postnatal period</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Mixed anxiety and depression arising in the postnatal period</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bipolar Affective Disorder</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Schizo-Affective Disorder</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Adjustment Disorder</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Severe mental and behavioural disorders associated with puerperium, not elsewhere classified</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Obsessive-compulsive disorder unspecified</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Severe depressive episode without psychotic symptoms, arising in the postnatal period</td>
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<td>1</td>
</tr>
<tr>
<td>(Acute)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other depressive episode arising out of the postnatal period</td>
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<td></td>
</tr>
<tr>
<td>Asperger’s Syndrome</td>
<td>1</td>
<td></td>
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<tr>
<td>Schizoaffective Disorder, manic type</td>
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<td></td>
</tr>
<tr>
<td>Anxiety Disorder Unspecified</td>
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<td></td>
</tr>
<tr>
<td>Generalised Anxiety Disorder</td>
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<tr>
<td>Acute and transient psychotic disorder</td>
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<td></td>
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<tr>
<td>Unspecified mood disorder</td>
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<td>1</td>
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</table>

**Results**

**Quantitative results**

- **BPRS**
  A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program decreased overall average scores measured in the clinician rated Brief Psychiatric Rating Scale. Subscales were not analysed individually, however overall scores showed statistically significant improvements from pre-intervention (M=41.56, SE= 0.93) when compared to post-intervention (M=33.48, SE= 1.28) (z=3.668, p=0.0002).

- **DASS21**
  A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program decreased overall scores of depression, anxiety, and stress in participants. Overall differences in the means highlight significant improvements from pre-intervention scores (M=55.74, SE=4.35) when compared to post-intervention scores (M=41.3, SE=4.38) (z=2.877, p=0.004). The subscales of depression, anxiety and stress were individually analysed.

  - Depression subscale
    The difference in means from the pre-intervention scores (M=17.91, SE=1.82) when compared to post-intervention (M=13.74, SE=1.59) do not show statistically significant changes in self-rated maternal depression (z=1.803, p=0.0714).

  - Anxiety Subscale
    A Wilcoxon Signed-Rank Test was used to determine whether PIMH Day Program decreased self-reported symptoms of anxiety in the participants. The difference in means from the pre-intervention scores (M=14.26, SE=1.87) when compared to post-intervention scores (M=10.70, SE=1.85) suggest the program elicited statistically significant changes in symptoms of anxiety (z=2.016, p=0.0438).
- Stress Subscale
  A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program decreased self-reported symptoms of stress in the participants. The difference in means from the pre-intervention scores (M=23.57, SE=1.72) when compared to post-intervention scores (M=16.96, SE=1.60) suggest the program elicited statistically significant changes in symptoms of anxiety (z=3.040, p=0.0024).

- HoNOS
  A Wilcoxon Signed-Rank test was used to determine whether the PIMH Day Program decreased overall average scores measured in the Health of the Nations Outcome Scale. Changes in average scores showed that the program elicited statistically significant changes from pre-intervention (M=10.44, SE= 0.64) to post-intervention (M=6.4, SE= 0.56) (z=3.859, p=0.0001).

- MHI
  A Wilcoxon Signed-Rank test was used to determine whether the PIMH Day Program improved overall average scores measured in the Mental Health Inventory. Changes in the average scores show that the program elicited statistically significant changes from pre-intervention (M=43.89, SE= 2.62) to post-intervention (M=57.1, SE= 3.09) (z=-2.940, p=0.0033).

- Karitane
  A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program improved overall parenting confidence in participants. Changes in average scores show that the program elicited statistically significant changes from pre-intervention (M=32.65, SE= 1.09) to post-intervention (M=35.52, SE= 1.24) (z=-2.377, p=0.0175).

- PSI
  A Wilcoxon Signed-Rank test was used to determine whether the Day program decreased overall self-reported parenting-related stress in participants. Changes in average scores show that the Day Program elicited statistically significant changes from pre-intervention (M=76.82, SE= 1.79) to post-intervention (M=64.91, SE= 3.41) (z=3.302, p=0.0010).

- MPAS
  A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program increased overall self-reported quality of parent-infant attachment. Changes in overall scores show that the program elicited statistically significant changes from pre-intervention (M=67.66, SE= 2.57) to post-intervention (M=76.16, SE= 2.26) (z=-3.255, p= 0.0011)

- M-ADBB (Video with blind rating)
  A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program improved overall scores of the infant relating to an observer in regard to the following five measures: facial expression; eye contact; general level of activity; vocalisations; and relationship. These five items are rated as Satisfactory, Possible Problem, Definite Problem. The above five scales were analysed and do not show statistically significant changes in the clinician rated observations. See Table 5 below for results.

- PIRGAS (Video with blind rating)
  A Wilcoxon Signed-Rank test was used to determine whether the PIMH Day Program increased overall quality of the parent-infant relationship. Changes in average scores show that the program did not elicit statistically significant changes in participants from pre-intervention (M=32.59, SE= 2.52) to post-intervention (M=32, SE= 1.68) (z=-0.016, p=0.9869).
A Wilcoxon Signed-Rank Test was used to determine whether the PIMH Day Program decreased overall scores in the Ages and Stages Questionnaire. Changes in average scores show that the program elicited statistically significant changes from pre-intervention (M=46.2, SE=3.79) to post-intervention (M=28.5, SE=3.89) (z=2.298, p=0.0216).

Table 5 shows the pre-post results for the research measures used for the program.

(See Appendix 1 for graph representation of pre-post scores)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-administered</strong></td>
<td></td>
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<tr>
<td>DASS21</td>
<td>55.74</td>
<td>41.30</td>
<td>2.877</td>
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<td>Depression</td>
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<td>13.74</td>
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<tr>
<td>Anxiety</td>
<td>14.26</td>
<td>10.70</td>
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<td>0.0438*</td>
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<td>Stress</td>
<td>23.57</td>
<td>16.96</td>
<td>30.40</td>
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<td>MHI</td>
<td>43.89</td>
<td>57.11</td>
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<td>KPCS</td>
<td>32.65</td>
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<td>PSI</td>
<td>76.81</td>
<td>64.91</td>
<td>3.302</td>
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<tr>
<td>MPAS</td>
<td>67.66</td>
<td>76.16</td>
<td>-3.25</td>
<td>0.0011*</td>
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<td>ASQ-SE</td>
<td>46.2</td>
<td>28.5</td>
<td>2.298</td>
<td>0.0216*</td>
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<td><strong>Clinician-administered</strong></td>
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<tr>
<td>BPRS</td>
<td>41.57</td>
<td>33.48</td>
<td>3.668</td>
<td>0.0002*</td>
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<td>HoNOS</td>
<td>10.44</td>
<td>6.40</td>
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<td>m-ADBB</td>
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<td>3.94</td>
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<td>1.000</td>
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<td>Eye contact</td>
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<td>Vocalisation</td>
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<td>Activity</td>
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<td>1.29</td>
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<td>Relationship</td>
<td>1.41</td>
<td>1.11</td>
<td>1.656</td>
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<td>PIRGAS</td>
<td>32.59</td>
<td>32</td>
<td>-0.016</td>
<td>0.9869</td>
</tr>
</tbody>
</table>

*Indicates a statistically significant result

Statistically significant results in reduction in maternal stress and anxiety were recorded as well as improvements found in parenting confidence, parental stress, quality of parent-infant attachments and child development. These scores are critical in measuring the successful outcomes of the PIMH Day Program for participants across those domains most commonly identified as contributing to diminished outcomes for mothers, infants and families in the perinatal period. Within the context of a pervasive mood disorder it is not surprising that a short term six week program has resulted in a less statistically significant outcome in self-reported mood. However, evidence of changes to other measures, improved understanding of perinatal mental illness and its impact on parent-infant relationships, and a willingness to continue to participate in continued care, suggest positive shifts can be expected to help in contributing towards improvements in mood over time.

**Comment on the use of the PIR-GAS and m-ADBB**

The PIR-GAS and m-ADBB required a pre-post video tape of mother-infant and infant-stranger interactions which were rated by independent scorers. These measures were included to assess the
attachment quality between the dyad (PIR-GAS) and infant-stranger interactions (m-ADBB). By comparing the two measures it is possible to determine an infant’s level of attachment risk and protective factors. However, difficulties were encountered in the videoing of these activities within the group environment where there were distractions and lack of an appropriate space to video interactions. Mothers reported feeling anxious and uncomfortable with the video process especially in the pre video session with a stranger. It is to be considered that these issues impacted the results providing less significant outcomes compared to other measures. It is recommended that alternative methods for videotaping be considered for future research such as in pre-arranged home visits.

Comment on cultural issues

The DASS-21 is a well-established instrument for measuring depression, anxiety, and stress with good reliability and validity reported across various cultures. However, there is concern over the lack of appropriate validation among Asian populations. Cultural variation appears to influence the individual’s experience and emotional expression (Oei, Sawang, Goh, Mukhtar, 2013). In this study three participant mothers were identified as having Asian cultural backgrounds having come to Australia within recent years. A potential for a language barrier in administration of the DASS was identified in this group of mothers, in particular, their scores for depression, which were significantly higher post program. This suggests increased understanding of the concepts being measured as a result of knowledge gained through the PIMH Day Program. Cultural versions of measures should be carefully considered in future studies.

Qualitative feedback

Participant feedback

Information sought from an exit survey included participant’s perceived improvements in emotional and social functioning, parenting confidence, overall program satisfaction and review of elements that helped or hindered program outcomes to assist future implementation of PIMH Day Programs. Twenty mothers completed the written feedback form (Appendix 1a).

Participant satisfaction

- Mothers reported that they found the program helpful (95%) and would recommend the program to other mothers in similar circumstances (95%)
- Mothers indicated that the program had improved their parenting confidence (80%)
- Mothers reported subjective improvement in their emotional wellbeing (65%)
- Mothers described the group space as safe and non-judgemental, with staff who respected their privacy and helped them feel understood (100%)

Entry: participants indicated that the information received prior to the program assisted them to attend. This included a home visit from the adult mental health clinician, an information sheet and completion of a consent form for the mother and infant. Universally the participants stated that the process was welcoming and friendly and geared positively to mums struggling with a mental health problem. Elements such as the provision of lunch and a baby floor rug that was kept at the end of the program was both practical and value added to their attendance. The venues were appropriate and the availability of cab vouchers for some mothers was critical to attending.

Content: Participating mothers were very positive about the content of the program as it was designed specifically for their mental health issues and focussed on their relationship with their infants. Anecdotally, many reported that they were able to attend the group activity due to its focus on their specific mental health issues without stigma or judgement. Meeting and sharing problems with other
mothers with similar issues was one of the most important outcomes for the participants. Qualitative feedback indicated improvements in:

- knowledge, confidence and enjoyment in parenting
- understanding the impact of mental health issues on their infant’s development
- understanding of their infant’s social-emotional, cognitive and physical development
- strategies to interact with their infant
- strategies to manage their mental health issues
- social support and community engagement
- trust of services and willingness to take up discharge referral pathways

**Process:** Feedback indicated that the closed, small group process was effective in helping mothers feel comfortable and safe in participating in the program (100%). The psycho-education and information sessions presented by the three clinicians were supported by videos, handouts and a journal for keeping notes and self-reflection. The process was intended to be interactional between clinicians and mothers/infants, mothers and infants and between mothers themselves. While the information was well received the process of baby observations, activities and singing with the infant were highly rated. The modelling of the group as a “safe and secure base” for mothers to explore, learn and share their experiences was a significant theme throughout the responses.

**Program improvement:** In response to the question on ways the program could be improved most mothers responded that they could not think of anything. The suggestions made related to length of program in weeks with most participants supporting a longer program with all but two mothers indicating the length of day was suitable. Other suggestions included bean bags for feeding (2), a quieter sleep space for the infants (1) more participants attending (1), increased hands on activities (1), improved parking (1), include session with mother and partner together (1).

**Participant comments:**

“This has been an invaluable experience…I now feel much less anxious”

“I now understand more about how my baby communicates with me ….I now talk to her more and spend more time with her “

“The way I interact with my baby is a lot different to how I used to..”

This program was great and I would recommend it to first time mums with a mental health issue”

“Before the program I didn’t know what to do with baby interactions and now I do”

“I now know when she cries it’s because she needs something and not to just be annoying”

“We are more active at play times together”

“I talk and sing more, I didn’t know how much of a difference it could make”

“I was very lost before I started. I feel like I have much more information and direction”

“I am making myself more available to one on one time and noticing my child’s development more…”

“The program allowed me (and others) to identify the problems we face and how to improve our mental health”

The entire day was helpful in some way or another. And where the day program couldn’t offer me help they redirected me to where I could…..”

“I couldn’t have asked for better staff. They are so supportive, sympathetic and understanding”

“Brilliant! I would recommend this (program) highly to any struggling mums”
Anecdotally many participants stated that they had felt quite isolated prior to the group and would not join a mainstream parent group due to their anxiety and depression and stigma of having a mental illness. They expressed concern that their parenting would be judged and an inability to “fit” in with other mothers. Many days they found it difficult to leave their home. By attending the group they expressed appreciation for being in an environment where they felt understood with other mothers experiencing similar problems. They looked forward to attending each week and supported the group extending for a longer period of time. A number of mothers planned to attend ongoing programs such as a Circle of Security program (Child Health) and First5forever run by library services to maintain social connections with each other.

**Partner Feedback**

Partners of women attending the group were invited by letter to attend an evening session facilitated by the adult mental health service clinician and a co-facilitator. Single mothers were welcome to invite another identified support person, however none chose to do so. In Cairns and Townsville the co-facilitators were male mental health clinicians with experience as fathers. Sixteen participants had partners, of whom ten accepted the invitation to attend a partner session. Partners completed post session questionnaires (Appendix 1b) relating to knowledge gained and strategies to support their partners, infants and themselves.

**Partner Satisfaction**

- Partners indicated that their knowledge of perinatal and infant mental health improved as a result of attending the partner session (100%)
- Partners agreed that the information received in the session helped prepare them for their role as partner/father (100%)
- Partners indicated that they felt more confident in supporting their partner experiencing perinatal mental illness, as a result of the session (100%)
- Partners said the session helped them think about their own health and wellbeing (100%)
- Partners said the session increased their knowledge of services that can assist them, their partner and their family (100%)

**Table 6 Partner Feedback**
Clinician Feedback

At the research sites, three principal clinicians from participating services facilitated and delivered the program for 13 mother-infant dyads over 3 groups. At the end of the program each clinician completed a questionnaire relating to their experience of the program (Appendix 1c).

Clinicians endorsed the collaborative model as an effective intervention for mothers with a mental illness and their infants. Clinicians indicated that their knowledge of perinatal and infant mental health had improved, as had their confidence in working with mothers with a mental illness, as a result of their involvement in the program. One respondent indicated that she had sufficient knowledge/confidence prior to the program. Some clinicians indicated that further training in group facilitation skills relevant to this particular group would be beneficial. On trialling the facilitator’s manual, minor recommendations were made regarding the content and delivery of the program. Overall, all participating clinicians expressed satisfaction with the program and manual.

Clinician Satisfaction

- Clinicians endorsed the collaborative model as an effective intervention for mothers with a mental illness and their infants (100%)
- Clinicians indicated that their knowledge of perinatal and infant mental health had improved through the program (83%)
- Clinicians indicated that their confidence in working with mothers with a mental illness had improved through the program (83%)

Table 7 Clinician Feedback

<table>
<thead>
<tr>
<th>Workforce development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinicians commented that the experience of working together in a collaborative capacity was invaluable in building networks, understanding the role of the other services, and providing a streamlined approach to service delivery and referral:</td>
</tr>
<tr>
<td>&quot;Fantastic professional relationships, shared knowledge and skills, overall collaborative practice providing families with optimal care in the postnatal period&quot;</td>
</tr>
<tr>
<td>&quot;It has really grounded some theory and learning into practical experience. My uni work really prepared me the most part for the Day Program but the program has really solidified what I know”.</td>
</tr>
<tr>
<td>“Significantly more coordinated service provision and referrals, increased learning about other areas relevant to PIMH/CH/AMH. Improved relationship between services leading to more streamlined</td>
</tr>
</tbody>
</table>

![Post-Program Facilitator Feedback](image)
service provision for mothers and more opportunity for targeted interventions based on other professionals knowledge.”

There was agreement across all clinicians that the opportunity to meet with both adult and infant psychiatrists in the case review process was a valuable case management process and learning experience that they recommend remain as an integral part of the program.

**Clinical service provision**

A critical factor identified by clinicians from both research sites was the opportunity to observe mothers and infants together for an extended period each day they attended the program. This provided a unique insight into the interactions between mother and infant and the mother’s reflective capacity to respond to their infant. It allowed for immediacy in responding to mothers concerns and identified problems in managing their infant such as feeding, sleep, distressed baby, secure holding and understanding and managing infant behaviours.

**Cost-benefit assessment**

The feedback identified potential efficiencies in this model of service delivery:

“In many ways it is an efficient way of 3 services offering an intensive block with 2 prospective clients (mother and infant) that otherwise we would all be doing similar work in isolation and therefore probably using more resources”.

Clinicians indicated that there were considerable costs in time undertaking initial assessments, pre-planning and delivery of the program as well as those associated with program management – booking venue, arranging equipment, catering etc. Without a formal cost benefit analysis it is difficult to assess resource costs and benefits. However, comparison to individual service delivery models and hospitalisation would suggest that the PIMH Day Program model provides cost-effective service delivery and an effective path to improved referral and links to services with positive outcomes.

**Sustainability**

All six clinicians indicated they would support ongoing groups in their HHS and would like to be part of an ongoing program. They indicated the high level value of other clinicians participating to further their knowledge and experience of PIMH and collaborative service delivery. Clinicians identified that further training, supervision and support in delivering the program is needed.

**Identified Issues**

Issues identified during the planning, implementation and evaluation of the PIMH Day Program research project require careful consideration in future implementation of the program. These include:

- referral processes
- barriers to participation
- program adaptations for culturally-diverse consumers and those with special needs
- organisational planning and support
- capacity building across services
- staff training
- resource demands

**Referral processes**

The referral process is demanding on the adult mental health and CYMHS clinicians’ clinical time as they are both required to assess the potential participant and complete CIMHA registration. The initial plan to have participants complete all research measures prior to attending the group was altered to
completing the measures at Day 1 of the group due to the excessive time required to assess and complete measures at the initial assessment meeting (+2.5 hours).

The child health nurse was instrumental in liaising with home visiting child health nurses to promote and identify potential mothers for referral to the program. One significant benefit was the referral of perinatal mothers who were not previously linked to mental health services for assessment and treatment. Having clear inclusion/exclusion criteria also assisted in ensuring appropriate referrals were considered for the program.

Referrals to the program were impacted by the following factors:

- Awareness of the Day Programs.

New programs often take time to be accepted until trialled. Despite the distribution of information (brochures, referrals guidelines, electronic reminders) and meetings attended by program facilitators and project coordinators with potential referrers, indications were that the program was not entrenched in day to day clinical practice and not actively included in initial case planning. Understanding a new program and its goals, as well as identifying appropriate referrals, can take time. By the end of the program trial significant interest and increasing referrals were being generated in each site.

- Mothers’ capacity to participate

Some mothers who were considered for the PIMH Day Program were unable to participate due to:

- Complex mental health and other social issues made attendance at a group setting challenging
- Highly mobile child under 12 months
- Older child at home with no available child care

**Barriers to participation**

Potential barriers to mothers attending the program were primarily related to mental health issues, transport and child care. As discussed, having mothers meet facilitators prior to the program assisted them to feel more secure in attending on the first day. Experiencing a welcoming environment and meeting other mothers with similar issues was identified as a key factor in attending the program and identified by the high retention rate. On a practical level the issue of transport for some mothers required the use of cab vouchers to attend. Child care for older under school aged children was a further barrier to some mothers attending. By finishing the program at 2.30 others were able to leave to pick up day care/kindergarten/school aged children.

**Program adaptations for culturally-diverse consumers and those with special needs**

Cultural variation appears to influence the individual’s experience and emotional expression. Mothers for whom English is not their first language may struggle to benefit from the program in its current form. Future sites may wish to consider program adaptations for culturally-diverse consumers and those with special needs.

**Capacity building across services**

Participating in the PIMH Day Program project has resulted in increased knowledge and strengthening of interagency relationships for the clinicians involved in the program. Feedback from clinicians and services indicate that it would be worthwhile to rotate available staff through the program to broaden these benefits for clinicians, clients and organisations.

**Organisational planning and support**

The PIMH Day Program model requires the organisation and participating services to identify the value of the program as a step up/step down intensive mental health model that provides benefits to all participants. Services are required to provide both staff time and finances related to program incidentals against competing demands.
Staff training

Clinicians delivering the PIMH Day Program had qualifications and experience in mental health/child health assessment and delivery of program topics. Training for the research project was directed at ensuring protocols and fidelity was embedded in the research. Additional training was provided to the CYMHS (infant) clinicians who were not involved in the infant mental health content review. As a result of delivering the program, clinicians identified that further training in the program manual, complex group facilitation, mother-infant observations and appropriate supervision would be of benefit to support them in delivering future groups.

Resource demands

Resources for the PIMH Day Program research project were primarily met by funding available through the National Perinatal Depression Initiative (NPDI). The project has identified that adequate resourcing of the PIMH Day Program is critical to its success. This includes trained clinical staff, an appropriate venue, provision of lunch and snacks, handouts (printing), facilitator manuals, transport, lap top and internet facilities. Baby rugs donated by the Children’s Hospital Foundation were also highly regarded by the mothers as transitional objects on leaving the group as each mother was given the quilt to keep.

Overall provision of services placed an additional demand on the clinicians involved in the research as it required time commitment above the existing work load. Clinicians indicated that as they became familiar with the program and became better prepared the time factor decreased and became more manageable. However, specific funding for the PIMH Day Program would allow for dedicated staff time to facilitate the program, complete assessments, intake and case reviews without impacting on work load.

The funding provided by the NPDI covered staff hours (including on costs) to deliver the PIMH Day Program, attend training and planning meetings, purchase catering and other resources, attend case review and complete administrative tasks associated with the research project.

The participating services provided many “in kind” resources to assist in program delivery including psychiatry time, use of lap tops, printing, attending interagency meetings to promote the PIMH Day Program, use of vehicles etc.

The following costs outline the funding provided to each program (A and B) and other estimated costs relating to the research component (C and D). Actual costs are identified in (E)

| Table 8. Breakdown of Research Project Costs | |
|---|---|---|---|---|
| **Staff rates** | **Staff Time per program** | **Staff cost per program** | **Total x 3 programs** | **Funded Activity** |
| N7 L 1 @26% on cost Adult Mental Health | 16 days (121.6 hours) | $7930 | $23,790 | MH assessment of participants for program inclusion. Facilitate group program. Attend working party meetings/case review. Provide consultation in AMH Other non-contact hours. |
| N6 L2 @ 26% on costs Child Health | 9 Days (68.4 hours) | $3684 | $11,052 | Co-facilitate group program. Attend training/meetings/case reviews. Provide consultation in Child Health Other non-contact hours |
| HP4.1 CYMHS | 9 Days (68.4 hours) | $4284 | $12,852 | Attend training/meetings/case review, Complete CIMHIA registration and record management. Co-facilitate group program. Provide consultation in IFM. Other non-contact hours |
| | | | | Total funds per site $15,898 $47,694 $3500 $51,194 |
A | Labour  
---|---  
Cairns | $47,694 (3 programs)  
Townsville | $47,994 (3 programs)  
Total | $95,388  

B | Non Labour (catering, etc.)  
---|---  
Cairns | $3500  
Townsville | $3500  
Total | $7000  

C | Research Non Labour estimated costs  
---|---  
Program support | $1000  
Printing/stationery | $500  
Travel/accommodation | $8,000 (Project Coordinator)  
| \( \text{\textdollar}8,000 \text{ (Clinician)} \)  
Total | $17,500  

D | Project Coordinator | $191,833  

E | TOTAL | $311,721  

It was not within the scope of this study to conduct a cost efficiency study in maintaining a mother and infant in the community as compared to hospitalisation, or to undertake comparisons of a group model as opposed to individual service delivery. In relation to early intervention relating to the infants mental health, the Australian and New Zealand College of Psychiatrists (report from the Faculty of Child and Adolescent Psychiatry, 2010), states “few studies have reported economic evaluations for early intervention programs and the few that have do not use comparable assessment metrics … However, considering the available cost data, for high-risk families, there seems to be a good return on investment although further research is needed”. A further report suggests that group approaches are likely to be less costly (estimates indicate eightfold less) than multi-systemic or individual approaches, and recommends all future trials of prevention and early intervention programs should build in formal economic evaluation procedures from the outset (Bayer J, Hiscock H, Scalzo K, Mathers M, McDonald M, Morris A, Birdseye J, Wake M, 2009).

**Discussion**

The Queensland Mental Health Plan: *Connecting Care to Recovery 2016-21* emphasises the need for more effective collaboration, co-ordination and integration across and between programs, services and providers in delivering mental health services. It also recognises the need for partnerships that holistically meet the needs of individuals, their families and carers experiencing mental health and alcohol and other drugs issues (p. 7). The PIMH Day Program research project was designed as a stepped model of intensive intervention that recognises the need for improved and coordinated service delivery in perinatal and infant mental health.

The research results indicate a wide range of benefits gained for program participants, clinicians from the three collaborating services and their organisations supporting the research model. As proposed, the collaborative process provided improved participant access to services; increased quality of case management supported by clinical case reviews; collaborative discharge planning; improved networking between services; more effective use of resources; reduction in duplication of services; consistency of messages to mothers and partners; increased collegial support for clinicians delivering the program; transfer of perinatal and infant mental health knowledge and skills; and improved collaborative practice leading to organisational support for a new practice model.

The PIMH Day Program was developed using theoretically grounded and evidence based knowledge delivered by experienced clinicians in their field of clinical practice. Using a defined program model and research protocol it was hypothesised that a PIMH Day Program was likely to improve maternal
emotional wellbeing scores; improve the parent-infant relationship; improve knowledge, competence and confidence in parenting; improve social networks; improve accessibility and use of mental health and health and community services for continuity of care. Using quantitative and qualitative measures the two research sites were able to produce similar results across research participants to support the hypothesis. Similar to the pilot project (2009), the research measures clearly indicate an overall positive outcome for both parents and clinicians participating in the PIMH Day Program. Quantitative results registered statistically significant improvements across maternal mental health scores, parenting knowledge and confidence, and mother-infant attachment. Qualitative feedback from parents identified the positive impact of the PIMH Day Program on their knowledge of infant mental health, improvements in their emotional-social wellbeing, satisfaction with the program content and delivery, trust in collaborating health services and social connections made within the PIMH Day Program. From the results we can acknowledge that a brief six week intervention for mothers with a pervasive mood disorder is unlikely to meet the complexity of all their mental health issues and they will require ongoing support and intervention from appropriate services. However, as a ‘stepped’ model of care, mothers are able to access the PIMH Day Program pre and post hospitalisation filling an important gap in existing perinatal services. Furthermore, the trust developed between participants and clinicians delivering the program has had an important outcome in engaging participants in ongoing services ensuring continuity of care for the mother, infant and family.

Research shows that by focusing interventions that support parenting as early as possible in a child’s life, it helps to prevent or reduce later problems across the life span in areas such as health, mental health, education, child safety, crime, and substance abuse with significant economic benefits. UK estimates suggest that for each AUS$1 invested in the critical first 1001 days, AUS$10 may be saved by the time that infant reaches adolescence (Bauer, Parsonage, Knapp et al, 2014). Clearly it can be shown that programs such as the PIMH Day Program is both more achievable and cost-effective than remediation.

The evidence gathered in this research study supports the PIMH Day Program as an intensive stepped model of care. It offers a promising opportunity to deliver a collaborative service that supports parenting that impacts a child’s early development and mental health outcomes through a sustainable and cost-effective manner that translates across settings while building workforce capacity in perinatal and infant mental health. This research project supports the emerging evidence on the benefits of collaboration and integration in the delivery of community based perinatal and infant mental health services in Australia and internationally.

**Recommendations**

**Recommendations for clinical practice – maintaining key aspects of the model**

- The results indicate that the collaborative model of care between Adult Mental Health, Infant Mental Health, and Child Health, delivers significant improvements to mothers’ social and emotional wellbeing, parenting confidence, self-rated anxiety, self-rated stress, and knowledge about infant mental health and child development. It is recommended that collaborative PIMH Day Programs are implemented as a ‘stepped care’ service model in Queensland HHS, for women with moderate to severe perinatal mental health issues.

- The therapeutic alliance established between the collaborating services, the mother, infant and partner was critical to the engagement of the family in the PIMH Day Program and accessing ongoing interventions and support. It is recommended that staff from adult mental health, infant mental health, and child health, continue to work together to increase their knowledge of perinatal and infant mental health and collaborate to deliver these programs.

- The opportunity to observe the mother-infant dyad for an extended period of time (5 hours per day of the program) provided insights and information about the mother-infant relationship that
would not be identified in routine home or clinic visits. This allowed information to be shared with the participant’s mental health and child health case managers (with parent permission) and the development of targeted case management plans and referral pathways. It is recommended that the length of day, and information-sharing across services, be retained as per the current model.

- Due to the impact of their mental illness and prescribed medications, participants’ cognitive capacities may be significantly impaired. It is recommended that service managers, group facilitators and other staff consider the needs of participants for additional support throughout the session and between sessions (for example, referral for a mental health assessment), and build these anticipated needs into planning, resource allocation and service delivery.

- Observations of mother-infant interactions as they occurred ‘in the moment’ were used by clinicians to model reflective thinking and learning about their infant (for example, ‘what do you think your baby is telling you now?’). Guiding the mother and role modelling positive parenting behaviours was essential in assisting both mother and infant to build positive relationships. It is recommended that active guidance and role-modelling are provided by all clinical staff to support experiential learning within the mother-infant dyad.

- The repetition of key concepts within the program is important to help participants learn and retain information and parenting/relational skills. It is recommended that repetition of key concepts throughout the program, and beyond, be continued by all staff engaging with the family.

- Participating mothers reported that the stigma and difficulty of managing a group process with a mental illness excludes them from attending other groups that do not address their specific needs and those of their infants. By contrast, mothers reported that the PIMH Day Program provided a safe and stable environment in which hope and recovery were key messages. It is important to deliver the Day Program in a way that promotes among mothers a sense of being respected, accepted and understood.

- Mothers and infants attending the program were referred post program to a range of services that were unlikely to be accessed prior to the program (mental health, child health and a range of community based services). Many participants felt supported and prepared to attend the Circle of Security offered by Child Health, and accepted referral to mental health specialist services and other community programs such as First5forever library program. Many mothers established an ongoing arrangement to meet with one another when the PIMH Day Program finished highlighting the importance of establishing a social network within a safe and supportive environment. Promoting connection with services, other mothers, and the community, should continue to be a key objective of the PIMH Day Program.

- A number of access barriers were identified in the course of this project. It is recommended that services identify and address factors which may hinder or prevent families from accessing the program.

- It is recommended that a partner session with a male clinician as co-facilitator is incorporated as an element of every PIMH Day Program, in the interests of engaging partners in supporting the mother and baby.

**Recommendations for clinical governance and management**

- Dedicated staff time is required to co-ordinate the planning, implementation and evaluation of a PIMH Day Program. The appointment of a Co-ordinator position should be considered, at an FTE level commensurate with the expected extent of PIMH Day Program delivery within the HHS, taking into account service readiness and the work that will be required to achieve delivery of an innovative collaborative service model.
Clinical governance responsibilities should be clearly articulated and communicated across participating agencies, all staff, participants and referrers.

Case review processes and procedures need to be implemented at the beginning, mid group and prior to discharge with adult and infant psychiatry oversight.

Appropriate mechanisms to support staff, including training, debriefing opportunities, and the provision of reflective supervision, should be in place and clearly communicated.

Opportunities for engagement with services delivering similar programs is recommended to share ideas and debrief from sessions allowing cross-fertilisation of ideas and knowledge.

**Recommendations for further research**

- Training in use of the Day Program Manual is required to ensure fidelity to program protocol
- Continue to source and develop appropriate measures for assessing change
- Consider longitudinal measures to ascertain if improvements in social and emotional wellbeing and parenting confidence are maintained over time
- Explore the possibility of multi-site trials to build on existing evidence based service development
- Consider a research protocol in the event of further groups delivered in HHS sites
- Consider adapting the program for diverse cultural groups and groups with special needs, and conducting further research
- Future trials of similar programs should consider building in formal economic evaluation procedures to determine cost-benefit ratios for this model of service delivery
Glossary

AMH: Adult Mental Health
APMHS: Adult Perinatal Mental Health Service
ASQ:SE: Ages and Stages Questionnaire: Social Emotional
BPRS: Brief Psychiatric Rating Scale
CCHS: Community Child Health Service
CHHHS: Cairns and Hinterland Hospital and Health Service
CHN: Child Health Nurse
CHQ HHS: Children’s Health Queensland Hospital and Health Service
CIMHA: Consumer Integrated Mental Health Application (Data Base)
CYMHS: Child and Youth Mental Health Service
DASS-21: Depression, Anxiety and Stress Scale
EBFC: Ellen Barron Family Centre
FTE: Full Time Equivalent
GP: General Practitioner
HoNOS: Health of the Nation Outcome Scale
HREC: Human Research Ethics Committee
KPCS: Karitane Parenting Confidence Scale
m-ADBB: Modified Alarm Baby Distress Scale
MHI: Mental Health Inventory
MPAS: Maternal Postnatal Attachment Scale
NAP Plan: National Action Plan for Perinatal Mental Health 2008-2010
NPDI: National Perinatal Depression Initiative
PSI 4: Parenting Stress Index (4th Ed)
PMHS: Perinatal Mental Health Services
PIMHS: Perinatal and Infant Mental Health Services
PIR-GAS: Parent-Infant Relationship Global Assessment Scale
QCPIMH: Queensland Centre for Perinatal and Infant Mental Health
SPSS: Statistical Package for Social Sciences
SSA: Site Specific Authorisation
STATA: STATA statistical software: Release 14
THHS: Townsville Hospital and health Service
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beyondblue: The National Depression Initiative.


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StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP.


Appendix 1 (a) (b) (c)
Appendix 1 (d)(e)(f)

**Depression Cumulative**

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<th>Severity</th>
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<tr>
<td>Normal</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mild</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Moderate</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Severe</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Extremely Severe</td>
<td>2</td>
<td>1</td>
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</table>

**Stress Cumulative**

<table>
<thead>
<tr>
<th>Severity</th>
<th>Pre</th>
<th>Post</th>
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</thead>
<tbody>
<tr>
<td>Normal</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Mild</td>
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<td>4</td>
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<tr>
<td>Extremely Severe</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Anxiety Cumulative**

<table>
<thead>
<tr>
<th>Severity</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mild</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Moderate</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Severe</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Extremely Severe</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix 2 (a)

PERINATAL AND INFANT MENTAL HEALTH DAY PROGRAM

PARTICIPANT POST PROGRAM FEEDBACK

HHS........................................................................................................ DATE................................................

Thank you for completing this feedback form. Some questions require a written answer, other questions may be circled. Your feedback will tell us how this program has assisted you and your family and how we might improve it for other mothers and their families.

Please let your program coordinator know if you would like assistance in completing the form.

1. When you came to the day program what did you expect?
Comment___________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________

2. Did the program meet your expectations?
Comment___________________________________________________________________________________
___________________________________________________________________________________________

3. Did the information you received about the day program help you in deciding to participate in the program?
Comment____________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

4. Did you feel welcome at the day program? Yes / No
What helped/did not help to make you feel welcome?
Comment___________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Please circle the following answer
5. How helpful did you find the day program?
   a) A lot
   b) Mostly
   c) A bit
   d) Not much

6. Did the facilities meet the needs of yourself and your baby? Yes/No
How can this be improved?
Comment___________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

7. Did you feel safe and that your privacy was respected? Yes/No
Comment:__________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
8. Would you recommend this program to other mothers with similar issues to yourself?
   Yes / No
   Comment:___________________________________________________________________________________
   _____________________________________________________________________________________________
   ______________________________________________________
   _______________________________________

9. What part/s of the program did you find most helpful?
   Comment:___________________________________________________________________________________
   _____________________________________________________________________________________________
   ______________________________________________________

10. Are there parts of the program you did not find helpful?
    Comment__________________________________________________________________________________
    ______________________________________________________
    ______________________________________________________

11. Are there topics you would like to include in this program
    Comment:___________________________________________________________________________________
    _____________________________________________________________________________________________
    ______________________________________________________
    ______________________________________________________
    ______________________________________________________

Please circle the following answer
12. Has attending the program increased your confidence in caring for your child?
    a) A lot
    b) Mostly
    c) A bit
    d) Not much
    If yes - How has the program assisted in increasing your confidence?
    _____________________________________________________________________________________________
    _____________________________________________________________________________________________

13. Have you noticed any changes in the way you think, feel or interact with your baby since commencing the day program?
    What has changed and why?
    _____________________________________________________________________________________________
    _____________________________________________________________________________________________
    ______________________________________________________
    ______________________________________________________

Please circle the following answer
14. Do you consider your mental health and emotional wellbeing has improved since coming to the program?
    a) A lot
    b) Mostly
    c) A bit
    d) Not much
    If yes - What has helped to improve your mental health?
    _____________________________________________________________________________________________
    _____________________________________________________________________________________________
    ______________________________________________________
Please circle the following answer

15. Did you feel the group facilitation was
   a) Very good
   b) Mostly good
   c) Not good
Comment_____________________________________________________________________________________
____________________________________________________________________________________________

Please circle the following answer

16. Overall the staff worked as a team to deliver the program
   a) Very good
   b) Mostly good
   c) Not good
Comment:_____________________________________________________________________________________
____________________________________________________________________________________________

Please circle the following answer

17. Was the program
   a) Too long
   b) Too short
   c) Just right

18. Did you have any individual sessions? Yes / No
   Do you have any comments on these sessions?
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________

19. Can you suggest ways the program could be improved?
Comment_____________________________________________________________________________________
____________________________________________________________________________________________

20. Any other comments you would like to make about the program?
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________

Your feedback is appreciated and will help us to develop programs that will assist mothers, their infants and families.
**APPENDIX 2 (b)**

**CLINICIAN QUESTIONNAIRE**

**QCPIMH DAY PROGRAM RESEARCH PROJECT**

HHS: Name (optional)

Your response will assist us in identifying if the collaborative interagency day program has been an effective service model to deliver support services to perinatal mothers and their infants.

Using the scale provided please indicate your agreement with the following statements:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

1. The collaborative day program is an effective model of care for perinatal mothers and their infants

2. My knowledge of perinatal and infant mental health has improved as a result of being involved in this program

3. The pre-program orientation and training prepared me for my role in the day program

4. I received adequate support to fulfil my role in the day program

5. I feel more confident in working with mothers with a perinatal mental illness and their infants

6. The program content was relevant for the program

Please comment on how your involvement in the day program has impacted on your knowledge of perinatal and infant mental health.

___________________________________________________________________________________________

___________________________________________________________________________________________

From your experience do you think this is an effective model of service delivery for perinatal mothers and their infants? Why?

___________________________________________________________________________________________

___________________________________________________________________________________________

Would you participate in this program again? Yes No

What have been the benefits of working collaboratively with other services in this project?

___________________________________________________________________________________________

___________________________________________________________________________________________

Were you provided with adequate information and support to participate in this program?

___________________________________________________________________________________________

Are there any disadvantages in this model of care?

___________________________________________________________________________________________
What do you think are the elements of the program that lead to its success? (EG. program venue, food, social support of other mothers, access to a range of clinicians, content, facilitation)
___________________________________________________________________________________________
___________________________________________________________________________________________
Are there any elements of the program that hinder its success?
___________________________________________________________________________________________
___________________________________________________________________________________________
From your experience can you identify any cost and or resource benefits to working in this model of care? Are there any disadvantages?
___________________________________________________________________________________________
___________________________________________________________________________________________
Would you require further training if you were to continue to run these programs in your Hospital and Health Service?
___________________________________________________________________________________________
___________________________________________________________________________________________
Please comment on the Program Manual. What would you keep? What would you change/drop/add in the manual?
___________________________________________________________________________________________
___________________________________________________________________________________________
What would support the implementation of this program in your HHS?
___________________________________________________________________________________________
___________________________________________________________________________________________
From 1 -10 (with 10 being the highest score) how would you rate your experience of the Day Program?
1  2  3  4  5  6  7  8  9  10
Any additional comments?
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Thank you for your feedback
<table>
<thead>
<tr>
<th>Main Question</th>
<th>Additional Questions/ Prompts</th>
</tr>
</thead>
</table>
| How has your involvement with the day program research project impacted upon your role as a clinician? | • What have you learned that you didn’t know before the program?  
• Do you see your role differently since being with the program  
• Is this something other clinicians should be involved in? |
| What have been the benefits of working collaboratively with other services in this project for you? | • Cross fertilisation of ideas and knowledge  
• New knowledge  
• New skills  
• Better understanding of other roles and services  
• Better understanding of perinatal mental health  
• Links to other services and improved referral options  
• Support from other service team members and networks |
| Have there been any disadvantages? | • Workload increase  
• Lack of skills/knowledge  
• No support from the work team  
• Not comfortable in groups  
• Other -HHS support  
• Insufficient resources/staff to manage other work load |
| From your experience can you identify any cost and or resource benefits to working in this model of care?  Are there any disadvantages? | • Shared resources  
• Keeping mums at home with their infants  
• Seeing a number of mothers in one place at one time  
• Less driving  
• Improves referral process |
| Were you provided with adequate information and support to participate in this program? | • From the project team  
• From your team  
• From the HHS  
• What else would be helpful? |
| In your opinion does your HHS support innovation and change in service delivery | How? |
| How well did the training from the project team prepare you for your role in this project? | How could this be improved? |
| Do you feel that you need additional training to do this work? | What would you recommend? |
| What is it about the program that you think leads to its success? (ie. content, delivery, environment, group support, resources, collaboration of services, group facilitation, etc) | • What are the program strengths?  
• Please identify any elements that don't work in the program  
• How could it be improved? |
| From your experience do you think this is an effective model of service delivery for perinatal mothers and their infants? Would you participate in this program again? | Why?  
What would be required to support you to participate in this program? |
| Is there anything you would like to add? | |

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PARTNER/FATHER QUESTIONNAIRE
QCPIMH DAY PROGRAM RESEARCH PROJECT

HHS:                                                                                                              Date:
Name (optional)

Your response will help us to investigate if a partner/father session has been helpful in delivering support services to perinatal mothers, their infants and families.

Using the scale provided please indicate your agreement with the following statements:

<table>
<thead>
<tr>
<th>Using the scale provided please indicate your agreement with the following statements:</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Before attending the partner/father session I was aware of perinatal mental health and how it impacts on the mother/infant/partner/father</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. My knowledge of perinatal and infant mental health has improved as a result of attending this session for partners/fathers</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>9. The information I received from the session has better prepared me for my role as partner/father</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I feel more confident in supporting my partner with a perinatal mental illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. The session has helped me to think about my own health and wellbeing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I am aware of services that can assist myself, my partner and family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Could you please comment on how your attendance at the partner/father session has affected your knowledge of perinatal and infant mental health?
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

What have been the benefits of attending the session for you?
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Is there anything you did not like about the session?
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

What topic did you find most helpful?
___________________________________________________________________________________________
___________________________________________________________________________________________
What topic was least helpful?
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

What would you add to the session to meet your needs?
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Any additional comments...
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

Thank you for your feedback