EINO PARTANEN, ANNA SALONEN, MARJO FLYKT, VEERA MALKKI, TOM H. ROSENSTRÖM, SUOMA E. SAARNI

FINNISH MODEL OF BRIEF PARENT-INFANT PSYCHOTHERAPY ON MATERNAL MENTAL HEALTH AND PSYCHOSOCIAL FUNCTIONING - A PILOT STUDY

ABSTRACT

Objectives: *Pregnancy and parenthood can strain parental mental health, with potential risks for child development. To alleviate this, parent-infant psychotherapies can promote parental mental health and positive parent-child interactions. While the effectiveness of parent-infant psychotherapies (PIPs) on parental mental health have been previously studied, the Finnish model of treatment differs from approaches used internationally by its integrative nature and personalized approach. No data on the effectiveness of the Finnish parent-infant psychotherapy approach exist. This pilot study investigated the effectiveness of the Finnish short-term (up to 20 sessions) parent-infant psychotherapy on maternal mental health and psychosocial functioning during the treatment period.* ***Materials and methods:*** *The study utilized data from the Finnish Psychotherapy Quality Register (FPQR) of the Hospital District of Helsinki and Uusimaa. The data consisted of all PIPs conducted between 2018 and 2022 (n=43, all female). Changes in anxiety (OASIS), depression (PHQ-9), psychological distress (CORE-OM) and clinician-assessed psychosocial functioning (SOFAS) from pre– to post-treatment were examined with linear mixed models. We further examined whether primary diagnosis affected symptom change.* ***Results:*** *Symptoms of anxiety, depression and psychological distress alleviated statistically, but not clinically significantly, in patients with anxiety as primary diagnosis (pre- vs. post-treatment PHQ-9 mean 6.88 (SD 5-09) vs. 3.08 (SD 3.04), OASIS 7.36 (4.23) vs. 3.56 (3.16), CORE-OM 10.90 (5.53) vs. 5.34 (2.93)). Pre-post comparisons for patients with primary diagnosis of depression seem to suggest no effect of intervention.* ***Conclusions:*** *In this pilot study we found modest changes in symptoms of depression, anxiety and psychological distress among patients with anxiety disorder, but not with depression, as primary diagnosis during parent-infant psychotherapy. Clinically reliable changes were observed only in a minority of the patients. Further studies with larger sample size and comparison groups are warranted to support evidence-based decision making in the planning of perinatal mental health services..*

KEYWORDS: FINNISH PSYCHOTHERAPY QUALITY REGISTER, FPQR, PERINATAL MENTAL HEALTH, ROM, ROUTINE OUTCOME MEASUREMENT, ANXIETY, DEPRESSION, PARENT-INFANT PSYCHOTHERAPY

INTRODUCTION

Caregivers form an emotional bond towards their infant already during pregnancy, building the basis for the early reciprocal interaction between them and their child [1]. An optimal parent-child interaction is characterized by the availability of the caregiver to respond promptly, appropriately and sensitively to the infant's needs, making it possible for the child to develop a secure attachment with the parent. While most caregivers develop a highly positive bond with their infant, parental psychological distress, such as depression, is associated with bonding problems [2]. This may predispose to poor infant outcomes, such as insecure attachment and socio-emotional problems [3].

While more than half of family-reared children develop a secure attachment with their caregivers [4], a large percentage

do not. Insecure attachment may develop as caregivers feel inadequate to providing sensitive care to their child due to, for example, their own difficult childhood experiences, current stress or infant-related difficulties, such as irritability [5,6,7]. One of the most important risk factors for problems in parent-infant interactions and infant insecure attachment is the caregiver's own mental health challenges, such as depression or anxiety [8]. Based on systematic reviews and meta-analyses, the prevalence rates of maternal postnatal depression and anxiety have been estimated to be 17% [9] and 10% [10], respectively, with some meta-analytic studies suggesting even higher prevalence for prenatal symptoms [10]. Hence, poor parental mental health is a potentially large contributor to difficulties in children's socio-emotional development [11], with parent-child interaction quality as one of the core mediators.

To alleviate and prevent challenges in parent-child relationship and infant attachment insecurity, psychodynamically oriented parent-infant psychotherapy (PIP; or IPP, infant-parent psychotherapy, in the USA) strives to improve the dyadic relationship between the caregiver and the infant. Its focus is on promoting the development of secure attachment between the caregiver and the infant by various approaches, such as improving parental expertise in sensitive caregiving, identifying and solving challenges in interaction, and promoting positive parental internal working models by, for example, working through parent's own insecure attachment history and its effect on parenting [12,13]. A recent systematic review [14, see also 12] found PIP to have a favourable effect on a proportion of infants that were securely attached after the intervention. However, the authors concluded that the effectiveness of PIP may not differ from other valid interventions. In contrast, a recent meta-analysis, by Huang and colleagues [15], did not find an effect of PIP on infant attachment when compared to no treatment or treatment as usual. However, the number of existing studies on effectiveness of PIP on infant attachment is small and there is much heterogeneity; thus, the results need to be interpreted with caution.

In addition, most of the studies on the effectiveness of PIP have focused on its primary outcome, child attachment security or quality of mother-infant interaction [12,15]. However, secondary outcome measures of PIP include alleviation of symptoms of parental depression, anxiety, psychological distress, and improvement of parental psychosocial functioning. This can occur, for example, via mediation: as the interaction quality between the infant and the caregiver improves, depressive symptoms associated with feelings of inadequacy as a parent may alleviate, simultaneously improving psychosocial functioning. PIP may also improve parental mood or lessen anxiety through possible therapeutic work directed to them in therapeutic sessions and through common factors of psychotherapy [16]. Indeed, the meta-analysis of Huang and others [15, see also 14] suggests that PIP may be effective in alleviation of depressive symptoms especially for mothers with postpartum depression, at least in the short term (less than 9 months). Little research exists on the effectiveness of PIP on other mental health outcomes besides depression.

However, studies assessing mental health outcomes of PIP have reported mixed results, possibly explained by variance in PIP approaches. Salomonsson and Sandell [17] reported in their RCT study that adding a PIP intervention (on average 29 sessions) module to treatment as usual had a larger effect on reduction of depressive symptoms than treatment as usual alone. Cohen and others [18] reported reduction in depressive symptoms, but only in a particular variant of PIP which specifically aimed to promote behavioural change by having the mother focus on infant-led play for the first part of the treatment session, and then reflecting the experience during the latter half of the session with the therapist in comparison to a more typical PIP approach. However, the sample in the study of Cohen and colleagues [18] consisted of mothers who were referred to PIP for a variety of reasons that had posed challenges for the parent-child relationship, ranging from maternal depression to functional problems in infant feeding, sleeping or behavioural regulation. In addition, some studies suggest that PIP approaches and other psychosocial treatments do not differ in terms of effectiveness on maternal depression or anxiety. For example, Cicchetti and colleagues [19] found no differences in depressive symptoms after a 36-month PIP intervention between depressed mothers and depressed mothers who received no PIP intervention. However, the study of Cicchetti and others [19] does not describe if the depressed mothers who received no PIP intervention received any other care during the study period.

In contrast, Cooper and others [20] reported a reduction in depressive symptoms at the end of the intervention in mothers receiving active treatment (i.e. PIP, cognitive behavioural therapy or non-directive counselling) compared to mothers receiving treatment as usual. However, depression scores between treatment as usual group and active treatment groups did not differ at follow-ups from 4.5 to 60 months [20].

As mentioned above, while PIP interventions are typically psychodynamically oriented, there is much

variation in the approaches used. The Finnish parent-infant psychotherapy is an intervention model, which draws inspiration from international PIP approaches but incorporates methods from various other approaches, such as child-infant psychotherapies [21], but for clarity the Finnish parent-infant psychotherapies are referred to as Finnish PIP approaches in the present study. Finnish PIP interventions often include videotaping and reviewing of parent-infant interaction, body-oriented approaches, and psychoeducation on child self-regulation and parental mental health, Theraplay sessions [22] and home visits. For example, videotaping and reviewing the parent-infant interaction can be used to promote behavioural change in the caregiver(s) and has been suggested to be essential for the effectiveness of the parenting interventions [23]. A meta-analysis [24] suggested that the frequency of home visits is associated with higher intervention effectiveness. Finnish PIP intervention, similar to some other PIP approaches, emphasizes a whole-family or family therapeutic focus, as these approaches have been shown to be effective for, e.g. treatment of perinatal depression [25], and the absence of the father from the intervention sessions is typically linked to poorer outcome for the children [26]. In short, the Finnish PIP implementation can be characterized as personalized and integrative parent-infant psychotherapy treatment, grounded in psychoanalytic principles and operating within the framework of attachment theory where PIP psychotherapists are encouraged to work, not only with the caregiver and child, but more broadly within the family network, such as with spouses or other children in the family or with grandparents.

As the effectiveness of PIP on maternal mood symptoms could depend on the characteristics of the PIP approach, the findings from previous research may not fully apply in regions where guidelines or approaches deviate from the typical PIP approach. This is especially relevant in the Finnish context, where PIP interventions incorporate various approaches from cognitive behavioural therapy (CBT), other behavioural or mentalization approaches [27,28] and family therapeutic methods. It is thus not known if findings from the studies on the effectiveness of PIP approaches, that adhere more strongly to the psychoanalytic principles, can be generalized to Finnish PIP interventions.

Indeed, outcomes following PIP or other parenting interventions may depend on the specific therapeutic approach or on the parental characteristics, such as socioeconomic status [29] of the treated group. For example, Salomonsson [30] argues that mothers, who consider their own characteristics or features contributing to the dysfunctional parent-infant interaction relationship with the infant, may receive the most benefit from PIP, including alleviation of depressive symptoms. Given that PIP's effect on parental mental health may depend on patient characteristics, it is noteworthy that the effectiveness of PIP on the primary outcome variable (improvement of parental sensitivity or infant attachment) either does not seem to depend on the underlying diagnosis of the caregiver, or the effect is not large enough to be seen in an aetiologically varied group [31,32].

While many of the studies on PIP's effectiveness have focused on parental psychiatric symptoms or changes in bonding, attachment or parental sensitivity, other positive effects have received less attention [8]. One such under-studied aspect is parental psychosocial functioning, which likely influences parental sensitivity via the ability to provide attuned interaction and to react promptly and adequately to the infant's or child's needs. Impaired parental psychosocial functioning can, in turn, negatively affect parenting behaviour [33] and possibly predispose to poorer developmental trajectories for the child. While effects of PIP interventions on parental psychosocial functioning have not been studied to our knowledge, more general evidence suggests that parenting programmes seem to improve parental psychosocial functioning overall [34].

In this pilot study, we investigated the effectiveness of the Finnish model of PIP interventions on maternal symptoms of depression, anxiety or psychological distress in a sample of caregivers with either diagnosis of depression or anxiety. To complement these analyses, we also assessed if the Finnish model of PIP intervention influenced maternal psychosocial functioning. In the light of the literature reviewed above, we expected that the integrative nature of the Finnish PIP intervention would result in reduction of depressive symptoms or psychological distress, regardless of underlying diagnosis (depression or anxiety). Even though there is high comorbidity between antenatal and postnatal depression and anxiety [35], PIP intervention's effect on symptoms of anxiety has been sparsely studied. Thus, hypotheses on PIP intervention's effects on symptoms of anxiety could not be made. In addition, we also report the effects of PIP intervention on psychosocial functioning and psychological distress, where we place no hypothesis due to lack of previous literature.

MATERIAL AND METHODS

PARTICIPANTS

The study was approved by the Ethical Committee of HUS (HUS/3150/2020). In addition, the Helsinki and Uusimaa Hospital district (HUS/2293/2021) granted study permission. As the present study uses only register data, informed consent from the patients was not required.

The data in the present study originate from the Finnish Psychotherapy Quality Register (FPQR; see [36] for details of the register). All patients, born between 1978 and 1996, who had been referred to short-term (20 times) PIP and completed the intervention between 2018 and 2022 were included into the study. Patients with other primary diagnosis than depression or anxiety were excluded from the study (n=3). The final data consisted of 43 patients. See *Table 1* for demographic data of the patients.

Table 1. Demographic data of the patients (n=43#)

ICD-10 primary diagnosis (n=43)	Depression (F32, F33): n=17 (39.5%) Anxiety disorder (F40-F43): n=26 (60.5%)
Gender (n=43)	Female: n=43 (100 %) Male: n=0
Occupational status (n=41)	Working: n=10 (24%) At home with child: n=18 (43%) Student: n≤5 Unable to work or disabled: n≤5 Unemployed: n≤5 Other: n≤5
Psychotropic medication (n=39-43)	Prescribed, in use: n=13 (32%) Prescribed, PRN ('when required'): n<5 (<10%) Previously prescribed, currently not in use: n=14 (34%) Not used: n=12 (29%)

#: All demographic variables were not entered into the Finnish Psychotherapy Quality Register (FPQR) for all patients; the number of patients with data for each variable are reported in the leftmost column. For anonymity, demographic variables with less than 5 cases are reported as <5; due to this the number of cases for psychotropic medication is reported as between 39-43

PIP INTERVENTION AND DATA COLLECTION

Patients were referred to PIP intervention either from primary care (municipal health centre) or specialist healthcare services. After a referral, the patients received a voucher for outsourced PIP free of charge to the patient. Accredited PIP therapists are entered into the system based on a set of required criteria and the patient can select a therapist from the list of available therapists based on the clinical recommendations. Two types of psychotherapy (including PIP) vouchers are available: for brief psychotherapy (up to 20 sessions) and for long psychotherapy (up to 40 sessions). All PIP interventions in this study were for brief psychotherapy (up to 20 sessions).

The Finnish PIP intervention implementation is predominantly focused on internationally used and psychoanalytically grounded parent-infant psychotherapy. However, as reviewed in the introduction, the Finnish parent-infant psychotherapy training incorporated methods from various other psychotherapy approaches depending on the training and qualifications of the psychotherapist [37].

MEASURES

At the time of the referral, a case manager opens a case in FPQR and the register automatically collects demographic information (age, gender, date of referral) from the healthcare registry. At the onset, or immediately after the onset of PIP, patients fill in relevant questionnaires regarding demographic information (e.g. socioeconomic status or employment status; medication) and clinically validated symptom severity questionnaires (for a full list of measures, see [36]). At the end of the PIP intervention, symptom severity questionnaires are filled again. For the present study, depressive symptoms were evaluated using the PHQ-9 questionnaire and anxiety symptoms using the OASIS scale. PHQ-9 is a self-report questionnaire consisting of 9 items, rating the frequency of experienced symptoms of depression as experienced over the past two weeks on a scale of 0-3. Sum scores of 5, 10, 15 and 20 represent cut-off points for various levels of depression. The PHQ-9 questionnaire is considered to be both a reliable and valid instrument for measuring the severity of depression [38]. OASIS is a validated five-item measure assessing the severity and frequency of anxiety disorders and how severely the anxiety symptoms impact the respondents' ability to function, on a scale from 0-4 [39]. Cutoff scores of 6, 10 and 12 are often suggested to be used for interpretation of the moderate, marked and severe illness severity of anxiety [40].

In addition to PHQ-9 and OASIS, the patients filled in CORE-OM (clinical outcomes in routine evaluation outcome measure [41]; regarding the Finnish version used in this study, see [42]) questionnaires. The psychosocial functionality was assessed by the therapist using SOFAS scale (social and occupational functioning assessment scale [43]) In our study SOFAS was used to assess psychosocial functioning. In SOFAS, the clinician, i.e. the therapist, assesses the patient's current psychosocial functioning on four different scales (self-care, family life and relationships, work and study and leisure activities) and a total scale. We used only the total scale in our analysis. The scales range from 0 to 100 with 80 points indicating normal or better functioning and 50 points or less severe impairment [44]. CORE-OM is a 34-item questionnaire with scores from 0 (not at all) to 4 (most or all the time), intended to assess the level of psychological distress and outcome of psychological interventions [45], and consists of four subscales (subjective wellbeing, symptoms, functioning and risk) and a total sum score. In this study only the sum score is used; a sum score of 10 is considered a clinical cut-off [45] and change of 5 points is considered reliable change [46].

STATISTICAL ANALYSIS

Of the 43 patients, 6 (14%) had missing data: 2 patients had no data for either PHQ-9 or OASIS questionnaires either before or after treatment, 2 patients had no data for either PHQ-9 or OASIS questionnaires after treatment, 1 patient had no data for PHQ-9 after treatment, and 1 patient had no data for OASIS after treatment. These data were not replaced. The remaining patients (n=37) had no missing values on PHQ-9, OASIS, SOFAS or CORE-OM questionnaires and only patients with full data were included in the final analyses.

Statistical analyses were conducted with R software (version 4.2.2 [47]). For linear mixed models (LMMs) lme4 package [48] was used. Tidyverse [49] and ggplot2 [50] packages were used for data visualization. Presence of outliers was assessed using histogram plots and no outliers were found for either depression or anxiety symptom variables. Homoscedasticity, or similarity of variances for depression and anxiety symptoms for patients with primary diagnosis of depression or anxiety, was assessed visually and no major violations of homoscedasticity were apparent.

Changes in the severity of depression (PHQ-9 scores), anxiety symptoms (OASIS scores), psychological distress

(CORE-OM scores) and psychosocial functioning (SOFAS scores) were analysed using linear mixed models, separately for symptoms of depression, anxiety, psychological distress and psychosocial functioning. Predictors were Time (prior to and after PIP intervention, t=0 and 1, respectively), primary diagnosis (depression, anxiety, x=0 or 1, respectively) and their interaction, the model being:

$$Y_{ij} = \beta_0 + \beta_1 X_{ij} + \beta_2 t_{ij} + \beta_3 t_{ij} X_{ij} + \eta_i + \varepsilon_{ij}$$

for the ith measurement of the jth subject, with t1j=0 and t2j=1 for all j and with the residuals η_i and ε_{ij} capturing the remaining between- and within-individual variation, respectively. Effect sizes are reported using pre-intervention versus post-intervention paired Cohen's *d* (without multilevel modelling). This sensitivity analysis was prudent because the mixed model lends statistical power from a regularizing normality assumption.

In addition to statistical analysis, we report the number of patients where reliable changes in symptom severity are observed (level of severity for both PHQ and OASIS are separated by a change in 5 points [38,39]). A recovery was assessed separately on basis of symptoms of depression and anxiety: the patient was considered to be recovered if their symptoms were below the clinical cut-off (<10) at the end of the treatment, they reported clinically significant symptoms at the start of the treatment (≥10) and their symptom severity was reduced by 5 points or more.

RESULTS

The PIP interventions in this study consisted of a maximum of 20 sessions. The severity of depression or anxiety symptoms prior to PIP did not differ between patients with primary diagnosis of depression or anxiety (p=0.165 and p=0.689, respectively). After PIP, the patients with a primary diagnosis of depression had more severe symptoms of depression (t(37)=-2.85, p=0.007) and anxiety than the patients with a primary diagnosis of anxiety (t(37)=-2.71, p=0.010). See *Table 2* for the participants' depression and anxiety symptom severity pre- and post-treatment.

Table 2. PHQ-9, OASIS, SOFAS and CORE-OM scores measured before and after treatment, grouped by diagnosis for all patients included in the analyses (n=37). Statistically significant pairwise effects are marked in bold

Symptom measures		Before treatment		After treatment		Paired t-test p-value	Paired Cohen's *d*
		Mean	SD[1]	Mean	SD[1]		
PHQ-9	All (n=37)	7.55	4.57	4.39	3.51	**<0.001**	0.756
	Primary diagnosis of depression (n=12)	8.66	3.39	6.17	3.19	0.08	0.486
	Primary diagnosis of anxiety (n=25)	6.88	5.09	3.08	3.04	**0.005**	0.788
OASIS	All (n=37)	7.91	4.13	4.61	3.98	**0.002**	0.780
	Primary diagnosis of depression (n=12)	8.58	3.09	7.16	4.32	0.362	0.404
	Primary diagnosis of anxiety (n=25)	7.36	4.23	3.56	3.16	**<0.001**	1.07
SOFAS	All (n=37)	68.08	9.43	78.32	7.84	**<0.001**	-1.41
	Primary diagnosis of depression (n=12)	66.10	13.1	76.00	10.1	0.092	-1.24
	Primary diagnosis of anxiety (n=25)	69.00	7.17	79.4	6.40	**<0.001**	-2.14
CORE-OM	All (n=37)	11.89	5.08	7.14	4.40	**<0.001**	0.760
	Primary diagnosis of depression (n=12)	14.00	3.30	10.90	4.69	0.550	0.301
	Primary diagnosis of anxiety (n=25)	10.90	5.53	5.34	2.93	**<0.001**	1.06

[1]: SD=standard deviation

Regarding changes in severity of depression or anxiety symptoms from prior to after PIP, LMM analysis indicated that depressive symptom severity had decreased statistically significantly (β=-3.5, p<0.001, pre-post paired Cohen's d=0.781). However, the depressive symptom severity was reduced statistically significantly more for those with a primary diagnosis of anxiety than those with a primary diagnosis of depression (β=2.1, p=0.04; a mean reduction of 3.80 vs 2.49 points, respectively). Anxiety symptom severity was reduced statistically significantly (β=-3.8, p<0.001, d=0.789). No differences in changes in anxiety symptom severity were found between the diagnosis groups (β=0.54, p=0.325). Figure 1 shows the changes in depressive (PHQ-9 scores) and anxiety symptom severity (OASIS scores), as well as changes in psychosocial functioning (SOFAS scores) and global distress (CORE-OM scores). Distribution of PHQ-9, OASIS, SOFAS and CORE-OM scores before and after treatment are shown in *Figure 2*.

When assessing changes in global distress (CORE-OM sum score), LMM results indicated that global distress was statistically significantly reduced from before to after intervention (β=-5.595, p<0.001, pre-post paired Cohen's d=0.840). This reduction was greater for those with the primary diagnosis of anxiety (β=4.280, p<0.050; a mean reduction of 5.56 vs 3.10 points, respectively). Concerning psychosocial functioning as measured by SOFAS, the psychosocial functioning improved from before to after intervention (β=-3.8, p<0.001, pre-post paired Cohen's d=1.150), with greater gains observed in patients with primary diagnosis of anxiety rather than depression (β=2.50, p<0.043; a mean increase of 10.4 vs 9.9 points, respectively).

Analysis of reliable changes indicated that depressive symptoms were reduced by 5 points or more in 9 patients (21%; deteriorated by 5 points or more in 2 patients 5%). For anxiety symptoms, reliable changes were seen in 13 patients (30%; deteriorated by 5 points or more in 1 patient 2%).

Of patients with primary diagnosis of depression, a recovery (≥5p change and across the clinical cut-off) in symptoms of depression (PHQ-9) was observed in one (1) patient. Of patients with primary diagnosis of anxiety, reliable recovery was seen in symptoms of anxiety (OASIS) in two (2) cases.

Figure 1. Changes in depressive (PHQ-9 scores) and anxiety symptom severity (OASIS scores), as well as changes in psychosocial functioning (SOFAS scores) and global distress (CORE-OM-scores), separately for patients with primary diagnosis of depression and anxiety. Dashed line illustrates clinically significant symptoms of anxiety, depression or psychological distress (10 points) (n=37)

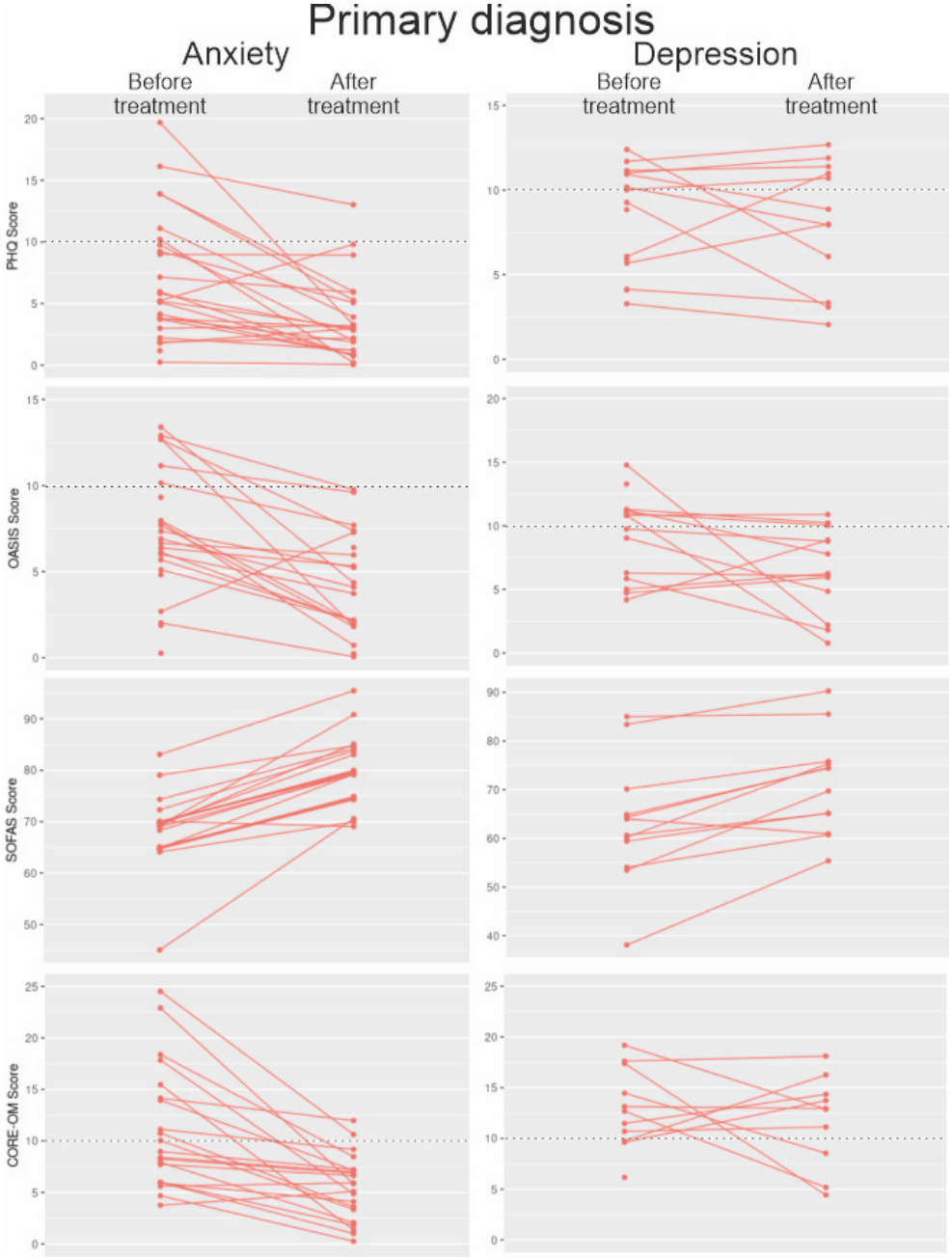
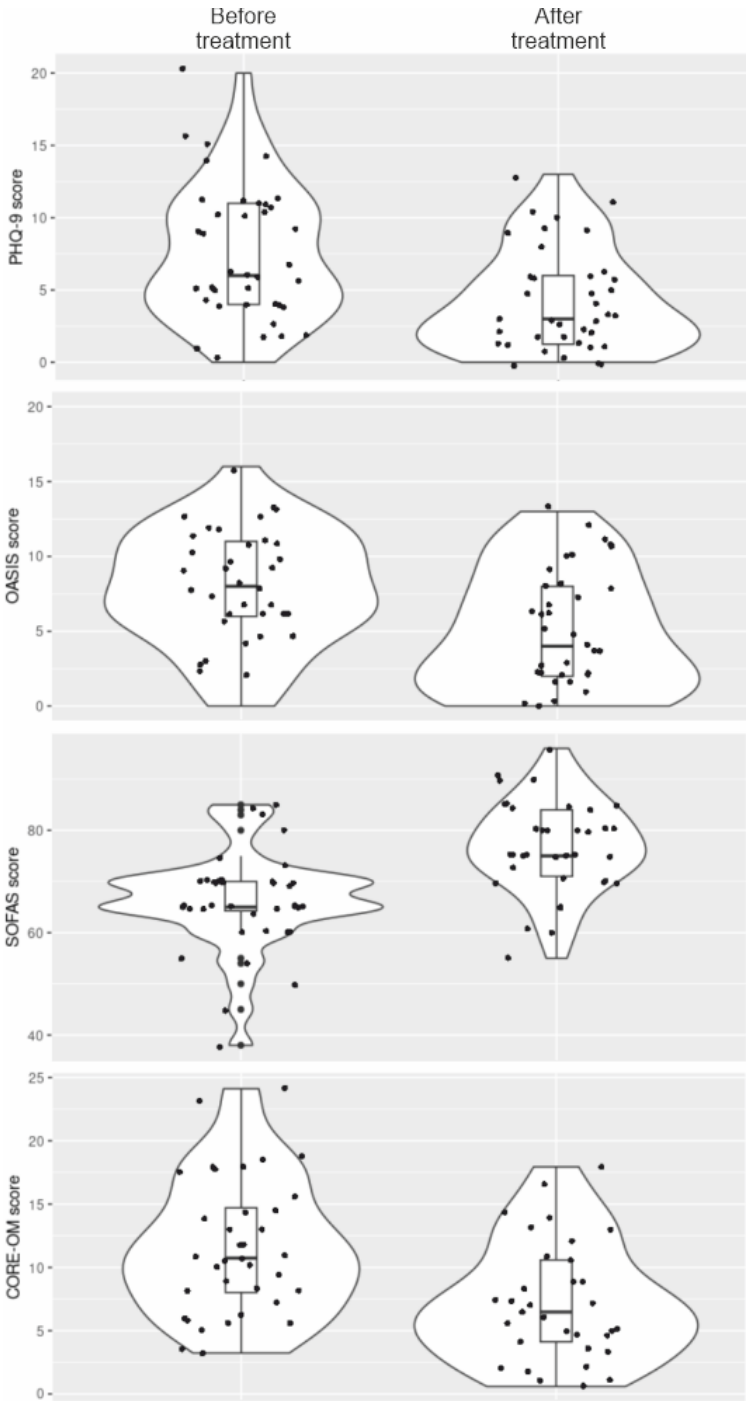


Figure 2. Distribution of PHQ-9, OASIS, SOFAS and CORE-OM scores before and after treatment (n=37)



DISCUSSION

In the present study we investigated the effectiveness of the Finnish PIP implementation on maternal symptoms of depression, anxiety and psychological distress as well as psychosocial functioning in patients with a primary diagnosis of either depression or anxiety. Our results suggest that mothers' symptoms of anxiety and psychological distress are somewhat reduced from pre- to post-treatment, while over the time during the PIP intervention of up to 20 sessions psychosocial functioning improves. However, direct pre-post comparisons for patients with primary diagnosis of depression seem to suggest no effect of intervention. While changes in symptom severity of depression and anxiety were statistically significant, reliable changes, defined as a change of more than 5 points in PHQ-9 or OASIS questionnaires, were observed only in a small group of patients. These findings are discussed in detail below.

THE EFFECTIVENESS OF THE FINNISH PIP INTERVENTION ON MATERNAL SYMPTOMS OF DEPRESSION, ANXIETY, PSYCHOLOGICAL DISTRESS AND PSYCHOSOCIAL FUNCTIONING

The present results suggest that the Finnish PIP intervention might be effective on alleviation of maternal symptoms of depression, anxiety and psychological distress. Considering the within-group pre-post effect sizes in our study (pre-post paired Cohen's d=0.781 for symptoms of depression, d=0.789 for symptoms of anxiety and d=0.840 for psychological distress), our findings are similar to the RCT study of Salomonsson and others [31], who found, using EPDS (Edinburgh Postnatal Depression Scale), a pre-post effect size of d=0.70 for amelioration of depressive symptoms in mothers. However, an earlier RCT study [17] suggested that PIP's effectiveness on maternal depression, measured using EPDS, could be somewhat smaller (d=0.39). While our results are consistent with some earlier studies on the effectiveness of PIP on caregiver depression, they should be interpreted with caution due to small sample size, no intention to treat analysis and a lack of control group. However, in comparison to other psychotherapies in the FPQR [36], our effect sizes were similar to those obtained in short-term psychotherapy of different frameworks and for a variety of diagnoses (20 visits; Cohen's d for PHQ-9 and OASIS scores, 0.50-0.65 and 0.62-0.69, respectively).

While maternal depression can be detrimental to various factors that influence infant outcomes, maternal anxiety can also lead to detrimental outcomes. For example, the study of Hervé and others [26] indicates that clinically significant pre-treatment maternal anxiety was associated with unfavourable treatment outcomes for the mother, defined as possible presence of symptoms of depression or anxiety, after a short (less than 10 consultations) PIP intervention.

It is not immediately evident why patients with primary diagnosis of anxiety appeared to have amelioration of depressive symptoms and psychological distress, while among the patients with primary diagnosis of depression there were no statistically significant findings. As this result conflicts with our hypotheses, it warrants further studies using a larger sample size.

Furthermore, the present results suggest that in addition to possibly ameliorating maternal symptoms of depression, anxiety and psychological distress, the PIP intervention could be associated with improvement in psychosocial functioning. Effects of PIP intervention on psychosocial functioning has been sparsely studied; however, some systematic reviews [53,12] suggest that parental interventions or programmes potentially have a beneficial short-term effect on parental psychosocial health, but the number of studies is small and there is little evidence of long-term effects. However, as studies emphasize the role of family psychosocial functioning on the children's wellbeing [54], follow-up studies assessing long-term effects of PIP intervention, including psychosocial functioning, are warranted.

Finally, our results may hint at differences in PIP intervention effects between patients with primary diagnosis of depression and anxiety in general. While the results should be considered preliminary due to small sample and unequal group sizes, patients with a primary diagnosis of depression might be less likely to benefit from the PIP intervention than those with a primary diagnosis of anxiety. If this result can be verified in follow-up studies with a larger sample size, it would be consistent with previous research indicating poorer outcomes of parenting interventions in depressed parents. For example, a systematic review [55] concluded that for mothers with depression, parental interventions had no effect on either parent-child relationship or child development either short- or long-term. Indeed, some meta-analyses suggest that only some parental interventions for depressed mothers are effective in improving, for example, maternal sensitivity [56]. Another possible explanation for this difference in the current small sample could also be the therapist effect, as the number of therapists was small.

RELIABLE CHANGES IN SYMPTOMS OF DEPRESSION AND ANXIETY

While we found statistically significant amelioration of symptoms of depression, anxiety and psychological distress from pre- to post-treatment for PIP intervention, changes in symptom severity were mainly not large enough to be considered reliable or clinically significant. In practical use, clinicians are typically encouraged to classify symptoms of depression measured using PHQ-9 into categories of 5 points and as such, changes of 5 points or more are interpreted as reliable [38]. In our study, reliable changes in symptoms of depression were found in nine (20%) and deterioration in two (5%) of a total of 43 patients. For symptoms of anxiety, reliable improvement was seen in 13 (30%) individuals and deterioration in one (2%) individual. While it has been suggested, by Kounali and others [57], that at milder depressive symptom levels (PHQ-9 ≤11) 2 points would already suffice for patients to discriminate between feeling the same versus feeling better, such a small subjective change may not be clinically relevant. One striking finding of the current study was that most patients referred to this high-intensity treatment reported subclinical symptoms of anxiety (OASIS <10p) and depression (PHQ <10p) at the beginning of the PIP intervention, despite a current diagnosis of depression or anxiety disorder. The same phenomenon has been reported also in other outsourced psychotherapies [36] and might therefore be a particular trait of the Finnish mental healthcare system.

To our knowledge only Salomonsson and others [31] have assessed reliable or clinically relevant changes in maternal depression following PIP intervention, using EPDS. In their study, depression symptoms were observed in 64% of the mothers pretreatment and of these mothers, 27.2% showed clinically significant symptoms of depression after PIP intervention. 6.2% of non-depressed mothers developed clinically significant depressive symptoms from pre- to post-treatment. Although not directly comparable due to different measurement of depressive symptoms between the studies, our results are somewhat more modest compared to the findings of Salomonsson and others [31].

While symptoms of depression and anxiety are important for assessing the effectiveness of PIP interventions, it must be kept in mind that they are secondary outcome measures of PIP. However, the main targets, improvement of mother-infant interaction sensitivity and infant attachment, were not studied in the present study. While outside of the topic of the present study, future studies should also investigate the effectiveness of the Finnish PIP approach on maternal sensitivity and infant attachment, possibly by incorporating the mental health data included in the FPQR.

STRENGTHS AND LIMITATIONS

To our knowledge, the present study is the first study to assess Finnish PIP effectiveness on secondary outcomes of PIP interventions, namely symptoms of anxiety, depression, psychological distress and psychosocial functioning. While the topic has been somewhat studied internationally, the Finnish PIP approach differs from international implementation by its eclectic and integrative nature and personalized approach. Studies into the personalized Finnish PIP approach are relevant to assess the effectiveness of the Finnish PIP approach, and also to investigate whether personalized approaches might provide additional benefits over a standardized approach, as has been suggested by some systematic reviews on adult psychotherapies [58]. However, a merit in our study is that it extends previous results by assessing changes in not only depression but also anxiety and psychological distress. This is especially relevant due to high comorbidity between antenatal and postnatal depression and anxiety [35]. In addition, the present study assesses reliable changes in symptoms and recovery. Finally, only few studies have addressed other impacts of PIP interventions, namely psychosocial functioning, which was also investigated in our study.

In addition to the aforementioned strengths, the present study benefits from investigating a group of patients with a specific cause that challenges the dyadic relationship between the caregiver and the infant, namely depression or anxiety. In many previous studies, as reviewed in the introduction, patients may have had large variance in the causes for referral to PIP intervention. However, as suggested by Salomonsson [30], this may hinder interpretation of results as it can be that the effectiveness of PIP may vary depending on the causes of parent-infant relationship dysfunction. Studies in samples with more similar treatment indications or parent characteristics may provide clinically relevant information on which parents would benefit most from PIP interventions. While the patients in our study were referred to PIP either due to depression or anxiety disorder, many patients had subclinical symptoms of depression and anxiety, suggesting that other aspects might have influenced the patient referral to PIP. Such aspects could be challenges in parent-infant interaction or attachment characteristics, but unfortunately our data did not include assessment of these characteristics.

However, the present study suffers from a small sample, difference in group sizes between patients with primary diagnosis of depression and anxiety, and some missing data. Also, the lack of a control intervention is a major weakness of the current study. In addition, overall research on the effectiveness of PIP on maternal mental health is limited. As some studies also report no effects [19], our findings need to be interpreted with care. Future studies should examine effectiveness in sample sizes large enough to have statistical power to detect possible effectiveness or non-effectiveness, necessarily with a control intervention. In addition, the small sample size prevents us from fully assessing if the baseline levels of anxiety or depression symptoms are associated with the magnitude of change in these symptoms. This is an especially important drawback, as symptom severity can be important for assessing the future outcome. For example, the severity of depressive symptoms typically is linked with maternal ratings of the magnitude of infant negative affect [59] or likelihood of mothers to rate their infants more difficult [60]. Finally, 6 patients had missing data and could not be included in the analyses. Even if the number seems small, it is a fair part (14%) of the initial sample. Due to these limitations our results can be seen only as preliminary and should be interpreted with caution.

CONCLUSIONS

The results from the present pilot study suggest that the Finnish eclectic and integrative PIP approach might have an effect on secondary outcomes of PIP, namely on maternal symptoms of depression, anxiety, psychological distress and improve psychosocial functioning. Our results also suggest that the targeting of this high-intensity treatment should be examined more carefully. However, the lack of good quality studies is evident, and further research with adequate sample size and control conditions is warranted to build an evidence base for the improvement of perinatal mental healthcare services.

Acknowledgments

This work was supported by the Helsinki University Hospital (Grant Number Y1012TKK21) and Kela (Grant Number 140/331/2021). THR was supported by the Research Council of Finland (formerly Academy of Finland, grant numbers 334057, 335901, and 358138).

Declaration of interest

The authors report there are no competing interests to declare.

Data availability

As the data are from patient registry, the current ethical permission and legislation do not allow for data sharing or processing outside of Helsinki University Hospital servers.

Authors

Eino Partanen[1]
Anna Salonen[2]
Marjo Flykt[2]
Veera Malkki[3]
Tom H. Rosenström[3]
Suoma E. Saarni[4,5,6]

[1] Cognitive Brain Research Unit, Department of Psychology and Logopedics, Faculty of Medicine, University of Helsinki, Finland
[2] Department of Psychology and Logopedics, Faculty of Medicine, University of Helsinki, Finland
[3] Department of Psychology and Logopedics, Faculty of Medicine, University of Helsinki and Helsinki University Hospital, Finland
[4] Department of Psychiatry, University of Helsinki and Helsinki University Hospital, Helsinki, Finland
[5] University of Tampere, Faculty of Medicine and Health Technology, Finland
[6] Family and Social Services, Psychiatry, Wellbeing Services County of Päijät-Häme, Finland

Correspondence

Eino Partanen
PO Box 21 (Haartmaninkatu 3)
00014 University of Helsinki
Finland
eino.partanen@helsinki.fi

References

1. Condon JT, Corkindale CJ. The assessment of parent-to-infant attachment: Development of a self-report questionnaire instrument. Journal of reproductive and infant psychology. 1998 Feb 1;16(1):57-76.

2. O'Dea GA, Youssef GJ, Hagg LJ, Francis LM, Spry EA, Rossen L, Smith I, Teague SJ, Mansour K, Booth A, Davies S. Associations between maternal psychological distress and mother-infant bonding: a systematic review and meta-analysis. Archives of Women's Mental Health. 2023 Aug;26(4):441-52.

3. Le Bas GA, Youssef GJ, Macdonald JA, Rossen L, Teague SJ, Kothe EJ, McIntosh JE, Olsson CA, Hutchinson DM. The role of antenatal and postnatal maternal bonding in infant development: A systematic review and meta-analysis. Social development. 2020 Feb;29(1):3-20.

4. Lionetti F, Pastore M, Barone L. Attachment in institutionalized children: A review and meta-analysis. Child abuse & neglect. 2015 Apr 1;42:135-45.

5. Groh AM, Narayan AJ, Bakermans-Kranenburg MJ, Roisman GI, Vaughn BE, Fearon RP, van IJzendoorn MH. Attachment and temperament in the early life course: A meta-analytic review. Child development. 2017 May;88(3):770-95.

6. Rowell T, Neal-Barnett A. A systematic review of the effect of parental adverse childhood experiences on parenting and child psychopathology. Journal of Child & Adolescent Trauma. 2022 Mar;15(1):167-80.

7. Ward KP, Lee SJ. Mothers' and fathers' parenting stress, responsiveness, and child wellbeing among low-income families. Children and Youth Services Review. 2020 Sep 1;116:105218.

8. Risi A, Pickard JA, Bird AL. The implications of parent mental health and wellbeing for parent-child attachment: A systematic review. Plos one. 2021 Dec 16;16(12):e0260891.

9. Shorey S, Chee CY, Ng ED, Chan YH, San Tam WW, Chong YS. Prevalence and incidence of postpartum depression among healthy mothers: A systematic review and meta-analysis. Journal of psychiatric research. 2018 Sep 1;104:235-48.

10. Dennis CL, Falah-Hassani K, Shiri R. Prevalence of antenatal and postnatal anxiety: systematic review and meta-analysis. The British Journal of Psychiatry. 2017 May;210(5):315-23.

11. Stein A, Pearson RM, Goodman SH, Rapa E, Rahman A, McCallum M, Howard LM, Pariante CM. Effects of perinatal mental disorders on the fetus and child. The Lancet. 2014 Nov 15;384(9956):1800-19.

12. Barlow J, Bennett C, Midgley N, Larkin SK, Wei Y. Parent–infant psychotherapy: a systematic review of the evidence for improving parental and infant mental health. Journal of reproductive and infant psychology. 2016 Oct 19;34(5):464-82.

13. Main M, Kaplan N, Cassidy J. Security in infancy, childhood, and adulthood: A move to the level of representation. Monographs of the society for research in child development. 1985 Jan 1:66-104.

14. Cucciniello C, Melia Y. Effectiveness of parent–infant psychotherapy for infant development, parenting, parental mental health, and the attachment relationship: a review of the literature. Journal of Public Child Welfare. 2024 May 6:1-35.

15. Huang R, Yang D, Lei B, Yan C, Tian Y, Huang X, Lei J. The short-and long-term effectiveness of mother–infant psychotherapy on postpartum depression: A systematic review and meta-analysis. Journal of affective disorders. 2020 Jan 1;260:670-9.

16. Cuijpers P, Reijnders M, Huibers MJ. The role of common factors in psychotherapy outcomes. Annual review of clinical psychology. 2019 May 7;15:207-31.

17. Salomonsson B, Sandell R. A randomized controlled trial of mother–infant psychoanalytic treatment: I. Outcomes on self-report questionnaires and external ratings. Infant Mental Health Journal. 2011 Mar;32(2):207-31.

18. Cohen NJ, Muir E, Lojkasek M, Muir R, Parker CJ, Barwick M, Brown M. Watch, wait, and wonder: Testing the effectiveness of a new approach to mother–infant psychotherapy. Infant Mental Health Journal: Official Publication of The World Association for Infant Mental Health. 1999 Dec;20(4):429-51.

19. Cicchetti D, Toth SL, Rogosch FA. The efficacy of toddler-parent psychotherapy to increase attachment security in offspring of depressed mothers. Attachment & Human Development. 1999 Apr 1;1(1):34-66.

20. Cooper PJ, Murray L, Wilson A, Romaniuk H. Controlled trial of the short-and long-term effect of psychological treatment of post-partum depression: I. Impact on maternal mood. The British Journal of Psychiatry. 2003 May;182(5):412-9.

21. Fraiberg S, Adelson E, Shapiro V. Ghosts in the nursery: a psychoanalytic approach to the problems of impaired infant–mother relationships 1. InParent-infant psychodynamics 2018 Nov 9 (pp. 87-117). Routledge.

22. Money R, Wilde S, Dawson D. The effectiveness of Theraplay for children under 12–a systematic literature review. Child and Adolescent Mental Health. 2021 Sep;26(3):238-51.

23. Juffer F, Struis E, Werner C, Bakermans-Kranenburg MJ. Effective preventive interventions to support parents of young children: Illustrations from the Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD). Journal of Prevention & Intervention in the Community. 2017 Jul 3;45(3):202-14.

24. Nievar MA, Van Egeren LA, Pollard S. A meta-analysis of home visiting programs: Moderators of improvements in maternal behavior. Infant mental health Journal. 2010 Sep;31(5):499-520.

25. Cluxton-Keller F, Bruce ML. Clinical effectiveness of family therapeutic interventions in the prevention and treatment of perinatal depression: A systematic review and meta-analysis. PloS one. 2018 Jun 14;13(6):e0198730.

26. Hervé MJ, Paradis M, Rattaz C, Lopez S, Evrard V, White-Koning M, Maury M. Predictors of outcome in infant and toddlers functional or behavioral disorders after a brief parent–infant psychotherapy. European child & adolescent psychiatry. 2009 Dec;18:737-46.

27. Slade A. Parental reflective functioning: An introduction. Attachment & human development. 2005 Sep 1;7(3):269-81.

28. Lo CK, Wong SY. The effectiveness of parenting programs in regard to improving parental reflective functioning: a meta-analysis. Attachment & Human Development. 2022 Jan 2;24(1):76-92.

29. Lundahl B, Risser HJ, Lovejoy MC. A meta-analysis of parent training: Moderators and follow-up effects. Clinical psychology review. 2006 Jan 1;26(1):86-104.

30. Salomonsson B. Psychodynamic therapies with infants and parents: A review of RCTs on mother–infant psychoanalytic treatment and other techniques. Psychodynamic psychiatry. 2014 Dec;42(4):617-40.

31. Salomonsson B, Kornaros K, Sandell R, Nissen E, Lilliengren P. Short-term psychodynamic infant–parent interventions at Child health centers: Outcomes on parental depression and infant social–emotional functioning. Infant mental health journal. 2021 Jan;42(1):109-23.

32. Fonagy P, Sleed M, Baradon T. Randomized controlled trial of parent–infant psychotherapy for parents with mental health problems and young infants. Infant mental health journal. 2016 Mar;37(2):97-114.

33. Waylen A, Stewart-Brown S. Factors influencing parenting in early childhood: a prospective longitudinal study focusing on change. Child: care, health and development. 2010 Mar;36(2):198-207.

34. Barlow J, Coren E. The effectiveness of parenting programs: A review of Campbell reviews. Research on Social Work Practice. 2018 Jan;28(1):99-102.

35. Falah-Hassani K, Shiri R, Dennis CL. The prevalence of antenatal and postnatal co-morbid anxiety and depression: a meta-analysis. Psychological medicine. 2017 Sep;47(12):2041-53.

36. Saarni SE, Rosenström T, Stenberg JH, Plattonen A, Holi M, Ekelund J, Granö N, Komsi N, Saarni SI. Finnish Psychotherapy Quality Register: rationale, development, and baseline results. Nordic Journal of Psychiatry. 2023 Jul 3;77(5):455-66.

37. Sarkkinen M, Savonlahti E. Raskausajan vuorovaikutuspsykoterapia. Psykoterapia. 2014; 33(2):93-110.

38. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. Journal of general internal medicine. 2001 Sep;16(9):606-13.

39. Norman SB, Hami Cissell S, Means-Christensen AJ, Stein MB. Development and validation of an overall anxiety severity and impairment scale (OASIS). Depression and anxiety. 2006;23(4):245-9.

40. Bragdon LB, Diefenbach GJ, Hannan S, Tolin DF. Psychometric properties of the Overall Anxiety Severity and Impairment Scale (OASIS) among psychiatric outpatients. Journal of Affective Disorders. 2016 Sep 1;201:112-5.

41. Evans, John Mellor-Clark, Frank Margison, Michael Barkham, Kerry Audin, Janice Connell, Graeme McGrath C. CORE: clinical outcomes in routine evaluation. Journal of mental health. 2000 Jan 1;9(3):247-55.

42. Honkalampi K, Laitila A, Juntunen H, Lehmus K, Piiparinen A, Törmänen I, Inkinen M, Evans C. The Finnish Clinical Outcome in Routine Evaluation Outcome Measure: psychometric exploration in clinical and non-clinical samples. Nordic Journal of Psychiatry. 2017 Nov 17;71(8):589-97.

43. Goldman HH, Skodol AE, Lave TR. Revising axis V for DSM-IV: a review of measures of social functioning. Am J Psychiatry. 1992 Sep;149:9.

44. Current Care Guidelines. Depression [Internet]. Working Group Set up by the Finnish Medical Society Duodecim and the Finnish Psychiatric Association, The Finnish Medical Society Duodecim, Helsinki; 2021 [Cited 2024 June 8]. Available from: https://www.kaypahoito.fi/hoi50023

45. Connell J, Barkham M, Stiles WB, Twigg E, Singleton N, Evans O, Miles JN. Distribution of CORE–OM scores in a general population, clinical cut-off points and comparison with the CIS–R. The British Journal of Psychiatry. 2007 Jan;190(1):69-74.

46. Barkham M, Margison F, Leach C, Lucock M, Mellor-Clark J, Evans C, Benson L, Connell J, Audin K, McGrath G. Service profiling and outcomes benchmarking using the CORE-OM: Toward practice-based evidence in the psychological therapies. Journal of consulting and clinical psychology. 2001 Apr;69(2):184.

47. R Core Team (2023). R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.

48. Bates D, Maechler M, Bolker B, Walker S, Christensen RH, Singmann H, Dai B, Grothendieck G, Green P, Bolker MB. Package 'lme4'. convergence. 2015 Oct 6;12(1):2.

49. Wickham H, Averick M, Bryan J, Chang W, McGowan LD, François R, Grolemund G, Hayes A, Henry L, Hester J, Kuhn M. Welcome to the Tidyverse. Journal of open source software. 2019 Nov 21;4(43):1686.

50. Wickham H. ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag New York. 2016.

51. Clark DM, Canvin L, Green J, Layard R, Pilling S, Janecka M. Transparency about the outcomes of mental health services (IAPT approach): an analysis of public data. The Lancet. 2018 Feb 17;391(10121):679-86.

52. Leach C, Lucock M, Barkham M, Stiles WB, Noble R, Iveson S. Transforming between Beck Depression Inventory and CORE-OM scores in routine clinical practice. British journal of clinical psychology. 2006 Jun;45(2):153-66.

53. Barlow J, Smailagic N, Huband N, Roloff V, Bennett C. Group-based parent training programmes for improving parental psychosocial health. Campbell Systematic Reviews. 2012;8(1):1-97.

54. Gaspar T, Gomez-Baya D, Trindade JS, Botelho Guedes F, Cerqueira A, de Matos MG. Relationship between family functioning, parents' psychosocial factors, and children's well-being. Journal of Family Issues. 2022 Sep;43(9):2380-97.

55. Rayce SB, Rasmussen IS, Væver MS, Pontoppidan M. Effects of parenting interventions for mothers with depressive symptoms and an infant: systematic review and meta-analysis. BJPsych Open. 2020 Jan;6(1):e9.

56. Kersten-Alvarez LE, Hosman CM, Riksen-Walraven JM, Van Doesum KT, Hoefnagels C. Which preventive interventions effectively enhance depressed mothers' sensitivity? A meta-analysis. Infant Mental Health Journal. 2011 May;32(3):362-76.

57. Kounali D, Button KS, Lewis G, Gilbody S, Kessler D, Araya R, Duffy L, Lanham P, Peters TJ, Wiles N, Lewis G. How much change is enough? Evidence from a longitudinal study on depression in UK primary care. Psychological Medicine. 2022 Jul;52(10):1875-82.

58. Nye A, Delgadillo J, Barkham M. Efficacy of personalized psychological interventions: A systematic review and meta-analysis. Journal of Consulting and Clinical Psychology. 2023 Jul;91(7):389.

59. Tikotzky L, Chambers AS, Gaylor E, Manber R. Maternal sleep and depressive symptoms: links with infant Negative Affectivity. Infant Behavior and Development. 2010 Dec 1;33(4):605-12.

60. Modell JD, Modell JG, Wallander J, Hodgens B, Duke L, Wisely D. Maternal ratings of child behavior improve with treatment of maternal depression. Family Medicine. 2001 Oct 1;33(9):691-5.