

RESEARCH ARTICLE

Short-term psychodynamic infant–parent interventions at Child health centers: Outcomes on parental depression and infant social–emotional functioning

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Funding information

Stiftelsen Solstickan; Stiftelsen Olle Engkvist Byggmästare; Stiftelsen Clas Groschinsky's Minnesfond; Karolinska Institutet; Helge Ax:son Johnsons Stiftelse; Stiftelsen Kempe–Carlgrenska Fonden; Bertil Wennborg Foundation

ABSTRACT

Randomized controlled trials (RCTs) demonstrate efficacy of parent–infant psychotherapy, but its applicability and effectiveness in public health care are less known. The method followed is Naturalistic study evaluating Short-term Psychodynamic Infant–Parent Interventions at Child Health Centers (SPIPIC) in Stockholm, Sweden. One hundred distressed mothers with infants were recruited by supervised nurses. Six therapists provided 4.3 therapy sessions on average (SD = 3.3). Sessions typically included the mothers, often with the baby present, while fathers rarely attended sessions. The Edinburgh Postnatal Depression Scale (EPDS) and the Ages and Stages Questionnaire: Social–Emotional (ASQ: SE) were distributed at baseline and at 3 and 9 months later. Data from a nonclinical group were collected simultaneously to provide norm data. Multilevel growth models on the mothers' questionnaire scores showed significant decreases over time on both measures. Nine months after baseline, 50% achieved a reliable change on the EPDS and 14% on the ASQ: SE. Prepost effect-sizes (d) were 0.70 and 0.40 for EPDS and ASQ: SE, figures that are comparable to results of other controlled studies. Psychotherapists integrated with public health care seem to achieve good results when supporting distressed mothers with brief interventions in the postnatal period. SPIPIC needs to be compared with other modalities and organizational frameworks.

KEYWORDS

naturalistic outcome study, nurse reflective supervision, parent–infant psychotherapy, postnatal depression, SPIPIC

1 | INTRODUCTION

Postpartum mood and anxiety disorders affect 10–20% of mothers with infants (Gavin et al., 2005; Logsdon, Wisner & Pinto-Foltz, 2006) and may have significant adverse effects on the mother, her offspring, and the family system (Chronis et al., 2007; Edhborg, Lundh, Seimyr, &

Widström, 2003; Olson, Bates, Sandy, & Schilling, 2002). Such effects may extend into adolescence (Murray, et al., 2010). These findings highlight the need of early interventions and strategies to improve maternal and child health.

A number of meta-analyses have evaluated studies, mostly randomized controlled trials (RCTs), of various modes of parent–infant psychotherapy

(Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Barlow, Bennett, Midgley, Larkin, & Wei, 2015; Rayce, Rasmussen, Klest, Patras& Pontoppidan, 2017; Singleton, 2005). Many of the included studies focused on a specific clinical procedure, for example, a psychotherapy method (Cohen et al., 1999; Robert-Tissot et al., 1996) or home visits (Armstrong, Fraser, Dadds, & Morris, 1999; Barlow et al., 2007). Others selected a disorder in the mother (depression: Clark, Tluczek, & Wenzel, 2003; Cooper, Murray, Wilson, & Romaniuk, 2003; van Doesum, Riksen-Walraven, Hosman, & Hoefnagels, 2008) or in the baby (feeding disorder: Benoit, Madigan, Lecce, Shea, & Goldberg, 2001; anxious attachment: Lieberman, Weston, & Pawl, 1991).

Most commonly, these outcome studies comprise mother-reported depressive symptoms and infant functioning, and external ratings of video-recorded dyadic interaction and infant development. Singleton (2005) synthesized studies of mothers with children up to 3 years. No effects were found on infant development, but significant levels emerged on parent–infant relationship, infant mental health, and parent ability including maternal depression. The meta-analysis by Bakermans–Kranenburg, van IJzendoorn, and Juffer (2003) covered studies, mostly RCTs, of attachment-promoting interventions. It revealed effects on insensitive parenting and infant attachment insecurity. A Cochrane review (Barlow, Bennett, Midgley, Larkin, & Wei, 2015) included eight parent–infant therapy RCTs. It found some effects on infant attachment but none on parental depression and parent–infant interactions.

A review article (Salomonsson, 2014) summarized the results of RCTs of psychodynamic parent–infant therapies: “The active therapies yielded effects mostly on mothers’ well-being, while infant effects were not always thoroughly investigated and, if found, were weaker” (p. 623). Parent–infant psychotherapies may thus be efficacious, at least on maternal health. But, as Barlow et al. (2015) noted, it is difficult to identify which programme components might enhance outcomes, for example, length of treatment, therapy focus, and therapeutic method. To this uncertainty is added that we know little about how such therapies perform under public health care conditions. Since virtually every Swedish baby comes for medical and developmental check-ups at the Child Health Centers (CHC), and since the nurses there are required to also consider the family’s emotional situation, this raises the need of a naturalistic study of psychotherapy conducted at the CHC. This is in line with Leichsenring’s (2004) argument that “naturalistic studies are required to demonstrate that a form of therapy works *in the field*” (p. 137, italics added). Vital questions include if therapies in such settings may reach more patients, if treatments develop similarly to those performed in private settings, if the populations differ or not,

THREE KEY FINDINGS

1. Previous RCTs have demonstrated the efficacy of parent–infant psychotherapy. This naturalistic study adds that short-term therapies at Child Health Centers, where therapists and nurses collaborate, may have positive outcomes on mother-reported depressive symptoms and infant functioning.
2. Psychotherapists’ placements at such centers can reduce parents’ obstacles in asking for treatment and make it more accessible for them.
3. Nurses at these units are in close contact with the families. They should receive reflective supervision by the psychotherapist at the unit to increase skills in observing, addressing, and suggesting help for families with emotional problems.

IMPLICATIONS FOR PRACTICE AND POLICY

Except for cases needing hospitalization, infant health care and emotional support for distressed families should be integrated at child health centers. Nurse–psychotherapist collaboration and supervision at these units are key factors.

and if collaboration between professional groups—such as nurses and psychotherapists—may influence outcomes. The last point also relates to how psychological care is integrated with ordinary health care. Such considerations were critical for the clinical project investigated here.

RELEVANCE TO THE FIELD OF INFANT MENTAL HEALTH

Knowledge is accumulating about the prevalence of parental and infant distress, its connection with future nonoptimal development, and suitable parent–infant psychotherapy techniques. Yet, it is still a long way from a parent’s signaling distress to receive adequate help. Integration of routine health care and psychological support can diminish this gap and increase the number of families that receive qualified help.

As a background, a Swedish federal commission had recommended “first line” facilities for mental health care (Sirén, Wicks, Lindberg, & Dalman, 2018) to make qualified psychological support more accessible in primary care. They should be placed between the levels of general medicine and specialist psychiatry and treat patients with mild to moderate mental illness. The present project placed psychotherapists where perinatal emotional distress is generally detected at CHC. These are tax-funded units where parents come with their children (0-5 years) for regular check-ups. Nurses weigh and measure the babies and provide inoculations and nutritional advice, and pediatricians do routine examinations (Socialstyrelsen, 2014). Virtually all Swedish children are registered at a CHC. Many nurses are trained in screening with Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden & Sagovsky, 1987) at 6-8 weeks postpartum. They may combine it with counseling (Rubin, Lindström, Fröjlinger, Lindfors, & Johnsson, 2017), but the extent to which this is done is unclear. Alternatively, they can refer to an external general practitioner, or a child or adult psychiatry unit.

1.1 | Psychotherapy method and clinical project

To integrate psychotherapy with routine infant health care, a clinical method was developed; Short-term Psychodynamic Infant-Parent Interventions at Child Health Centers (SPIPIC; Salomonsson, 2018). It has two constituents; one is a brief psychotherapy method that combines elements of psychodynamic and attachment theory. The other is a collaborative model in which the psychotherapist supervises the nurses, on a scheduled basis, in handling perinatal mental health (PMH) issues. The primary patients of SPIPIC therapy are mother and child, because they are the ones who almost always come to the CHC for check-ups. A second reason is that mothers seem more distressed postnatally than their partners (Johansson, Nordström & Svensson, 2020; Johansson, Svensson, Stenström & Massoudi, 2016), which makes it important to focus on their wellbeing and their relationship with the infant. Therapists are trained to also observe whether the mother's account indicates problems with the emotional state of the father or the spousal relationship. If so, they might invite the father for a session or two, though couple therapy per se is not included in the SPIPIC concept. Thus, therapists' main focus remains to assist distressed mothers with infants.

Therapy sessions last for 45 min, during which the therapists focus on the infant's distress (Lojkasek, Cohen, & Muir, 1994), unconscious influences on maternal capacities (Cramer & Palacio Espasa, 1993; Fraiberg, 1987), indications of the father's paternity issues (Baradon,

2019; Barrows, 1999), and nonoptimal parent-infant relationships (Norman, 2001). Therapies aim to promote infant attachment and to uncover “ghosts in the nursery” (Fraiberg, 1987) that prevent parents from achieving optimal sensitivity and bonding with the child. For clinical illustrations and recommendations on therapeutic technique, we refer to Salomonsson (2018) and Kornaros, Zwedberg & Nissen (2019). See also the Appendix at the end of the article. Selection to SPIPIC is done by the CHC nurse as she identifies emotional problems and suggests the parent(s) to see the therapist. Families then receive around four once- or biweekly SPIPIC sessions in a setting adapted to the family's central problems. Thus, the mother may come alone, with the baby, or with some participation of the father as well.

A clinical project took place 2013-2016 in co-operation with the CHC division of the Stockholm County Council. A group of psychoanalysts were trained by the SPIPIC developer and placed at CHCs, one analyst at each unit. Out of these units, six were selected for the research project reported below. Selection was based with the aim of reaching, as far as possible, CHCs in inner-and outer-city areas with socioeconomically and ethnically varied populations.

1.2 | Research project

1.2.1 | AIMS

This study aimed to evaluate the outcomes on parent-reported depressive symptoms and infant social-emotional functioning of SPIPIC's psychotherapy constituent. Therapies were provided at CHC. It utilized longitudinal data collected in a naturalistic setting. A second aim was to investigate associations between outcomes and pretreatment adversity factors reported by parents and therapists. The idea was to investigate if any subgroup was more or less responsive to SPIPIC.

2 | ETHICAL PERMISSION

Approval and consent were obtained from all participants prior to entering the research project. It received permission from the Regional Ethical Vetting Board in Stockholm (Dnr2013/1311-31/3).

3 | METHODS

3.1 | Study design and procedure

We recruited mothers and infants from six Stockholm CHCs, a number considered manageable and with

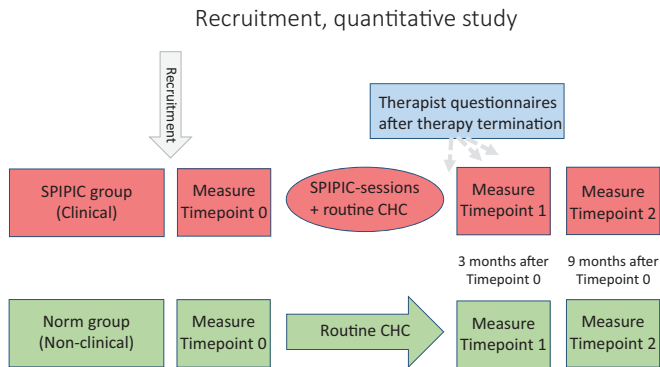


FIGURE 1 Study design. CHC, Child Health Center; SPIPIC, Short-term Psychodynamic Interventions for Parents and Infants at Child Health Centres

sufficient statistical power as specified below. At the CHC routine check-up, the nurse noted distress in mother and/or baby, or the mother brought it up herself. During this visit, the nurse suggested her to participate in SPIPIC treatment and in the study and provided relevant written information material. If she consented, she was instructed to also ask her partner to provide data independently. These families constituted the clinical subsample or the “SPIPIC group” and received SPIPIC at the CHC. Mothers who showed no distress at baseline constituted the nonclinical subsample or the “norm group.” They were recruited as the next nondistressed case at the CHC right after the nurse had recruited a family to the SPIPIC group. They merely provided norm data from the same population as the SPIPIC group, with the aim of being used in one of the outcome calculations.

The nurse administered article questionnaires at the end of the visit, at Timepoint 0. As seen in Figure 1, follow-up questionnaires were submitted 3 and 9 months later (Timepoints 1 and 2) on a project webpage safeguarding confidentiality.

The therapists filled in treatment information after termination. To protect treatment integrity, they participated in biweekly peer-group supervision with the first author. Five therapists were licensed psychologists and one was an MD. All were trained psychoanalysts and had also trained as child analysts or had lengthy experience working in child and adolescent mental health services. Their average experience with psychotherapy was 34.6 (SD = 7.2) years.

3.2 | Recruitment criteria

Primary inclusion criteria were mothers with a non-twin infant below 2 years. Their partners also provided questionnaire data. At their regular baby check-ups,

the mothers had signaled to the nurse difficulties with parenting, marriage, personal well-being, contact with the child, or baby problems such as feeding, sleep, and affect regulation. The screening selection was made by the nurse as she suggested the mother a contact with the psychotherapist. The final decision if SPIPIC was suitable was made by the psychotherapist and upon parental consent.

Exclusion criteria were parental mental disorder of such severity, for example, postpartum psychosis or substance abuse, that the nurse or therapist considered immediate psychiatric care indicated, alternatively mental disorder of the child of such severity, such as developmental inhibition or neuropsychiatric problems, that they assessed that specialist child psychiatric care was indicated. The number of such cases is unknown but probably low, since the second author was in regular contact with the nurses who did not report any such incident.

3.3 | Instruments

3.3.1 | Parent-reported depressive symptoms

The EPDS (Cox et al., 1987) is a widely used 10-item questionnaire. Cox et al. (1987) and Murray and Carothers (1990) found adequate sensitivity (.86 and .96) and specificity (.78 and .81) for major depression compared with a standardized interview. We used an authorized Swedish translation (Lundh & Gyllang, 1993), which has been validated (Wickberg & Hwang, 1996). In our sample, internal consistency (Cronbach’s α) was .896.

3.3.2 | Parent-reported infant social-emotional functioning

The Ages and Stages Questionnaire: Social-Emotional (ASQ: SE; Squires, Bricker, Heo, & Twombly, 2001) is a widely used instrument to measure parents’ assessments of their infant’s distress. It has been used in study settings like ours (Briggs et al., 2012). It contains items rated on a four-step scale, except for four items on a two-step scale. Test-retest reliability is reported at 0.94, and Cronbach’s α for internal consistency for babies of 3 to 14 months at .69 and .67. Three age ranges are relevant to this study: 3-8, 9-14, and 15-20 months, each with a different number of questions. To enable comparison across age groups, we calculated mean scores across all items. We used a Swedish translation authorized by the constructor. Our Cronbach’s α was .704 at 3-8 months and .754 at 9-14 months.

3.3.3 | Background factors and therapeutic setting

To assess how parents estimated the influence on their present situation by previous life events, health, and socioeconomic factors, we created 20 questions that they answered at Timepoint 0. They covered age, education, immigrant status, adoption of parents and child, psychiatric and medical history, the family constellation, and data on delivery and breastfeeding.

The psychotherapists reported in a free-text questionnaire on the parents' histories, symptoms, treatment duration, and which family members participated in SPIPIC sessions. They could mark presuggested variables and/or write down themes brought up in treatment. We coded their answers into binary categories such as absence/presence of depressive symptoms, anxiety, loneliness, relationship difficulties, etc.

3.3.4 | Power calculation

To compare with other studies, we calculated their effect sizes (Cohen's d) on parent-report depression measures. We computed their within-group d 's, since our reported d 's belong to that category as well. In one study (Cooper et al., 2003), d was 0.58 for a subsample receiving psychodynamic parent–infant therapy of 10 sessions. Another study (Salomonsson & Sandell, 2011) yielded $d = 1.38$ after almost 25 sessions. A study by Cohen et al. (1999) yielded $d = 0.44$ after 14 sessions. Since SPIPIC was considerably briefer, we opted for a lower d of 0.30. For a power of 0.80, and α of 0.05, the required n in a one-sample study is $2.80^2 / 0.30^2 \approx 87$. We decided to recruit both parents from 100 families.

3.3.5 | Statistics

SPSS 25.0 was used for t -, McNemar-, and χ^2 - tests and multilevel modeling. Outcomes were calculated using three methods. The first was a multilevel growth modeling (MLM; Gueorguieva & Krystal, 2004; Singer & Willett, 2003). MLM adequately handles nested data structures and utilizes all available information, which provides accurate estimates under fairly unrestrictive missing data assumptions. We used data collected in three waves on patients from six CHCs. EPDS and ASQ: SE scores were nested within patients, who were nested within CHCs.

The second method assessed how many individuals' change could be considered reliable. We used a reliable change index (Edwards, Yarvis, Mueller, Zingale, & Wagman, 1978; Nunnally, 1975) based on the following

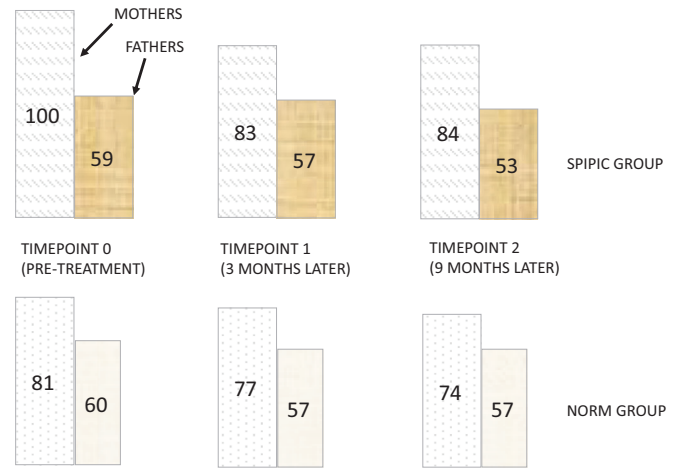


FIGURE 2 Number of respondents at time-points 0-2. Acronyms, see Figure 1

formula:

$$XL < \text{or} > [r(XA - M) + M] + / - 2 * SD,$$

where XA is the admission score, XL is the last post-treatment score. M and SD are the admission means and standard deviations, and r is the instrument's reliability. We used the acronym RCEN for this index in the tables.

The third method was to calculate how many individuals had moved from a dysfunctional to a functional population. We used the *clinically significant change* b (Jacobson & Truax, 1991), abbreviated CCB. The functional population is defined as $M \pm 2 SD$, where M and SD refer to a norm group's values.

4 | RESULTS

Figure 2 indicates recruitment results at Timepoints 0 - 2. The response rate for fathers was less than 60% in the clinical group, and they took part in therapies less than expected. Since one could question the responding fathers' representability for the entire sample's characteristics as well as for the therapeutic method, we were advised not to include them in our calculations.

In addition to the numbers indicated in Figure 2, nine families received SPIPIC but declined to participate in the research study, and 10 declined SPIPIC. None of these 19 families were included in the study.

4.1 | Participant characteristics

The SPIPIC mothers' age ranged from 21 to 42 years, with a mean of 32.1 (SD = 4.7) years. The children's age ranged

TABLE 1 Background data for mothers and infants

Variable	SPIPIC	Norm Group	χ^2	t-test	df	p
Mothers						
Age	32 (4.7)	33 (5.1)		-1.690	177	.093
Education (years)	15 (2.8)	15 (2.5)		0.117	176	.907
Immigrant	14/99 (14 %)	5/77 (6%)	2.631		1	.105
Medical diagnosis	24/98 (25%)	14/81 (17%)	1.377		1	.241
Psychiatric care before pregn.	38/100 (38 %)	21/80 (26%)	2.785		1	.095
Psychotherapy before pregn.	45/96 (47%)	27/80 (34 %)	3.110		1	.078
Stressed during pregnancy	64/100 (64%)	24/80 (30%)	20.561		1	<.001
Liked pregnancy	70/96 (73 %)	61/76 (80%)	1.261		1	.261
Caesarian section	23/99 (23%)	23/80 (29%)	0.705		1	.401
Ventouse delivery	10/97 (10%)	4/77 (5%)	1.518		1	.218
Complicated labour exp.	26/98 (27%)	11/79 (14%)	4.204		1	.040
Skin to skin < 1 h	92/99 (93%)	73/81 (90%)	0.459		1	.498
Infants						
Age (months)	4.8	5.2		0.477	175	.634
Boy	48/100 (48%)	44/81 (54%)	0.715		1	.398
Prematurity*	2/93(2%)	2/78 (3%)	0.032		1	.859
Breastfeeding	97/98(99%)	77/81(95%)	2.507		1	.177
Breastfeeding start delayed	13/95(14%)	6/75(8%)	1.364		1	.243
Living with 1 parent at a time	7/102 (7%)	2/80 (3%)	1.815		1	.178
Medical diagnosis	12/98 (12%)	2/80 (3%)	5.772		1	.016

Bracketed numbers refer to standard deviations or, when indicated, percent. Complicated labour exp. = Complicated labour as experienced by parent. Ventouse = Vacuum extraction. Skin to skin < 1 h = Skin-to-skin contact with baby initiated less than 1 h after delivery.

*Two SPIPIC babies were born in gestational week (GW) 32 and 37, and two norm group babies were born in GW 34 and 35.

Only available, nonimputed data are presented.

from 1 to 23 months, with a mean of 4.8 (SD = 4.5) months. Twelve percent of SPIPIC parents were immigrants, a lower proportion than the Swedish average, which was 18% in 2016 (www.scb.se).

As seen in Table 1, many mothers in both groups had previous mental health problems and psychotherapies. There were no between-group differences on caesarean section, ventouse deliveries, and skin-to-skin contact, but SPIPIC mothers reported difficult labour more often. SPIPIC infants had a medical diagnosis more often than in the norm group; gastric reflux, allergies and asthma, ventricular septal defect, other cardiac malformation, hip dysplasia, cramps, impaired kidney function, multicystic kidney, benign lymph nodes, jaundice, loss of hearing, and clubfoot. No child or parent was adopted.

4.2 | Data on psychotherapeutic setting

The mean number of sessions was 4.3 (SD = 3.3). Reported mean SPIPIC duration was 8.6 weeks (SD = 8.0), ranging 1-32 weeks. The most common setting was a mother in ther-

apy (94%), and in 83% of the cases the baby, too, was present in one or more sessions. The partner joined in 9% of the therapies and then only in one or two sessions.

4.3 | Therapist-reported problem areas

Due to the free format of this instrument, figures must be interpreted cautiously. Among the parents' personal difficulties, the most commonly reported issues concerned parenthood (63%), depressive symptoms (58%), anxiety (49%), spousal relationship (35%), loneliness (33%), and bonding with the child (30%). The most frequently noted child problems concerned child development (24%), sleep (17%), and attachment (12%).

4.3.1 | Outcomes on questionnaire scores

For mothers receiving SPIPIC (n = 100), missing data on EPDS and ASQ: SE were 0 and 11% at baseline, respectively. At 3 and 9 months, they were 17 and 16% for both questionnaires.

TABLE 2 Multilevel growth models estimating change in symptoms over time

	Mothers (n = 100)	
	EPDS	ASQ:SE
Baseline score		
Intercept	12.21**	1.56**
Rate of change		
Monthly	-1.20**	-0.20**
Month × Month	0.09**	0.02**
Variance components		
Residual	17.37**	0.58**
Intercept	9.40**	0.36

** $p < .01$ * $p < .05$. ASQ:SE, the Ages and Stages Questionnaire: Social-Emotional; EPDS, the Edinburgh Postnatal Depression Scale.

4.3.2 | Multilevel growth modeling

Since every CHC employed one specific therapist, we first examined any possible effects due to therapists/CHCs. Unconditional models with random intercepts at CHC level were estimated for both questionnaires. This enabled the calculation of an intraclass correlation (Wampold & Serlin, 2000), interpreted as the percentage of the total variability in measures that could be attributed to CHC differences. For the EPDS, the proportion was 1.0% and for ASQ: SE 3.7%, but these variance components were not significant (EPDS, $z = 0.608$, $p = .543$; ASQ: SE, $z = 1.247$, $p = .213$). Thus, there were no significant outcome differences between the six CHCs and hence, between the six therapists.

We proceeded with two-level analyses. Basic time-models, including a fixed effect of time and random effects for intercept, were estimated for each outcome measure. The time variable was coded 0, 3, and 9 for the number of months since treatment started. Fixed and Random effects for slope were also tested but discarded since models did not converge. Next, we added a quadratic term (Month × Month) to test for possible nonlinearity in trajectories over time, which proved significant. This suggests that the shape of change over time was similar across individuals, that is, a quadratic slope directed downwards. To handle missing data, all models were fitted with Maximum Likelihood estimation using all available information. Since the study was considered exploratory, we did not correct for family-wise error rate by using, for example, the Bonferroni correction.

The results are presented in Table 2. For each month, the MLM model indicated a significant decline of 1.20 EPDS points and 0.20 ASQ: SE points. The significant quadratic term (i.e., Month × Month) indicates that the change was nonlinear.

4.3.3 | Clinically significant and reliable change indices

These calculations used only raw scores without imputing missing data. As seen in Table 3, the SPIPIC mother's EPDS scores decreased 3.60 points from intake to the last measurement, indicating that depressive symptoms abated. The effect size (Cohen's d) was -0.701 , 95% CI $[-1.149$ to $(-0.252)]$. Repeated measures analyses of within-subject effects revealed effect sizes to be significant ($<.001$ $p < .017$).

To calculate clinically significant change b , we used the norm group EPDS means, which yielded cut-off points of 10.09 for mothers. Thus, scores of ≥ 11 indicated depression. As detailed in Table 3 and graphically rendered in Figure 3, the number of depressed SPIPIC mothers was approximately halved from Timepoint 0 to 2. The McNemar tests compared the pre- and post-treatment proportions of depressed versus nondepressed parents, indicating that for mothers this reduction was significant. Table 3 also reports on the number of mothers with a reliable change.

Infant functioning problems reported by mothers on the ASQ: SE also decreased. The resulting d was -0.40 , 95% CI $[-0.864$ to $(-0.057)]$. For calculating clinically significant change b (CCb), the norm group data provided cut-off points of ≤ 2.24 . At baseline, 24% of the SPIPIC mothers worried about their babies beyond the cut-off level. Nine months later, 9% still worried, thus, a substantial decrease. The McNemar test, with $N = 74$, yielded $p < .001$.

4.3.4 | Predictor analyses

To conduct these analyses, we added our predictor variables to the basic time-models for EPDS and ASQ: SE. Dichotomous demographic variables (e.g., child sex, immigrant status, etc) were coded 0 or 1. The remaining parent-reported "adversity factors" were condensed into four dichotomous variables covering psychiatric/psychological care before pregnancy, subjective discomfort during pregnancy, delivery problems and breastfeeding problems, where 0 or 1 indicated the absence or presence of such a factor. All variables were entered separately to the basic time models, both as fixed effects and in interaction with time (months), to explore associations with baseline scores and rates of change over time.

The predictor analyses are presented in Table 4. The mothers' number of sessions was associated with higher baseline EPDS scores. One more EPDS point before therapy start yielded half (0.48) a session extra, but the number of sessions did not predict rate of change over time on the EPDS and was wholly unrelated to the ASQ: SE.

TABLE 3 Summary of mothers' questionnaire scores

Instruments	SPIPIC 0	SPIPIC 1	SPIPIC 2	Norm 0	Norm 1	Norm 2
Mothers						
EPDS	12.21 (5.31)	9.52 (5.33)	8.60 (4.99)	3.79 (3.15)	4.44 (3.65)	4.87 (4.20)
EPDS Cohen's <i>d</i>	0.70					
EPDS RCEN+	42/81 (52%)					
EPDS RCEN-	8/81 (10%)					
EPDS CCB	64/100(64%)	32/86 37%)	27/81 (33%)	2/81 (2%)	4/77 (5%)	10/74 (14%)
EPDS McN	$t = 18.27, p < .001$					
ASQ:SE	1.54 (1.18)	1.12 (0.80)	1.12 (0.88)	0.98 (0.63)	0.81 (0.65)	0.99 (0.64)
ASQ:SE Cohen's <i>d</i>	0.40					
ASQ:SE RCEN +	10/74 (14%)					
ASQ:SE RCEN -	0/74					
ASQ:SE CCB	22/90 (24%)	9/86 (10%)	7/81 (9%)	1/69(1%)	2/77 (3%)	3/73 (4%)
ASQ:SE McN	$p < .001$					

CCB, clinically significant change, method b according to Jacobson & Truax (1991). McN, McNemar's test; RCEN+, Reliable Change according to Edwards & Nunnally with improvement. RCEN- ... with impairment.

Only available, nonimputed data are presented.

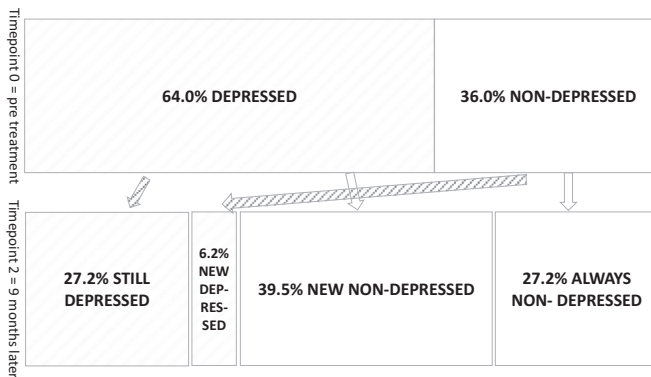


FIGURE 3 Development of SPIPIC mother's EPDS scores. "Depressed" implies EPDS ≥ 11 , that is, the level of clinically significant change *b*, as explained in the article text

Most sociodemographic variables and adversity factors were nonsignificant as predictors of baseline score or rates of change. However, every added year on mother's age was associated with one quarter (-0.28) fewer EPDS points. Mothers whose child did not live constantly with them had four (3.83) more EPDS points initially compared with families where both parents were living together. Also, higher education level was associated with a steeper rate of change over time (-0.05 per year) for depressive symptoms. Finally, infants with a medical diagnosis predicted higher baseline scores on the ASQ: SE.

5 | DISCUSSION

This study evaluated the outcomes of Short-term Psychodynamic Infant-Parent Interventions (SPIPIC;

TABLE 4 Estimates from multilevel growth models predicting baseline score and rate of change

Predictors	Mothers (n = 100)			
	EPDS Baseline score	EPDS Rate of change	ASQ Baseline score	ASQ Rate of change
Number of sessions	0.48**	-0.02	-0.02	0.00
Parental age ^a	-0.28**	0.01	-0.01	0.00
Years of education ^a	0.13	-0.05*	0.05	-0.01
Infant age ^a	-0.10	0.01	0.00	0.00
Infant sex 0/1	-0.68	0.02	-0.07	0.01
Immigrant status 0/1	2.02	-0.20	0.25	0.03
Parent medical diagnosis 0/1	0.99	-0.02	0.04	0.02
Infant living with both parents 0/1	3.83*	0.40	0.65 [#]	0.02
Infant medical diagnosis 0/1	0.34	0.15	0.57*	-0.05
Prepsych 0/1	1.83 [#]	-0.15	-0.08	-0.01
Discomfortpreg 0/1	0.66	-0.21	0.07	-0.05
Deliveryprob 0/1	-0.38	-0.09	0.14	-0.01
Breastprob 0/1	0.39	-0.15	0.25	-0.04

Note. 0/1 refers to reported absence/presence of an adversity factor. On Infant sex, 0 = girl. On Immigrant status, 0 = nonimmigrant. Breastprob, breastfeeding painful or delayed; Discomfortpreg, subjective discomfort during pregnancy; Deliveryprob, complications or subjective discomfort during delivery; Prepsych, psychiatric/psychological care before pregnancy.

^aMean centered variables.

** $p < .01$

* $p < .05$,

[#] $p < .07$.

Salomonsson, 2018) provided at CHC. The clinical model integrated somatic and psychological health care for emotionally distressed families by offering mothers—with occasional participation of their partners—psychotherapy on the premises. In addition, nurses received reflective supervision with the CHC therapist (Weatherston & Osofsky, 2009). The research design included one clinical group (the “SPIPIC group”) and one nonclinical group (the “norm group”), whose function was to provide norm data of apparently unperturbed families from the same CHCs for calculations of clinically significant change. Parent-reported scores on depressive symptoms and infant social–emotional functioning were collected before interventions and 3 and 9 months later. We also collected therapist- and parent-assessed data on background factors and present emotional problems, for descriptive purposes and for predictor analyses.

As for the fathers, we made great efforts to receive questionnaire data but only reached a response rate of less than 60%. It also emerged in therapists’ reports on the treatment settings that they participated less than we had expected. We concluded that paternal data should not be included in the analyses, since they could not be considered representative for the sample or for the method. What follows in the discussion thus applies only to the mothers.

Existing RCT studies indicate that parent–infant psychotherapies based on psychodynamic and attachment theory and technique are often efficacious compared with routine care or an alternative therapy method. This project was based on clinical observations from CHCs that families with babies tend to be less vocal about their emotional than their medical worries. It was assumed that if nurses get help with improving their clinical skills in detecting and addressing parental distress—and if therapists work on the premises to promptly institute treatment—this would be beneficial. Although SPIPIC therapies were brief, we speculated that the nurse–therapist collaboration would add to any benefits and rub off onto the parents by helping them handle more optimally their perinatal crisis. This would, we hypothesized further, be reflected on their reported depression and infant functioning. This naturalistic study, thus, evaluated SPIPIC’s feasibility in clinical practice and its outcomes.

As a general comment before discussing the outcomes, we emphasize that from the perspective of parental mental health and infant development, the first perinatal year is especially volatile. The levels of parental depressive symptoms may vary due to changes in hormonal balance, psychological maturation, support from the family origin, their somatic conditions, etc. The child is in a most rapid phase of cognitive and emotional development. These factors may cause variations over time in ratings of depressive symptoms and infant functioning, which makes it dif-

ficult to specify to what extent our outcomes were caused by SPIPIC per se. Furthermore, the study did not include a control group, which makes any such attributions even more uncertain, since naturalistic studies have a “reduced possibility of controlling factors influencing outcome apart from therapy” (Leichsenring, 2004, p. 139).

Bearing these reservations in mind, our MLM-models indicated that mothers’ scores on the EPDS and the ASQ: SE improved significantly between baseline and follow-up. Two thirds of them entered SPIPIC as clinically, significantly depressed (Jacobson & Truax, 1991). After treatment, half of this subgroup had left that area. A reliable improvement according to Edwards et al. (1978) and Nunnally (1975) was found among half of the mothers, whereas one-tenth became reliably impaired. Before SPIPIC, one-fourth of the mothers worried about their infants’ social–emotional functioning, a proportion reduced to 1 of 11 after therapy. Predictor analyses indicated that mothers who had been depressed initially received more SPIPIC sessions. Younger mothers were more depressed, as were mothers whose children alternated domicile between their parents. If the infant had a medical diagnosis, this affected both parents’ scores on infant functioning.

5.1 | Instruments and change indices

To assess depressive symptoms we used the EPDS, a well-known measure with satisfactory validity (Cox et al., 1987; Murray & Carothers, 1990; Wickberg & Hwang, 1996). To assess parent-reported infant functioning, we chose the ASQ: SE, which has been used to measure infant outcomes in a setting like ours (Briggs et al., 2012). It was more unclear which score *levels* should be considered pathological and which *changes* to be relevant. Postpartum depression studies often rely on recommended cut-off points. The original EPDS study (Cox et al., 1987) suggests 12/13 (see also Matthey, Henshaw, Elliott, & Barnett, 2006). In contrast, Swedish health care recommendations (Rikshandboken, 2018; Wickberg & Hwang, 1997) and studies from other countries (Austerberry, Wiggins, Turner, & Oakley, 2004; Freeman et al., 2005) recommend 11/12. Since such variability casts doubts on the external validity of cut-off scores, we chose to retrieve norm values among parents from the same population as our clinical sample. The clinical and the norm groups were selected by the CHC nurses, a procedure that mirrored clinical practice where they meet parents in routine visits and decide who need further psychological help. We suspected that our norm group would score slightly below community samples, since such studies (Heron et al., 2004; Josefsson, Berg, Nordin, & Syd-sjö, 2001; Rubertsson, Wickberg, Gustavsson, & Rådestad,

2005) included all mothers whereas our nurses selected nondistressed parents for the norm group. Indeed, this proved to be the case and the norm group thus reflected a nonclinical subgroup.

The question was how to assess treatment effectiveness when no true comparison group existed. We started with a MLM procedure and found significant outcomes. Yet, though MLM can calculate changes in terms of slopes, it only establishes their levels of significance, whereas their clinical implications are not revealed. Speer (1992) argues that for studies in settings where experimental research may not be feasible, one must select clinically relevant measurements to classify clients as “improved, unchanged or deteriorated” (p. 402). With this aim, we calculated clinically significant and reliable change indices. For the first index, we applied Jacobson’s & Truax’s (1991) clinical change b that compares clinical and non-clinical group data. As argued in the previous paragraph, our norm group’s data reflected that of a non-clinical subgroup and was thus relevant for a comparison with the clinical group.

We also wanted to know how our nurses’ thresholds of selecting cases for SPIPIC corresponded with depression intake scores in other samples that, like in our study, had been recruited due to perceived distress. One study (Salomonsson & Sandell, 2011) recruited Stockholm mothers who experienced distress about their emotional well-being and/or the relationship with the child. Their EPDS mean score were very close to our study. In another study (Robert-Tissot et al., 1996), psychologist-recruited mothers’ mean scores on the Beck Depression Inventory (BDI; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961) implied mild depression. Thus, our nurses had selected mothers for SPIPIC with depression scores similar to those of distressed mothers in other studies.

As for the ASQ: SE, the developers (Squires, Bricker & Twombly, 2004) have calculated cut-off levels of around 2 points per item, which was also the mean value used in a previous study (Salomonsson & Sandell, 2011) of mothers with postnatal distress. Our SPIPIC parents scored around 1.5 initially. These levels were higher than in other studies (Beeber et al., 2010; Høivik et al., 2015) of parent-child interaction problems and depression. This indicated some distress about the baby in our sample.

5.1.1 | Regression to the mean

One might ask to what extent our therapy effects could be explained by regression to the mean (RTM; Barnett, Dobson, & van der Pols, 2004), which occurs when a variable is measured repeatedly and extreme values tend to change toward the centre. True, the CCb measure does not

take RTM in account (Speer, 1992). To handle the problem, Speer recommends an index suggested by Edwards et al. (1978) and Nunnally (1975). It works by “shrinking” pretherapy scores toward the pretherapy mean by the reliability of the measure. This estimated true score is then placed at the center of a confidence interval so that estimates can be made of the significance of post-therapy change” (Atkins, Bedics, McGlinchey, & Beauchaine, 2005, p. 983). This adjustment minimizes “the risk of improvement rates capitalizing on regression to the mean” (Speer, 1992, p. 404). Although we used this more conservative method, the number of improved clients increased considerably. To conclude, we regard it as highly improbable that the therapy outcomes could be solely attributed to RTM.

5.1.2 | SPIPIC: Outcomes compared with other studies

In this study, the SPIPIC group’s effect sizes (Cohen’s d) were 0.70 and 0.40 on the EPDS and ASQ: SE, respectively. Most studies that we will now use for comparison were RCTs. To make their findings comparable with ours, we have calculated their within-group d values of the index treatment. In contrast, calculating their indices of reliable and clinical change was unfeasible without access to original data.

Concerning *depression*, Singleton’s meta-analysis (2005) reported higher effect sizes of *Parent-Infant Interaction Interventions* (PIII; “therapeutic interventions designed to increase positive experiences between a parent and infant”, p. 6) on “parenting ability,” a term including both parental depression and behavior. However, some of her included studies did not actually measure depression (Benoit et al., 2001; Wendland-Carro, Piccinini, & Millar, 1999), which makes her conclusions uncertain. As for *infant massage*, Singleton reported one study with $d = 1.13$ (Onozawa, Glover, Adams, Modi, & Kumar, 2001), which we recalculated as actually being lower, $d = 0.80$, comparable to another study (O’Higgins, Roberts, & Glover, 2008) with $d = 0.86$. As for *video feedback* therapy, Olhaberry, León, Seguel, & Mena (2015) reported $d = 0.34$ and Høivik et al., (2015) $d = 0.40$, both on the BDI. As for *psychodynamic parent-infant therapy*, one subsample (Cooper et al., 2003) received 10 sessions. Nine months post-treatment, d was 0.58 on the EPDS. A Swiss study (Robert-Tissot et al., 1996) provided therapy with a number of sessions similar to ours and reported interview-based “maternal sadness” (Stern et al., 1989) to decrease with $d = 0.33$. The study by Cohen et al. (1999), with approximately 14 sessions, also belongs to this variety of therapy and with a similar $d = 0.44$ on the BDI. To summarize, our SPIPIC mothers’ d of 0.70 on the

EPDS was comparable to, in some cases even superior to, other studies of similar psychotherapy modes. When comparing SPIPIC with studies of infant massage, we point out that Onozawa et al. (2001) calculated d directly at treatment termination. At the 1-year follow-up by O'Higgins et al. (2008), there was no difference between the massage and support groups.

Concerning *infant functioning*, Høivik et al. (2015) reported $d = 0.71$ after video feedback therapy. Kaminiski et al. (2013) summarized studies of the Legacy Project (Perou, Elliott, & Visser, 2012) for poor children and found d 's of around 0.30 on the Brief Infant Toddler Social and Emotional Assessment (BITSEA; Briggs-Gowan & Carter, 2002). In a sample of Latino mothers (Beeber et al., 2010) with children of around 15 months receiving 16 sessions of Interpersonal Therapy (Weissman, Markowitz, & Klerman, 2000), d was 0.46 on the ASQ: SE. Finally, d was 1.08 on the ASQ: SE for mothers and babies of around 5 months in psychodynamic therapies of around 25 sessions (Salomonsson & Sandell, 2011). Thus, our SPIPIC mothers' d of 0.40 on infant functioning was similar to other studies except in one that provided longer therapies.

Interpreting the magnitude of reliable and clinical change indices is more difficult since these methods have not, to our knowledge, been used on comparable samples. Bearing in mind the reservations at the beginning of the discussion, we interpret that the SPIPIC therapies, whose duration had a mean of only 4.3 sessions, contributed to a non-negligible extent to the improvements—at 9 months follow-ups—on mother-reported depressive symptoms and infant functioning. Qualitative studies of interviews with nurses, parents, and psychotherapists (Kornaros, Zwedberg & Nissen & Salomonsson, 2018, 2020 and Kornaros, Zwedberg & Nissen, 2019, respectively) identified salient features such as a flexibility in therapeutic technique and a confident nurse–therapist collaboration. Improvements seemed not to be obtained merely due to the psychotherapies but also to their integration with an enhanced health care provided by supervised nurses.

The predictor analyses indicated that mothers who had been depressed initially received more SPIPIC sessions. In contrast, an earlier study (Salomonsson & Sandell, 2011) did not find associations between initial EPDS scores and treatment length. We have not found this association investigated in other parent–infant studies. Plausibly, our depressed mothers revealed a greater need of support and the therapists responded by offering more sessions. The fact that mothers who reported previous psychological distress tended to score higher on the EPDS conforms with findings that postnatal depression is linked with earlier depressive episodes in a woman's life (Norhayati, Hazlina,

Asrenee, & Emilin, 2015). Mothers whose children alternated living with either parent were evidently involved in spousal conflicts, which Dennis & Ross (2006) have shown to be associated with postnatal depression and which corresponds to our findings. This constitutes a caveat for infant mental health, since marital conflict may mediate between parental depression and child outcomes (Harrington, Heron, Stein, & Ramchandani, 2012) and can be directly associated with child outcomes (Favez et al., 2012). Finally, our findings that parents whose baby had a medical diagnosis scored higher on the ASQ: SE were unsurprising. This instrument lists various distress symptoms in the child that may be linked with his/her medical condition and/or the parents' worries about it.

5.1.3 | Clinical conclusions, key findings, and implications for practice

To the extent that the outcomes can be ascribed to the content of the clinical project—including SPIPIC provided by psychotherapists and their collaboration with the CHC nurses—we interpret it as being due to the integration of nurses' and therapists' competences and contributions. This “horizontal” model of care provided easy access to qualified psychological interventions. The design did not enable us to disentangle the extent to which each constituent, psychotherapy and supervision, contributed to the outcomes. Our conclusions comprise:

1. Even if our results indicated that many mothers with clinically significant depression seemed to benefit from SPIPIC, severe cases may need transfer to specialist units. Since these parents also visit the CHC for baby check-ups, the nurses may need supervision on handling these cases as well.
2. Since the baby may be distressed in connection with maternal depression, SPIPIC psychotherapists should preferably be specialized in adult and infant work and be comfortable with individual, parent–infant, and couple therapy modes (Sirén et al. (2018).
3. The fathers' low response rate and rare participation in therapy probably indicates that they come under the radar all too often. Paternal mental health thus needs to be highlighted pre- and postnatally (Cameron, Sedov, & Tomfohr-Madsen, 2016; Paulson & Bazemore, 2010). Nurses need to include fathers more persistently in their observations and offers of support. Therapists need to discuss when and why they choose to include/not include fathers in sessions, and to investigate their attitudes to taking part in therapy.
4. Infants with a medical condition affect parents, whose needs of psychological support should be heeded.

5. The fact that mothers with higher educational level responded quicker might suggest that they are more responsive to SPIPIC. It might also indicate that therapists need to adapt their technique according to such factors.

5.1.4 | Limitations

The design did not randomly assign families to two treatment modes. We can therefore neither estimate any selection bias, nor measure the extent to which outcomes were due to time passage, regression to the mean, or other confounding factors. Results must thus be interpreted cautiously. In the future, RCTs could compare SPIPIC with, for example, nurse counseling or infant massage including their long-term effects. Another area of investigation is to what extent the development of an enhanced psychological competence among the staff may influence parental and child emotional wellbeing.

The therapists' supervision with the author of the SPIPIC monograph (Salomonsson, 2018) also intended to safeguard treatment adherence. It would have been preferable if this factor had been measured systematically by using recorded sessions and gauging adherence with an established instrument. The clinicians' substantial professional experience probably influenced outcomes positively. From a research perspective, it may be considered a limitation since it makes external validity uncertain. Future studies should apply a similar design to settings with therapists having varying clinical experience.

Despite our efforts to recruit CHCs with parents of various socioeconomic levels, our sample was well educated and socially integrated than many contemporary studies of parent-infant therapy. For example, the number of immigrants was fewer than the national average. Therefore, the applicability of SPIPIC to various social strata needs further studies.

The fact that we received fewer questionnaire responses from fathers was an unexpected limitation. Interventions primarily targeted mothers and infants but we had assumed that fathers, nevertheless, would be more prone to provide data. Although the therapists had no explicit agenda to always invite them as well, their rare participation can be seen as a limitation. Future projects should secure an even stricter design for including father data and should clarify if, when, and why they are to be included in therapy or not.

ACKNOWLEDGMENTS

We wish to sincerely thank all parents, nurses, and psychotherapists who took part in the project. We also extend our thanks to the Swedish Inheritance Fund for gener-


ously financing the clinical project. The research project was financed by Karolinska Institutet and the following foundations: Bertil Wennborgs Stiftelse, Clas Groschinskys minnesfond, Stiftelsen Olle Engkvist Byggmästare, Helge Ax:son Johnsons stiftelse, Stiftelsen Solstickan, and Kempe-Carlgrenska fonden. We thank them all.

CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

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How to cite this article: 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 Ment Health J.* 2020;1-15. <https://doi.org/10.1002/imhj.21893>

APPENDIX

Summary of the characteristics of SPIPIC:

- The SPIPIC therapist's major perspective on the parents' distress is psychodynamic. Symptoms are thought to express internal, psychological conflicts of which the individual is unconscious. They emerge as distress in the baby's and/or the parent's well-being.
- The conflicts concern ambivalence about the child or partner, unresolved issues with significant persons in childhood ("ghosts in the nursery," Fraiberg, 1987), clashes between the parent's ideals and achievements, etc. The therapist helps him/her become aware of the conflicts and how they link with the symptoms.
- Another aim is to contain (Bion, 1962) the patient's anxieties. She/he may feel helpless, shameful, fearful of herself/himself, confused about feelings vis-à-vis the baby, etc. The therapist empathizes with these feelings, processes them internally and provides a comment or stance that the patient finds sympathetic and helpful.
- The therapist may also apply a supportive technique. One may also discuss medication. This should preferably be instituted only after insight work and containment have not initiated progress. The therapist is more focused on helping the patient understand her symptoms as a comprehensible reaction to a life crisis than as an indication of a psychiatric disorder.
- The SPIPIC therapist pays close attention to the baby's state. If relevant, she/he brings up symptoms in the baby such as a depressive appearance, gaze avoidance, hyper- or hypoarousal, etc. Addressing baby symptoms can be done both directly with the baby and indirectly via the parent.
- The setting varies according to the most immediate focus. For example, one may start with a session with the mother alone, followed by a session with the parents and then one with mother and baby only etc.
- The number and frequency of sessions is decided in cooperation with the parent(s), for example, one session every second week for 2 months. This should be gauged according to the therapist's assessment of the case and the parent's wishes.
- The therapist cooperates with the CHC nurse. If the parent addresses something that the therapist deems the nurse should know of, she/he talks with the nurse with due discretion and after consulting with the patient. Another aim with reporting to the nurse is to convey whether her worries about the family were well founded, and if the therapist and the parent(s) have made a viable contact.
- The therapist meets the group of nurses regularly for reflective group supervision. The nurse, with her colleagues and under the therapist's guidance, works toward understanding and relieving her problematic relationship with the family. The aim is to increase her reflective function on perinatal psychological challenges.