

METROPOLITAN REGIONAL DIFFERENCES IN PRIMARY HEALTH CARE OF POSTNATAL DEPRESSION

Anne Buist, MD, FRANZCP, is Associate Professor of Psychiatry, University of Melbourne, Victoria, Australia

Jeannette Milgrom, PhD, FAPS, is Professor of Psychology, University of Melbourne, Melbourne, Victoria, Australia

Carol Morse, PhD, MAPS, is Professor of Psychiatry and Dean, Faculty of Human Development, Victoria University, Australia

Sarah Durkin, BA, Research Assistant, Faculty of Human Development, Victoria University, Australia

Accepted for publication August 2003

Key words: postnatal depression, motherhood, distress, cultural sensitivity

ABSTRACT

This study examines the psychological and social aspects of the transition to motherhood by primiparous women, including care received, in two regions of suburban Melbourne, Australia. Two hundred and thirteen women were recruited from antenatal clinics in the regions and completed questionnaires at 24 weeks gestation, six weeks, four months and nine months postpartum. Maternal child health nurses were also asked to complete questionnaires on services in their region. Rates of distress decreased over time in the eastern affluent established region, but increased in the western rapidly developing region. For women in both regions, satisfaction in their relationship with their partners decreased. A previous history of mental illness, lower social integration and cultural background were predictors of distress. Nurses in the west reported high stress and less satisfaction from their clientele. Results highlight the need for health planning related to childbirth in developing regions.

INTRODUCTION

In the past 10 years there have been major changes in the delivery of obstetric services. A recent Victorian (Australia) survey showed that shared care, between obstetricians and general practitioners, had increased from 2 to 16%, private maternity admissions had fallen from 59 to 36%, and length of stay had reduced, with some 38% of mothers leaving on day one compared to 20% in 1989 (Brown et al 2001).

The current literature is undecided on whether these changes themselves are linked to a risk of depression (Hickey et al 1997; Brown et al 1998). Research does show a number of major categories of risk factors that predispose vulnerable mothers to depression following childbirth, which may be impacted on by these service changes. These include stressful life events, marital discord and lack of support (O'Hara et al 1991; O'Hara and Swain 1996; Dennerstien et al 1989).

Some studies have identified low socio-economic status and low educational attainment (O'Hara and Swain 1996; Campbell et al 1992) as other risk factors for postnatal depression. Moreover, these may influence depression independently (Gurel and Gurel 2000; Bergant et al 1999). These findings are in keeping with landmark studies on social factors linking social class and having three children under the age of 11 years, (Brown et al 1977), with increased risk of depression. Other studies have shown associations with poor social network, low education and neglectful mothers (Wadsby et al 1996; Coohy 1995). Of concern, these risk factors may also impede access to supports when, and if, they are available. These are also the families who are least able to access supports (Coohy 1995).

Up to 50% of Victorian mothers reported that after discharge they were not able to access the support they needed (Brown et al 2001). It is unclear whether this is because of lack of knowledge of the supports by women or their health professionals, or lack of suitable resources, but women with postnatal depression appear to be the most likely to be unsatisfied (Webster et al 2001). Given that postnatal depression affects around 14% of Australian mothers (Brown et al 2001; Dennerstein et al 1989) this is worrying, as studies suggest lack of support is an important risk factor, and is likely to prolong distress (O'Hara and Swain 1996). Studies also suggest a detrimental effect of maternal depression on mother-infant relationship and child outcome so this has a potentially wide-ranging impact (Beck 1998; Murray et al 1996). The most needy women, from impoverished social backgrounds and families with poor parenting role models, are the most at risk of both depression and the longer-term poor outcomes for the child (Buist 1998; Buist and Janson 2001).

Research findings suggest that depression postpartum can be readily identified by community nurses (Cox et al 1987; Elliot and Leverton 2000; Milgrom et al 2002) and that general practitioners are also able to identify and manage depression (Holden et al 1989). However, it appears this only occurs if the health professionals have specific training, which in postnatal depression is particularly important given mothers who are depressed may present for reasons external to their own needs eg infant health problems (Mandl et al 1999). Treatment studies in postnatal depression are limited, but suggest that similar interventions to those for depression are effective, including psychological therapies and antidepressant medication, but also stress the need for ongoing support (Mandl et al 1999; Milgrom et al 2002; O'Hara et al 2000; Appleby et al 1997; Hendrick et al 2000).

However, many of these studies are often divorced from what is practical and feasible in a clinical setting, either because they use research and psychology staff not available outside the scope of the study, or because the training requirements are too stringent and unrealistic in the light of the work load of clinical staff. In Victoria, Australia, the key health professional involved with most, if not all, postnatal women is the maternal child health nurse, who has generally had some training in the assessment of postnatal depression and in many cases screen routinely (Buist et al 2002). Through the birth registry, all babies born are attempted to be visited at least once; whilst many women also see their general practitioner, some see an obstetrician for their postnatal check, and mental health issues are not always identified (Hearn et al 1998).

This research project aims to look at the influence of social factors in the women's psychological transition to motherhood and the maternal and child health nurse's (MCHN) ability to identify and refer mothers with postnatal depression. It was hypothesised that the two

regions' differing socioeconomic profiles and support available would impact on the mother's psychological wellbeing. Another paper reports on the outcomes of the MCHN identification and attempts to improve it (Morse et al 2004).

METHOD

This study involved 243 women recruited from antenatal clinics at four major public obstetric hospitals in Melbourne, covering two regions, one western, one eastern. According to the Australian Bureau of Statistics 1996 Census of Population and Housing the residents in the western region have a median income ranging from \$201-\$345 per week, a mean age of 31 years and 38% speak a language other than English at home. This region was characterised by rapid, recent development, with new housing estates and the recent introduction of a new public maternity hospital, with few general medical practitioners (GPs) and no private psychiatrists at this time. The eastern region was characterised by established maternity hospitals (private and public) and established housing and major shopping centres, with general medical practices and private psychiatry consulting suites located close by. In the eastern region, residents have a median income ranging from \$313 to \$420 per week, a mean age of 35 years and 15% speak a language other than English at home.

All MCHN who serviced the eastern and western areas involved were also invited to participate. Human research and ethics committees at each of these hospitals and the universities of the chief investigators approved the project.

Participants

Participants were English speaking, first time mothers (n=243), in a relationship with the father of the infant for one year or more, with no major past psychiatric history that was currently being treated, attending their first antenatal appointment.

Interviews were conducted at 24 weeks gestation, and for those mothers who were identified as depressed, follow up interviews were also conducted and referrals given at nine months postpartum. Measures were completed at 24 weeks gestation (Time 1 by interviewer), six weeks postpartum (Time 2 by MCHN), four months (Time 3 by post with telephone contact) and nine months postpartum (Time 4 by post and selected interviews).

Measures

Interview (Time 1 and 4 - selected cases)

Mothers were interviewed using a semi-structured interview, assessing demographic details (age, occupation, marital status, education, partner's education and occupational status) and inclusion criteria.

Measures completed by mothers (Time 1-4)

Mothers were asked to complete the following measures:

The Edinburgh Postnatal Depression Scale (EPDS) (Cox et al 1987) is a widely used 10 item-screening tool developed for postpartum depression with high validity and specificity, also standardised in an Australian population (Murray and Carothers 1989). This was administered by the MCHN at Time 2 at six weeks postpartum. A threshold score of ten was utilised to indicate distressed mood or dysphoria; this has been shown to have 89-90% sensitivity and 82-84% specificity for detection of distressed/depressed cases in community samples (Cox et al 1987; Boyce et al 1993; Murray and Carothers 1989; Harris et al 1989; Murray and Cox 1990) and has also been validated for antenatal use (Murray and Cox 1990). Those mothers who had high EPDS scores (>10) at any assessment were interviewed at Time 4 by a psychiatrist and follow up where appropriate was offered.

The Social Provisions Scale (SPS) (Cutrina 1984) covers six components of social support: integration, reassurance of worth, reliable alliance, guidance and opportunity for nurturing. High scores on subscales indicate that the respondent receives that provision from her current social relationships. Several studies have demonstrated the construct and discriminant validity of the scale and good test retest reliability (Cutrina 1984).

The Experience of Motherhood scale (Astbury et al 1994) measures the self-perceived level of coping and emotional well being associated with the experience of motherhood in mothers with small children. Mothers rate their agreement with 20 statements on a four-point scale. Internal reliability has been found to be good with alpha of 0.79.

Mothers responded on five-point Likert scales on two sub-scales of the Parenting Stress Index (PSI) (Abidin 1983). High Scores on the 'Child Reinforces Parent' sub-scale indicate that the parent does not experience her child as a source of positive reinforcement. Internal consistency for this sub-scale is excellent 0.97. High scores on the 'Parent Attachment' sub-scale indicate that the parent does not feel a sense of emotional closeness to the child, and/or the parent feels unable to read and understand the child's feelings and/or needs. The PSI has shown good concurrent, construct, and discriminant validity, with good test retest reliability across a number of studies.

The Short Form of the Spanier Dyadic Adjustment Scale (DAS) (Spanier 1976) developed on Australasian samples, is a seven item five-point scale that purports to measure spousal adjustment and satisfaction with the relationship quality. Internal consistency is high with alpha=0.90.

Measures completed by mothers and service providers (Time 4)

All MCHNs were asked to complete a service satisfaction survey. This inquired into services available for mothers with postnatal depression in their area, the ease of accessing these services and how helpful they were. Women were also asked about services they had accessed and how satisfied they were with these.

Data analysis

A number of chi-square analyses and independent t-tests were conducted to examine whether there were any differences between mothers in the east and west on any of the separate demographics measured, and on the care they received from professionals in the postnatal period.

First, a series of repeated measures, ANOVAs, were conducted on the psychological and psychosocial measures reported by all mothers at each assessment. Then we focused on those who were distressed (EPDS >10) in pregnancy and in the first six weeks after birth. To do this a separate series of repeated measures, ANOVAs, was conducted on the psychological and psychosocial measures at each assessment on this distressed group.

All variables were normally distributed except SPS-Reliable Alliance, which had a skewness of just greater than two, however transformations did not alter distribution significantly.

Forward logistic regressions were also performed, controlling for sector and distress at Time 1 and 2 and identifying predictors of distress at Times 3 and 4.

RESULTS

The study recruited 243 women. Twenty-four mothers completed the first assessment only and six others were incomplete, resulting in 213 women being included in the final analysis. There were 137 women in the west and 76 women from the east. Seventy three percent of western and 80% of eastern region mothers returned all questionnaires. Over time there was a greater attrition rate in the west; at Time 2, 95% (n=130) mothers in the west and 92% (n=70) in the east returned questionnaires, at Time 3, 86% (n=118) in the west and 92% (n=70) in the east, at Time 4, 79% (n=108) in the west and 91% (n=69) in the east.

Demographics

Though there was no difference between mothers in the west and east on maternal age (26.7 years in the west, 27.3 years in the east), educational or occupational levels, there were differences on definition of marital status. More mothers were in a defacto relationship in the east, and mothers in the west were more likely to report being 'engaged'. Mothers and their partners in the west and east differed on occupation with both genders in the west more likely to be in semiskilled clerical/trade work and in the east, in professional occupations (table 1).

Table 1: Maternal demographics

	west n=105-137 % (n)	east n=76 % (n)
Marital status		
Married	77 (106)	77 (58)
Engaged	12** (16)	1 (1)
Defacto	11** (15)	22 (17)
Education		
≥ Bachelor degree	15 (21)	24 (18)
Certificate/Diploma	22 (30)	17 (13)
Trade/Apprenticeship	3 (4)	4 (3)
Secondary	60 (82)	55 (42)
Unemployed	31 (42)	26 (20)
Occupation		
Professional	9 (9)	27* (15)
Semi-professional	24* (24)	21 (12)
Clerical/Trade	58* (57)	41 (23)
Other	9 (9)	11 (6)
Ethnic background		
Australasian	84 (115)	88.2 (67)
Asian	6.5 (9)	2.6 (2)
European	6.5 (9)	7.9 (6)
Other	3 (4)	1.3 (1)

Key: top number = correlation coefficient; bottom number = significance;

* Pearson's correlation; • Spearman's correlation

Chi Square tests cp west to east

* p<0.05; ** p<0.01

Psychological distress

Rates of distress (EPDS >10) remained stable in the mothers from the west over time. In contrast, rates of distress in the mothers from the east reduced markedly from the antenatal assessment to six weeks postpartum and then to three months postpartum, with a slight increase at the nine-month postpartum assessment. Significantly more women in the west were continuously in the distressed range across assessments (table 2). Mothers from the west had lower rates of distress antenatally, but higher than mothers in the east at all postnatal assessments; this reached statistical significance at three months postpartum (p<0.01), when the cut off for a likely major depressive illness was considered, using EPDS scores >12 - rates ranged from a low of 12.4% antenatally to a high of 13.6% at the three-month postnatal review in the mothers from the west, and 11.1% antenatally to 7.2% six weeks postnatally from those in the east.

When group mean EPDS scores were assessed on a time by sector repeated measure ANOVA, an effect of both time (p<0.01) and sector (p<0.05), without interaction was found. Posthoc univariate analyses showed a significantly higher mean score in the west at Time 1 and Time 3.

Six mothers scored an EPDS >18, and all were referred to the specialist service (all by the research assistant). Only the mothers in the east (two) took up this offer; the mothers in the west refused, citing distance as a barrier.

Social functioning

A series of repeated measure ANOVA were conducted using the Social Provisions Scale (SPS) (Cutrina 1984) and the Dyadic Adjustment Scale (DAS) (Spanier 1996) (table 3). Significant group differences were found for four SPS subscales. Means scores indicated that the mothers from the east had higher scores on the SPS-social integration and the SPS-reassurance of worth between the groups at Time 3, and the SPS attachment at Time 1 and Time 3. All but two subscales (reassurance of worth, reliable alliance) decreased significantly over time but with no group by Time interactions.

The mothers' DAS scores reduced significantly (decrease in marital function) in both groups from Time 1 to Time 4 and Time 3 to Time 4, with no difference between groups and no group by Time interaction. For the male partners there was a significant reduction in scores on the DAS from Time 1 to Time 4, and from Time 3 to Time 4.

Parenting role

Repeated measures (ANOVA) were conducted on the EMQ and the two subscales of the PSI. There were significant reductions over time in the EMQ and the PSI-reinforce parent for both groups but between group difference using the posthoc Bonferroni adjustment (p<0.025) on the EMQ at Time 3 only, the higher score indicating more difficulties were reported in the mothers from the west.

No difference was found between mothers in the west and east on help-seeking behaviour or satisfaction with services. The MCHN was the person most likely to be asked for help, with infant sleeping difficulties being the most common reason, followed by feeding difficulties. Eighty two per cent of mothers from the west and 81% of mothers from the east were fairly or very satisfied with the assistance received.

Predictors of distress

Using logistic regression, predictors of distress at Time 3 were examined (55% correct classification of distressed cases, 98% correct classification of non-distressed cases) and found that only a previous history of mental illness (other than major current psychiatric disorder, which was an exclusion criteria) was significant. Those with a history of mental illness were nearly nine times more likely to be distressed at Time 3, (OR 8.853, 95% CI, 0.825; 95.044). Of the variables that were controlled for, previous distress levels at Time 1 and Time 2 significantly predicted distress at Time 3, but group membership and sector were not significant.

When examining predictors of distress at Time 4 (71% correct classification of distressed cases, 98% correct classification of non-distressed cases) these included self-reports of lower social integration (SPS), older age (>30 years) and a previous history of mental illness. Mothers

with a past history were 168 times more likely to be distressed at Time 4 (OR 168.46, 95% CI: 7.95; 3533.3) than those without a past history. Asian born mothers were less likely to be distressed, (OR 0.027, 95% CI: 0.001; 0.996), and those born in miscellaneous regions other than Australasia, Asia and Europe were almost 13 times more likely to be distressed, (OR 12.736, 95% CI: 0.907; 170.63). Those women who were married were less likely to be distressed (OR 0.051, 95% CI: 0.006; 0.536). Of the variables that were controlled for, only distress at Time 1 significantly predicted distress at Time 4, while group membership, sector, and distress levels at Time 2 were not significant.

Maternal and child health nurses

Thirty-one MCHNs from the west and 11 from the east were involved in the study; responses were received from only 11 (33%) in the west and seven (75%) in the east. All were positive about their involvement in the study. Seven nurses from the west and three nurses from the east had at least one woman with an EPDS score of 13-17; five nurses from the west and one nurse from the east were involved with at least one woman with an EPDS score of 18 or more. Eight of the MCHNs from the west were dissatisfied or very dissatisfied with the current supports for PND provided in their region, with concerns about lack of services and long waiting periods for admission featuring strongly in their qualitative reports. Six of the nurses from the east were satisfied with the supports in their region, with five commenting on the recent improvements in care provided by GPs. Nine of the nurses from the west rated 13 aspects of their job as very demanding; the nurses from the east reported only two aspects. At the time of this study a New Initiatives Project was implemented by the Victorian Department of Human Services (Australia), providing increased funding for vulnerable families. It would have been expected that the west would have benefited, and client numbers were reported to be stable, further suggesting the importance of the lack of external supports.

DISCUSSION

In this paper the psychological and social aspects of primiparous postnatal mothers and service delivery by MCHNs in two different regions of suburban Melbourne, Victoria, were examined.

At the outset, these mothers and their partners from each region differed on occupational level and definition of marital status. The latter may be of relevance though the actual percentage in the two groups who were married was identical. The difference seems to arise from the preferred terminology of *de facto* versus *engaged*. This may reflect different attitudes or relationship stability but can only be speculated upon. That being married reduced the risk of distress by half in the predictive model suggests some importance of marital status and fits with

O'Hara and Swain's (1996) redefinition of what type of social support and stability is important. Otherwise the groups were comparable on age, ethnic background, and education. Rates of distress using the EPDS of >10 were high (nearly a third of women) antenatally for both groups, in keeping with other studies using the Edinburgh Postnatal Depression Scale antenatally. This finding raises the possibility that it is identifying antenatal anxiety as much as depression (Evans et al 2001). Of note, the groups differed on their close social ties and ability to make use of them, the mothers in the east appearing more supported.

Postnatally, rates of distress remained high in the west (24.8% to 28% west compared with 11.4% to 33.3% east) across all assessments, with more mothers who were distressed at more than one assessment (7.3% to 14.7% in west compared with 1.5% to 8.6% in east), though numbers were low in the east. The actual means of the EPDS for the distressed group tended to be higher in the east (4.6 to 14.6 in the east, 6.6 to 13.5 in west) but this may be because of a higher retention rate in these mothers. This may mean that in the west, mothers who dropped out may have had a higher level of depression - which would further broaden the gap between the two areas.

Ethnicity was seen to be a strong prediction of postnatal distress; those from Asian backgrounds being less likely to be distressed, which might reflect the close knit social structure and support of these communities, or also that they are more established in the community. Alternatively, stigma in these cultures may mitigate against admitting depression and the tools used may not have been appropriate to these cultures (the English version of the EPDS being used). This effect of Asian ethnicity differs from an earlier study (Morse et al 2000) carried out in the same east region of the city where those who self-identified as of non-specific Asian background were significantly more likely to be distressed/depressed. Other migrants were at significantly higher risk of distress, possibly reflecting lack of supports for newer arrivals in the country.

Mothers in the west also continued to rate lower most aspects of their social networks than the mothers from the east. They struggled more with adjustment to motherhood at Time 3; it may well be that this would also have continued to be significant at Time 4 but at this time the attrition rate was double that of the mothers in the east and between-group findings must be viewed carefully. These difficulties adjusting to motherhood appears consistent with the greater distress and lower capacity to utilise supports. In both western and eastern groups, the male partners rated deterioration in marital satisfaction occurring postpartum.

Despite these differences, mothers in the west were not differentiated from the eastern mothers on the subscales of the PSI. This may be because the two subscales, which were only used as an indicator, were not sufficiently sensitive; this would also have been affected by the high

attrition rate in the west. Use of the whole scale may have been beneficial, but cumbersome given the length and the other questionnaires completed. Scores on the EMQ suggested that mothers from the west reported more difficulties in adjusting to motherhood, indicating also that this is an area worth further examination.

One of the main limitations was the substantial attrition rate of respondents. It may be that the most distressed were represented in this group and thus have been missed. In the case of the MCHNs, from those who did respond, there are suggestions that the low response rate from the nurses in the west was due to work stress and overload. Of concern also, was the lack of referrals of those more distressed mothers to specialist services as in all cases referral was carried out by the research assistant. This may relate to the design of the study, the reluctance of the mothers or again, to the high workload of the nursing staff. Further evaluations of the level and causes of stress in the MCHN, given the regional differences, would have been worthwhile and a direction for potential future research.

Oldenburg (1972) noted that tackling socioeconomic health inequalities represented one of Australia's most challenging public health issues. It still appears to be the case. Relatively minor inequalities were evident in the mothers in these areas prior to childbirth, but differences became accentuated following the arrival of their child as reflected by distress levels. Given the major difference in the supports of the regions identified by the MCHN, these findings may suggest the importance of supports in mediating the distress. The major difference between these two regions was the wealthier, older population and established obstetric and auxiliary services in the east, versus a new maternity hospital and a relatively isolated, rapidly growing region in the west, which has been slow to attract medical and health practitioners and establish

services. In this study, the health care needs of the mothers in the west were not being met and as a result the transition to parenthood by these mothers was problematic or compromised, with the potential for ongoing ramifications of marital problems and child behavioural and/or cognitive delays (Beck 1998). The importance of supports may also be a key issue that needs closer examination, particularly in those mothers from other cultural backgrounds.

In the planning of obstetric services, the region had managed with the delivery needs, but has failed to take into account the emotional needs of mothers. This dissociation between the physical obstetric needs and the emotional needs of motherhood in services has been noted before (Oldenburg 1972) and has been highlighted in a recent survey of mothers (Brown et al 2001) where nearly half the mothers were unhappy with their postnatal support. In regions where there are fewer services, this dissatisfaction is likely to be higher. Our findings, along with Brown et al's 2001 survey results, suggest an urgent need for obstetric services to work in conjunction with psychological services, for optimum outcomes from an early planning level onwards.

Future directions

This study highlights some of the specific needs and difficulties for mothers having children in lower socioeconomic areas where supports are limited. Two recent postnatal tragedies of suicide and infanticide, one in this western region, and another in a similar satellite new suburb of Melbourne, have highlighted the issues of social isolation and difficulties for these women to access supports. Further examination of these needs is indicated - and an examination of how best to meet them.

Table 2: Rates of distress on EPDS between west and east

	West mean EPDS (sd)	West % distressed (n)	West % cts distress (n)	East mean EPDS (sd)	East % distressed (n)	East % cts distress (n)
26 weeks	6.9 (4.6)	(137)	Time 1	6.1 (4.5)	(72)	Time 1
EPDS >10	13.1 (2.9)	26.3 (36)	26 (36)	12.3 (2.1)	33.3 (24)	33.3 (24)
6 weeks pp	7.0 (4.8)	(130)	Time 1 and 2	5.7 (4.0)	(70)	Time 1 and 2
EPDS >10	13.5 (3.4)	25.4 (33)	12.3 (16)	12.3 (2.2)	18.6 (13)	8.6 (6)
3 mths pp	6.7 (4.5)	28** (33)	Time 1, 2, 3	5.6 (4.4)	(70)	Time 1,2,3
EPDS >10	12.6 (2.3)		10.2 (12)	14.6 (5.0)	11.4 (8)	4.3 (3)
9 mths pp	6.6 (4.7)	(109)	Time 1, 2, 3, 4	4.6 (4.6)	(68)	Time 1, 2, 3, 4
EPDS >10	13.2 (2.8)	24.8 (27)	7.3 (8)	13.6 (3.1)	16.2 (11)	1.5 (1)
EPDS >10			11.9 (13)			Time 2, 3, 4, 1.5 (1)
EPDS >10			14.7 (16)			Time 3 and 4, 1.5 (1)

Chi square analysis * p<0.05; **p<0.01

Table 3: Repeated measures ANOVAs - Means of psychosocial and parenting factors across eastern and western sectors

	Time 1 mean (SD)		Time 3 mean (SD)		Time 4 mean (SD)		Sector F value
	west	east	west	east	west	east	
Social Provisions Scale							
Attachment	14.48 (1.71)a	15.04 (1.21)b	14.01 (-1.65)a	15.05 (1.84)b	13.71 (2.14)	14.30 (2.19)	9.66**
95% CI	(-1.04, -0.07)		(-1.65, -0.42)		(-1.27, 0.09)		
Social integration	13.59 (1.58)	14.13 (1.65)	12.98 (2.03)a	13.86 (2.05)b	13.13 (2.06)	13.77 (2.01)	7.40**
95% CI	(-1.04, -0.03)		(-1.52, -0.24)		(-1.28, 0.01)		
Reassurance of worth	13.16 (1.61)a	13.78 (1.77)b	13.05 (2.05)a	14.03 (1.82)b	13.10 (2.14)	13.69 (1.71)	9.08**
95% CI	(-1.15, -0.10)		(-1.60, -0.36)		(-1.20, 0.03)		
Reliable alliance	14.86 (1.67)	15.10 (1.50)	14.87 (1.58)	15.25 (1.26)	14.70 (1.83)	15.30 (1.44)	3.99*
95% CI	(-0.74, 0.27)		(-0.84, 0.08)		(-1.13, -0.07)		
Guidance	14.80 (1.46)	15.16 (1.37)	14.60 (1.87)	15.01 (1.56)	14.26 (1.97)	14.73 (2.14)	3.25
95% CI	(-0.81, 0.09)		(-0.97, 0.14)		(-1.11, 0.17)		
Opportunity for nurturance	12.12 (1.87)	12.38 (2.16)	12.86 (2.27)	13.52 (1.86)	13.01 (2.23)	13.61 (2.30)	3.50
95% CI	(-0.88, 0.37)		(-1.32, 0.02)		(-1.30, 0.10)		
Short Form -DAS	31.26 (5.14)	32.61 (4.95)	31.19 (5.15)	32.29 (4.19)	30.45 (5.10)	30.24 (6.11)	1.10
95% CI	(-2.97, 0.27)		(-2.64, 0.44)		(-1.55, 1.98)		
Exp of motherhood			39.86 (6.78)a	36.50 (6.10)b	37.50 (6.99)	35.78 (6.35)	7.32**
95% CI			(1.31, 5.42)		(-0.41, 3.84)		
PSI- child doesn't reinforce parent			9.19 (2.88)	8.87 (2.50)	8.19 (2.97)	7.59 (2.69)	1.54
95% CI			(-0.56, 1.18)		(-0.31, 1.50)		
PSI- Lack of parental attachment			11.16 (3.18)	10.86 (2.85)	11.26 (3.32)	10.52 (3.23)	1.24
95% CI			(-0.67, 1.26)		(-0.30, 1.78)		

Note: Means within same measurement occasion with different subscripts were statistically different (Bonferroni corrected alpha =.025)

*p<0.05, **p<0.01, ***p<0.001

REFERENCES

- Abidin, R. 1983. Parenting Stress Index. *Paediatric Psychology Press*. Virginia. USA.
- Appleby, L., Warner, R., Whitton, A. and Faragher, B. 1997. A controlled study of fluoxetine and cognitive-behavioural counselling in the treatment of postnatal depression. *British Medical Journal*. 314(4):932-936.
- Astbury, J., Brown, S., Lumley, J. and Small, R. 1994. Birth events, birth experiences, social differences and depression after birth. *Australian Journal of Public Health*. 18:176-184.
- Beck, C. 1998. The effects of postpartum depression on child development: A meta-analysis. *Archives Psychiatric Nursing*. 1:12-20.
- Bergant, A., Heim, K., Ulmer, H. and Illmensee, K. 1999. Early postnatal depressive mood: Associations with obstetric and psychosocial factors. *Journal of Psychosomatic Research*. 46(4):391-394.
- Boyce, P., Stubbs, J. and Todd, A. 1993. The Edinburgh Postnatal Depression Scale: Validation for an Australian sample. *Australian and New Zealand Journal of Psychiatry*. 27:472-476.
- Brown, S., Darcy, M. and Bruinsma, F. 2001. *Victorian Survey of Recent Mothers*. 2000. Centre for Mothers and Babies. Latrobe University.
- Brown, G.W., Harris, T. and Copeland, J.R. 1977. Depression and loss. *British Journal of Psychiatry*. 130:1-18.

Brown, S., Lumley, J. and Small, R. 1998. Early obstetric discharge: Does it make a difference to health outcomes? *Paediatric and Perinatal Epidemiology*. 12:49-71.

Buist, A. 1998. Childhood abuse, postpartum depression and parenting difficulties: A literature review of associations. *Australian and New Zealand Journal of Psychiatry*. 32:370-378.

Buist, A., Bamett, B., Milgrom, J., Pope, S., Condon, J., Ellwood, D., Boyce, P., Austin, M.P. and Hayes, B. 2002. To screen or not to screen - that is the question in perinatal depression. *The Medical Journal of Australia*. 7/10/2002:S101-S105.

Buist, A. and Janson, H. 2001. Childhood abuse, parenting and postpartum depression: A three year follow up study. *Child Abuse and Neglect*. 25:909-921.

Campbell, S., Cohn, J., Flanagan, C., Popper, S., and Meyers, T. 1992. Course and correlates of postpartum depression during the transition to parenthood. *Development and Psychopathology*. 4:29-47.

Coohey, C. 1995. Neglectful mothers, their mothers and partners: The significance of mutual aid. *Child Abuse and Neglect*. 19(8):885-895.

Cox, J., Holden, J. and Sagovsky, R. 1987. Detection of Postnatal Depression: Development of the 10-item Edinburgh Postnatal Depression scale. *British Journal of Psychiatry*. 150:782-6.

Cutrina, C.E. 1984. Social support and stress in the transition to parenthood. *Journal of Abnormal Psychology*. 93:378-390.

- Dennerstein, L., Leher, P. and Riphagen, F. 1989. Postpartum depression - risk factors. *Journal of Psychosomatic Obstetrics and Gynaecology Supplement*. 10:53-65.
- Elliott, S. and Leverton, T. 2000. Is the EPDS a magic wand? A comparison of the EPDS and health visitor report as predictors of diagnosis on the Present State Examination. *Journal of Reproductive and Infant Psychology*. 18:79-95.
- Evans, J., Heron, J., Francomb, H., Oke, S. and Golding, J. 2001. Cohort Study of depressed mood during pregnancy and after childbirth. *British Medical Journal*. 323:257-260.
- Gurel, S.A. and Gurel, H.G. 2000. The evaluation of determinants of early postpartum low mood: The importance of parity and inter-pregnancy interval. *European Journal of Obstetrics and Gynecology*. 91:21-24.
- Harris, B., Hucke, P., Thomas, R., Johns, S. and Fung, H. 1989. The use of rating scales to identify postnatal depression. *British Journal of Psychiatry*. 154:813-817.
- Hearn, G., Iliff, A., Jones, I., Kirby, A., Ormiston, P., Parr, P., Rout, J. and Wardman, L. 1998. Postnatal depression in the community. *British Journal of General Practice*. March:1064-1066.
- Hendrick, V., Altshuler, L., Strouse, T. and Grosser, S. 2000. Postpartum and non-postpartum depression: Differences in presentation and response to pharmacological treatment. *Depression and Anxiety*. 11:66-72.
- Hickey, A.R., Boyce, P.M., Ellwood, D. and Morris-Yates, A.D. 1997. Early discharge and risk for postnatal depression. *Medical Journal of Australia*. 167:244-247.
- Holden, J., Sagovsky, R. and Cox, J. 1989. Counselling in a general practice setting: Controlled study of health visitor intervention in treatment in postnatal depression. *British Medical Journal*. 298:223-6.
- Mandl, K., Tronick, E., Brennan, T., Alpert, H. and Homer, C. 1999. Infant health care use and maternal depression. *Archives of Pediatrics and Adolescents*. 153:808-813.
- Milgrom, J., Negri, L., Erickson, J., Martin, P., DePaola, C. and McNeill, M. 2002. (In submission). A randomized, controlled trial of non-pharmacological interventions for postnatal depression. *British Journal of Psychiatry*.
- Morse, C., Buist, A. and Durkin, S. 2000. First time Parenthood: Influences on pre and postnatal adjustment in fathers and mothers. *Journal of Psychosomatic Gynaecology*. 21:109-120.
- Morse, C., Durkin, S., Buist, A. and Milgrom, J. 2004 Improving the postnatal outcomes of new mothers. *Journal of Advanced Nursing*. 95(a):1-11.
- Murray, D. and Cox, J. 1990. Screening for depression during pregnancy with the Edinburgh Depression Scale. *Journal of Reproductive and Infant Psychology*. 8:99-107.
- Murray, L. and Carothers, A. 1989. The validation of the Edinburgh Postnatal Depression Scale on a community sample. *British Journal of Psychiatry*. 154(81):3-7.
- Murray, L., Fiori, C., Hooper, R. and Cooper, P. 1996. The impact of postnatal depression and associated adversity on early infant interactions and later infant outcome. *Child Development*. 67:2512-2516.
- O'Hara, M., Schlechte, J.A., Lewis, D. and Varner, M. 1991. Controlled prospective study of postpartum mood disorders: Psychological, environmental and hormonal variables. *Journal of Abnormal Psychology*. 100(1):63-73.
- O'Hara, M., Stuart, S., Gorman, L. and Wenzel, A. 2000. Efficacy of interpersonal psychotherapy for postpartum depression. *Archive of General Psychiatry*. 57:1039-1045.
- O'Hara, M. and Swain, A. 1996. Rates and risk of postpartum depression - A meta-analysis. *International Review of Psychiatry*. 8:37-54.
- Oldenburg, D.P. 1972. *The detection of psychiatric illness by questionnaire*. London. Oxford University Press.
- Spanier, G. 1976. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and Family*. Feb:15-29.
- Wadsby, M., Sydsjo, G. and Goran, C. 1996. Children of psychosocial risk mothers: Life events, social interaction and behaviour problems at the age of eight. *Scandinavian Journal of Social Medicine*. 24(4):227-236.
- Webster, J., Pritchard, M., Linnare, S., Roberts, J., Hinson, J. and Starrenburg, S. 2001. Postnatal depression: Use of health services and satisfaction with health-care providers. *Journal of Qualitative Clinical Practice*. 21:144-148.