1997

Postnatal depression: prevalence, prediction and preventive intervention randomised trial

Georgina E. Stamp
University of Wollongong

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POSTNATAL DEPRESSION: PREVALENCE, PREDICTION AND
PREVENTIVE INTERVENTION BY RANDOMISED TRIAL.

Thesis submitted in fulfilment of the requirements for the award of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF WOLLONGONG

by Georgina E. Stamp

Department of Public Health and Nutrition, Faculty of Health and Behavioural Sciences, University of Wollongong

1997
ACKNOWLEDGEMENT

I wish to thank all the women who were prepared to take time as busy new mothers to fill in questionnaires and participate in these studies.

This research was supported by the inaugural award of a Midwifery Fellowship by the Queen Victoria Hospital and grants from The Queen Victoria Foundation, The South Australian Health Commission (Section 16), The Australian College of Midwives Inc and the Centre for Nursing Research.

My thesis supervisors Dr Catherine Blackmore and Dr. Caroline Crowther have supported and advised me through all stages of the research and I am particularly indebted to them.
DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed

Georgina E Stamp

I believe that this thesis is properly presented, conforms to the specifications for the thesis and is of sufficient standard to be, prima facie, worthy of examination.

Signed

Dr Catherine Blackmore
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ABSTRACT

Preamble

Depression after childbirth represents a largely under-reported area of maternal morbidity and a major public health concern in Australia (Health Department of Victoria 1990) and worldwide (Gitlin & Pasnau 1989). Prior to the following studies, there was no published data on the prevalence of postnatal depression using a South Australian population. This identified gap, and the magnitude of the problem, resulted in the design and conduct of the studies that make up this thesis. The work has resulted in three publications in refereed journals (Stamp & Crowther 1994a, Stamp et al 1995, Stamp et al 1996).

In a preliminary postnatal survey, drawn from a hospital sample of women, in which their views of postnatal care and breastfeeding practices were also sought, postnatal depression was identified as a problem (Stamp & Crowther 1994a). If prediction were possible it could be of value to facilitate the development of strategies for prevention. This consideration led to the modification of an antenatal screening questionnaire developed by Leverton et al (1989) to assess the prediction of postnatal depression. Results of the prediction study of the Modified Antenatal Screening Questionnaire (MASQ), are presented in Chapter 5 of this thesis and in Stamp et al (1996). Those women identified as more vulnerable were randomised and half were offered attendance at three specifically developed supportive and information sharing groups designed to prevent postnatal depression (Chapter 6 and Stamp et al 1995). After the studies and data analysis were complete, participants were sent details of the results and invited to express their feelings about completing the MASQ, and (if applicable), their
reasons for not attending the groups. A brief outline of each study and its results follows.

In the first study, women who gave birth to term babies over a 6 month period in an Adelaide tertiary hospital completed an Edinburgh Postnatal Depression Scale (EPDS) and a Rosenberg self-esteem scale in hospital and at 6 weeks and an EPDS only at 6 months postpartum (Appendices 1 & 2). A total of 235 women took part in the study of which 222 (95%) returned questionnaires at 6 weeks postpartum and 192 (82%) at 6 months postpartum. Characteristics of the women and their pregnancy outcomes are presented in Chapter 4. The EPDS identified likely major depression (score >12) in 9% of women in hospital and at 6 weeks postpartum (95% CI 5.3%-12.8%). At 6 months this had increased to 10% (95% CI 5.7%-14.1%). Postnatal depression was significantly correlated with low self-esteem in hospital and at 6 weeks postpartum.

The second study assessed the prediction of postnatal depression. Women at 24 weeks’ gestation or less were invited to complete a Modified Antenatal Screening Questionnaire (MASQ) that identified those more vulnerable to becoming depressed after childbirth. Of these 249 women, 144 (58%) screened more vulnerable, and were randomly allocated to attend either a supportive intervention to reduce postnatal depression or to standard care (Chapter 5). At 6 weeks, 12 weeks and 6 months postpartum the participants completed the Edinburgh Postnatal Depression Scale (EPDS).

No difference occurred at 6 weeks postpartum between the MASQ vulnerable group (return rate 64/68) and the MASQ less vulnerable group (return rate 44/51) in the frequency of those who screened as potential candidates for major depression using the
EPDS. At 12 weeks a significant difference was found (RR 3.60, 95% CI 1.38-9.36). At 6 months postpartum the relative risk for major depression was undefined.

For **major** depression the MASQ’s sensitivity was 73% at 6 weeks, 91% at 12 weeks and 100% at 6 months, specificity 43%, 45% and 43% respectively, positive predictive value 17%, 16% and 9% respectively and negative predictive value 91%, 98% and 100% respectively. For **minor** depression the test’s sensitivity was 81% at 6 weeks, 72% at 12 weeks and 77% at 6 months, specificity 48%, 46% and 43% respectively, positive predictive value 34%, 27% and 16% respectively and negative predictive value 89%, 89% and 93% respectively.

In a South Australian population the MASQ was able to predict minor depression with good sensitivity, poor specificity and excellent negative predictive value at 6 weeks postpartum. At 12 weeks and 6 months the test predicted major depression with excellent sensitivity, poor specificity and excellent negative predictive value.

In the third study, a randomised trial design was used to test the hypothesis that women identified as more vulnerable to developing postnatal depression who attend two support and information sharing antenatal groups and one postnatal group have a reduced incidence of postnatal depression from 37% to 15% at 6 weeks, 12 weeks and 6 months postpartum. A modified antenatal screening questionnaire (MASQ), was completed, and those women identified as more vulnerable to postnatal depression were stratified by parity and randomly allocated to receive extra support groups or to a control group. The Edinburgh Postnatal Depression Scale (EPDS) was used to detect postnatal depression.
Attendance at the support groups was lower than anticipated, 31% overall. Postal EPDS return rates of 92% were achieved at 6 and 12 weeks postpartum and 87% at 6 months postpartum. At six weeks, in the intervention group, 8, (13%) of 64 women scored high (>12) on the EPDS, compared with 11 (17%) controls. Similarly, at 12 weeks, 7, (11%) of 63 versus 10 (15%) of 65 women scored higher than 12. At 6 months the direction of the difference was reversed 9 of 60 (15%) compared with 6 of 61 (10%). None of these small differences was statistically significant, and demonstrate that the intervention did not reduce postnatal depression as hypothesised. More research is needed into ways of reaching and supporting women who may become depressed after the birth of their babies.

In the fourth investigation, results of studies 2 and 3 were mailed to participants and their retrospective views of completing the MASQ in the antenatal clinic sought. In addition, those women randomised to the intervention groups who did not attend were invited to give their reasons. Open-ended questions were used. From a return rate of 111 of 238 (47%), most women (68%), expressed in their own words, a desire to help in research which attempted to find strategies to help unhappy women. Sixteen women responded to a section on group attendance. The two most common reasons given were a feeling of not needing groups (5 of 16, 31%) and transport problems (4 of 16, 25%). Most added qualifying statements of support for the research in principle. Out of 111 respondents when asked only 4, (4%) would not participate in such a study again. For others the responses were “yes” (82%) and “maybe” (14%). Participation in the trial and completion of the MASQ were acceptable to a majority of the respondents.
CHAPTER 1

INTRODUCTION

1.1 GENERAL INTRODUCTION

1.1.1 Background

The birth of a baby signals major changes in a woman's life and is frequently attended by strong emotions ranging from joy to despair (Oakley 1980, Lumley and Astbury 1980). For many however, the experience is marred by a low emotional mood, feelings of sadness and an inability to cope. Postnatal or postpartum depression are terms commonly used to describe this condition or emotional state. Some consider these terms over-emphasise pathology in what is essentially a life event and prefer descriptions such as unhappiness after childbirth (Romito 1990), low emotional mood (Oakley 1980), or depression after childbirth (Small et al 1994). Although such terms are often used interchangeably, the condition is commonly accepted to be a form of major depression (Cox et al 1987).

Depression after the birth of a baby has been established as a problem for a substantial minority of women both within Australia (Lumley et al 1990) and internationally (Romito 1990). Despite the use of differing methods and timing of assessment in widely varying populations, rates of 10-20% are consistently reported during the first postnatal year (Romito 1990). In a large community sample of all women giving birth in the state of Victoria in one week, (Astbury et al 1994), 15% were depressed at 8 months postpartum using the Edinburgh Postnatal Depression Scale (EPDS)(Cox et al 1987). In our published study, which is described in Chapter 4 of this thesis 10% of
women were depressed on the EPDS at 6 months postpartum. Given prevalence rates of 10-15%, between 26,000 and 31,000 women each year are likely to experience depression after childbirth (Australian Bureau of Statistics 1993). This represents a major public health issue for childbearing women in Australia.

A number of factors have been repeatedly associated with an increased vulnerability or risk of postnatal depression. These include a past history of mood disorder including postnatal depression, (Paykell et al 1980, Watson et al 1984, Dennerstein et al 1989), a problematic marital relationship (O’Hara et al 1989) and lack of a confiding relationship (Paykell et al 1980, Watson et al 1984). Knowledge of the presence of these factors has resulted in a number of calls for the development of screening questionnaires to predict risk and randomised trials of preventive interventions to reduce postnatal depression (Elliott 1989, Murray & Stein 1989, Lumley 1990).

In response to these calls, this thesis investigates four important associated areas: investigation of the prevalence of postnatal depression in a South Australian population; prediction of women more vulnerable to developing postnatal depression using a specifically Modified Antenatal Screening Questionnaire (MASQ); a randomised trial of antenatal and postnatal support designed to reduce postnatal depression and the participating women’s views about completing the MASQ in the antenatal clinic and reasons for non-attendance at support groups.
1.1.2 Rationale for studies and aims

In reviewing the literature it was noted that there were no data on the prevalence of postnatal depression in South Australia. In addition, there is a dearth of well controlled studies of preventive interventions world-wide. Categories of controlled trials suggested in this area are: secondary interventions designed to reduce existing postnatal depression (Holden et al 1989, Wickberg & Hwang 1996); primary preventive interventions introduced antenatally to reduce postnatal depression in the general population of pregnant women (Gordon and Gordon 1960); and primary preventive interventions in groups screened antenatally as more vulnerable to postnatal depression (Elliott 1989).

At the time the study was designed no such controlled investigations had been undertaken in Australia in the area of postnatal depression. To address these deficits the following studies that make up this thesis were undertaken:

1. A postnatal survey of 235 women which had the objectives:
   • to determine the prevalence of postnatal depression in hospital, at 6 weeks and 6 months postpartum by the use of a recognised postnatal depression scale
   • to assess the level of women’s self-esteem in hospital and at 6 weeks postpartum.

2. Prediction of postnatal depression in pregnant women which had the objectives:
   • to modify an antenatal screening questionnaire (MASQ) for Australian populations
• to assess the ability of the MASQ to predict postnatal depression at 6 weeks postpartum.

3. A randomised trial to test the hypothesis that antenatal and postnatal groups will reduce postnatal depression from 37% to 15% (Gordon & Gordon 1960), or 33% to 12% (Elliott et al 1989) (sample size 140) at 6 weeks, 12 weeks and 6 months in women who screen more vulnerable using the MASQ.

4. A survey to determine the women’s retrospective views about completing the MASQ antenatally with the objectives:
   • to seek the views of women about completing the MASQ antenatally
   • to assess women’s reasons for not attending support groups to reduce postnatal depression
   • to ascertain whether women would participate in such studies again
   • to disseminate results of the randomised trial and prediction study to the participants.
2.1 BACKGROUND

The experience of joy and relief following the birth of a baby can be easily predicted. Nevertheless a substantial minority of up to one in five women will experience unexpected unhappiness or depression in the weeks and months following childbirth (Romito 1990, Cox & Holden 1994, Stamp & Crowther 1994). Women of widely differing parity, age, socio-economic status and cultural background can be affected.

Reports of postnatal mood disturbances are not new. Marcé (1858) provided a vivid description of a woman who gave birth over 140 years ago. In 1980 the Marcé Society, an international network of health professionals, to stimulate research and information about postnatal mood disorders was formed and took his name. The writer Charlotte Perkins Gilman gave a moving fictionalised account of her own experiences in New England in 1892 (Gilman, reprinted 1982). Yet research into postnatal depression has occurred relatively recently (Gordon & Gordon 1960, Paffenbarger 1961, Pitt 1968) and postnatal mood disorders remain a priority area for health professional research.
2.2 DEFINITIONS AND CLASSIFICATION OF POSTNATAL MOOD DISTURBANCES

Puerperal mental disorders have been only recently categorised separately in the International Classification of Diseases (ICD-10)(WHO 1992). There is not a specification for them in the United States DSM-III criteria for psychiatric interview for the diagnosis of major depression (American Psychiatric Association 1980, 1987). Debate exists in the literature as to whether the prevalence of depression after childbirth differs significantly from the baseline prevalence for women overall (O'Hara 1990). Higher rates of depression have been found in married women with children than in married women without children (Bebbington et al 1991). There is a three-fold increase in the risk of non-psychotic depression shortly after the birth when compared with matched control mothers who were not pregnant and had not had a child in the past 12 months (Cox et al 1993).

The broad term postnatal depression has been loosely applied to a number of states leading to it being variously described as a "grab bag title" (Lumley 1984) or a "catch-all diagnosis" defined differently by different authors (Affonso & Domino 1984). The states are more accurately described in order of severity as: the blues; postnatal depression; and puerperal psychosis.

The blues is the most commonly reported and is experienced by up to 80% of postpartum women (Yalom et al 1968, O'Hara & Zekoski 1988). Occurring 3-10 days postnatally, the blues is transient in nature and characterised by tearfulness, a labile...
mood and anxiety. The blues is very well documented, mainly because it occurs when women are traditionally still in hospital where they are more likely to be observed by health professionals as they recover from the birth (Romito 1990). Although not usually considered seriously, more severe episodes have been associated with later postnatal depression or low emotional mood (Pitt 1968, Oakley 1980, Kendell et al 1981, Cox et al 1982). It is considered likely that there is a biological and hormonal dimension to the blues (Kennerly & Gath 1986, Boyce 1994).

**Postnatal depression** is a common and often unreported non-psychotic depressive disorder. Sometimes known as postpartum depression, it is a potent cause of maternal morbidity during the first postnatal year. Prevalence rates of 10-20% are consistently reported in the literature world-wide (Romito 1989). The generally accepted symptoms of postnatal depression in the classical description by Pitt (1968) are “tearfulness, despondency, feelings of inadequacy and inability to cope” while Cox (1989) describes one of the most frequent symptoms as “lack of interest and pleasure in doing things”.

Researchers differ in their acceptance of the term postnatal depression. For Oakley (1980) and Romito (1989), postnatal depression labels and medicalises unhappiness and is regarded as inappropriate. According to Cox most women regard postnatal depression as “different” from depression at other times and Cox finds it a useful diagnostic term (Cox & Holden 1994). Brown et al (1994) prefer to use the expression “depression after birth” and maintain that terms such as “postnatal stress”, “postnatal distress” or “low emotional well-being” could misrepresent its seriousness, severity and duration.
The problem is particularly compounded by guilt for women as postnatal depression comes when traditionally they anticipate and are expected by others to be happy and fulfilled (Lumley & Astbury 1980, Dix 1986). As well as a societal stigma associated with seeking help for emotional problems (Wolff et al 1996), women may fear being seen as unfit mothers, particularly when others seem to be coping and radiant (Lumley & Astbury 1980, Brown et al 1994). This may add to what is widely considered to be large-scale under-reporting of depression after childbirth (Lumley 1984, Romito 1990, O'Hara & Zekoski 1988).

Puerperal psychosis is a severe, usually psychotic disorder that appears to be triggered by birth in susceptible women (O'Hara & Zekoski 1988). It is important to distinguish postnatal depression from puerperal psychosis. Puerperal psychosis occurs in 1-2 per 1,000 births, most commonly before the third postpartum week, and those women with a history of affective disorders are estimated to have a 20-25% increased risk of developing the condition (Gitlin et al 1989). Other risk factors are being a single parent, having a first baby and a having a caesarean birth (Kendell et al 1981a and 1981b, Gitlin et al 1989). Care of any woman with a history of psychotic illness, should be followed by a psychiatric team, particularly in the first 2-3 weeks following childbirth when florid signs and symptoms are easily recognised (Gitlin et al 1989). Puerperal psychosis is associated with an increased risk of both suicide and infanticide (Brockington et al 1982). Nevertheless, epidemiological studies consistently demonstrate that overall, there is a considerably lower risk of suicide during pregnancy and the first postnatal year than at other times, and that motherhood appears to offer a protective effect (Barno 1967, Kendell 1991, Appleby 1991, Appleby 1995).
Postnatal depression, the commonly occurring non-psychotic depressive disorder rather than the blues or puerperal psychosis forms the subject of inquiry in this thesis.

2.3 INCIDENCE AND PREVALENCE

Incidence relates to the number of new cases occurring during a specific time period whilst prevalence refers to the number of cases actually present during a particular time period. Reported prevalence of postnatal depression may vary according to the criteria used for diagnosis, timing of assessments, the population of women studied and the instruments for diagnosis employed. Despite such variation, rates between 10 and 20% are consistently reported internationally (Romito 1990).

Over 13 years ago Lumley (1984) called for standardised, reliable criteria for defining and assessing postnatal depression, more longitudinal community based studies that assess social support and stress variables, and attention to the meaning childbirth related events had for women themselves. Since that time, the Review of Birthing Services in Victoria, a large community based survey, enrolled a large sample of 1059 in which every woman who gave birth in Victoria over a one week period was approached (Lumley et al 1990). This survey and review, Having a Baby in Victoria, has provided substantial data for several publications (Small et al 1992, Astbury et al 1994, Brown et al 1994). The survey revealed that 15% of the women were depressed at 8 months postpartum (Astbury et al 1994) using the Edinburgh Postnatal Depression Scale (EPDS)(Cox et al 1987).
There are few other published rates of postnatal depression in Australia. In a prospective study with a sample equally divided between Australia, the Netherlands and Italy, 14% of 293 women had been depressed for more than 4 weeks at a 4 month postpartum assessment (Dennerstein et al 1989). Since then, in a recent Australian study of 100 women whose infants were admitted to a mother and baby unit for a variety of reasons (mean age of 9.7 weeks), 39% were depressed (Barnett et al 1993). A number of factors could contribute to this high rate of depression including having a baby with sufficient problems to require admission, the clinical setting and the population of women attending the facility most of whom were primiparas (Lumley 1993).

Women can be depressed in the antenatal period as well as postnatally. In the United Kingdom, in one of the few studies to follow and assess depression in a cohort of women through pregnancy and the first postnatal year, one third of women were depressed antenatally as well as postnatally, and for one third of women, their postnatal depression lasted 6 months or more (Watson et al 1984). In a more recent longitudinal study in a sample of 293 women in the Netherlands, significantly higher rates of depression at 10 weeks postpartum were reported than during pregnancy, the first postpartum weeks or later in the postpartum period (Pop et al 1993). Green & Murray (1994) modified the Edinburgh Postnatal Depression Scale (Cox et al 1987) for antenatal use and demonstrated a correlation between antenatal and postnatal depression, however a large proportion showed no evidence of depression antenatally. The existence of depression in pregnancy has led to calls for antenatal interventions in an attempt to lower incidence postnatally (Green & Murray 1994).
There is some indication from the Victorian Review of Birthing Services, that a significant number of women experienced depression beyond the first postnatal year (Brown et al 1994). Other studies have reported similar findings (Wolkind & Zajcek 1981, Kumar & Robson 1984,) which confirms work by Brown & Harris (1978) who found high levels of depression in mothers of small children in inner city London. Depressions both in pregnancy and lasting beyond the first postnatal year are beginning to be considered more seriously and require further research. It is the postnatal period however that remains a time of increased risk of depression for women (Cox 1994).

2.4 MEASUREMENT, SCREENING SCALES FOR POSTNATAL DEPRESSION: THE DEVELOPMENT OF THE EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS)

There are recognised criteria, undertaken during a psychiatric interview that are considered to be the best diagnostic standard for major depressive disorders (O'Hara & Zekoski 1990). These include: the Research Diagnostic Criteria (RDC) (Spitzer et al 1975); the Diagnostic and Statistical Manual (DSM-111)(American Psychiatric Association 1980); the Pitt criteria (Pitt 1968); or the Standardised Psychiatric Interview (SPI)(Goldberg et al 1972). However the full clinical psychiatric interview is time-consuming, expensive and not always available. This has led to the development and use of screening tests and measures.

Screening is “an organised attempt to detect, among apparently healthy people in the
community, disorders or risk factors of which they are unaware” (Sackett et al 1985).

For screening to do more good than harm the three essential elements required are: diagnostic confirmation; treatment or preventive intervention and follow-up (Sackett et al 1985). An effective screening test should be both accurate and feasible. As screening is used to confirm or exclude a disease or condition, crucial to the effectiveness of a test is its sensitivity and specificity. A test’s sensitivity refers to its ability to detect the presence of disease accurately, (the true positives) while its specificity relates to its ability to accurately assess absence of disease (the true negatives). Screening should not be introduced unless there are facilities available to deal with the consequences of identification of the problem or disorder being sought, for example adequate treatment or appropriate referrals.

Screening measures used to identify depression in non-childbearing populations have several limitations when used for childbearing women (Cox 1987, O’Hara & Zekoski 1988). Most problematic is the fact that what could be indicative of depression in the general population may be normal physiological changes in puerperal women (Cox et al 1987). Several different questionnaires have been utilised in an attempt to screen for postnatal depression. Until comparatively recently none had been specifically designed for this purpose (Cox et al 1987). The Anxiety and Depression Scale (Bedford & Foulds 1978) was found to be of uncertain validity by Cox et al (1983), the General Health Questionnaire (GHQ) had very poor specificity (Nott et al 1982), the Beck Depression Inventory (BDI)(Beck 1961) has been widely criticised as unsuitable for postpartum use (O’Hara et al 1984, Harris et al 1989). Whiffen (1988) found the BDI was able to detect under half of diagnosed depressions postnataally. Both the Montgomery-Asberg Depression Rating Scale (Montgomery & Asberg 1979) and the
Hamilton Depression Rating Scale (HRSD) (Hamilton 1967) although well validated in non-puerperal populations were found to be of limited use for postpartum women (Cox et al 1987). The primary disadvantage with all of these scales relates to biological aspects that may change in postpartum women for reasons other than depression. For example, the Hamilton Rating Scale for Depression is heavily weighted for variables such as weight loss, appetite, sleep disturbance and fatigue, factors that can be normal physiological adaptations to lactation and caring for a new baby (Cox et al 1987, Harris & Jamil 1994).

An important advance in the past decade has been the development and validation of the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al 1987). The EPDS was adapted from work by Zigmond & Snaith (1982). The aim was to overcome the problems outlined above and to address what the authors saw as a particular need for a screening test for primary health care workers that was acceptable both to depressed and non-depressed postpartum women (Holden 1990). As health visitors and midwives have difficulty detecting postnatal depression (Scott 1987, Eden 1989, Cox 1989, Holden 1990, Affonso 1992), a scale to detect postnatal depression would be of increasing value in a community setting. The EPDS is a simple 10-item questionnaire, which is easy to score with good sensitivity and specificity (Cox et al 1987). The EPDS has been validated using several different populations (Harris et al 1989, Murray & Carothers 1990) including Australian women (Boyce et al 1993).

The sensitivity, specificity and positive predictive values in four validation studies show that the EPDS performs well as a screening test (Table 2.1).
Table 2.1: Validation studies of the Edinburgh Postnatal Depression Scale

<table>
<thead>
<tr>
<th>Study</th>
<th>Sensitivity %</th>
<th>Specificity %</th>
<th>PPV %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cox et al 1987</td>
<td>86</td>
<td>78</td>
<td>73</td>
</tr>
<tr>
<td>Harris et al 1989</td>
<td>95</td>
<td>93</td>
<td>75</td>
</tr>
<tr>
<td>Murray &amp; Carothers 1990</td>
<td>96</td>
<td>81</td>
<td>43</td>
</tr>
<tr>
<td>Boyce et al 1993</td>
<td>100</td>
<td>95.7</td>
<td>50</td>
</tr>
</tbody>
</table>

PPV = positive predictive value

More recently the EPDS has been validated for use in pregnancy (Murray & Cox 1990) and with non-postpartum women (Cox et al 1996). The EPDS also has a role in research and audit of services both from a hospital and primary health care perspective. Translations into 11 languages have been undertaken (Cox & Holden 1994). The need for careful validation studies before the EPDS is introduced into other cultures or multicultural communities has been stressed (O’Hara 1994, Small et al 1996).

In summary, the EPDS has been the most significant development in the past decade in screening for postnatal depression. Nevertheless, there is a need for the use of the EPDS to be carefully monitored. For as Cox (1994) has stated “it was (not) entirely foreseen that a scale validated in Scotland would be of use not only elsewhere in the United Kingdom, but also in research and clinical settings overseas”.

2.5 AETIOLOGY

A very large literature on postnatal depression has now accumulated. This section will briefly discuss key issues and quality of the evidence. Despite the increase in writings
and research into the topic there remains little consistency about associations and possible causation (Romito 1990, Brown et al 1994, Wilson et al 1996). The methods and timing of assessment and the populations studied can vary widely from study to study. Many are uncontrolled descriptive studies and lack the statistical power to detect small or even large associations or differences that may have a bearing on clinical practice (Brown et al 1994, Wilson et al 1996).

The following section summarises factors that have frequently been associated with depression after birth and includes the social context in which women give birth.

2.5.1 Social and contextual factors

The birth of a baby, whether planned or not, is always accompanied by major changes in the life and relationship of a couple (Oakley 1980, Moss et al 1982, Southern Community Health Services Research Unit 1990). Antenatally women may feel at risk of a poor outcome (Searle 1996) while postnatally, whilst physically recovering from giving birth they are confronted by a new and demanding job which is constant, repetitive, and exhausting for which they can feel unprepared (Southern Community Health Services Research Unit 1990). As breastfeeding is being established for example, normal healthy babies may regularly wake every 2 hours, and feed for up to one hour. A difficult baby or one with problems can be a further drain on a mother’s energy (Lumley 1993). Not surprisingly women whose husbands or partners are not helpful with the baby, the housework and shopping or care of other children are more likely to experience depression (Paykell et al 1980, Romito 1989, Moss et al 1982).
Unsupported single women may be even more isolated. Moreover, changes in hospital stays and the recent wide introduction of obstetric early discharge has reduced the hours of professional contact time for new mothers with little adequate evaluation of the effects of those changes.

Mothers of young children are frequently depressed (Brown & Harris 1978, Brown et al 1994). The process relates to the changing circumstances of their lives; therefore if they are to be helped, understanding about the conditions in which their unhappiness occurs is required (Romito 1990).

A tendency to reduce the complexity of the experience of unhappiness for women, with its many interacting variables, to a medical model labelled “postnatal depression” has drawn criticism (Romito 1990). In her now classic statement the feminist sociologist Ann Oakley (1986) stated: “the medicalisation of women's unhappiness as depression is one of the greatest tragedies of the 20th century.” There is an inherent contradiction between the day-to-day context in which a woman experiences being a mother as opposed to the myths, cultural attitudes or what has been called the “institution” of motherhood (Rich 1977, Oakley 1981, Wellburn 1980). For Oakley (1986), it is this conflict between experiencing the reality of motherhood and the social expectations of mothers that has been a significant factor in the rise of feminism.

In one of the first comprehensive books on postnatal depression written for consumers by a non-professional Wellburn (1980) stated: “the monotony, drudgery, low-status and isolation of motherhood are delivered to us with the baby”. Wellburn, in noting that the poet Sylvia Plath rose at 4 am to write before her children awoke asked: “what sort of
society do we live in that requires a woman to drive herself to breaking point if she is to
care adequately for her children and fulfil her own needs?" In the same vein another
writer, looking back on her years as a mother commented:

No one warned me that caring for children would simply not be enough for me.
It would not occupy my mind sufficiently. It would not allow me to do the
things I really wanted to do. I was forever doing something I did not want to do,
and pushing myself to make time for what I wanted to do. (Nicholson 1983).

A rare insight from a century ago was described in Oakley's essay “Beyond the Yellow
Wallpaper” (1986) in which she offered a critique of an autobiographical novel by
Charlotte Perkins Gilman. The novel described how an unhappy young mother was
confined to an attic room on doctor's orders and told to refrain from doing anything,
even reading, or any writing, which was her profession. The mother, convinced that
there was a woman behind the wallpaper trying to escape tore off the wallpaper to set
her free. When the book was published, Perkins Gilman sent a copy to the treating
doctor who is said to have publicly retracted his views and treatment as a result.

Although not dealing with postnatal depression only, an important and influential study
by Brown & Harris (1978) deserves comment. The study, on the social origins of
depression, investigated a population of London women. The approach was developed
from the hypothesis that non-psychotic clinical depression is an understandable
response to adversity. The authors assessed rates of clinical depression in a randomly
selected community based population from which recent immigrants and women
suffering from psychiatric disorder were excluded. These were compared with a
sample of female psychiatric in-patients and out-patients. The researchers sought to explain differences in rates through detailed exploration of the lives of individual women. They developed a causal model, which consisted of pre-existing vulnerability factors such as lack of a supportive intimate relationship, lack of outside paid employment, and other children at home. These factors increased the risk of depression in the presence of a recent "provoking" agent such as loss of a loved one. Working class women had a higher incidence of depression compared with middle class women (23% versus 6%) and mothers of small children were significantly more likely to become, and remain, depressed.

Recent work from Brown and colleagues tracked chronic depressive episodes lasting more than one year in 404 working class mothers in inner-city London (Brown & Moran 1994). Chronic depression was strongly associated with childhood parental indifference, family violence or any sexual abuse, and current interpersonal difficulties.

Low self-esteem has been linked to postnatal depression (Cox 1994, Hall et al 1996). The Rosenberg (1965) self-esteem scale was used in a sample of 738 low socio-economic women in North and South Carolina most of whom were African-American (58%). Those women with low self-esteem were 39 times more likely to have high depressive symptoms when compared with women with high self-esteem (Hall et al 1996).

There is disagreement on whether depression after birth is more prevalent in western industrialised societies (O'Hara 1994). Moreover, little work has been undertaken to develop appropriate measures or to assess prevalence in non-English speaking women
in predominantly English speaking countries. Such women are under-represented in health assessment generally and in surveys of postnatal depression prevalence in particular (Lumley et al 1990). Results of work being undertaken in Melbourne to address this lack is awaited with interest (Centre for the Study of Mothers’ and Children’s Health 1997).

The literature reviewed in this section highlights the abundance and complexity of social and environmental issues surrounding childbirth, the changing role for women and demands associated with caring for a new baby.

2.5.2 Women’s views of depression after birth

First-hand individual accounts of how depression after birth feels for a woman are more likely to be found in women’s magazines than in the professional literature. There is also a dearth of systematic research of women’s own experiences of depression after childbirth (Brown et al 1994). A notable exception in Australia is the substantial survey of women who gave birth in Victoria, Having a Baby in Victoria already referred to (Lumley et al 1990). The report formed the basis of a subsequent volume Missing Voices, the Experience of Motherhood which brings together a combination of qualitative and quantitative research findings in one volume (Brown et al 1994).

Rare personal voices clearly demonstrate the distress the women experience. The account of one woman, a midwife herself, that was reported in a professional midwifery journal, highlights her fear and struggle:
I look back with terror and confusion at the decline in my mental health. I felt as though I were slowly sinking into a black sea and the struggle to resurface had been lonely and painful (Anonymous, 1993).

A qualitative study, using a sample of 60 primiparous working-class Glasgow women, thoroughly explored how they experienced postnatal depression, how they sought help, and their own ideas of causation (McIntosh 1993). Of the sample 38 (63%) women reported feeling depressed at some stage after the first week postpartum. The women themselves perceived the origins of their depression to be related mainly to social and economic difficulties and the experience of motherhood itself. Less than half of the women sought professional help, believing it would not meet their needs, or feeling afraid of being labelled mentally ill and therefore unfit mothers. Health visitors were seen by 80% as having a social control function. In the United Kingdom, health visitors have a midwifery and nursing qualification and are community based. One woman commented:

When you mention to the baby ladies that you're depressed, they're frightened for the baby not for you in case in your depression you hit the baby. So if they find out you're depressed, they take the baby away for safety (McIntosh 1993).

In the Glasgow study, of those who did seek help, 90% were dissatisfied with some aspect of the help or advice given. The researcher did not claim the results were representative of the population of women who become depressed after birth but that
they revealed problems commonly encountered by professionals seeing women postnatally.

A large randomised trial of midwife managed care using a similar population of predominantly working-class women in Glasgow revealed a high incidence of postnatal depression at 6 weeks postpartum, particularly in the control group (23%) (D. Turnbull 1997, unpublished data). A rate of 17% in the midwife led group was also high, however postnatal depression was not a primary study end point in this trial.

In *Having a Baby in Victoria*, women's views were sought on a number of issues relating to their antenatal, birth and postnatal experiences. Of 880 women respondents, 90 were interviewed two years later (Brown et al 1994). Most who had been depressed had improved by the time of the interview. The improvement had been associated with changes in their lives such as more support, feeling less tired and the child getting older. Fewer than 4% said that help from professionals (either counselling or medication) had been a factor in their recovery. Being socially isolated and unsupported by a partner, the temperament of the child and a variety of negative life events were associated with continuing depression (Brown et al 1994).

### 2.5.3 Biochemical factors

Dramatic hormonal changes, particularly drops in levels of oestrogen and progesterone follow immediately after childbirth. The magnitude of the changes has led to

Earlier research by Nott et al (1976) failed to establish an association between mood in later pregnancy and the puerperium and plasma oestrogen and progesterone levels. In a study of 182 childbearing women and 189 of their non-childbearing acquaintances, little evidence was found of a hormonal influence in postnatal depression (O'Hara et al 1991). There was a possible association with lower levels of oestradiol in late pregnancy and day 2 postpartum. A multi-disciplinary study in Newcastle, Australia, of 97 women volunteers assessed mood changes, obstetric experience, plasma cortisol, beta-endorphin and corticotrophin releasing hormone during pregnancy and the puerperium (Smith et al 1990). Mood disturbances were not found to be significantly linked to changes in hormone concentrations.

A recently published drug company funded trial concluded that transdermal oestrogen is more effective than placebo for women with severe postnatal depression in the first month of treatment (Gregoire et al 1996). There are a number of problems associated with this trial: there was no clearly defined hypothesis or power calculations; the method of allocation to oestrogen or placebo was not clearly described; women had their first treatment at widely differing intervals from 3-18 months postpartum and a no breastfeeding or use of hormonal contraception since birth exclusion meant the sample was unlikely to be representative. Although the investigators planned a sample of 100, this was reduced to 64 because of 'time limitations' with more receiving treatment (n=36) than placebo (n=28). Preliminary results were published 5 years previously (Henderson et al 1991) and when the trial actually took place was not reported. In
addition, important demographic and prognostic characteristics were not tabulated, and out of two exclusions in the experimental group, one was a death from suicide. Further studies with more standardised entry points, a larger more representative sample and appropriate power calculations are needed in order to produce valid conclusions.

Enthusiasm for progesterone as a prophylactic treatment for postnatal depression was generated by Dalton (1980) from early data from uncontrolled studies. Her later work continues to be inadequately controlled (Dalton 1989). A recent prospective study of 120 women showed no associations between saliva progesterone and postnatal mood at 5-6 weeks, providing no support that progesterone treatment is effective for postnatal depression (Harris et al 1996).

Transient thyroid dysfunction is common in the postpartum period and a small group of women with thyroid dysfunction may become depressed following childbirth (Glover 1992, Harris et al 1992). As 10% of all women are thyroid positive, consideration of this possibility is recommended (Harris & Jamil 1994).

From the available evidence, there is no support for a purely hormonal view of postnatal depression. Even biochemists now point to the likelihood of a combination of psychosocial and hormonal factors being involved (Weick 1989, Glover 1992).
2.5.4 Psychoanalytical or psychological approaches

Romito (1990) suggests that although psychoanalytic theory, developed from the ideas of Freud, may have fallen from favour in academic circles, remnants of its influence are still felt in popular culture. Such theory proposes that during pregnancy and the first few months of motherhood, a woman regresses to a more infantile state. Resultant depression arises, according to this theory, from unresolved conflicts which involve an unsuccessful adaptation to motherhood and rejection of femininity. Oakley (1986) quotes examples from the literature in which infertility, miscarriage, premature birth, vomiting in pregnancy and pre-eclampsia are seen as symptomatic of a woman's rejection of her femininity, her fetus or of problematic relationships with men. Such theorising is not based on careful evidence and has drawn strong censure from health professionals and consumers with an interest in postnatal depression (Wellburn 1980, Lumley & Astbury 1980, Oakley 1986, Gitlin et al 1989, Romito 1990, Brown et al 1994).

A tendency to look for blame, or for simplistic solutions to complex issues, has led to suggestions that styles of mothering are responsible for a multitude of problems children may experience (Penfold 1986). Poor cognitive development in children, behavioural problems and criminal behaviour have been ascribed to mothering contributions by a variety of experts in the past (Ehrenreich & English 1978) and may incline mothers to accept more responsibility than is their due (Penfold 1986). A 'good' mother gives constantly and unconditionally of herself is a belief that can persist in women's minds, side by side with statements that they personally don't quite match up to this ideal (Brown et al 1994).
A variety of psycho-therapies can be used to treat depressive states (McGrath et al 1992). One of the most commonly used is cognitive therapy which has as its genesis that depressed clients have dysfunctional thinking in that they blame themselves for negative events, and underestimate their own power to change them (McGrath et al 1992). Allied with the cognitive approach is another much cited theory of depression: that of attributional style and learned helplessness in which individuals who believe outcomes are uncontrollable are more prone to depression (Abramson et al 1978, Cutrona 1983, McGrath et al 1992). There is a dearth of adequately controlled published trials of the benefits of therapeutic approaches to treat or prevent postnatal depression. Trials of non-directive counselling (Holden et al 1989) and antidepressants versus cognitive therapy are reviewed in 2.9 (Appleby et al 1997) and an unpublished trial by Murray and Cooper (1992) is briefly described in 2.5.6.

Being consulted, feeling they have some control over events, and being listened to are highlighted as being important to childbearing women in a number of reviews and reports (NSW Department of Health 1989, Brown & Lumley 1994, NHMRC1996). Childbearing women’s wishes are frequently not taken into account and there is a wide gap between what professionals believe they want and what women themselves want (Romito 1989, Bastian 1994).

A variety of approaches are needed to help women who are depressed after birth including those identified by women themselves. More research is needed into whether new approaches and increased choice and participation in decisions will lead to not only increased satisfaction, but also to lower rates of depression after birth.
2.5.5 Effects on the father

From the limited literature available, it appears that not only mothers, but also fathers, can become unhappy or depressed after the birth of a baby (Atkinson & Rickel 1984, Quadagno et al 1986, Ballard et al 1994). A recent representative study found 27.5% of 200 women were depressed using the EPDS at 6 weeks postpartum compared with 9% of their male partners (Ballard et al 1994). Being unemployed and having a partner who was also depressed was significantly associated with depression in fathers. In an Australian longitudinal study, 123 Canberra couples recruited from childbirth education classes and expecting their first baby, stress, coping and adaptation to new parenthood were investigated (Terry 1991). The mothers experienced significantly lower psychological well-being than the fathers at 6 weeks postnatally using the General Health Questionnaire (Goldberg 1972).

Two studies in the United Kingdom have noted an increase in the onset of an episode of psychiatric illness in men whose partners required admission to a mother and baby unit during the first postnatal year (Harvey & McGrath 1988, Lovestone & Kumar 1993).

Lack of support from their partner is associated with a higher prevalence of postnatal depression (Boyce & Todd 1992, Astbury et al 1994). It follows that such support is less likely if fathers are depressed and not coping. The paucity of research in this area indicates a need for further studies on the incidence of paternal depression and associated factors during the postnatal period.
2.5.6 Effects of postnatal depression on the child

Research into mother/infant interaction and child development is an area that appears to be conducted in isolation from much of the postnatal depression research and there are few cross-references in the literature (Romito 1990).

Some authors in their reading of the literature have generated a sense of urgency relating to attachment, developmental and other problems of the children of mothers who are depressed after birth (Lyons-Ruth et al 1989, Crowe 1992).

Murray & Stein (1989) suggest that as a depressed mood affects all relationships the mother/infant connection is not likely to be an exception. In their review of the literature however, they concede that there is little strong evidence to support a view of severe long or short-term behavioural problems in children of mothers with depression after birth and much of it is conflicting. More recent updates and research have done little to modify this view (Murray & Cooper 1997). Some studies have reported certain difficulties in mother/baby attachment when the mother is depressed (Field et al 1985, Williams & Carmichael 1985, Caplan et al 1989, Stein et al 1991, Murray 1992). In contrast, such associations have not been demonstrated by all investigators (Wrate et al 1985).

Study methods in this area of research have been criticised, particularly for small, unrepresentative samples; the use of multiple statistical tests; and poorly validated scales (Garrison & Earls 1986, Anonymous Editorial 1989, Leverton, 1991). One much cited study reveals methodological problems (Field et al 1985). A small sample of 12
women were identified antenatally as being at high risk of postnatal depression, apparently accurately. It was stated that selection was from a "larger sample", although denominators and percentages were not given. In addition, no description as to how the non-depressed controls were selected was given and the timing of the one assessment of mother/infant interaction varied by up to 2 months, creating potential bias. The conclusions of "less than optimal interaction behaviours" mostly drawn from p-values of <0.05 should be viewed with caution.

Depressed women may feel less positive about their babies. In a large prospective community based study in the United Kingdom, an association was found at 6 weeks postpartum between low emotional mood, primiparity, obstetric complications and women's negativity about their infants (Green et al 1990). In another study, women who were depressed at 3 months postpartum expressed more indifference to their babies than non-depressed controls (Robson & Kumar 1980).

In a London study, marital disharmony and paternal psychiatric problems, but not maternal postnatal depression, were associated with long-term behavioural difficulties in children at 4 years of age (Caplan et al 1989). Those women who were depressed at the time of assessment reported more behavioural and emotional problems in their children. However, the possibility that difficult behaviour in babies may trigger depression in the mother rather than vice versa should be considered. Recent work with 2 groups of women, those at high risk of postnatal depression and those at low risk demonstrated that at 2 months postpartum, two infant behaviours, poor motor scores and high irritability strongly predicted postnatal depression (Murray et al 1996).
Research published by Coghil et al (1986) showed lower cognitive scores in 4 year olds if their mothers had been depressed in the first postnatal year. A thorough re-analysis of the original work 8 years later demonstrated that the children’s cognitive deficits could be completely explained by vulnerability factors such as male gender, low birth weight, and the social environment (Hay & Kumar 1994). A higher level of maternal education offered a protective effect.

Williams & Carmichael (1985) used a multi-ethnic sample of 99 Melbourne families to assess, among other things, mother and child interaction and behaviour of other siblings over time. They reported more behavioural problems in infants and pre-school children of depressed women. Mediating factors were having an extended family and friends, older children in the family and support from the father. Getting off to a poor start and feeling unsupported in hospital and immediately after discharge was associated with feelings of anger and frustration with the baby at home.

A United Kingdom study found a reduced quality of mother/child interaction at 19 months in women who had been depressed during the postnatal year and subsequently recovered, and women who had been, and still were depressed compared with matched controls (Stein et al 1991). The sample consisted of 49 out of 60 women identified as depressed postpartum by psychiatric interview on at least one of three assessment occasions. The women were followed prospectively from an earlier study (Cooper et al 1988). Not surprisingly, chronic marital and social difficulties were the most significant variables associated with unsatisfactory mother/child interaction. One important area that warrants more research is the degree to which compensating
strengths in mothers and/or babies may mediate the effects of adversity (Downey & Coyne 1990).

Philipps & O'Hara (1991) in the United States followed up women from an earlier study of postnatal depression (O'Hara 1986). They found postnatal depression was related to child behavioural problems (as assessed by the mothers) at four and a half years only if there had been a recurrence of depression beyond the first postnatal year. It is possible that use of the mother's retrospective assessment of her child's behaviour as a marker in this study could be subject to recall bias.

In an unpublished study by Murray (1992) in Cambridge UK, subgroups of women were identified from a larger sample. They were categorised as: those depressed previously but not since delivery (n=13), those with a previous episode of depression and postnatal depression (n=21), those with postnatal depression only (n=37), and a never depressed control group (n=42). Following a considerable number of tests and statistical analyses relating to cognitive, social, language and behavioural development three possible associations with postnatal depression emerged; mild behavioural difficulties; less secure attachment; and poorer performance on cognitive tasks.

In all, relatively small numbers, different populations and assessment methods and other methodological limitations make it difficult to generalise the results of these studies to other populations.

Considering the attention received in the literature, there is a dearth of well-designed long-term follow-up studies and randomised trials to help reach clear conclusions on
this important topic. Only one randomised trial has been conducted to date (Cooper & Murray 1992). The participants were women assessed postnatally as depressed. The trial compared the effect of routine care with three different forms of therapy: non-directive counselling; cognitive-behaviour therapy; and brief dynamic psychotherapy on prevention of adverse infant outcomes. To date these results have not been published.

In summary, much work remains to be done in this field. Particularly needed are well-designed intervention trials using standardised methods with long-term follow-up of children.

2.6 RISK OR VULNERABILITY FACTORS

Many variables have been associated with postnatal depression in the literature, with some of the most commonly cited having achieved the status of risk factors (O’Hara & Zekoski 1990).

In a recent study of 2375 women who attended a Manchester hospital four independent risk factors were identified after stepwise logistic regression (Warner et al 1996). These were: an unplanned pregnancy (OR 1.44); not breastfeeding at 6 weeks postpartum (OR 1.52); no job to return to (OR 1.56); or the household head being unemployed (OR 1.50). There were no 95% confidence intervals around these effects given.
In another recent publication which was a systematic review of ‘adverse postpartum family outcomes’, in 118 studies that had been selected on previously agreed criteria, a strong association with postnatal depression was shown on three factors: poor marital adjustment, recent life stressors and antenatal depression (Wilson et al 1996). A ‘fair’ association existed for lack of social support, abuse of the mother and previous psychiatric history. The association with a past history of mood disorder, including postnatal depression, has been shown in several studies (Gordon & Gordon 1960, Tod 1964, Paykel et al 1980, Wolkind & Zajcek 1981, Watson et al 1984, Dennerstein et al 1989), but not in others (Pitt 1968, Kumar & Robson 1984).

Obstetric difficulties and complications have been investigated by several authors. In the United States, women’s retrospective recall of having been depressed was associated with severe complications in pregnancy (Burger et al 1993). Feelings of having some control in labour reduced the likelihood of depression in women (Oakley & Rajan 1990). Unexpected obstetric intervention was associated with lower emotional well-being but this was mediated if accompanied by a belief that the intervention was necessary in a United Kingdom study (Green et al 1990). In Australia, Boyce & Todd (1992) found an increase in postnatal depression at 3 months postpartum in a sample of women who underwent an emergency caesarean section. By contrast Warner et al (1996), at 6-8 weeks postpartum found no association with caesarean birth, however emergency and elective caesarean sections were not analysed separately (Warner et al 1996). In Having a Baby in Victoria (Lumley et al 1990) depression after birth was associated with a number of interventions, including a forceps birth, caesarean section and having an obstetric procedure score of more than 4. The obstetric procedure score, adapted from Elliott et al (1984), gave weight to various interventions in labour such as
epidural, perineal trauma, induction of labour, general anaesthetic and caesarean section (Brown et al 1994). Others studies have not found these associations (Pitt 1968, Paykell et al 1980, Elliott et al 1984).

Differences again emerge when linking postnatal depression with parity. Most studies have found no significant associations by parity (Paykel et al 1980, Watson et al 1984, Astbury et al 1994, Warner et al 1996). However, higher parity in some (Tod 1964, Playfair & Gowers 1981) and primiparity in others (Gordon et al 1965, Bridge et al 1985) was associated with higher levels of postnatal depression. Mothers of closely spaced singletons and twins independent of the number of siblings had higher rates of depression postpartum (Thorpe et al 1991).

Holmes & Rahe (1967) identified pregnancy and childbirth as stressful life events which can lead to depression. Working class mothers of small children living in poverty, poor housing, and affected by other stressful life events are more likely to be depressed (Brown & Harris 1978). Adverse life events and lack of social support have been implicated in postnatal depression by some (Watson et al 1984, Paykel et al 1980, Stein et al 1989). Specifically, lack of a confidante associated with other life events was significantly linked with postnatal depression (Stein et al 1989).

Anxiety in pregnancy has been associated with postnatal depression in a number of studies of variable quality (Tod 1964, Dalton 1971, Meares et al 1976, Hayworth et al 1980, Watson et al 1984). There are at least two studies where such an association was sought, but not found (Pitt 1968, Kumar & Robson 1984). A significant correlation
between depression in pregnancy and postnatal depression using the EPDS has been revealed (Green & Murray 1994).


Several of the studies reviewed here have been published since the research in this thesis was undertaken. In summary, there are conflicting results from studies which may relate to the use of small, unrepresentative samples in different settings as well as the likelihood that multiple interacting factors are involved. If interventions are to be designed to prevent postnatal depression, risk factors need to be accurately identified.

The following section reviews the literature on antenatal intervention screening strategies and scales.
2.7 ANTENATAL PREDICTION

If women at higher risk of postnatal depression could be identified antenatally appropriate interventions could be designed and evaluated. Prior to the research that was conducted and reported in this thesis, there was only one appropriate reported attempt to develop and assess an antenatal screening questionnaire based on commonly identified risk factors (Elliott et al 1989).

Elliott et al (1989) sought to identify 'more vulnerable' women, a term they preferred to 'at risk', who then received a program of intensive supportive antenatal and postnatal groups that aimed to reduce postnatal depression. Married or cohabiting primiparas and mothers with a preschool-age child were included in the study. Women were excluded if under 18 years of age, if they had more than one preschool child, a child aged 6 years or more, or if they booked for antenatal care after 18 weeks' gestation or were single. Single women were already being offered community support (Leverton & Elliott 1989).

The Leverton antenatal screening questionnaire sought information in four areas: a woman's views about the state of her relationship (if applicable) including feeling loved and being able to confide and talk over problems together; her personal problem-solving style, having a trusted person such as a relative or friend to talk to, and a broadly defined previous psychiatric history including postnatal depression (Appendices 9 and 10). A modified version of the Crown Crisp Experiential Index (CCEI, Crown and Crisp 1979), was used to measure anxiety (Appendix 12).
More women who screened vulnerable experienced borderline depression during the first three months postpartum (20/50, 40%) compared with 14/90 (16%) of the less vulnerable women (Leverton & Elliott 1989). The test’s sensitivity, specificity and positive and negative predictive values have not been published thereby limiting its applicability in research or clinical settings.

Since the studies described in this thesis, two further attempts to predict postnatal depression have been published in the United Kingdom (Appleby et al 1994, Cooper et al 1996). These studies confirm the need for effective measures to be able to accurately predict women at risk postnatal depression.

Appleby et al (1994), constructed a 10-item screening antenatal questionnaire from reported psycho-social correlates found in previous work by one of the authors (Kumar & Robson 1984). These were: treatment for ‘psychological problems’ including current and postnatal depression and any family history; antenatal worries about their own or their baby’s health; having considered termination of the pregnancy; social and financial stress and a lack of partner and/or other supports. The screening questionnaire was administered at 36 weeks gestation with the EPDS to 165 women (Appleby et al 1994). Follow-up at 8 weeks postpartum demonstrated that the questionnaire was unable to predict postnatal depression. Its use in research with preventive interventions or in clinical practice was therefore not recommended.

In the second study Cooper et al (1996) used a large sample of 6000 women who completed a 40-item questionnaire to detect risk factors for postnatal depression. An EPDS to identify likely depression was returned by 89% of this sample. Logistic
regression was used to reduce the number of the risk factor questions to a 17-item predictive index that was weighted and scored. These final questions were not included in the publication. One third of the sample was used to validate the questions and calculate sensitivity and specificity at various scores on the predictive index. Results showed that for a high score of 35, the sensitivity was only 5%, the specificity was 98% and the positive predictive value was 39%. A score of 27 had sensitivity of 35%, specificity of 87% and a positive predictive value of 35%. The authors concluded that despite a limited sensitivity and specificity, the test has a place in clinical practice in identification of high risk populations where limited resources exist.

At the time of writing this thesis the antenatal screening study by Cooper et al (1996) has produced the best available measure to date however the timing of postnatal prediction was limited to 6-8 weeks postpartum. As depression can occur at any time throughout the first postpartum year a need remains to assess the predictive value of common risk factors at a wider variety of times throughout this period. Moreover, it should be remembered that at the time the research in this thesis was designed and implemented the work by Elliott et al (1989) was all that existed.

2.8 RANDOMISED TRIALS AND SYSTEMATIC REVIEWS

Accurate up-to-date evidence is needed in an accessible form in order for clinicians to practice effectively. There are volumes of studies on clinical issues of varying degrees of quality published each year, it is clearly impossible for busy individual clinicians to read them all (Sackett et al 1985). As a research method the randomised trial is
considered to be the most scientifically valid means of evaluating different forms of care or procedures (Chalmers et al. 1991). An appropriately designed and executed randomised trial allows a judgement to be made about the differences between interventions or treatments. In a randomised trial all participants should have an equal chance of being in the experimental or the control group. Randomisation, if undertaken correctly ensures that the two groups studied will be comparable in all but the intervention or treatment (Enkin et al. 1989b, Oakley 1989). Analysis of results is by intention to treat and all participants should be accounted for. Essential in the design of a randomised trial are power calculations based on the hypothesised difference between treatments and the generation of a large enough sample size to avoid a Type II error. In a Type II error a conclusion is reached that a difference does not exist between experimental and control groups when in fact it does, but the sample size is not large enough to detect that difference (Sackett et al. 1985).

Another powerful method of avoiding a Type II error is to combine carefully selected similar trials in a systematic review or meta-analysis. The Cochrane Collaboration is an international collection of health researchers, clinicians, consumers and policy makers who prepare, maintain and disseminate systematic reviews of the effects of health care (Mulrow & Oxman 1996).

Among the many systematic reviews included in the Cochrane Library there are only a handful that address the effects of psycho-social interventions on health outcomes (Cochrane Database of Systematic Reviews 1997). A systematic review of support in from caregivers in pregnancy and childbirth found reduced unhappiness, worry or negative feelings about giving birth, and in labour and postnatally, feelings of being
more in control, more satisfaction with care received and a higher likelihood of breast feeding (Hodnett 1997). A reduction in postnatal depression in women receiving midwife care was revealed in a Scottish randomised controlled trial (personal communication D. Turnbull, 1997). Further research into which specific aspects of midwife care that may produce these effects is needed.

The prevalence of postnatal depression has been reported as a secondary outcome in at least three other reported randomised trials (Sleep & Grant 1987, Carty & Bradley 1990, Wolman et al 1993).

In the United Kingdom a randomised trial investigated the benefit of intensive pelvic floor exercises postnatally (Sleep & Grant 1987). A lower rate of postnatal depression at 6 weeks postpartum was found in the intensive exercise group.

Postnatal depression was assessed in a South African trial of support in labour (Wolman et al 1993). Although the sample size was somewhat small (75 in both the intervention and control groups) the presence of a non-professional volunteer labour companion significantly increased self-esteem and lowered depression at 6 weeks postpartum.

In a randomised trial that investigated early postnatal discharge in Canada (Carty & Bradley 1990), postnatal depression was assessed using the Beck Depression Index (Beck et al 1961). The sample size was small (38, 44 and 49 in the three groups studied). There was a higher rate of depression at 4 weeks postnatally in the group that stayed in hospital for the longer traditional 4 day stay compared with those who went home after 24 hours (the earliest discharge group) using a p-value of <0.05 as significant (Carty & Bradley 1990).
In a Canadian randomised trial the effect of antenatal parenting, communication and education classes on postpartum adjustment, marital adjustment and anxiety at 6 weeks and 6 months postpartum was investigated (Midmer et al 1995). Postnatal depression was not assessed. The participants were couples expecting their first child with a low risk pregnancy. The groups, 41 experimental and 29 control couples, were similar on important demographic variables. The method of randomisation was not described neither were power calculations reported. Data were analysed by intention to treat. Differences between groups at the p<0.05 level were considered significant, however odds or relative risk ratios and 95% confidence intervals were not presented. The experimental group scored lower on anxiety and higher on dyadic adjustment at both assessment times (p<0.05). The authors called for further research to assess whether similar antenatal classes would reduce the prevalence of postnatal depression.

2.9 RANDOMISED AND CONTROLLED TRIALS OF POSTNATAL DEPRESSION

Despite the large amount of research into postnatal depression, remarkably few published well-designed randomised or even adequately controlled trials of interventions aimed at reducing the incidence of postnatal depression have been located. A recent paper in the British Medical Journal highlights concerns about the rising popularity of counselling that is unsupported by clear evidence (Wessley 1996). The author calls for “well-designed trials for specific conditions using defined personnel”.
One such randomised trial conducted in Edinburgh (Holden et al 1989) is frequently cited in the literature (Gerard et al 1994, Holden 1994, Enkin et al 1995). Women identified as depressed by the EPDS at 6 weeks and 12 weeks postpartum were entered into the trial. The method of randomisation was not clearly described but women were "allocated by random numbers". The experimental group consisted of 26 women who received home visits and counselling with health visitors. The intervention was organised as a time for the woman to talk about herself, not necessarily about her baby. The control group of 24 women who were also depressed received standard care with the usual access to health visitors and clinics. There were no published power calculations neither were hypothesised treatment effects used to calculate the sample size. It was stated that the trial set out to test the effectiveness of health visitor counselling in the management of postnatal depression using health visitors who were specifically trained in non-directive counselling. Chi-square tests and p-values were used to assess whether there were differences between the groups. The groups were similar on important variables including the use of prescribed antidepressants. At 3 months postpartum after 8 weekly sessions all women were interviewed by psychiatrists who were not aware of their group allocation. Analysis of results using a p-value of <0.05 as significant, found more women 18/26 (69%) in the treatment group had recovered compared with 9/24 (38%) of the controls. Suggestions that antidepressants combined with counselling may be more effective than counselling alone was not a prior hypothesis and was not supported by the data. The sample was small, and although not published, calculated 95% confidence intervals are wide, therefore a need exists for the results to be replicated in other populations. The wide introduction of the model on the basis of this one trial is probably not justified (Gerard et al 1994, Cox & Holden 1994).
A more recent Swedish randomised controlled study investigated a similar intervention, the effect of a series of six weekly counselling visits by a child health nurse in women screened as depressed (12 or more on the EPDS) at 8 and 12 weeks postpartum (Wickberg & Hwang 1996). Conclusions that the intervention was successful in reducing postnatal depression should be treated with caution as the study had a number of limitations. There was no discussion of a hypothesised treatment effect or any sample size calculations. The participants were drawn from a large sample of 1655 women who completed the EPDS twice, at 2 months and 3 months postpartum (Cox et al 1987). Women who scored 12 or more were interviewed at home resulting in a sample of 57 depressed women who were eligible to take part in the trial 9 of whom declined. Women were then “randomly allocated” to intervention or control groups but no details of the randomisation process were described and there is confusion about just when and how randomisation occurred. The authors stated, after the 9 refusals that “thus 48 women participated in the study”. Later they stated that 7 dropped out “after the study trial began” 3 for reasons provided by the researchers and 4 (2 in the counselled and 2 in the control group) were referred for specialist care. Finally a statement that “this left a final sample of 41 who were randomly allocated to a study and control group” raises suspicions. Exactly when did randomisation take place? Was it undertaken twice? It was not explained why the 3 drop-outs and four referrals were not included in the analysis as intention to treat; when the three who dropped out did so; and whether any of the drop-outs had received the intervention counselling. Even the reduced sample was not analysed by intention to treat, therefore the results of 12/15 (80%) counselled, versus 4/16 (25%) controls recovered, are likely to overestimate the positive effects of the intervention. In all, the main problems with his study are the very small sample size and lack of power calculations, an inadequately explained
unorthodox randomisation process, omission of 95% confidence intervals around the
primary outcome measures and avoidance of analysis by intention to treat by selective
removal of participants. More and better designed studies of counselling interventions
in a variety of populations are warranted.

Very few antenatal studies have used appropriately designed randomised controlled
trials to assess the effect of preventive programs on depression after childbirth. Two
controlled investigations of antenatal interventions with reduction of postnatal
depression as a primary hypothesis have been reported.

In the first, conducted 37 years ago in the United States, an experimental design was
used with a sample of primiparous middle-class women (Gordon & Gordon 1960).
Two 40 minute antenatal classes were offered to two different intervention groups, one
of which included husbands, and two control groups. Random allocation was by
antenatal class, using classes already operating at a community hospital. The two
interventions provided practical instructions on preparation for and adjustment to a new
baby. Suggestions included making friends of others with young children, arranging
baby sitting support, having a family doctor, husbands being more available, lowering
housework standards and limiting but remaining involved in outside interests.
Researchers reported that:

Obstetricians, unaware of group allocation who assessed women on a 4 point
scale of severity at 6-8 weeks postpartum found significantly less 'upsets' 15% of
the total of 85 in women in experimental groups when compared with 37% of
the 76 controls, p<0.05.
At 6 months postpartum only half the women were assessed, again by their obstetricians, who found that 1/46 versus 10/36 controls were “having problems”. There were no sample size and power calculations undertaken which would have been unusual in 1959. Analysis was not by intention to treat, chi square and p-values were used and 95% confidence intervals were not published. Mood assessment by the 50 obstetricians who assessed their private patients was not standardised and could have been subject to biases. Although there was an attempt at masking (the obstetricians were cautioned not to discuss the group allocation with women) there was no way this could be verified. There appeared to be a treatment ‘dose effect’. Women who missed one group had poorer outcomes than total attenders but better results than the controls. The 54 women whose husbands participated in the groups had better outcomes than the 31 who attended alone (11% with ‘upsets’ versus 23%). The researchers acknowledged that the participants, a middle class population who chose to attend classes may limit the generalisability of the results. Despite its limitations this study was one of the first attempts to introduce a psycho-social intervention in a carefully controlled experimental environment. It is noteworthy that since that time only a handful of adequately controlled studies have been located in the literature.

The only other reported controlled account of a primary intervention in the antenatal period was conducted in Lewisham in South London in 1984-6 (Elliott et al 1989). Results were published in conference proceedings and as a book chapter (Elliott et al 1989, Leverton & Elliott 1989). Publication in a refereed journal has not been located and long-term results at 1 year postpartum have not been published.
All women attending their first appointment at the Lewisham Hospital over a 6 month period were given the Leverton antenatal screening questionnaire to identify vulnerability to postnatal depression (Elliott et al 1989). Women less than 18 weeks pregnant who screened vulnerable were assigned to attend eleven preventive antenatal and postnatal groups or to a control group receiving standard antenatal and postnatal care. The programme was marketed as part of regular antenatal education and preparation, rather than therapeutic in an attempt to avoid low uptake. The authors stated that they “decided to aim for more homogeneous groups than would be produced by random sampling”. The method of allocation was not described and raises the possibility of bias. Women were allocated to intervention group (n=48) and control group (n=51) organised and run for first and second time mothers separately. The number of refusals or exclusions was not provided. Monthly sessions were conducted from 4 months gestation to 6 months postpartum. The primary study outcome was the prevalence of postnatal depression at 6 weeks, three months, and one year postpartum. Assessment of depression was by self-report measures including an early unpublished version of the EPDS, and psychiatric interview. The data were analysed as intention to treat. Attendance at groups was lower for the second time mothers. Primparous women attended an average of 7 out of 11 groups and second time mothers an average of 4 of 11 groups.

In the first two months postpartum, results from groups showed that significantly fewer women had borderline depression lasting two or more weeks 6 (12%) in the intervention group compared with 17 (33%) in the control group (p<0.02). The 95% confidence intervals and odds ratios were not provided but can be calculated as; OR 3.50, 95% CI 1.14-11.93. At three months no differences were seen between the groups.
but when the results were combined 9 out of 48 (12%) women in the intervention group had a borderline episode compared with 21 out of 51 (41%) controls. There were no significant differences between primparous and second time mothers although the numbers are getting small for further analysis.

The main limitations of this study are: the absence of informed consent for women who completed the Leverton screening questionnaire; the lack of hypothesised effect of the intervention and relevant power calculations; failure to randomise women to intervention or control groups, and an inadequate description of exactly how the groups were assigned; no indication of whether the two groups were comparable on important variables that may have an effect on outcomes; no publication of the study results in a peer reviewed journal and inadequate acknowledgment or explanations of these problems. It is clear that more and better designed research using different populations is needed.

The prediction of postnatal depression in South Australia using a modified version of the antenatal screening questionnaire by Leverton et al (1989) has been undertaken and is reported in Chapter 5, Study 2 of this thesis.

A controlled study of an antidepressant, fluoxetine and cognitive-behavioural counselling conducted was recently reported in the British Medical Journal (BMJ)(Appleby et al 1997). Funding for salaries for two named investigators came from Lilly Industries, the manufacturer of fluoxetine and although reported in a preliminary publication in the British Journal of Psychiatry (Warner et al 1996), the authors did not declare the association in the BMJ paper.
The hypotheses were that 6 counselling sessions would be more effective than one, that fluoxetine would be more effective than placebo, and that fluoxetine and counselling would be equally effective following one counselling session. Power calculations to justify the choice of sample size of 21-23 women in four groups were not published (Appleby et al 1997).

Participants were screened at 6-8 weeks postpartum using the EPDS (Cox et al 1987) and the diagnosis confirmed by psychiatric interview. Women were allocated to one of 4 groups but there was no description of how the allocation was done or by whom, however, computer generated random numbers were used. The exclusion of breastfeeding women, and a high 54% refusal rate raises the possibility that women who agreed to enter the trial may differ in important aspects from those who declined. There was no attempt to raise this as a possible limitation. Results showed fluoxetine was more effective than placebo and six sessions of counselling more effective than one session. In summary however, there are a number of reasons why the results should be treated with caution: the affiliation with the manufacturer of the antidepressant was not spelt out; power calculations were not undertaken; the sample was small and the 95% confidence intervals around the treatment effect were wide; primary results were not analysed or reported by intention to treat (when counselling results were analysed this way at 12 weeks the results were "of borderline significance" however the statistics were not tabulated or provided for comparison); there may have been biases at entry and the sample may not be representative of depressed women because of the high refusal rate and the exclusion of breastfeeding women.
2.10 SUMMARY AND NEED FOR FURTHER STUDIES OF PREVALENCE, PREDICTION AND PREVENTION

The literature review highlights the enormous literature on postnatal depression, the varied aetiology, the need for measures of accurate antenatal prediction and randomised trials of potential preventive therapies.

A research plan was devised in response to this deficit at a time when several studies included in the review were not published. The studies that follow in this thesis investigated the following:

- local prevalence of postnatal depression
- prediction of postnatal depression using a modified antenatal screening questionnaire and women's feelings about its use
- a randomised controlled trial of supportive groups aimed to reduce postnatal depression
- women's reasons for not attending groups provided
CHAPTER 3

METHODS COMMON TO THESIS STUDIES

3.1 STUDY HOSPITAL AND POPULATION

Adelaide, the capital city of South Australia, has a population of one million. The Queen Victoria Hospital (QVH), a women’s teaching hospital, associated with the University of Adelaide, was amalgamated with the Adelaide Children’s Hospital (ACH) in 1995 to form the Women’s and Children’s Hospital (WCH). The hospital continues to provide a clinical learning environment for midwifery students from tertiary courses at the University of South Australia and Flinders University who are placed in related clinical areas. The institution is a state-wide referral centre for high-risk pregnancies and neonatal intensive care. The studies presented for this thesis were conducted before the amalgamation.

In 1991, the QVH had the largest number of deliveries in South Australia (Chan et al 1991). In 1991, of the women giving birth at the QVH, 65% were not privately insured (Table 3.1). This was higher than the South Australian figures in 1991 of 55% which are presented for comparison in Table 3.2 (Chan et al 1991). This difference is partially explained by the existence of several popular private maternity hospitals within the QVH catchment area that are favoured by Visiting Medical Specialists (VMS).

The QVH figures for mode of birth reflect a major trend in recent years in developed countries towards an increase in incidence of caesarean section surgery (Enkin 1989,
The QVH caesarean rate for 1991 was 26% (Table 3.1), compared with 22% for South Australia (Table 3.2). Birth outcomes, women’s health insurance status and babies’ Apgar scores for 1991 are displayed in Table 3.1.

Table 3.1: Queen Victoria Hospital 1991 health cover, mode of birth and babies’ Apgar scores

<table>
<thead>
<tr>
<th>Confinements</th>
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<th>%</th>
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<td><strong>Health cover</strong></td>
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<td></td>
</tr>
<tr>
<td>Hospital (public)</td>
<td>1722</td>
<td>65</td>
</tr>
<tr>
<td>Private</td>
<td>916</td>
<td>35</td>
</tr>
<tr>
<td><strong>Mode of birth</strong></td>
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<td></td>
</tr>
<tr>
<td>Normal vaginal</td>
<td>1545</td>
<td>59</td>
</tr>
<tr>
<td>Instrumental</td>
<td>406</td>
<td>15</td>
</tr>
<tr>
<td>Caesarean delivery</td>
<td>687</td>
<td>26</td>
</tr>
<tr>
<td>{Elective</td>
<td>463</td>
<td>17</td>
</tr>
<tr>
<td>{Emergency</td>
<td>224</td>
<td>9</td>
</tr>
<tr>
<td>Induction of labour</td>
<td>652</td>
<td>25</td>
</tr>
<tr>
<td>Apgar &lt;7 at 1 minute</td>
<td>517</td>
<td>20</td>
</tr>
<tr>
<td>Apgar &lt;7 at 5 minutes</td>
<td>110</td>
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</table>

NB 2757 babies were born (119 multiple births)
Table 3.2: South Australia 1991 health cover, mode of birth and babies' Apgar scores

<table>
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<th>%</th>
</tr>
</thead>
<tbody>
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<td>10706</td>
<td>55</td>
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<tr>
<td>Private</td>
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<tr>
<td><strong>Mode of birth</strong></td>
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<td></td>
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<tr>
<td>Normal vaginal</td>
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<td>63</td>
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<td>Caesarean delivery</td>
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<td>Induction of labour</td>
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<tr>
<td>Apgar &lt;7 at 1 minute</td>
<td>3224</td>
<td>16</td>
</tr>
<tr>
<td>Apgar &lt;7 at 5 minutes</td>
<td>319</td>
<td>2</td>
</tr>
</tbody>
</table>

NB 19749 babies were born (550 multiple births)

3.2 **STUDY BASE**

Participants were drawn from eligible women who had given birth (recruited from the postnatal wards), or planned to give birth (recruited from the antenatal clinics), at the Queen Victoria Hospital during the study periods from July 1990 to June 1993.

3.3 **HOSPITAL RESEARCH AND ETHICS COMMITTEE APPROVAL**

Approval to conduct the studies was obtained by the Queen Victoria Hospital Research and Ethics Committee (Appendices 3 and 4).
3.4 DATA MANAGEMENT

Epi Info software version 5, a public domain database and statistics system for epidemiology on microcomputers, was used to develop the databases (Dean et al 1990). For these databases, the Epiaid function of the program was used to create a questionnaire on an IBM compatible computer. Double data entry was undertaken to reduce the risk of transcription errors.

3.5 DATA ANALYSIS

The samples were described using frequency tables and means where appropriate. Data were analysed using a parametric test (Student’s t test) for continuous variables and non-parametric tests (Chi square 2 x 2 contingency tables and odds ratios and relative risks with their 95% confidence intervals) for categorical variables. If a cell value was less than 5 for any of the four cells a Fisher exact test was calculated for the table.

3.6 CONFIDENTIALITY AND INFORMED CONSENT

Women were approached by the researcher on the two postnatal wards for Study 1 (Chapter 4), or in the antenatal clinic (for Studies 2, 3 and 4, Chapters 5, 6, and 7 respectively) and if interested, received oral information and an information sheet (Appendices 5 and 6). Those who remained interested were offered time to discuss the study with a partner, family member or friend. It was explained to these women that
they were free to withdraw at any time and that such a decision would not compromise any care they received. All were assured that their responses would be treated in strict confidence and that data would not be used in a manner in which they could be identified. After time to consider participation carefully and an opportunity to discuss with her partner, family or a friend, the woman signed consent and was enrolled in the particular study (Appendices 7 and 8).

The signed consent form could possibly identify that a woman was in the study therefore these were kept separate in a locked filing cabinet in an office accessible only to the researcher or the data management officer. Access to case notes was necessary to check data sheets and obtain relevant study information by the researcher or the data management officer. Completed questionnaires were stored in the same locked filing cabinet and office used by the researcher and data management officer and transferred to a computer with a password known only to them.
CHAPTER 4

STUDY 1. POSTNATAL DEPRESSION: A SOUTH AUSTRALIAN PROSPECTIVE SURVEY

4.1 PREAMBLE

This is the first of the studies that make up this thesis. The study was part of a broader investigation of postnatal outcomes. Two other published sections on women’s views of their care by midwives (Stamp & Crowther 1994b) and breastfeeding rates and reasons for stopping (Stamp & Crowther 1995) constituted the research component for the award Master of Science (Primary Health Care).

Despite the considerable contribution of postnatal depression to maternal morbidity, to our knowledge, this work has resulted in the first published account of prevalence rates in a South Australian population (Stamp & Crowther 1994a). The aims of the study were to detect postnatal depression and to measure self-esteem before discharge from hospital, and at 6 weeks postpartum and to detect postnatal depression at 6 months after the birth. The information from the study could be of value in planning interventions to reduce its incidence.

The study objectives were:

1. To determine the prevalence of postnatal depression in hospital, at 6 weeks and at 6 months postpartum by the use of a recognised postnatal depression scale (Cox et al 1987).
2. To assess the level of women's self-esteem in hospital and at 6 weeks postpartum using a self-esteem scale by Rosenberg (1965).

4.2 METHODS

The study was a prospective descriptive survey using questionnaires in hospital and postal questionnaires at 6 weeks and 6 months postpartum. From the population of approximately 1,200 eligible women giving birth to term babies at the QVH over a 6 month period, a sample of 230 was calculated to be large enough to detect an incidence of major depression from 6.5% to 13.5% and minor depression from 20% to 30% using the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al 1987, Appendix 1).

Women were considered eligible to participate if they gave birth to a singleton baby of at least 37 weeks' gestation, gave informed signed consent and were fluent in English. Research funding was limited and did not extend to translators and interpreters for non-English speaking women.

The measures used were the 10-item Edinburgh Postnatal Depression Scale (EPDS) (Cox et al 1987, Appendix 1) and the 10-item self-esteem scale (Rosenberg 1965, Appendix 2). The EPDS, a screening questionnaire, is designed to identify a depressed mood postnatally. It is simple to administer and acceptable to women and with high sensitivity and specificity (Cox et al 1987, Boyce et al 1993). The Rosenberg self-esteem scale has been well validated (Rosenberg 1965) and found to be suitable for use in an Australian context (Winefield et al 1990).
In hospital and at 6 weeks postpartum, women completed an EPDS and a Rosenberg self-esteem questionnaire. The preface for the EPDS in hospital, was modified to assess a woman's mood since the birth of the baby rather than the usual in the past 7 days. At 6 months the completed the EPDS was again completed. An EPDS score of greater than 12 is highly indicative of major depression (Cox et al 1987). Self-esteem was categorised as high (5 and 6) medium (3 and 4) and low (1 and 2).

Women giving birth between July 1990 and January 1991 were invited to take part in the survey by the researcher (GS) who was not involved in any way in their care. Enrolment took place at differing days postpartum to include women taking early discharge. Of the 250 women approached, 15 (6%) declined to take part; three of who nominated themselves to be Aboriginal. At the time of the study Aboriginal women were 2% of the population giving birth (Queen Victoria Hospital 1990-1) and around 2% of the population of pregnant Australian women (Lancaster, 1989).

Occasionally primiparas were unavailable to enrol because of participation in another postnatal midwifery study. The dated questionnaires were completed some time before discharge, the researcher being conscious of the multiple calls on a new mother’s energy and time postnatally. Questionnaires and consent forms were either personally collected or placed in a sealed envelope in an internal letterbox addressed to the researcher. At 6 weeks and 6 months women were mailed further questionnaires.

An ethical consideration was associated with uncovering possible postnatal depression and not acting on it. Women were therefore invited to tick a box “yes” or “no” on the 6-week questionnaire seeking consent to a follow-up phone call should their response
indicate a low emotional mood. Only 4 (2%) of 222 respondents did not consent to the phone call.

4.3 RESULTS

4.3.1 Numbers enrolled, hospital timing, 6 week and 6 month returns

A total of 235 women agreed to take part in the study and completed questionnaires in hospital at a variety of days postpartum. The range was 2-10 days, mean 4.29 days, mode 3 days (SD 1.93)(Table 4.1).

<table>
<thead>
<tr>
<th>Table 4.1: Days postpartum EPDS was completed in hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Day 2</td>
</tr>
<tr>
<td>Day 3</td>
</tr>
<tr>
<td>Day 4</td>
</tr>
<tr>
<td>Day 5</td>
</tr>
<tr>
<td>Day 6</td>
</tr>
<tr>
<td>Day 7</td>
</tr>
<tr>
<td>Days 8-12</td>
</tr>
</tbody>
</table>

* data missing for one subject
SD = standard deviation

These figures relate to a period when obstetric early discharge was being introduced (personal communication J Long, domiciliary midwife QVH 1990). In Victoria in 1989 the traditional length of stay postpartum was 5-7 days (Small et al 1992). Shorter hospital stays are now common in Australia (Brown et al 1995).
From the original hospital sample of 235 completed questionnaires, there was a high rate of return of 222 (94%) at 6 weeks postpartum. This response rate was achieved by sending postal reminders to 37 (16%) women, and 24 (10%) were followed up with telephone calls. At 6 months postpartum 192 (82%) women returned a postal questionnaire, 38, (20%) of whom received a postal reminder or telephone call (Table 4.2).

<table>
<thead>
<tr>
<th></th>
<th>n=235</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6 weeks</strong></td>
<td>222</td>
<td>94</td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td>192</td>
<td>82</td>
</tr>
</tbody>
</table>

### 4.3.2 Women's characteristics at study entry

The women's ages ranged from 17-44 years with the mode in the 26-30 age group (Table 4.3). The majority (86%) of the women were married or living in a stable relationship. This compared with 80% of the hospital sample (Queen Victoria Hospital 1990-1) and 86% of women in South Australia (South Australian Health Commission 1991). Primiparous women made up 42% of the sample and 172 (73%) received hospital service (public) care (Table 4.3).
Table 4.3: Characteristics of women at study entry

<table>
<thead>
<tr>
<th></th>
<th>n=235</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>20-25</td>
<td>51</td>
<td>22</td>
</tr>
<tr>
<td>26-30</td>
<td>89</td>
<td>38</td>
</tr>
<tr>
<td>31-35</td>
<td>71</td>
<td>30</td>
</tr>
<tr>
<td>≥ 36</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparas</td>
<td>99</td>
<td>42</td>
</tr>
<tr>
<td>Multiparas</td>
<td>136</td>
<td>58</td>
</tr>
<tr>
<td><strong>Health cover</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital (public)</td>
<td>172</td>
<td>73</td>
</tr>
<tr>
<td>Private</td>
<td>63</td>
<td>27</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/de facto</td>
<td>202</td>
<td>86</td>
</tr>
<tr>
<td>Single/separated/widow</td>
<td>33</td>
<td>14</td>
</tr>
</tbody>
</table>

4.3.3 Maternal Birth Outcomes

Vaginal birth was achieved by 174 (74%) women. Some form of pain relief was used by most women. Of those who gave birth vaginally, 45% had an epidural block and some had a combination of pethidine, nitrous oxide and oxygen and epidural. Nitrous oxide and oxygen only or no pain relief at all accounted for 12% of women. Overall, there was a higher than expected postpartum haemorrhage rate, defined 500 mls or greater of 22%. This rate would be reduced if a definition of 600 mls or greater was used (Queen Victoria Hospital 1992). However, when women who had a caesarean
section were analysed separately there was a comparatively high rate of 68% compared with a lower rate of 6.4% for the vaginal births. Of the women giving birth vaginally 37% had an episiotomy and 26% a tear requiring suturing (Table 4.4).

Table 4.4: Maternal birth outcomes

<table>
<thead>
<tr>
<th>Mode of birth</th>
<th>n=235</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous vaginal</td>
<td>134</td>
<td>57</td>
</tr>
<tr>
<td>Assisted vaginal</td>
<td>40</td>
<td>17</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>62</td>
<td>26</td>
</tr>
</tbody>
</table>

Analgesia (vaginal births) n=174%

<table>
<thead>
<tr>
<th>Mode of birth</th>
<th>n=174</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidural</td>
<td>78</td>
<td>45</td>
</tr>
<tr>
<td>Pethidine</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>Pethidine N2O2</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>N2O2 only/none</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>PPH ≥ 500 ml</td>
<td>53</td>
<td>22</td>
</tr>
</tbody>
</table>

Perineum (vaginal births)

<table>
<thead>
<tr>
<th>Mode of birth</th>
<th>n=235</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episiotomy</td>
<td>65</td>
<td>37</td>
</tr>
<tr>
<td>Tear requiring suture</td>
<td>46</td>
<td>26</td>
</tr>
</tbody>
</table>

PPH = postpartum haemorrhage  
N2O2 = nitrous oxide and oxygen

4.3.4 Study sample and hospital population

In order to ascertain whether the mode of birth, parity and health insurance status for the study sample was representative of women giving birth at the Queen Victoria Hospital, the 1991 hospital annual figures are presented for comparison.
When comparing the study with the hospital population they are similar in several respects such as parity, normal vaginal, caesarean and instrumental birth rates (Table 4.5).

More women in the study group were married or in a stable relationship (86% versus 80%, OR 0.63, 95% CI 0.42-0.94). A higher number of women in the study population had hospital service health cover (73% versus 65%, OR 0.69, 95% CI 0.50-0.94). The study participants had a lower rate of induction of labour, 11% versus 25% (OR 2.77, 95% CI 1.78-4.33). The overall caesarean section rate of 26% was the same in both groups, however there was a significantly lower rate of emergency caesarean in the study population (11% versus 17%, OR 1.64, 95% CI, 1.07-2.54)(Table 4.5).
Table 4.5: Comparison of hospital births 1991 and study births on marital status, health cover, parity, mode of birth and induction rates

<table>
<thead>
<tr>
<th></th>
<th>Hospital 1991</th>
<th>Study births</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=2638</td>
<td>n=235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital/de facto</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/de facto</td>
<td>2097</td>
<td>202</td>
<td>0.63</td>
<td>0.42-0.94*</td>
</tr>
<tr>
<td>Health cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital (public)</td>
<td>1722</td>
<td>172</td>
<td>0.69</td>
<td>0.50-0.94*</td>
</tr>
<tr>
<td>Private</td>
<td>916</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparous</td>
<td>1071</td>
<td>99</td>
<td>0.94</td>
<td>0.71-1.24</td>
</tr>
<tr>
<td>Multiparous</td>
<td>1567</td>
<td>136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode of birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal vaginal</td>
<td>1544</td>
<td>133</td>
<td>1.02</td>
<td>0.77-1.35</td>
</tr>
<tr>
<td>Instrumental</td>
<td>406</td>
<td>40</td>
<td>0.89</td>
<td>0.61-1.29</td>
</tr>
<tr>
<td>Caesarean</td>
<td>687</td>
<td>62</td>
<td>0.98</td>
<td>0.72-1.35</td>
</tr>
<tr>
<td>Emergency</td>
<td>463</td>
<td>27</td>
<td>1.64</td>
<td>1.07-2.54*</td>
</tr>
<tr>
<td>Elective</td>
<td>224</td>
<td>35</td>
<td>0.53</td>
<td>0.36-0.79*</td>
</tr>
<tr>
<td>Induction</td>
<td>654</td>
<td>25</td>
<td>2.77</td>
<td>1.78-4.33*</td>
</tr>
</tbody>
</table>

Instrumental = forceps and vacuum extraction
OR = odds ratio, CI = confidence interval
* = statistically significant

4.3.5 Baby outcomes

The mean birth weight of babies in this study was 3.4 kg, standard deviation 443.01, mode 3.4, range 2.060-4.380 kg. Of note in this sample of term babies is the high number 199 (85%) admitted to the nursery. Of these, 11 (5%) were admitted to level 2 or 3 (intensive care) nurseries and the remainder to the observation nursery. Twenty-five babies (10.6%) had an Apgar score of less than 7 at 1 minute, 3 (1.3%) at 5 minutes and 8 (3.4%) babies were intubated (Table 4.6). During the period under investigation, babies in this institution were admitted to the observation nursery for a number of
common indications including, following a caesarean birth, group B streptococcus colonisation in the mother, intrapartum meconium stained liquor and/or fetal heart abnormalities and neonatal hypothermia (QVH manual 1991).

Table 4.6: Baby outcomes

<table>
<thead>
<tr>
<th></th>
<th>n=235</th>
<th>%</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth weight kg (mean)</td>
<td>3.4</td>
<td></td>
<td>443</td>
</tr>
<tr>
<td>Apgar &lt;7 at 1 minute</td>
<td>25</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Apgar &lt;7 at 5 minutes</td>
<td>3</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Aspirated at birth</td>
<td>186</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>Oxygen at birth</td>
<td>108</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Intubated</td>
<td>8</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Admission Observation Nursery</td>
<td>188</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>Admission Neonatal Intensive Care</td>
<td>11</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

SD= Standard Deviation

4.3.6 Postnatal depression

In hospital 22 (9%) scored >12 on the EPDS as did 21 (10%) at 6 weeks and 19 (10%) at 6 months. A score of >12 on the EPDS is indicative of probable major depression (Table 4.7).
Table 4.7: Probable major depression using the EPDS

<table>
<thead>
<tr>
<th></th>
<th>n=235</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt; 12</td>
<td>22</td>
<td>9</td>
<td>5.7-12.3</td>
</tr>
<tr>
<td>EPDS ≤ 12</td>
<td>213</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td><strong>6 weeks</strong></td>
<td>n=222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt; 12</td>
<td>21</td>
<td>9</td>
<td>5.6-12.4</td>
</tr>
<tr>
<td>EPDS ≤ 12</td>
<td>201</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td>n=192</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt; 12</td>
<td>19</td>
<td>10</td>
<td>5.7-14.1</td>
</tr>
<tr>
<td>EPDS ≤ 12</td>
<td>173</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

EPDS = Edinburgh Postnatal Depression Scale
CI = confidence interval

The majority of these women were depressed at only one of the assessment times. There were 3 women who scored high at all 3 assessment times and a further 7 women were depressed as assessed by the EPDS both in hospital and at 6 weeks postpartum. Higher numbers of women scored above the cut-off indicative of probable minor depression, (Cox et al 1987 (Table 4.8). Twenty one percent of this sample was affected in hospital, 27% at 6 weeks and 20% at 6 months postpartum.
Table 4.8: Probable minor depression using the EPDS

<table>
<thead>
<tr>
<th></th>
<th>n=235</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt; 9</td>
<td>49</td>
<td>21</td>
<td>16.3-25.7</td>
</tr>
<tr>
<td>EPDS ≤ 9</td>
<td>186</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td><strong>6 weeks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=222</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt; 9</td>
<td>60</td>
<td>27</td>
<td>21.7-32.3</td>
</tr>
<tr>
<td>EPDS ≤ 9</td>
<td>162</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=192</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt; 9</td>
<td>39</td>
<td>20</td>
<td>14.8-25.2</td>
</tr>
<tr>
<td>EPDS ≤ 9</td>
<td>153</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

EPDS = Edinburgh Postnatal Depression Scale
CI = Confidence interval

4.3.7 Self-esteem

Self-esteem was defined as low {1 and 2}, medium {3 and 4}, and high {5 and 6}. Most women scored high (194, 82.5%) in hospital and (188, 85%) at 6 weeks (Table 4.9).

Table 4.9: Self-esteem in hospital and at 6 weeks

<table>
<thead>
<tr>
<th></th>
<th>n=235</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low {1 and 2}</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Medium {3 and 4}</td>
<td>32</td>
<td>13.5</td>
</tr>
<tr>
<td>High {5 and 6}</td>
<td>194</td>
<td>82.5</td>
</tr>
<tr>
<td><strong>6 weeks</strong></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>n=222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low {1 and 2}</td>
<td>10</td>
<td>4.5</td>
</tr>
<tr>
<td>medium {3 and 4}</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td>high {5 and 6}</td>
<td>188</td>
<td>84.5</td>
</tr>
</tbody>
</table>
4.3.8 Self-esteem and postnatal depression

There was a significant association between low self-esteem and a depressed mood in hospital (OR 0.07, 95% CI 0.01-0.34). This association was still present at 6 weeks (OR 0.13, 95% CI 0.03-0.70 (Table 4.10).

Table 4.10: Associations between self-esteem and postnatal depression

<table>
<thead>
<tr>
<th>Self-esteem</th>
<th>EPDS&gt;12</th>
<th>EPDS≤12</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In hospital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (1,2)</td>
<td>n=235</td>
<td>5</td>
<td>4</td>
<td>0.07</td>
</tr>
<tr>
<td>Medium, high, (3,4,5,6)</td>
<td>17</td>
<td>209</td>
<td></td>
<td>0.01-0.34 *</td>
</tr>
<tr>
<td><strong>At 6 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (1,2)</td>
<td>n=222</td>
<td>4</td>
<td>6</td>
<td>0.13</td>
</tr>
<tr>
<td>Medium, high, (3,4,5,6)</td>
<td>17</td>
<td>195</td>
<td></td>
<td>0.13-0.70 *</td>
</tr>
</tbody>
</table>

OR = Odds ratio  
CI = Confidence interval  
* = Statistically significant

4.3.9 Breastfeeding and postnatal depression

No association was found between breast feeding and postnatal depression at 6 weeks postpartum (study power 23%)(Table 4.11), or at 6 months postpartum (study power 47%), Table 4.12). At 6 weeks postpartum, of the 147 (66%) women fully breast-feeding 11 (7.5%) were depressed (Table 4.11).
Table 4.11: Association between breastfeeding and postnatal depression at 6 weeks postpartum

<table>
<thead>
<tr>
<th></th>
<th>Fully breastfeeding</th>
<th>Not breastfeeding</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDS &gt; 12</td>
<td>11</td>
<td>10</td>
<td>1.90</td>
<td>0.70-5.12</td>
</tr>
<tr>
<td>EPDS ≤ 12</td>
<td>136</td>
<td>65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OR = Odds ratio
CI = Confidence interval

At 6 months of the 105 (55%) women still breast-feeding 13 (12.4%) had a depressed mood using the EPDS. No association between breastfeeding and postnatal depression was found at this assessment time (Table 4.12).

Table 4.12: Association between breastfeeding and postnatal depression at 6 months postpartum

<table>
<thead>
<tr>
<th></th>
<th>Still breastfeeding</th>
<th>Not breastfeeding</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDS &gt; 12</td>
<td>13</td>
<td>6</td>
<td>1.91</td>
<td>0.64-5.94</td>
</tr>
<tr>
<td>EPDS ≤ 12</td>
<td>92</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OR = Odds ratio
CI = Confidence interval

Women scoring high on the EPDS, were contacted by telephone or letter to inquire whether they were getting support as had been previously agreed with them. An appointment with a social worker or visiting psychiatrist was offered if the woman wished. Although not part of the formal assessment, several women who received telephone calls made suggestions about their needs postnatally and highlighted gaps in community supports available in their localities.
4.4 DISCUSSION

There have been few Australian demographic studies that have ascertained the prevalence of postnatal depression and none in South Australia. Percentages of women identified as depressed in this study at 6 months were similar to those noted by Lumley (1990) at 8 months and Dennerstein et al (1989) at 6 months postpartum. Postnatal depression is a significant problem for women. This study added a further dimension to the Australian literature in that it used the EPDS in the immediate postpartum period before discharge from hospital despite the limitation that the timing of assessment varied (Table 4.1). It may be that the EPDS was more correctly measuring the 'blues' at this time. A rate of 9% at 6 weeks postpartum was the same as in hospital although only one third of these women scored as depressed at both time assessment times.

This study used a convenience sample drawn from 20% of the women who gave birth in one hospital, albeit the largest, in South Australia over a 6 month period. Therefore, although similar to rates of postnatal depression in other studies, these findings cannot be generalised to other populations.

Research by Alder and Cox (1983) suggesting a correlation between fully breastfeeding and postnatal depression was not borne out by this study and confirms work from a large Victorian sample (Brown et al 1994) and recent work in the United Kingdom (Warner et al 1996). However the study lacked the statistical power to adequately address correlations between important variables that may be associated with postnatal depression. As well as breastfeeding these may include nursery admission and interventions such as caesarean section, instrumental delivery and epidural block.
The correlation demonstrated between low self-esteem and postnatal depression is perhaps not unexpected. Low self-esteem is a risk factor for depression. Hall et al. (1996) found that women with low self-esteem were 39 times more likely to have depressive symptoms than women with high self-esteem. Other factors that were beyond the scope of this study to investigate may be associated with low self-esteem. It is well established that not feeling in control can be associated with a sense of failure and low self-esteem in women (Oakley 1980, Romito 1989). Midwives and other caregivers should be attentive to ways in which they can help increase or make known the ranges of choices available to women they care for during pregnancy, birth and the postnatal period (National Health & Medical Research Council 1996).

Access to non-English speaking women was limited owing to a lack of funds for translations and interpreters and it is possible that these women may have different experiences of depression after childbirth (Rice 1993, Brown et al 1994). Important research in Victoria involving modification of the EPDS for use in trans-cultural contexts is in progress as part of the Mothers in a New Country (MINC) Project (Centre for the Study of Mothers’ and Children’s Health 1996).

Only three Aboriginal women were approached to participate in the study, all of who declined. This is an indication that either the approach (from a non-Aboriginal researcher), or the prospect of participating may not have been seen as culturally relevant or acceptable (Aboriginal Women of Central Australia 1985, Aboriginal Health Organisation, Gosden 1992). Approaches through the hospital Aboriginal liaison officer may have been more appropriate.
In certain areas in South Australia free counselling is unavailable for those experiencing postnatal unhappiness and isolation. The telephone calls to women yielded anecdotal information that was not part of the aim of study. For a woman whose husband had left soon after the birth her comment “Who wouldn’t be depressed” cannot be disputed. Another started a postnatal support group as none existed where she lived. While some women found the self-help group Overcoming Postnatal Depression (OPND) to be too involved with a biochemical model for their needs, for others it was most helpful. It is clear however, that women need a range of different options. There is a need for more research of the views of unhappy postpartum women about the usefulness and accessibility of services.

Discussion with women and families by midwives and other care providers, about recognition of postnatal depression and up-to-date pamphlets locating available supports and resources may reduce unnecessary suffering (Tresillian Family Care Centres 1994, Hyde & Maddocks undated, Eastern Sydney Area Health Service 1995). Information could be made available both in the antenatal visits and classes, but also postnatally. In South Australia it has recommended that the EPDS should be completed by all women at their 6-week postnatal check, and repeated at 4 and 6 months (Crowe 1991). In New South Wales routine use of the EPDS by health professionals is also recommended (NSW Health Department 1994). Agencies need adequate preparation for dealing with the consequences of identifying large numbers of 'cases'. Despite an obvious need, in the context of cuts to health budgets it is unlikely that extra supports will be in place to deal with any increased work loads generated. It is clear that calls for widespread use of the EPDS should be tempered with caution and based on awareness of potential harmful effects. Weekly counselling has been shown to be of
value in reducing already identified depression after childbirth. In a randomised trial in the United Kingdom, health visitors specifically trained in non-directive counselling, were able to lower depression in an identified group of women although the small sample indicates adequately designed replication studies are needed (Holden et al 1989). Counselling initiatives require training of health care personnel including midwives and nurses and are being more widely introduced in some areas in the UK (Holden 1990, Feingold 1995).

A need exists to appropriately evaluate interventions designed to reduce depression after childbirth. This is particularly important as women themselves informally identified a lack of resources in the community.

4.5 CONCLUSIONS

This study investigated postnatal depression in a South Australian sample of women giving birth to term babies at three assessment points: in hospital, at 6 weeks postpartum and at 6 months postpartum. Rates of postnatal depression of 9 to 10% were revealed. Self-esteem, measured in hospital and at 6 weeks postpartum was significantly correlated with postnatal depression at these two assessment times.
4.6 RECOMMENDATIONS

1. Postnatal depression associated with low self-esteem was identified as a problem for women in this study population. Identification of women at risk of developing postnatal depression and evaluation of support is recommended. (Chapters 5 and 6).

2. Midwives and other care-givers have a role in helping increase or make known the range of choices available to the women in their care during pregnancy, birth and the postnatal period, particularly as they relate to support for depression (National Health & Medical Research Council 1996).

3. Research of the views of postnatally unhappy women about the availability and usefulness of interventions and supports is needed.
CHAPTER 5

STUDY 2: PREDICTION OF POSTNATAL DEPRESSION AMONG WOMEN USING A SCREENING QUESTIONNAIRE IN PREGNANCY.

5.1 PREAMBLE

Chapter 5 (Study 1) of this thesis investigated prevalence of major depression after birth and found, in a hospital-recruited sample of 235 South Australian women, rates of 9% in hospital and at 6 weeks and 10% at 6 months using the Edinburgh Postnatal Depression Scale (EPDS). Common risk factors for postnatal depression have been identified in several studies (O’Hara & Zekoski 1990). Primary prevention may be possible if more vulnerable women could first be identified during pregnancy (Leverton et al 1989). Following the work in Study 1 (Chapter 3), the aim of this study was to predict postnatal depression in a population of women giving birth in South Australia using a Modified Antenatal Screening Questionnaire (MASQ).

The objectives of the study were:

1. To modify an antenatal screening questionnaire (MASQ), for use with an Australian population.

2. To assess the ability of the MASQ to predict postnatal depression at 6 weeks, 3 months and 6 months postpartum in an Australian population.
5.2 METHODS

5.2.1 Population and sample

Although Medicare contributions cover the cost of hospitalisation, 39% of women giving birth in South Australia in 1994 were privately insured (Chan et al. 1995). Many of these gave birth in private maternity units. At the time of this study, as now, for most privately insured women, including those booked in a tertiary hospital, the antenatal care is in obstetrician’s private rooms remote from the hospital. Privately insured women were therefore unavailable to enrol in this study because they did not attend the hospital and the researcher was unable, owing to time and financial constraints, to attend the private rooms for recruitment.

Women receiving hospital service care were recruited from March to December 1992 from four antenatal clinics of the Queen Victoria Hospital. English-speaking women with a singleton pregnancy, booking before 24 weeks gestation and living in the metropolitan area who gave their signed consent, were eligible to enter the study (Appendix 8). The population from which the sample was drawn, the Queen Victoria Hospital had 2646 deliveries in 1992 (Chan et al. 1993). A more detailed description of the study base, including the numbers of private and hospital service women, is outlined in Chapter 3.

From the annual number of hospital service births it was calculated that a sample size of 70 women for the prediction study could be obtained in nine months if no fewer than
15% of women who were approached screened more vulnerable for postnatal depression (personal communication T. Leverton 1991).

5.2.2 Modified Antenatal Screening Questionnaire (MASQ)

The Leverton antenatal screening questionnaire was modified for this study and many of the variables that did not receive weighting were removed (Elliott et al 1989). Leverton and colleagues had developed two questionnaires, one for primiparous and one for multiparous women (Appendices 9 and 10). For this study these were combined to form one and items specific to the United Kingdom (e.g., health visitors), selected demographic data including housing, items addressed to primiparas, and general health status, painful periods and premenstrual symptoms were deleted. A copy of the Modified Antenatal Screening Questionnaire (MASQ) is included as Appendix 11).

Information sought in the MASQ related to the state of the woman's current relationship (if applicable), with questions in four areas: a rating of how well the woman feels she and her partner get on in three categories from "very well" to "not well"; and dissatisfaction with the relationship ranging from "very satisfied" to "not satisfied". Other questions ask a woman if she wonders whether her partner loves her and if she can confide in and talk over problems with her partner, with possible responses of "never", "sometimes", "often", or "always". Other weighted items are a woman's problem-solving style, having someone available to talk to, such as a relative or friend, and a broadly defined previous psychiatric history including a past need for medication, a psychiatric referral or previous self-defined postnatal depression lasting longer than eight weeks. Also included was a 25-item modified version of the Crown
Crisp Experiential Index (CCEI) Crown and Crisp 1979), which measures anxiety (Appendix 12). A score of 10 was weighted 2 and was sufficient on its own to indicate more vulnerable status. Possible scores for each item were zero, 1, or a maximum score of 2. An overall score of 2 or more predicted a woman as more vulnerable to depression (Personal communication T. Leverton 1991) (Appendix 13).

5.2.3 Procedure

Eligible women were given an explanation and an information sheet about the study in the antenatal clinic by the researcher (Appendix 6). They were told that the study was testing a screening questionnaire, and although it was designed to identify more vulnerable women, it was anticipated that only a relatively small proportion of those identified would become depressed after the birth.

Women who gave consent completed the MASQ in 5 to 10 minutes in the clinic and agreed, if assessed as more vulnerable, to take part in a randomised trial of antenatal and postnatal support groups (Study 3, Chapter 6). All women consented to completing an EPDS at 6 weeks, 3 months and 6 months postpartum. Furthermore, it was explained that their views of participating in the studies may be sought.

The MASQ was scored immediately by the researcher (GS) following completion. Women who scored as vulnerable were then randomly allocated to either a support group intervention or a non-intervention group. This was done by a telephone call to a member of the University of Adelaide Department of Obstetrics and Gynaecology.
research team who was unconnected with the trial (AT). Randomisation according to parity was by the opening of the next sequentially numbered sealed opaque envelope marked 'multipara' or 'primipara'. The woman's name, envelope number, UR number and trial allocation were written in a notebook kept in a locked filing cabinet in the Department of Obstetrics and Gynaecology. The woman was fully informed of her MASQ result and, if applicable, randomised trial allocation prior to leaving the clinic. The randomised trial of support is reported in Chapter 6 of this thesis. Those allocated to the non-intervention group of the randomised trial formed the MASQ vulnerable group for this prediction study. All women who scored less than 2 were considered less vulnerable for postnatal depression and a random sample (50%) of these less vulnerable women formed the MASQ less vulnerable group.

Participants were told they would be sent questionnaires to assess their mood after the birth. They understood that the researcher would contact them should the questionnaire indicate a possible depressed mood and that a referral for treatment or counselling with either a social worker or psychiatrist may be offered (for a major depression EPDS score of >12).

Data were collected at enrolment, after the birth and at 6 weeks postpartum. Primary study outcomes were EPDS scores indicative of major or minor postnatal depression at 6 weeks, 12 weeks and 6 months (Cox et al 1987). In this study a score of 10 or more was used to indicate minor depression and this included some women with possible major depression (EPDS score >12).
5.3 RESULTS

5.3.1 Refusals

Of the 354 women approached in the clinic to participate, 105 (30%) declined, 8 (2.3%) after reading the questionnaire. Primiparous and multiparous women gave quite different reasons for declining to participate and these have been analysed by parity and presented in Table 5.1. For some, there was more than one reason for declining. The most common reason given by multiparous women was that it would be difficult for them to attend the groups if entered into the randomised trial. On the other hand, primiparous women gave a preference to wait and see how they felt as their main reason for declining.

<table>
<thead>
<tr>
<th>Refusal reasons</th>
<th>Primipara n=53</th>
<th>%</th>
<th>Multipara n=52</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would not attend groups</td>
<td>1</td>
<td>2</td>
<td>27</td>
<td>52</td>
</tr>
<tr>
<td>No problems last time</td>
<td>N/A</td>
<td></td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>Prefer to wait and see</td>
<td>18</td>
<td>34</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Information overload</td>
<td>7</td>
<td>13</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Disliked questionnaire</td>
<td>7</td>
<td>13</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Strong person, will cope</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>In a hurry</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Have good support</td>
<td></td>
<td></td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Know all about it</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Prefer not to know</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No reason given</td>
<td>6</td>
<td>11</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Combination of reasons</td>
<td>14</td>
<td>26</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

NB: some women gave more than one reason
There was an attempt to enrol eligible women at the first booking visit, however this was not always achieved. The proportion of women who completed the MASQ and were enrolled at the first visit and those enrolled at a subsequent visit prior to 24 weeks gestation is shown in Table 5.2.

Table 5.2: Proportion enrolled at booking or subsequent visit

<table>
<thead>
<tr>
<th></th>
<th>N=249</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>At antenatal booking visit</td>
<td>141</td>
<td>57</td>
</tr>
<tr>
<td>At second or subsequent visit</td>
<td>108</td>
<td>43</td>
</tr>
</tbody>
</table>

The demographic characteristics of women in this study and their birth outcomes are presented in Table 5.3. Apart from a lower risk of caesarean section and a higher risk of instrumental births in the MASQ vulnerable group, the groups were similar for important variables such as age, parity, marital status, antenatal visits and birth and baby outcomes.
Table 5.3: Characteristics of women and their birth outcomes and odds of a difference between MASQ vulnerable and less vulnerable groups

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>vulnerable</th>
<th>% SD</th>
<th>less vulnerable</th>
<th>% SD</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>27.6</td>
<td>5.2</td>
<td>26.8</td>
<td>5.2</td>
<td>0.79</td>
<td>0.27-2.30</td>
</tr>
<tr>
<td>Married/de facto</td>
<td>50</td>
<td>78</td>
<td>36</td>
<td>82</td>
<td>0.79</td>
<td>0.27-2.30</td>
</tr>
<tr>
<td>Single/divorced</td>
<td>14</td>
<td>22</td>
<td>8</td>
<td>18</td>
<td>0.79</td>
<td>0.27-2.30</td>
</tr>
<tr>
<td>Primipara</td>
<td>36</td>
<td>56</td>
<td>26</td>
<td>59</td>
<td>0.89</td>
<td>0.38-2.08</td>
</tr>
<tr>
<td>Antenatal visits (mean)</td>
<td>10.2</td>
<td>2.8</td>
<td>9.7</td>
<td>2.4</td>
<td>0.89</td>
<td>0.38-2.08</td>
</tr>
<tr>
<td>Labour and birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epidural pain relief</td>
<td>24</td>
<td>40</td>
<td>20</td>
<td>47</td>
<td>0.72</td>
<td>0.31-1.69</td>
</tr>
<tr>
<td>Normal vaginal</td>
<td>40</td>
<td>63</td>
<td>28</td>
<td>64</td>
<td>0.95</td>
<td>0.40-2.27</td>
</tr>
<tr>
<td>Instrumental</td>
<td>18</td>
<td>28</td>
<td>5</td>
<td>11</td>
<td>3.55</td>
<td>1.13-3.55 *</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td>23</td>
<td>0.35</td>
<td>0.10-0.35 *</td>
</tr>
<tr>
<td>Labour length (mean)</td>
<td>8.1</td>
<td>5.1</td>
<td>7.9</td>
<td>4.5</td>
<td>0.64</td>
<td>0.21-2.01</td>
</tr>
<tr>
<td>PPH &gt; 500 ml</td>
<td>9</td>
<td>14</td>
<td>9</td>
<td>20</td>
<td>0.64</td>
<td>0.21-2.01</td>
</tr>
<tr>
<td>Blood loss (mean, ml)</td>
<td>297</td>
<td>147</td>
<td>367</td>
<td>289</td>
<td>0.64</td>
<td>0.21-2.01</td>
</tr>
<tr>
<td>Baby outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apgar &lt;7 at 1 min</td>
<td>11</td>
<td>17</td>
<td>5</td>
<td>11</td>
<td>1.62</td>
<td>0.47-6.41</td>
</tr>
<tr>
<td>Apgar &lt;7 at 5 min</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>1.62</td>
<td>0.47-6.41</td>
</tr>
<tr>
<td>Admission nursery</td>
<td>41</td>
<td>64</td>
<td>28</td>
<td>64</td>
<td>1.02</td>
<td>0.42-2.44</td>
</tr>
<tr>
<td>Preterm &lt;37 weeks</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>1.78</td>
<td>0.27-19.4</td>
</tr>
<tr>
<td>Planned breastfeed</td>
<td>60</td>
<td>94</td>
<td>39</td>
<td>87</td>
<td>1.92</td>
<td>0.39-10.26</td>
</tr>
</tbody>
</table>

OR = odds ratio  
CI = confidence interval  
* = statistically significant  
PPH = postpartum haemorrhage  
nursery = observation nursery  
SD = standard deviation

5.3.2 Modified Antenatal Screening Questionnaire (MASQ) rates

Of the 249 women who completed the MASQ, 144 (58%) scored equal to or greater than 2. They were considered to be more vulnerable to postnatal depression and randomised into the intervention trial. The 71 women who were allocated to the non-intervention group formed the MASQ vulnerable group for this study. Of the 105 (42%) women who screened less vulnerable with a MASQ score of less than 2, 53 women (50%) formed the MASQ less vulnerable group (Figure 1).
Three unavoidable exclusions occurred from the MASQ vulnerable group of 71 enrolled: 1 termination of pregnancy, 1 miscarriage and 1 stillbirth. Two women from the randomly selected MASQ less vulnerable group had pregnancy losses and were therefore excluded from analysis and follow-up (Figure 1). At 6 weeks and 6 months
follow-up, 64 women (94%) in the MASQ vulnerable group and 44 (86%) in the MASQ less vulnerable group returned an EPDS (Figure 1). At 12 weeks, the figures were the same apart from 45 women, (88%) in the less vulnerable group who returned an EPDS. This difference in return rates between the groups was not statistically significant (OR 2.55, 95% CI 0.60-12.49) at 6 weeks and 6 months.

5.3.3 MASQ prediction of minor and major postnatal depression

At 6 weeks postpartum the difference in the frequency of likely **major** depression between the two groups using the EPDS was not statistically significant. At 12 weeks postpartum however, a statistically significant difference between the two groups was revealed (RR 3.60, 95% CI 1.38-9.36). At 6 months postpartum 6 vulnerable women (10%) screened positive for major depression but none of the less vulnerable women, therefore the relative risk is undefined (Table 5.4: footnote **).

Women in the MASQ vulnerable group had a higher incidence of likely **minor** depression (which included some with major depression, EPDS>9) at 6 weeks (RR 3.03, 95% CI 1.24-7.38) and 12 weeks (RR 11.95 95% CI 1.38-86.61), but not at 6 months postpartum (Table 5.4).
Table 5.4: Prediction of postnatal major and minor depression using the MASQ at 6 weeks, 12 weeks and 6 months postpartum

<table>
<thead>
<tr>
<th></th>
<th>vulnerable</th>
<th>less vulnerable</th>
<th>n=64</th>
<th>%</th>
<th>N=44</th>
<th>%</th>
<th>RR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;12</td>
<td>11</td>
<td>17</td>
<td>4</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>1.89</td>
<td>0.64-5.56</td>
</tr>
<tr>
<td>EPDS &gt;9</td>
<td>22</td>
<td>34</td>
<td>5</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>3.03</td>
<td>1.24-7.38*</td>
</tr>
<tr>
<td><strong>12 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;12</td>
<td>10</td>
<td>17</td>
<td>5</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>3.60</td>
<td>1.38-9.36*</td>
</tr>
<tr>
<td>EPDS &gt;9</td>
<td>17</td>
<td>27</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>11.95</td>
<td>1.65-86.61*</td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;12</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>undefined</td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;9</td>
<td>10</td>
<td>16</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>2.29</td>
<td>0.67-7.85</td>
</tr>
</tbody>
</table>

RR = relative risk  
EPDS = Edinburgh Postnatal Depression Scale  
CI = confidence interval  
* = statistically significant

** however the relative risk of not being depressed was 0.91, 95% CI 0.84-0.98

The sensitivity, specificity, and positive and negative predictive values of the MASQ for major and minor postnatal depression are presented in Table 5.5.

Table 5.5: MASQ sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for major and minor postnatal depression at 6 weeks, 12 weeks and 6 months postpartum

<table>
<thead>
<tr>
<th></th>
<th>sensitivity %</th>
<th>Specificity %</th>
<th>PPV %</th>
<th>NPV %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;12</td>
<td>73</td>
<td>43</td>
<td>17</td>
<td>91</td>
</tr>
<tr>
<td>EPDS &gt;9</td>
<td>81</td>
<td>48</td>
<td>34</td>
<td>89</td>
</tr>
<tr>
<td><strong>12 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;12</td>
<td>91</td>
<td>45</td>
<td>16</td>
<td>98</td>
</tr>
<tr>
<td>EPDS &gt;9</td>
<td>72</td>
<td>46</td>
<td>27</td>
<td>89</td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPDS &gt;12</td>
<td>100</td>
<td>43</td>
<td>9</td>
<td>100</td>
</tr>
<tr>
<td>EPDS &gt;9</td>
<td>77</td>
<td>43</td>
<td>16</td>
<td>93</td>
</tr>
</tbody>
</table>
For major depression the MASQ test's sensitivity was 73% at 6 weeks, 91% at 12 weeks, and 100% 6 months, specificity 43%, 45% and 43% respectively, positive predictive value 17%, 16% and 9% respectively and negative predictive value 91%, 98% and 100% respectively.

For minor depression the test's sensitivity was 81% at 6 weeks, 72% at 12 weeks, and 77% at 6 months, specificity 48%, 46% and 43% respectively, positive predictive value 34%, 27% and 16% respectively and negative predictive value 89%, 89% and 93% respectively.

5.4 DISCUSSION

This prediction study was the first published attempt to assess and modify an antenatal screening questionnaire to detect women more vulnerable to depression after childbirth in Australia. A clear need existed to undertake the study within a local population to confirm the value of such screening.

A limitation of the MASQ's value and a surprise finding was that 144 (58%) of the total number of women who completed it screened more vulnerable. Published figures of the proportions of women who screened vulnerable in the study by Elliott et al (1990) are not available for comparison.
The diagnostic psychiatric interview using the DSM-111-R criteria is the generally accepted definitive standard for definition and diagnosis of a case of major depression (Cox et al 1987, Boyce et al 1993).

In this study, the EPDS, a screening questionnaire, was chosen to detect risk of depression rather than a clinical diagnosis by a psychiatrist based on three reasons.

Firstly, several validation studies of the EPDS with different populations demonstrated that it has acceptable sensitivity and specificity (Cox et al 1987, Boyce et al 1993, Cox & Holden 1994). Furthermore, the authors of the Australian validation study state that from their data they are reassured the EPDS will identify all cases of major depression with very few false positives (Boyce et al 1993). In addition, all cases of minor depression were identified (sensitivity 100%) and the test had highly acceptable specificity with EPDS cut-off scores ranging from 89.4 to 93.6 per cent for minor depression.

Secondly, a psychiatric interview can be threatening to new mothers, whereas the simple 10-item EPDS has been demonstrated to be "user friendly" (Cox et al 1997, Boyce et al 1993, Cox & Holden 1994). This is an important consideration when aiming for high rates of return.

Thirdly, funds were limited and did not cover the additional costs involved in conducting psychiatric interviews. However, it is a limitation of this study that the EPDS, a screening questionnaire, was used to detect depression after childbirth rather than a clinical diagnosis by a psychiatrist.
The validation study by Boyce et al (1993) was a cross-sectional design and assessed women over a period of 2 to 29 weeks. Analysis of variance showed that the EPDS did not vary as a function of time, scores were evenly distributed over the 6-month period. Timing of the assessments in this prediction study at 6 weeks, 12 weeks and 6 months postpartum are therefore likely to be appropriate.

This study demonstrates that for a complex issue affected by many variables, the MASQ was able to predict minor depression in a population of South Australian women with good sensitivity, poor specificity but excellent negative predictive value at 6 weeks postpartum. At 12 weeks and 6 months postpartum the MASQ predicted major postnatal depression with excellent sensitivity, poor specificity and excellent negative predictive value. At 6 weeks postnatally, one woman in three identified as more vulnerable antenatally did, in fact, score as having a risk of at least a minor depression on the EPDS, and 1 woman in 6 was identified as having a likely major depression on the EPDS. Similarly at 12 weeks postnatally 1 in 4 screened for minor and 1 in 6 for major depression while at 6 months 1 in 6 had likely minor and 1 in 10 major depression in this group.

In the study by Leverton & Elliott (1989), 20/50 (40%) of women identified as vulnerable had a borderline depression at 3 months postpartum compared with 14/90 (16%) of the less vulnerable women but a validation study with sensitivity, specificity and predictive values has not been published. Although interest continues in the identification of women at risk so that preventive interventions may be offered (Lumley 1993), at the time this study was undertaken no other acceptable antenatal screening questionnaire had been devised.
It has been suggested that symptoms described in the EPDS may reflect a general state of depression or anxiety not specific to postnatal depression (Boyce et al 1993). A study using the EPDS antenatally suggests that this possibility should be considered and warrants further examination (Murray & Cox 1990). It was not a purpose of this study and the sample size was too small to conduct a factor analysis of items on the MASQ and subsequent EPDS scoring. This area also warrants further investigation.

This study had an 83% power to predict minor depression but only 23% power to predict major depression. Further studies using larger sample sizes are needed to build on this work and to develop a screening test with a higher specificity and positive predictive value.

Caution should be exercised against carrying out population screening programs except within the context of well designed community-based intervention studies (Lumley 1993). In addition, effective supportive services should be in place to deal with any problems identified (Lumley 1993).

Some investigators have called for identification of “at risk” groups antenatally followed by the provision of antenatal preventive interventions evaluated by randomised trials (Stein et al 1989). Despite its limitations the MASQ evaluated here has a place in this context.
5.5 CONCLUSIONS

A significant number of women suffer debilitating depression after the birth of a baby contributing to a public health issue of considerable magnitude. Cultural expectations tend to conflict with this uncomfortable reality. Prediction of those more vulnerable to depression after birth would enable a variety of preventive programmes to be introduced and evaluated.

The MASQ was able to predict minor depression (including major depression) assessed as a score of $>9$ on the EPDS at 6 weeks and 12 weeks and major depression (score $>12$) at 6 months postpartum. Because of the small sample however, the 95% confidence intervals are wide. Further studies are needed to extend this work and develop a screening questionnaire with higher specificity and greater positive predictive value.

5.6 RECOMMENDATIONS

1. The MASQ should be validated using the psychiatric interview rather than the EPDS as the method of assessing postnatal depression.

2. The search should continue for an antenatal screening questionnaire with better specificity and positive predictive values using larger sample sizes.
3. Widespread use of the MASQ is not recommended except in the context of appropriately designed randomised trials of preventive interventions to reduce depression after childbirth.

4. There is a need for further studies on the effect on women of being identified as at higher risk in their pregnancies (Searle 1996), particularly as it relates to depression after childbirth.
CHAPTER 6

STUDY 3: ANTENATAL AND POSTNATAL SUPPORT TO OVERCOME POSTNATAL DEPRESSION: A RANDOMISED TRIAL

6.1 PREAMBLE AIMS AND OBJECTIVES

Chapter 4 investigated the prevalence of postnatal depression in South Australian women who gave birth at a tertiary women’s hospital. In Chapter 5, an antenatal screening questionnaire (Leverton et al 1989) was modified. This Modified Antenatal Screening Questionnaire (MASQ) was used to predict those pregnant women more vulnerable to developing postnatal depression with a view to evaluating a preventive intervention. This chapter describes results from a randomised trial that assessed the value of a brief intervention, two antenatal and one postnatal support and information groups. The groups were planned and offered to pregnant women who screened as more vulnerable to postnatal depression using the MASQ.

Only two controlled studies of antenatal preventive interventions for postnatal unhappiness were located in the published literature (Gordon and Gordon 1960, Elliott et al 1989). In the first, conducted four decades ago in the United States, two preparation for parenthood classes were provided in addition to the normal antenatal classes for women and their husbands. The women were not selected on the basis of any identified risk factors. At 6-8 weeks postpartum the experimental group had a lower incidence of “emotional upsets” than the intervention group (15% versus 37%).
In the second more recent controlled trial in the United Kingdom, women who screened as more vulnerable were offered a series of intensive antenatal and postnatal groups (Elliott et al 1989). Reduction in postnatal depression of a similar magnitude to Gordon and Gordon (12% versus 33%) was noted at up to 8 weeks postpartum. These studies are reviewed in more detail in the literature review of this thesis in Chapter 2. Both studies showed a substantial reduction of 59% in unhappiness or depression in the women who received the interventions. In the absence of other evidence the figures from these two studies formed the basis of the hypothesis and power calculations for this randomised trial.

The aim of the trial was to assess whether, in a group of women identified as more vulnerable, two antenatal groups and one postnatal support group would significantly lower postnatal depression.

The objectives were:

To test the hypothesis that women identified as vulnerable to postnatal depression who attended two antenatal support groups and one postnatal group would have a reduced frequency of postnatal depression by 59% from 37% to 15% (Gordon & Gordon 1960) or 33% to 12% (Elliott et al 1989) at 6 weeks, 12 weeks and 6 months postpartum compared with a control group of women also vulnerable to postnatal depression.
6.2 METHODS

To test the hypothesis a sample of 140 had an 80% chance (beta error 0.2) of detecting a statistically significant difference at the 5% level (2 tailed alpha 0.05) if postnatal depression was reduced from 37% (or 33%) in the control group to 15% (or 12%) in the intervention group (Dean et al 1990). The modified antenatal screening questionnaire (MASQ) was used to detect women vulnerable to postnatal depression (Chapter 5, Stamp et al 1996).

6.2.1 Trial entry

Eligible women were recruited from March 1992 to December 1992 during four morning antenatal clinics at the hospital. After a full explanation women signed consent and completed the MASQ (Appendix 9). Non-English speaking women were excluded from participating in the study because of limited funds for translations and interpreters. Specialised research on assessing depression after birth in transcultural contexts is in progress elsewhere (Centre for the Study of Mothers’ and Children’s Health 1996). English speaking women with a singleton pregnancy of less than 24 weeks gestation, who lived within the metropolitan area and agreed to attend extra groups if invited were eligible to enter the trial (Table 6.1) if they scored 2 or more on the MASQ (Appendix 11). Privately insured women did not attend the clinic and were therefore not available to participate (see further explanation in Chapter 5).
Table 6.1: Eligibility criteria for randomised trial of support

<table>
<thead>
<tr>
<th>Signed informed consent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluent in English language</td>
</tr>
<tr>
<td>Singleton pregnancy less than 24 weeks gestation</td>
</tr>
<tr>
<td>Resident in the metropolitan area of Adelaide</td>
</tr>
<tr>
<td>Agreed to attend extra groups if screened more vulnerable on the MASQ</td>
</tr>
</tbody>
</table>

At enrolment women gave consent to be contacted if their EPDS score indicated likely major depression in order to check support and offer a treatment referral.

6.2.2 Randomisation

Women were randomly allocated to a preventive intervention group or control group by a phone call from the antenatal clinic to an independent researcher who opened the next in a series of sequentially numbered envelopes. The randomisation schedules were prepared in advance by a researcher not involved in the trial. Variable balanced blocks were used with stratification by parity. Women were informed of their allocation by the researcher before leaving the clinic. All women received routine care and in addition, the intervention group were offered a place to attend two special antenatal support and information groups and a 6 week postnatal group.

6.2.3 The support groups

Women were invited to the groups which were held at 32 and 36 weeks gestation and 6
weeks postpartum. Group size was limited to 10 persons including partners. These groups were in addition to the antenatal childbirth education classes offered by the hospital. At the time of this trial, the hospital classes did not include specific information about postnatal depression until 6 week postpartum when a videotape was shown. Since this trial was conducted some information about postnatal depression is now included antenatally in the hospital classes (personal communication J Long 1996).

The intervention group activities were planned in collaboration with the researcher by an independent midwife educator (MS) who also ran the groups and was employed on a grant for the purpose. The groups met in a comfortable room physically removed from the hospital antenatal class venue. Partners were welcome to attend because of their emotional significance in a woman's life and potentially supportive role. There was also evidence of improved outcomes when partners attended groups (Gordon & Gordon 1960). A particular aspect of the program was developed to encourage partners to set goals with specific ideas of how they could be supportive.

The groups were developed from ideas from a number of sources (Gordon & Gordon 1960, Pacific Post Partum Support Society 1988, Elliott 1989). There was practical and emotional emphasis on planning for and expectations of life changes precipitated by the arrival of a new baby. Three groups only were offered because of some evidence that a low-cost brief intervention could be effective (Gordon & Gordon 1960). A non-directive, practical and supportive program was developed underpinned by a philosophy that acknowledged the abilities and resourcefulness of the women themselves. There was a focus on access to information, preparation and support, the extension and
development of women's existing networks and goal setting. Lists of helpful general practitioners, heath centres and other resources were developed, distributed and added to (Appendix 14). There was emphasis on the context in which the birth would occur in women's lives and ample time scheduled for them to talk, if they wished to, about their individual situations. Sections of the videotape “The baby’s fine but how are you?” were shown during groups and followed by discussion (Colton 1988). Copies of the videotape were available for loan to women and their partners.

Simple suggestions to reduce stress after the birth of the baby were: ignore unwanted advice, obtain support from one or two trusted people, form a relationship with supportive professionals, and keep the list of resources and goals in an obvious place.

The six-week postnatal group was structured for women to tell their birth stories, talk about the impact of a new baby on their lives and, if resources had been used, to discuss what had worked and what had not. The group was a time for mutual support, the educator's role being to facilitate and listen but not to offer advice unless it was directly sought.

All non-attenders in the intervention group had an information package included goal setting information, suggestions to reduce stress after the birth and the list of resources mailed to them. The packages were therefore, received by all women who were randomised to the intervention, whether or not they attended the groups.
6.2.4 Primary study outcome, data collection and analysis.

The primary study outcomes were probable major depression measured by a score of >12 on the EPDS and minor depression (which included major depression) measured by a score of >9 on the EPDS at 6 weeks, 12 weeks and 6 months postpartum.

Data were collected at trial entry, during the intervention period, after the birth and at 6 weeks, 12 weeks and 6 months postpartum by the researcher. The midwife educator was responsible for keeping an accurate attendance register. Data were collected from case notes by a data management officer (Appendix 15).

Data from all those women allocated to the intervention group were analysed as intention-to-treat, regardless of whether they attended groups or not and the results compared with the control group outcomes.

To assess if the intervention and control groups were comparable, women’s characteristics at randomisation, birth details and baby outcomes were compared. Comparisons were made between the intervention and control groups for the primary study outcomes. A parametric test (Student’s t-test) was used for continuous variables. Chi square 2x2 contingency tables and relative risk or odds ratios were used for categorical variables.
6.3 RESULTS

Of the 249 women who consented to complete the antenatal screening questionnaire, 144 (58%) screened vulnerable to postnatal depression using the MASQ. A total of 73 women were randomised to the intervention group and 71 women to the control group. Demographic characteristics such as mean age, parity and marital status were compared and there were no statistically significant differences (Table 6.2). The MASQ scores were evenly distributed between high {>4}, medium {3,4} and low {2} ranges and the mean scores were similar. There were no significant differences between the groups for mode of birth, term baby, mean birthweight of babies or Apgar scores <7 at one minute (Table 6.2).
Table 6.2 Characteristics of groups

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Intervention group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean age (years)</strong></td>
<td>25.6 (4.41 (SD))</td>
<td>27.5 (5.20 (SD))</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparas</td>
<td>46 (63%)</td>
<td>42 (59%)</td>
</tr>
<tr>
<td>Multiparas</td>
<td>27 (37%)</td>
<td>29 (41%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/de facto</td>
<td>56 (77%)</td>
<td>56 (79%)</td>
</tr>
<tr>
<td>Single/separated/widowed</td>
<td>17 (23%)</td>
<td>15 (21%)</td>
</tr>
<tr>
<td><strong>MASQ score</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (&gt; 4)</td>
<td>13 (18%)</td>
<td>14 (20%)</td>
</tr>
<tr>
<td>Medium (3,4)</td>
<td>20 (28%)</td>
<td>20 (28%)</td>
</tr>
<tr>
<td>Low (2)</td>
<td>40 (55%)</td>
<td>37 (52%)</td>
</tr>
<tr>
<td>Mean</td>
<td>3.4 (2.0)</td>
<td>3.6 (2.16)</td>
</tr>
<tr>
<td><strong>Labour and delivery</strong></td>
<td>n=71</td>
<td>n=68</td>
</tr>
<tr>
<td>Spontaneous vaginal</td>
<td>44 (62%)</td>
<td>42 (62%)</td>
</tr>
<tr>
<td>Induction</td>
<td>17 (24%)</td>
<td>14 (21%)</td>
</tr>
<tr>
<td>Augmentation</td>
<td>18 (25%)</td>
<td>14 (21%)</td>
</tr>
<tr>
<td>Instrumental</td>
<td>14 (20%)</td>
<td>19 (28%)</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>14 (20%)</td>
<td>7 (10%)</td>
</tr>
<tr>
<td><strong>Baby outcomes</strong></td>
<td>n=71</td>
<td>n=68</td>
</tr>
<tr>
<td>Birthweight (mean kg)</td>
<td>3.4 (0.6 (SD))</td>
<td>3.3 (0.5 (SD))</td>
</tr>
<tr>
<td>Apgar score &lt;7 1 minute</td>
<td>18 (25%)</td>
<td>14 (21%)</td>
</tr>
<tr>
<td>Term baby (≥37 weeks)</td>
<td>67 (94%)</td>
<td>62 (91%)</td>
</tr>
</tbody>
</table>

MASQ = Modified Antenatal Screening Questionnaire
SD = Standard Deviation
kg = kilograms
There were 5 unavoidable exclusions, two miscarriages in the intervention group giving a total of 71 women. One termination of pregnancy, one miscarriage and one stillbirth at term reduced the control group to 68 women.

Overall attendance at groups was low. The rate for the three groups was 65 (31%) out of 213. The figures for attendance by individual group are presented in Table 6.3.

<table>
<thead>
<tr>
<th>Table 6.3: Number of women who attended support groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Antenatal groups</strong></td>
</tr>
<tr>
<td>At 32 weeks</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>38</td>
</tr>
<tr>
<td>At 36 weeks</td>
</tr>
<tr>
<td>23</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td><strong>Postnatal groups</strong></td>
</tr>
<tr>
<td>At 6 weeks</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>21</td>
</tr>
</tbody>
</table>

There were no differences in attendance rates between primiparous and multiparous women (Table 6.4).

<table>
<thead>
<tr>
<th>Table 6.4: Odds of a difference in group attendance between primiparas and multiparas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Antenatal</strong></td>
</tr>
<tr>
<td>At 32 weeks</td>
</tr>
<tr>
<td>19 41</td>
</tr>
<tr>
<td>1.50 0.48-4.73</td>
</tr>
<tr>
<td>At 36 weeks</td>
</tr>
<tr>
<td>16 35</td>
</tr>
<tr>
<td>1.37 0.42-4.55</td>
</tr>
<tr>
<td><strong>Postnatal</strong></td>
</tr>
<tr>
<td>At 6 weeks</td>
</tr>
<tr>
<td>11 24</td>
</tr>
<tr>
<td>1.65 0.41-7.98</td>
</tr>
</tbody>
</table>

OR = Odds Ratio  
CI = Confidence Interval
No statistically significant differences in attendance rates were revealed between single and partnered/married women (Table 6.5).

Table 6.5: Odds of a difference in group attendance between single women or those married or living with a partner

<table>
<thead>
<tr>
<th></th>
<th>Single</th>
<th>Married/de facto</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antenatal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=17</td>
<td></td>
<td>n=54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 32 weeks</td>
<td>9</td>
<td>18</td>
<td>2.25</td>
<td>0.65-7.86</td>
</tr>
<tr>
<td>At 36 weeks</td>
<td>8</td>
<td>15</td>
<td>2.31</td>
<td>0.66-8.21</td>
</tr>
<tr>
<td><strong>Postnatal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=17</td>
<td></td>
<td>n=54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 6 weeks</td>
<td>4</td>
<td>11</td>
<td>1.20</td>
<td>0.24-5.01</td>
</tr>
</tbody>
</table>

OR = Odds Ratio
CI = Confidence Interval

Similarly, there were no differences revealed in group attendance rates between those with low or medium/high MASQ scores.

Table 6.6: Odds of a difference in group attendance between women with low MASQ and medium/high MASQ scores

<table>
<thead>
<tr>
<th></th>
<th>MASQ low, 2</th>
<th>MASQ med/high &gt;2</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antenatal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=39</td>
<td></td>
<td>n=32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 weeks</td>
<td>15</td>
<td>13</td>
<td>0.91</td>
<td>0.31-2.65</td>
</tr>
<tr>
<td>36 weeks</td>
<td>13</td>
<td>11</td>
<td>0.96</td>
<td>0.32-2.87</td>
</tr>
<tr>
<td><strong>Postnatal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 weeks</td>
<td>10</td>
<td>5</td>
<td>0.50</td>
<td>1.86-7.81</td>
</tr>
</tbody>
</table>

OR = Odds Ratio
CI = Confidence Interval

The mean age of women who attended at least the first group was 26.64 (SD 4.82), range 19-36 years, compared with 24.84 (SD 4.09) range 18-32 years for non-attenders.
The incidence of teenage pregnancies was evenly distributed between those who attended the first group 3/27 (11%), and non-attenders 4/44 (10%).

Two partners attended the antenatal groups and only one attended all three groups. One single woman came to two out of three groups with her mother as her support person and another woman brought a female friend once.

The return rates for the EPDS mailed at 6 and 12 weeks were 92% and 87% at 6 months postpartum. Slow responders were followed up by a second letter or a telephone call.

When the data were analysed for a likely case of major depression as indicated by a score of >12 on the EPDS no differences were found between the groups at 6 weeks. Of 64 women in the intervention group 8 (13%) compared with 11 (17%) of 64 controls were depressed (OR 0.69 95% CI 0.23-2.03). At 12 weeks 7 (11%) of 64 compared with 10 (15%) of 65 controls were depressed (OR 0.69 95% CI 0.22-2.14) and at 6 months 9 (15%) of 60, compared with 6 (10%) of 61 controls (OR 1.62 95% CI 0.47-5.91)(Table 6.7).

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks</td>
<td>n=64</td>
<td>n=64</td>
<td>0.69</td>
<td>0.23-2.03</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 weeks</td>
<td>n=63</td>
<td>n=65</td>
<td>0.69</td>
<td>0.22-2.14</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>n=60</td>
<td>n=61</td>
<td>1.62</td>
<td>0.47-5.91</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OR = Odds Ratio
CI = Confidence Interval
When data were analysed to include minor depression as indicated by a score of greater than 9 on the EPDS and again there were no differences between the groups at the three assessment points.

At 6 weeks, there were 22 (34%) of 64 women in the intervention group compared 22 (34%) of 64 controls scored as having likely minor depression (OR 1.00 95% CI 0.45-2.21). At 12 weeks 14 (22%) of 63 compared with 17 (26%) of 65 controls scored for minor depression. At 6 months there were 14 (23%) of 60 compared with 10 (16%) of 61 controls who scored >9 on the EPDS (OR 1.55 95% CI 0.58-4.22)(Table 6.8).

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks</td>
<td>n=64</td>
<td>n=64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>22</td>
<td>1.00</td>
<td>0.45-2.21</td>
</tr>
<tr>
<td>12 weeks</td>
<td>n=63</td>
<td>n=65</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>17</td>
<td>0.81</td>
<td>0.33-1.96</td>
</tr>
<tr>
<td>6 months</td>
<td>n=60</td>
<td>n=61</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>10</td>
<td>1.55</td>
<td>0.58-4.22</td>
</tr>
</tbody>
</table>

OR = Odds Ratio  
CI = Confidence Interval

6.4 DISCUSSION

This is the first Australian randomised controlled trial to assess the effect of a primary preventive psycho-social intervention designed to reduce depression after childbirth. For several years there have been calls to mount such trials (Murray & Stein 1989, Lumley 1990). The main strength of the study lies in its methodology in which a "new"
intervention was evaluated by means of a randomised trial in which all women randomised were analysed as intention-to-treat.

The trial did not detect a difference between the groups at the three assessment points of 6 weeks, 12 weeks and 6 months postpartum. Two previous studies had suggested postnatal depression could be more than halved using supportive interventions (Gordon & Gordon 1960, Elliott et al 1989). This study failed to show such a reduction, however the power of the study to detect smaller reductions was small. The finding of no difference may mean that the study was not powerful enough to detect the smaller differences observed between the groups at 6 weeks and 12 weeks postpartum, even though these differences may be of clinical significance.

The study hypothesis was based on two previous studies that took place in widely differing populations and time periods. It may have been an optimistic expectation that the hypothesised reduction could be achieved. A larger sample size would have enabled the examination of smaller but possibly clinically significant differences between the intervention and control groups.

Alternatively it is possible that the lack of a consistent trend towards lower depression scores in the intervention group at the three assessment times for either minor or major depression is an indication that the study was not significantly underpowered.

The EPDS which has high sensitivity and specificity was used to assess likely minor depression and major depression and was found to be acceptable to women and the rates of return were high.

The poor attendance at the three groups was more marked for the 6 week postnatal groups than for the antenatal groups. In particular, attendance of partners was lower than anticipated. Attendance rates and drop-outs at the hospital based antenatal groups were not kept. Hospital 6-week classes were said to be less popular (J. Long, personal
communication 1992). It may be possible that the method of delivering the intervention to specifically designed groups, with the main focus to avoid depression after childbirth, was associated with a stigma for women already identified as vulnerable. One way to avoid this would be to offer the intervention in conjunction with the hospital classes. However this would raise the possibility of missing an important sub-group of less advantaged women who do not attend childbirth education classes (Redman et al 1991, Lumley & Brown 1993). A further possibility is that offering such groups in a community setting may have been better accepted.

Two Australian studies have reported on differences between antenatal class attenders and non-attenders with similar patterns of lower attendance in women who are younger, poorer and less well educated (Redman et al 1991, Lumley & Brown 1993). This study did not collect data about education and income. Although the numbers are getting small for sub-analysis, there were no differences identified in group attendance between single and partnered women, or women with higher MASQ scores and hence a greater number of vulnerability factors, and those with lower scores.

Multiparous women are less likely than primiparous women to attend antenatal childbirth education groups in Australia (Redman et al 1991, Lumley & Brown 1993). Elliott et al (1989) commented on low attendance rates of second-time mothers. After stratification by parity to ensure even distribution between the intervention and control groups no statistically significant differences in attendance rates were found in our trial. The inclusion of all multiparous women in this trial and the different population involved may have contributed to the differences between the two trials.
There is another possible reason for low attendance at groups. Could women who screened as more vulnerable to depression have had fewer chances to get to groups owing to domestic and childcare ties, partners unwilling to be supportive or attend or other related issues? Women were invited to give their reasons for non-attendance and these are presented in Chapter 7 of this thesis.

The high number of women assessed as vulnerable may raise questions as to the value of this screening except in the context of randomised trials. In this study the frequency of postnatal depression was lower that that hypothesised and therefore closer to the population range (Chapter 5, Stamp & Crowther 1994a, Astbury et al 1994), whereas the antenatal screening questionnaire more effectively predicted minor or borderline depression (Elliott 1989).

6.5 CONCLUSIONS

Depression after childbirth remains a major cause of distress for women. In this study, a simple supportive antenatal and postnatal intervention was offered to women who were identified as vulnerable to postnatal depression antenatally using a modified antenatal screening questionnaire (MASQ). The study hypothesis, that such support would reduce depression in women receiving the intervention by 59%, required a sample size of 140 women. There was low attendance at the groups. Analysis by intention-to-treat revealed that the intervention did not reduce either major or minor depression at any of the three assessment points: 6 weeks, 12 weeks and 6 months.
6.6 RECOMMENDATIONS

1. Further exploration of ways of selecting vulnerable women is required, including the search for a more effective screening method followed by the application of interventions that are both effective and acceptable to women.

2. Alternatively an intervention trial with a large enough sample for a clinically significant reduction in depression after childbirth could be designed and offered antenatally to all women.

3. Further research is indicated into women’s reasons for not attending antenatal and postnatal groups.

4. Other randomised trials are needed to assess the use of non-professionals and community settings on group attendance and outcomes.

5. More research is indicated on prediction of vulnerability in community settings in conjunction with preventive interventions.

6. Based on the results of this trial it is not possible to recommend changes in clinical practice. More research is needed into other methods of applying supportive interventions and reaching women who are at risk of becoming depressed after the birth of their babies.
CHAPTER 7

STUDY 4  PREGNANT WOMEN'S VIEWS OF A QUESTIONNAIRE TO PREDICT POSTANTAL DEPRESSION AND WHY THEY DECLINED SUPPORT

7.1 PREAMBLE

Chapters 4, 5 and 6 reported studies in which participants consented to provide personal information about their feelings and lives for the purposes of research. Women participate in pregnancy and childbirth studies largely for altruistic motives or for the greater good (Elbourne 1987, Oakley 1992). The views of participants in randomised trials are increasingly being sought and seen as an important area of inquiry (Mulrow and Oxman 1996).

Chapter 5 reported on the Modified Antenatal Screening Questionnaire (MASQ) adapted from Leverton et al (1989) and its administration to women before 24 weeks gestation in the antenatal clinic of the Women’s and Children’s Hospital. Women answered a number of personal questions such as: satisfaction with any current relationship including whether they felt their partner loved them; their problem solving style, including getting support or coping alone; the presence of a confidante in their lives; previous emotional problems or self defined postnatal depression; and questions relating to anxiety (Appendices 11 and 12).
Research and Ethics Committee approval to undertake the study was granted (Appendix 4), however it was a concern of the chair that women may find the personal information sought in the MASQ intrusive and distressing (personal communication Dr R. Kenihan 1992). A simple questionnaire was designed which aimed to assess whether these concerns were valid (Appendix 16). Further aims were to ascertain whether women would participate in such a study again and the reasons why some did not come to support groups offered to reduce postnatal depression (Chapter 6).

The objectives of the study were:

1. To seek women’s views about completing the MASQ.
2. To ascertain women’s reasons for not attending support groups (if applicable).
3. To disseminate the results of the randomised trial and prediction study to participants.
4. To assess whether women would participate in such a study again.

7.2 METHODS

In March 1994, following the analysis of the results of the two previous studies, all women who completed the MASQ at the Queen Victoria Hospital during the study recruitment period from March 1992 to January 1993 were mailed a summary of the results and thanked for their participation (Appendix 17). At the same time they were invited to complete a simple questionnaire asking them to explain, in their own words, how they felt about completing the MASQ in the antenatal clinic (Appendix 16).
Responses were placed into categories broadly under the headings positive or negative. In addition, the women who screened as more vulnerable and were randomised to the support groups were asked if they had actually attended groups and if not, what their reasons were. All women were asked whether they would participate in such a study again.

A decision not to send reminders and follow-up letters was affected by the length of time since the original studies and the additional costs both in postage and of the researcher’s time.

7.3 RESULTS

A return rate of 111 (47%) of 238 was achieved. Of respondents, 66 (59%) had screened more vulnerable to postnatal depression using the MASQ, the same proportion as the sample approached in the antenatal clinic (144/249 (58%) Chapter 6). The difference in the denominators relates to the 11 women whose pregnancies did not progress to a live birth who were therefore excluded from this study (Figure 1, Chapter 5).

7.3.1 Women's feelings about completing the MASQ

Answers were placed into several sections and presented in tables as positive (Table 7.1) or negative responses (Table 7.2).
Sub-analysis by vulnerable status revealed that there was an equal distribution of positive comments between those women who screened more and those who screened less vulnerable using the MASQ. Examples of supportive comments were:

"Always happy to participate in research/surveys etc in areas I believe are worthwhile. This area is well worthwhile!"

"I was happy to help. I also felt it would help me be in touch with my own feelings. I was not offended and did not feel it was an encroachment on my personal life."

"I had no feelings about filling it in. It did not make me depressed or feel more vulnerable."

<table>
<thead>
<tr>
<th>Table 7.1: Positive responses to the MASQ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comment</strong></td>
</tr>
<tr>
<td>Did not have a problem with it</td>
</tr>
<tr>
<td>Good idea/ keen to help</td>
</tr>
<tr>
<td>Felt I wouldn't be a candidate</td>
</tr>
<tr>
<td>Helped me, raised my awareness</td>
</tr>
<tr>
<td>Made other suggestions re PND</td>
</tr>
<tr>
<td>Not offended, did not add to fears</td>
</tr>
</tbody>
</table>

* some women made more than one comment

Analysis of the negative comments revealed that all but one were from women who screened as more vulnerable. For 7 (7%) of 99 women, timing of completion of the MASQ was poor (Table 7.2). One woman stated:
"I remember filling it out when I was in a bad mood, low self-esteem and not getting on well with my partner .......... I know what to do to get over it and don't consider it abnormal."

A further 7 (7%) of 99 were a little apprehensive or anxious about completing the MASQ, for example:

"I was slightly apprehensive about what would be involved in participating in the study, but I do believe it is very important to understand postnatal depression which can become very serious - and try to prevent it before it comes."

Three women stated that although they were glad to help, they were unhappy or anxious when the MASQ identified them as more vulnerable. One who did become depressed after the birth expressed it thus:

"I was only too happy to be of some help as I realise the need to find help for those suffering postnatal depression. Knowing I was more vulnerable however did cause some anxiety I could have done without."

One woman would have appreciated a more private setting in which to complete the MASQ and another stated that at the time she did not reveal her true feelings which may have placed her in the more vulnerable group.
Table 7.2: Negative responses to the MASQ

<table>
<thead>
<tr>
<th>Comments*</th>
<th>n=99</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing was poor</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Slightly apprehensive</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Somewhat offended</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Unhappy about vulnerability</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Did not reveal true feelings</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Activated feelings about past PND</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Would have liked more privacy</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* some women made more than one comment  
PND = postnatal depression

Women were asked if they would take part in such a study again with the option of three responses “yes”, “no”, or “maybe” (Table 7.3). Almost all answered “yes” (82%) or “maybe” (14%) to this question.

Table 7.3: Would participate in such a study again

<table>
<thead>
<tr>
<th></th>
<th>n=111</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>91</td>
<td>82</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maybe</td>
<td>16</td>
<td>14</td>
</tr>
</tbody>
</table>

7.3.2 Reasons given for non-attendance at groups

If a woman had been randomised to the intervention and had not attended groups she was invited to explain, in her own words, why she had not. Sixteen women responded to this question and some gave more than one reason. The commonly stated reasons are included in table 7.4. Five women stated that they did not feel they needed the groups. For example:
“At first I did not have support, then I had the support of my baby’s father and didn’t need the groups.”

“I didn’t feel I needed help emotionally.”

“I knew I wasn’t going to be able to make it to the groups and had a low estimation of how useful they’d be to me (unfounded I know).”

“I didn’t feel group therapy was necessary for me.”

Lack of transport was an issue for four women and another four were too busy to attend. For three women, the baby came early and two received their first notice too late to attend and then did not get around to attending the next one.

Table 7.4: Reasons for non-attendance at groups

<table>
<thead>
<tr>
<th>Reasons</th>
<th>n=16</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not feel a need for groups</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Problems accessing transport</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Too busy</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Baby born early</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Invitation arrived late</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Moved hospital or interstate</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Attended only one then didn’t return</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

* some respondents gave more than one reason

7.4 DISCUSSION

This survey was conducted at the completion of the randomised trial to overcome depression after childbirth (Chapter 6). Prior to the trial women had completed the MASQ to identify possible vulnerability to postnatal depression. The intimate nature of
some of the questions prompted this survey to assess how acceptable the MASQ was to this sample of women. A further issue of importance was low attendance at groups offered in the randomised trial. Qualitative information from participants may give some indication of reasons.

The study was limited by its retrospective nature and the low rate of return. For some women, two years had elapsed since the first approach with the MASQ in the clinic. This may have had an impact on their ability to recall the event accurately. Just under half the women who completed the MASQ responded to the survey and several questionnaires were returned unopened because women had moved house. It is possible that women who did not return questionnaires or those who had moved house differed in important aspects from the respondents.

The numbers are far too small to be generalisable to other populations however some important points were raised. For most respondents, completion of the MASQ did not pose problems. A further substantial number stated that they were motivated by a desire to participate in research that may help to reduce the number of women who become depressed after the birth of their babies. This desire to help is similar to other studies seeking women's views of participating in research (Elbourne 1987, Oakley 1992).

Smaller numbers of women were anxious when faced with the possibility or the reality of being assessed as more vulnerable. Most who expressed anxiety added qualifying statements as to the importance of the study, the need to help unhappy women and their own desire to be of some assistance.
The most common reason given by women for non-attendance at the groups offered were that they personally did not feel the need and at least one woman saw them as "group therapy". At enrolment women were informed that they could change their minds about participation without penalty and some who originally agreed may, for a variety of reasons, have changed their minds during the course of the pregnancy. One woman stated her reason being that she now had support from the baby's father that was not available at the time of completing the MASQ. Support of the partner is seen to be very important to women (Romito 1990) and is understandably likely to be more highly rated than any supportive group.

The second most common reason given, problems with transport, may by solved by holding such groups either in community settings to follow on from scheduled clinic visits or by provision of transport.

7.5 CONCLUSIONS

In this survey study results were mailed to participants, their views of completing the MASQ sought and non-attenders of groups offered to reduce postnatal depression were invited to give their reasons.

The MASQ was acceptable to most respondents. Most expressed a wish to help in research to reduce postnatal depression and this included the few women who had negative comments about completing the MASQ. Most of the negative comments came
from more vulnerable women. The most common reason given by women for non-
attendance at the groups offered was that they did not feel a need for them.

7.6 RECOMMENDATIONS

The research raised issues for consideration if further studies are planned:

1. It is possible that one to one counselling may be more acceptable to some women
   than groups. A trial could be mounted to evaluate the effectiveness of an individual
   counselling intervention and its acceptability to women.

2. The timing of sessions and their geographical location to better suit individual
   women’s needs could be considered in future studies.

3. The study highlighted the need for researchers to listen to the views and experiences
   of the participants in the research process. This may provide valuable information
   for the planning of future studies.
CHAPTER 8

GENERAL CONCLUSIONS FROM THE STUDIES

The studies that make up this thesis investigated the prevalence, prediction and value of an intervention to reduce postnatal depression and included some of the views of the women who participated. To date there has been little controlled evaluation of such psycho-social interventions nor the means of predicting those who may be more likely to become depressed after the birth of their babies. The conclusions and implications for practice and further research from each study have been discussed at the end of each section of the thesis. This last section attempts to draw together and summarise the main conclusions.

Postnatal depression has considerable public health implications for the population of childbearing women and its prevalence in these studies was within commonly demonstrated ranges within Australia and world-wide. The prediction study showed that there is a need for the development of a more effective means of predicting those women who may become depressed after birth at a variety of postnatal assessment times as these may vary. The intervention trial described in this thesis demonstrated that the intervention was not able to reduce postnatal depression. There were low attendance rates and the possibility that supportive groups may be perceived by some women as unlikely to meet their needs. Further research is needed into women's preferences and reasons for not participating in groups with a perceived 'negative' focus. A more individualised intervention trial in which the women themselves can choose when, how much and from whom they receive support may be more acceptable.
but would involve some research design challenges. The use of non-professionals and support in different settings also warrants further investigation. As the prevalence of postnatal depression was closer than hypothesised to background rate in Australia, a larger randomised trial of preparation and support that includes low-risk women warrants consideration.

The use of supportive groups for more vulnerable women should not be widely introduced on the basis of this research.
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Colton C. (1988). *The baby's fine, but how are you? The experience of postnatal depression*. St Margaret's Private Hospital, Darlinghurst New South Wales.


Queen Victoria Hospital. (1992). *Perinatal Protocols and Guidelines for Management*. Compiled by Freemantle J. Adelaide Medical Centre for Women and Children, South Australia

Queen Victoria Hospital. (1992). *Policies and procedures for neonatal care*. Queen Victoria Hospital, South Australia


Southern Community Health Services Research Unit (1990). *Nothing or no one could have told me what it was going to be like*. The third & final report of the New Parenthood Project on the first year of parenting. SCHSRU. Adelaide, South Australia.


Tresillian Family Care Centres (1994). *Some postnatal feelings.* Tresillian Family Care Centres, Petersham, New South Wales.


Appendix 1

EDINBURGH POSTNATAL DEPRESSION SCALE
(Cox JL., Holden JM, Sagovsky R. 1987)

As you have recently had a baby, we would like to know how you are feeling now. Please TICK the answer which comes closest to how you have felt in the past 7 days, not just how you feel today.

Here is an example already completed.
I have felt happy:

a. Yes, all the time
b. Yes, most of the time
c. No, not very often
d. No, not at all

This would mean: “I have felt happy most of the time” since my baby was born. Please complete the other questions in the same way.

In the past 7 days:

1. I have been able to laugh and see the funny side of things:
   a. As much as I ever did
   b. Not quite so much now
   c. Definitely not so much now
   d. Not at all

2. I have looked forward with enjoyment to things:
   a. As much as I ever did
   b. Rather less than I used to
   c. Definitely less than I used to
   d. Hardly at all

3. I have blamed myself unnecessarily when things went wrong:
   a. Yes, most of the time
   b. Yes, some of the time
   c. Not very often
   d. No, never

4. I have been anxious or worried for no good reason
   a. No, not at all
   b. Hardly ever
   c. Yes, sometimes
   d. Yes, very often

5. I have felt scared or panicky for no very good reason
   a. Yes, quite a lot
   b. Yes, sometimes
   c. No, not much
   d. No, not at all
6. Things have been getting on top of me:
   a. Yes, most of the time I haven't been able to cope at all
   b. Yes, sometimes I haven't been coping as well as usual
   c. No, most of the time I have coped as well as ever
   d. No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping:
   a. Yes, most of the time
   b. Yes, sometimes
   c. Not very often
   d. No, not at all

8. I have felt sad or miserable:
   a. Yes, most of the time
   b. Yes, quite often
   c. Not very often
   d. No, not at all

9. I have been so unhappy that I have been crying:
   a. Yes, most of the time
   b. Yes, quite often
   c. Only occasionally
   d. No, never

10. The thought of harming myself has occurred to me:
    a. Yes, quite often
    b. Sometimes
    c. Hardly ever
    d. Never
Appendix 2

ROSENBERG SELF-ESTEEM SCALE
(Rosenberg 1965)

Please tick the answer that you think most applies to you:

1. I feel that I’m a person of worth, at least on an equal plane with others.
   a. Strongly agree  
   b. Agree  
   c. Disagree  
   d. Strongly disagree

2. I feel that I have a number of good qualities
   a. Strongly agree  
   b. Agree  
   c. Disagree  
   d. Strongly disagree

3. All in all, I am inclined to feel that I am a failure
   a. Strongly agree  
   b. Agree  
   c. Disagree  
   d. Strongly disagree

4. I am able to do things as well as most other people:
   a. Strongly agree  
   b. Agree  
   c. Disagree  
   d. Strongly disagree

5. I feel I do not have much to be proud of:
   a. Strongly agree  
   b. Agree  
   c. Disagree  
   d. Strongly disagree

6. I take a positive attitude toward myself
   a. Strongly agree  
   b. Agree  
   c. Disagree  
   d. Strongly disagree
7. On the whole, I am satisfied with myself:
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

8. I wish I could have more respect for myself:
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

9. I certainly feel useless at times:
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

10. At times I think I am no good at all:
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree
Dear Ms. Stamp

RE: APPLICATION FOR RESEARCH PROJECT:
PRELIMINARY POSTNATAL STUDY

Your request was considered at the last meeting of the Research and Ethics Committee held on 19 July 1990.

Approval has been given for you to proceed subject to the following amendments:

a) Appendix A Part III - it was felt that other staff should be included as well as "the midwife or student midwife".

b) that another item should be included in the questionnaire as regards reasons for refusal to breast feed.

Please find attached a copy of an article on "The Decline of Breast Feeding", which A/Professor MacLennan thought would be of interest to you in your work.

Approval is also subject to the following being supplied to the undersigned:

1) The date the project is to commence
2) The date the project is completed
3) A copy of the final publication or report.

I wish you every success for this project.

Yours sincerely

CAROLINE KING
Secretary, Research and Ethics Committee
Dear Ms. Stamp

RE: PROPOSED RESEARCH: RANDOMISED CONTROLLED TRIAL MEASURING THE EFFECTIVENESS OF AN ANTENATAL AND POSTNATAL INTERVENTION DESIGNED TO REDUCE POSTNATAL DEPRESSION

Thank you for attending the July meeting of the Research and Ethics subcommittee, to clarify issues of concern on the above research proposal.

Approval has been given for the project, with a rider for the commencement time, which you are requested to negotiate with the Outpatient Department Staff.

As discussed, it is expected that the researcher will recruit and conduct the research.

Approval to proceed is also subject to the following being supplied to the undersigned:

1. The date the project is to commence
2. The date the project is completed
3. Progress reports annually (if project continues for more than one year)
4. A copy of the final publication or report.

I wish you every success for this project.

Yours sincerely

CAROLINE KING
Secretary
Research & Ethics Subcommittee

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Appendix 5

Postnatal Study
The Queen Victoria Hospital
Information Sheet

We would like to invite you to take part in this important post delivery study, we want to learn about your experiences since giving birth to your baby and to ask you some questions about your experience. These include: some feeding method questions and how you feel about advice and care given by the midwives and others.

Feedback from you about how you feel about your care helps in evaluating practices and may lead to more effective care.

If you agree to take part, the midwifery researcher who is not involved in providing direct care will meet and talk to you. This is to find out whether or not you plan to breastfeed, and ask you to complete a short questionnaire. It will take about 7 minutes to complete.

After discharge home 6 weeks after delivery another similar questionnaire will be sent to you for completion and return in a prepaid envelope. This will take about 10 minutes to complete and will include questions about feeding your baby.

At 6 months another questionnaire will be mailed to find out about your method of feeding at that time.

All information given will be treated in strict confidence and your name will not appear on the questionnaire. A number coding system which will only be known to the researcher will be used to protect your identity.

We hope you are able to take part in this postnatal study.

Thank you

Georgina Stamp (Midwife, Midwifery Fellow, QVH)

This project has been approved by Queen Victoria Hospital Research and Ethics Committee
Appendix 6

INFORMATION SHEET

POSTNATAL DEPRESSION PREDICTION AND RANDOMISED TRIAL

Welcome to the Queen Victoria Hospital. If you are expecting a baby, we are asking you to fill in a questionnaire whilst you are waiting to be seen in the clinic. This will give us some additional information about you and it may help us to design services that are particularly suited to your needs and those of other women.

You may be aware that some women can suffer from mood changes or unhappiness after the birth of a baby. It can be as ‘the blues’ in the first few days. Or last a longer time. It is quite a common problem and can take a new mother by surprise. In an effort to understand the reasons behind the feelings, a great deal of research is being done. Researchers have found some ways of identifying women whose chance of mood changes may be higher than others. If we can identify this group before the baby is born, maybe we can help those women who might become unhappy later.

This questionnaire is the first stage in our research. Later we will wish to contact you again after the birth with a simple questionnaire at 6 weeks, 12 weeks and 6 months after your baby is born.

If you agree to take part, you will be asked to sign a consent form, and then complete this questionnaire. A member of the study team is then available to answer any questions you might have. When you have completed both the consent form and the questionnaire, please give them to the midwife researcher or hand into the reception desk. You are, of course, free to change your mind and withdraw at any time. Any information given to us by you will be treated in the strictest confidence.

Another member of our research team is setting up some informal groups for women (and their partners) to prepare for the practical and emotional changes involved in having children. The ten women or couples invited to join each group will meet twice later in the pregnancy and once after the baby is born. Because we are trying something new and want to know if these groups are helpful, places will be randomly chosen (by chance). We will let you know if we can offer you a place in one of these groups. They will be in addition to the classes already offered at the hospital.

A member of the research team, (Georgina Stamp, midwifery researcher or Caroline Crowther, obstetrician) is available via the switchboard to answer any questions you may have about the study.

Thankyou for your help.
Postnatal Study Consent Form

I consent to participate in the postnatal study.

The researcher has explained to me that I will be invited to fill in two sets of questionnaires, one before leaving hospital and another which will be posted to me 6 weeks after my baby's birth.

I understand that my participation may not be of benefit to me personally, but that it may help to improve the quality of midwifery services.

I understand no information either from my questionnaire or medical history will be published in a manner that would reveal my identity and that the researcher is the only person to know my identity.

I also understand that my involvement in the project will not affect my relationship with my medical advisers.

I also understand that I am free to withdraw from the project at any stage.

Signed: .................................................................

Address: .................................................................

Post Code .................................................................

Research Worker: .................................................................

Date: .................................................................
CONSENT FORM

PREDICTION OF POSTNATAL DEPRESSION AND RANDOMISED TRIAL

I consent to participate in the antenatal and postnatal study.

The researcher has explained to me that I will be invited to take part in a study which will involve me filling in a questionnaire now and at 6 weeks, 12 weeks and 6 months after the birth of my baby. I will be willing to attend three extra classes if invited.

I understand that my participation may not be of benefit to me personally, but that it may help to improve the quality of midwifery services.

I understand that no information either from my questionnaire or my history will be published in a manner that would reveal my identity and the researcher is the only person to know my identity.

I also understand that my involvement in the project will not affect my relationship with my medical advisers and that I am free to withdraw at any stage.

I agree that the midwifery researcher may contact me in relation to information on my questionnaires should it be necessary.

Signed: ..................................................

Address: (new address if planning to move)

Postcode ................................................ Telephone: ............................................

Research worker ................................................ Date: .............................................
LEVERTON QUESTIONNAIRE (1984) FOR
WOMEN WHO DO NOT HAVE ANY CHILDREN

Name: ........................................ 
Today's Date: ...................... 
Date of Birth: ..............

1. When is your baby due?
   ....... ....... ....... 
   Day    Month   Year 
   So, how many weeks pregnant are you? .......

   Are you planning to move from your house/area before or soon after the birth of your baby
   Yes   No

Please circle your answers

2. Have you any experience of looking after babies
   Yes   No
   a) done any baby sitting? 
   Yes   No
   b) changed a nappy? 
   Yes   No
   c) fed a baby? 
   Yes   No
   d) bathed a baby? 
   Yes   No

3. Have you close relatives/friends with small children? 
   Yes   No

4. Have you been pregnant before? 
   Yes   No

5. Have you ever had:
   a) a termination of pregnancy? 
      (therapeutic abortion) 
      Yes   No
   b) a miscarriage? 
      Yes   No
   c) a stillbirth 
      Yes   No

6. Was this pregnancy planned? 
   Yes   Not exactly   No
      (Please explain)

7. Did you have any difficulty in getting pregnant? 
   Yes   No
   a) If yes, had you been trying for
      more than 1 year
      more than 2 years
      more than 3 years

   b) If yes, did you have any treatment for infertility? 
      Yes   No

8. Are you pleased to be pregnant now? 
   Yes   Mixed feelings   No

9. Have you at any time regretted that you became pregnant?
   Not at all   Initially   For several weeks   Still do
10. Before you became pregnant were your periods regular? Yes Usually No

a) Before you became pregnant were your periods painful?
Never Sometimes Often Always

11. Before you were pregnant did you get tense before a period?
Never Sometimes Often Always

a) Before you were pregnant did you get irritable before a period?
Never Sometimes Often Always

12. Would you describe your general health as:

Good Fair Poor (please give brief details, including any medication you are taking)

13. Have you ever seen your GP for trouble with "nerves"? Yes No

14. Has your doctor ever given you any tablets (or medicine) for "nerves", depression, anxiety or sleep? Yes No

15. Can you remember the name of the tablets (or medicine)?

-------------------------------------------------------------

16. Did your doctor arrange for you to see a specialist such as a psychiatrist, clinical psychologist or community nurse?

No Yes I saw a ...........................................(please specify).

If yes, (a) was this: as an outpatient?
or in your home?
or as an inpatient?

(b) Are you still receiving treatment?

Yes No I stopped going ............... .............

Month Year

17. Are you married?

Yes

No, I'm ..................

living with my boyfriend
planning to live with my boyfriend
engaged
single
separated
divorced
widowed
other (please explain)

Please circle more than one if necessary.
If you are single and do not have a boyfriend at the moment, please go to QUESTION 23.

18. In general, how would you say you and your partner get on together?

   Very well         Satisfactorily        Not very well

19. Do you ever wonder whether your partner loves you?

   Never             Sometimes           Often          Always

20. Do you ever wonder whether you love your partner?

   Never             Sometimes           Often          Always

21. On the whole, how do you feel about your relationship with your partner?

   Very satisfied    Satisfied          A little unsatisfied    Not satisfied

22. Do you feel that your partner is there when you need him? (for practical help, support, to listen)

   Never             Sometimes           Often          Always

23. If you have a problem, do you prefer to solve it yourself?

   Never             Sometimes           Often          Always

   If you have a problem do you prefer to talk it over with your partner?

   Never             Sometimes           Often          Always

   If you have a problem do you prefer to talk it over with a relative?

   Never             Sometimes           Often          Always

   If you have a problem do you prefer to talk it over with a friend?

   Never             Sometimes           Often          Always

24. Do you feel that there is a friend (or relative) available when you need one (for practical help, support, to listen)?

   Never             Sometimes           Often          Always

25. Can you confide in your partner as much as you would like?

   Never             Sometimes           Often          Always

26. Have you been under stress recently? Yes No

   If yes, please state briefly what the stress is ........................................

.................................................................
27. Do you have any housing problems? 
   Yes No

   If yes, please state briefly what the problem is ..............................................

   .........................................................................................................................

28. Would you say you have financial problems 
   Yes No No more than others

29. Are you working at present? 
   Yes No

   (a) do you plan to return to work after the baby is born? 
   Yes No Not sure

   (b) what is your job? ..............................................................

30. What work does your partner do? ............................................

These questions are concerned with the way you feel or act. They are all simple. Please circle the answer that applies to you. Don't spend long on any one question.

1. Do you often feel upset for no obvious reason? 
   Yes No

2. Are you troubled by dizziness or shortness of breath? 
   Often Sometimes Never

3. Can you think as quickly as you used to? 
   Yes No

4. Have you felt as though you might faint? 
   Frequently Occasionally Never

5. Do you often feel sick or have indigestion? 
   Yes No

6. Do you feel that life is too much effort? 
   At times Often Never

7. Do you feel uneasy and restless? 
   Frequently Sometimes Never

8. Do you sometimes feel tingling or pricking sensations in your body, arms or legs? 
   Rarely Frequently Never

9. Do you regret much of your past behaviour? 
   Yes No

10. Do you sometimes feel really panicky? 
    Yes No

11. Has your appetite got less recently? 
    Yes No

12. Do you wake unusually early in the morning? 
    Yes No

13. Would you say you were a worrying person? 
    Very Fairly Not at all

14. Do you feel unduly tired and exhausted? 
    Often Sometimes Never

15. Do you experience long periods of sadness? 
    Often Sometimes Never

16. Do you feel "strung up" inside? 
    Yes No

17. Can you get off to sleep alright at the moment? 
    Yes No
18. Do you have to make a special effort to face up to a crisis or difficulty?
   Very much so       Sometimes       No more than anyone else

19. Have you ever had the feeling you were going to "pieces"?
   Yes       No

20. Do you often suffer from excessive sweating or fluttering of the heart?
   Yes       No

21. Do you find yourself needing to cry?
   Frequently       Sometimes       Never

22. Do you have bad dreams which upset you when you wake up?
   Frequently       Sometimes       Never

23. Has your sexual interest altered?
   Less       The same       Greater

24. Have you lost the ability to feel real sympathy for other people?
   Yes       No
ANTENATAL CLINIC QUESTIONNAIRE FOR WOMEN WHO ALREADY HAVE CHILDREN

NAME ........................................

DATE ........................................

DATE OF BIRTH ..............................

1. When is your baby due?  ....... ...... ......  EDDATE
   Day     Month     Year

   So how many weeks pregnant are you?  ......  WKPREG

   Are you planning to move from the Lewisham area before
   or soon after the birth of your baby?  Yes  No  MOVING

   Please circle your answers  LQM2
   Code -1  LQM3

2. How many children do you have?  ..............

3. How old are they?  Boys ......  Girls ......

   Please circle your answers  LQM3

4. How many times have you been pregnant before now?  ......  LQ4

5. Have you ever had:
   (a) a termination of pregnancy?  Yes  No  LQ5
      (therapeutic abortion)

   (b) a miscarriage?  Yes  No  LQ5B

   (c) a stillbirth  Yes  No  LQ5C

6. Was this pregnancy planned?  Yes  No  LQ6
   Not exactly (please explain)

7. Did you have any difficulty in getting pregnant?  Yes  No  LQ7
   (a) If yes, had you been trying for more than 1 year
       more than 2 years
       more than 3 years

   (b) If yes, did you have any treatment for infertility?  
       Yes  No  LQ7B
8. Are you pleased to be pregnant now?
   Yes  Mixed feelings  No

9. Have you at any time regretted that you became pregnant?
   Not at  Initially  For several  Still all weeks  do

10. Before you become pregnant were your periods regular?
    Yes  Usually  No

    (a) Before you became pregnant were your periods painful?
        Never  Sometimes  Often  Always

    (b) Before you became pregnant did you get tense before a period?
        Never  Sometimes  Often  Always

    (c) Before you were pregnant did you get irritable before a period?
        Never  Sometimes  Often  Always

11. Were you more tearful than usual in the first two weeks after the birth of any of your children? 
   (The Baby Blues")
   Yes  No

    (a) Did you feel much more tense or depressed than usual during the first three months after the birth of any of your children?
        Yes  No

    (b) If yes, about how long did the feelings last?
        .....  Weeks

    (c) If yes, did you go to anyone for help?

       - friend
       - relative
       - C.R.F.H.S.
       - psychologist
       - psychiatrist
       - other (please specify)

12. Would you describe your general health as:
    Good  Fair  Poor  (please give brief details, including any medication you are taking)

(c) Written in blue ink

March 1984
13. Have you ever seen your GP for trouble with your "nerves"? (other than during the first three months after having a baby).
   Yes No LQ13

14. Has your doctor ever given you any tablets (or medicine) for "nerves", depression, anxiety or sleep? (other than during the first three months after having a baby).
   Yes No LQ14

15. Can you remember the name of the tablets (or medicine)?
   ..................................................
   LQ15

16. Did your doctor arrange for you to see a specialist such as a psychiatrist, clinical psychologist or community nurse?
   No Yes, I saw a ................. (please specify). LQ16
   If yes, (a) Was this: as an out-patient or in your home or as an in-patient LQ16A
   (b) Are you still receiving treatment?
      Yes No I stopped going ....... ....... month year LQ16B

17. Are you married?
   Yes
   No I'm ............... living with my boyfriend LQ17A
      planning to live with my boyfriend LQ17B
      engaged
      single
      separated
      divorced
      widowed
      other (please explain) LQ17C

Please circle more than one if necessary.

IF YOU ARE SINGLE AND DO NOT HAVE A BOYFRIEND AT THE MOMENT PLEASE GO TO QUESTION 23

18. In general how would you say you and your partner get on together?
   Very well Satisfactorily Not very well LQ18

19. Do you ever wonder whether your partner loves you?
   Never Sometimes Often Always LQ19

20. Do you ever wonder whether you love your partner?
   Never Sometimes Often Always LQ20
21. On the whole how do you feel about your relationship with your partner?

<table>
<thead>
<tr>
<th>Very satisfied</th>
<th>Satisfied</th>
<th>A little unsatisfied</th>
<th>Not satisfied</th>
</tr>
</thead>
</table>

LQ21

22. Do you feel that your partner is there when you need him? (for practical help, support, to listen)

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ22

23. If you have a problem do you prefer to solve it yourself?

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ23A

If you have a problem do you prefer to talk it over with your partner?

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ23B

If you have a problem do you prefer to talk it over with a relative?

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ23C

If you have a problem do you prefer to talk it over with a friend?

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ23D

24. Do you feel that there is a friend (or relative) available when you need one (for practical help, support, to listen)?

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ24

25. Can you confide in your partner as much as you would like?

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
</table>

LQ25

26. Have you been under stress recently? Yes No

If yes, please state briefly what the stress is .......

LQ26

LQ26A

LQ26B

LQ26C

27. Do you have any housing problems? Yes No

If yes, please state briefly what the problem is .......

LQ27

LQ27A

LQ27B

LQ27C

28. Would you say you have financial problems?

Yes No No more than other people

LQ28

29. Are you working at present? Yes No

LQ29

(c) Leyerton Questionnaire 1984.
(a) do you plan to return to work after the baby is born?
    Yes   No   Not sure

(b) what is your job?

30. What work does your partner do?
These questions are concerned with the way you feel or act. They are all simple. Please circle the answer that applies to you. Don’t spend long on any one question.

1. Do you often feel upset for not obvious reason?
   - Yes
   - No
   LQC1

2. Are you troubled by dizziness or shortness of breath?
   - Never
   - Often
   - Sometimes
   LQC2

3. Can you think as quickly as you used to?
   - Yes
   - No
   LQC3

4. Have you felt as though you might faint?
   - Frequently
   - Occasionally
   - Never
   LQC4

5. Do you often feel sick or have indigestion?
   - Yes
   - No
   LQC5

6. Do you feel that life is too much effort?
   - At times
   - Often
   - Never
   LQC6

7. Do you feel uneasy and restless?
   - Frequently
   - Sometimes
   - Never
   LQC7

8. Do you sometimes feel tingling or pricking sensations in your body, arms or legs?
   - Rarely
   - Frequently
   - Never
   LQC8

9. Do you regret much of your past behaviour?
   - Yes
   - No
   LQC9

10. Do you sometimes feel really panicky?
    - Yes
    - No
    LQC10

11. Has your appetite got less recently?
    - No
    - Yes
    LQC11

12. Do you wake unusually early in the morning?
    - Yes
    LQC12

13. Would you say you were a worrying person?
    - Very
    - Fairly
    - Not at all
    LQC13

14. Do you feel unduly tired and exhausted?
    - Often
    - Sometimes
    - Never
    LQC14

15. Do you experience long periods of sadness?
    - Never
    - Often
    - Sometimes
    LQC15

16. Do you feel "strung up" inside?
    - Yes
    - No
    LQC16

17. Can you get off to sleep alright at the moment?
    - No
    - Yes
    LQC17
18. Do you have to make a special effort to face up to a crisis or difficulty?

   Very much so  Sometimes  No more than anyone else

LQC18

19. Have you ever had the feeling you were going to "pieces"

   Yes  No

LQC19

20. Do you often suffer from excessive sweating or fluttering of the heart?

   No  Yes

LQC20

21. Do you find yourself needing to cry?

   Frequently  Sometimes  Never

LQC21

22. Do you have bad dreams which upset you when you wake up?

   Never  Sometimes  Frequently

LQC22

23. Has your sexual interest altered?

   Less  The same  Greater

LQC23

24. Have you lost the ability to feel real sympathy for other people?

   Yes  No

LQC24
MODIFIED ANTENATAL SCREENING QUESTIONNAIRE (MASQ)  
(from Leverton, 1988)

1. Do you have any children?  
   Yes  No

2. Have you ever had:  
   a) a termination of pregnancy?  
      Yes  No  
   b) a miscarriage?  
      Yes  No  
   c) a stillbirth?  
      Yes  No  

3. Was this pregnancy planned?  
   Yes  No  
   Not exactly

4. Did you have any difficulty getting pregnant?  
   Yes  No
   a) If yes, had you been trying for more than  
      1 year  2 years  3 years
   b) If yes, did you have any treatment for infertility?  
      Yes  No

Please ignore question 5 if this is your first baby

5. Were you tearful in the first two weeks after the birth of any of your children?  
   Yes  No

6. Did you feel much more tense or depressed during the first three months after the birth of any of your children?  
   Yes  No
   b) If yes, for how long?  
      ……weeks
   c) If yes, did you see anyone for help?  
      Yes  No
      e.g. friend  relative  psychologist  psychiatrist  other, please specify

Have you ever seen your GP for trouble with 'nerves'? (other than the first 3 months after having a baby)  
   Yes  No

Has your doctor ever given you any tablets or medication for 'nerves', depression, anxiety or sleep?  
   Yes  No

8. Did your doctor arrange for you to see a specialist such as a psychiatrist, psychologist or a community nurse?  
   Yes  No
   If yes, please specify
   a) Was this: as an outpatient? or in your home? as an inpatient?

Are you still receiving treatment?  Yes  No, I stopped going ……month ……year
9. Are you married? Yes

   No, I am living with my partner
   planning to live with my partner
   engaged
   single
   separated
   divorced
   widowed
   other, please explain...........................................
   (please circle more than one if necessary)

If you are single and do not have a partner at the moment please go to question 13b and ignore question 15.

10. In general, how well would you say you and your partner get on together?
    very well fairly well not well

11. Do you ever wonder if your partner loves you?
    never sometimes often always

12. On the whole, how do you feel about your relationship with your partner?
    very satisfied satisfied a little unsatisfied not satisfied

13. a) If you have a problem do you prefer to talk it over with your partner?
    never sometimes often always

    b) If you have a problem do you prefer to solve it yourself?
    never sometimes often always

    c) If you have a problem do you prefer to talk it over with a relative?
    never sometimes often always

    d) If you have a problem do you prefer to talk it over with a friend?
    never sometimes often always

14. Do you ever feel that there is a friend (or relative) available when you need one
    for practical help, support, to listen)?
    never sometimes often always

15. Can you confide in your partner as much as you would like?
    never sometimes often always
Appendix 12

CROWN CRISP EXPERIENTIAL INDEX
(Modified from Crown and Crisp, 1979)

These questions are concerned with the way you feel or act. Please circle the answer that applies to you. Don't spend too long on any one question.

1. Do you often feel upset for no obvious reason? Yes No

2. Are you troubled by dizziness or shortness of breath? Yes No
   often sometimes never

3. Can you think as quickly as you used to? Yes No

4. Have you felt as though you might faint? Yes No
   frequently occasionally never

5. Do you often feel sick or have indigestion? Yes No

6. Do you feel that life is too much effort? Yes No
   at times often never

7. Do you feel uneasy or restless? Yes No
   frequently sometimes never

8. Do you sometimes feel tingling or prickling sensations in your arms or legs? Yes No
   rarely frequently never

9. Do you regret much of your past behaviour? Yes No

10. Do you sometimes feel really panicky? Yes No

11. Has your appetite got less recently? Yes No

12. Do you wake unusually early in the morning? Yes No

13. Would you say you are a worrying person? Yes No
    very fairly not at all

14. Do you feel unduly tired and exhausted? Yes No
    Often sometimes never

15. Do you experience long periods of sadness? Yes No
    never often sometimes

16. Do you feel 'strung up' inside? Yes No
17. Can you get off to sleep all right at the moment? Yes No

18. Do you have to make a special effort to face up to a crisis or difficulty? very much so sometimes no more than anyone else

19. Have you ever had the feeling you were ‘going to pieces’? Yes No

20. Do you often suffer from excessive sweating or fluttering of the heart? Yes No

21. Do you find yourself needing to cry? frequently sometimes never

22. Do you have bad dreams that upset you when you wake? frequently sometimes never

23. Has your sexual interest altered? less the same greater

24. Have you lost the ability to feel real sympathy for other people? Yes No
ANTENATAL CLINICAL QUESTIONNAIRE
THE LEVERTON QUESTIONNAIRE

Scoring System

Score 2

Q13

Seen GP for trouble with 'nerves'.

14 Has had 'nerve' tablets from GP.

16 GP made specialist referral

18 Get on together 'not very well'.

19 'Always' doubt whether he loves her.

21 'Not satisfied' with relationship.

25 'Never' can confide in partner.

Multiparae Only

11 Previous postnatal depression last 8 weeks or more

Primiparae and Multiparae - Score 10 or more on CDTI Anxiety Scale

Score 1

Q18

Get on 'satisfactorily'.

19 'Often' wonder whether he loves her.

21 'A little unsatisfied' with relationship.

24 Never a confidant available.

25 Can only confide in partner 'sometimes'.

exclude if:
- Booking at 18 more more weeks gestation
- under 18
- moving from area
- single (not engaged, living with or planning to live with boyfriend)
- more than one pre-school child
- multiparae - other child 6 years or more only
SUPPORTIVE COMMUNITY RESOURCES

OPND (Overcoming Postnatal Depression)
Ongoing self help group
  Sandy Horne  250 5385
  Ros Sobko  277 3340

Clovelly Park Health Centre
Ongoing groups
  Wendy Roxby  268 9330

Unley Park Community Centre
Individual and ongoing groups
  Rochelle Baker  373 0766

Mental Health Resource and Advisory Centre  326 677

Private individual counselling:
  Marian Burns  272 609
  Zoy Kazan  232 577

Dale Street Women’s Health Centre
Individual counselling and groups
  Annie Littlejohn  47 7033

CAFHS Hotline
Information and resources  236 0444

Lyell McEwin Health Service
  Val Alvino  282 1206

Munno Para Health Service
  Denise Duthie  254 1444

Second Storey Youth Centre  232 0233

Queen Victoria Hospital
  Postnatal parenting group  332 4888

RESOURCES (live-in)

Helen Mayo House, Glenside  267 4880
Torrens House: support  236 0400

MEDICAL

Dr Anne Sved Williams: psychiatrist  267 4880
Dr Wendy Strachan: GP Southern area  381 755
Dr Deborah Ireland: GP Torrensville  43 9611
Port Adelaide Dale Street Women’s Health Centre
Dr Lesley Shorne  47 7033
NAME: .......................................................................................................................... REC NO: .............

STUDY NUMBER: ........................................ STUDY GROUP: ...................................................

Entry Criteria:  First Visit YES □ NO □
Booking Before 24 Weeks YES □ NO □ (Must Be Yes)
Will be Living in Metro Area YES □ NO □ (Must Be Yes)
Plan to Deliver at QVH YES □ NO □ (Must Be Yes)
English Speaking YES □ NO □ (Must Be Yes)

Leverton Questionnaire Score: □ High (≥6) □ Med (3,4,5) □ Low (2) □ Not Vulnerable (<2) □

Trial Entry: Yes □ No □

Randomisation: Standard Care □ Intervention Group □ Control □
Refusal □ If Refusal ... □ Prefer to wait and see
□ Was OK last time
□ Got good support
□ Strong person, will be OK
□ Wouldn't come to groups
□ Know all about that
□ Information overload
□ Didn't Like Leverton Questionnaire

First Baby: Yes □ No □

Date Completed: ....../...../.....
Date of Birth: ...../...../.....  
Number of Pregnancies ≥ 20 Weeks  

Revised EDD: ...../...../.....  
Age at EDD:  

Married/De Facto: Yes  No  
Postcode:  

Date of First Ante Natal Visit: ...../...../.....  
Total No. of Ante Natal Visits:  

Pregnancy: Low Risk  Yes  No  
High Risk  Yes  No  
If Yes ...  Ante Natal Hospital Admission  
   Ante Partum Haemorrhage  
   PIH  
   PROM  
   PTL  
   Other  
If Other, Specify  ..............................................................  

DEVELOPMENT  

Date of Delivery: ...../...../.....  
Gestational Age at Birth:  

Miscarriage:  Yes  No  

Spontaneous Onset:  Yes  No  

Normal Vaginal Delivery:  Yes  No  

Induction:  Yes  No  
If Yes, Why  ............................................  

Augmentation:  Yes  No  

Forceps Delivery:  Yes  No  
If Yes, Why  ............................................  

Ventouse:  Yes  No  
If Yes, Why  ............................................  

LSCS:  Yes  No  
If Yes ......  Elective  
   Emergency  
<table>
<thead>
<tr>
<th>If Elective ... Previous CPD</th>
<th>If Emergency ... Lack of Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breech</td>
<td>CPD</td>
</tr>
<tr>
<td>Woman's Choice</td>
<td>Fetal Distress</td>
</tr>
<tr>
<td>Suspected CPD</td>
<td>Cord Prolapse</td>
</tr>
<tr>
<td>Gest. Diabetes</td>
<td>APH</td>
</tr>
<tr>
<td>Poor Obs. History</td>
<td>Other</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If LSCS ... General Anaesthetic:</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidural:</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of Labour:</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain Relief:</th>
<th>Epidural ☐</th>
<th>N₂O₂ ☐</th>
<th>Pethidine ☐</th>
<th>Nil ☐</th>
<th>Other ☐</th>
</tr>
</thead>
</table>
|              | If Other, Specify ..................................................

<table>
<thead>
<tr>
<th>Episiotomy:</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Tear Requiring Sutures:</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Blood Loss:</th>
<th>☐☐☐☐ mls ...... ≥ 600 mls</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥ 1000 mls</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manual Removal of Retained Placenta:</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
</table>

### BABY

<table>
<thead>
<tr>
<th>Birthweight:</th>
<th>☐☐☐☐ g</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Apgar Scores:</th>
<th>1 Minute ☐ 5 Minutes ☐</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Resuscitation:</th>
<th>Oxygen Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suction Yes ☐ No ☐</td>
</tr>
<tr>
<td></td>
<td>Intubation Yes ☐ No ☐</td>
</tr>
</tbody>
</table>
Admitted to:
- Observation Nursery
- Level 1
- Level 2
- Level 3

Level 1, 2 and 3 at total of more than 7 days

Congenital Defects: Yes No

Planned to Breast Feed: Yes No

CLASSES ATTENDED

32 Weeks: Yes No
- If Yes... Date With Partner: Yes No
- If No... Info Given/Sent: Yes No

36 Weeks: Yes No
- If Yes... Date With Partner: Yes No
- If No... Info Given/Sent: Yes No

4 Weeks Post Natal: Yes No
- If Yes... Date With Partner: Yes No
- If No... Info Given/Sent: Yes No

EPDS SCORE

6 Weeks: Date Score: Referral: None GP Psychiatrist Getting Support: Yes No

12 Weeks: Date Score: Referral: None GP Psychiatrist Getting Support: Yes No

6 Months: Date Score: Referral: None GP Psychiatrist Getting Support: Yes No
Appendix 16

STOP TRIAL
FOLLOW-UP QUESTIONNAIRE

Thankyou for taking part in this study to overcome postnatal depression

In your own words, could you comment on your feeling about filling in the questionnaire in the antenatal clinic, to assess if you may have been more vulnerable to depression after the birth?

2. If you were invited to attend additional groups offered. How many did you attend?
   one  two  three  none

If you were invited and did not attend, could you say in your own words, what your reason or reasons were for not coming.

4. Would you take part in a study such as this again?
   Yes  No  Maybe

5. Did you attend the hospital antenatal classes?
   Yes  No  If yes, how many?.........

6. Did you attend the hospital 6 week postnatal class?
   Yes  No
March 1994

Dear

Thank you very much for taking part in the study to overcome postnatal depression and for filling in all those questionnaires!

We thought you might be interested to hear what the results of the study are, as they have just now been analysed. We would also be most grateful if you would complete just one more small questionnaire. We are interested in how you felt about taking part in the study.

It is a while ago now, but you will remember that you were approached in the clinic and asked if you would complete a questionnaire which we hoped would detect a group of women who may have had a higher chance of becoming unhappy or depressed after the birth of their babies (more vulnerable). We did not know how well the questionnaire could predict this as it had not been used in Australia, and we explained to you that we wanted to check the questionnaire at the same time as running our study. This is called testing the validity of the questionnaire. We explained that if you were identified as more vulnerable, that you may, by random allocation or chance, be offered two additional groups before and one after the birth of your baby. It was one of our study aims that these would help reduce the number of women who became depressed or unhappy after the birth of their babies. The information sheet you were given is enclosed as a reminder, as it was quite a while ago – during 1992 – that you were approached for this study.

Here are the results:

The Identification Questionnaire

At six weeks postnatally, of those whose questionnaire indicated that they may be vulnerable to postnatal depression, one out of three became borderline depressed and one out of six were more severely depressed or unhappy. This compared with women whose questionnaire indicated that they were less vulnerable. Of these, one in ten became borderline depressed or unhappy and only one in twenty more severely depressed. So the questionnaire did detect a more vulnerable group, but even so, most of the more vulnerable women did not become depressed at 6 weeks after the birth. The same sort of results applied at the other times you returned questionnaires, at 12 weeks and 6 months after the birth.

The Support Groups

Attendance

Overall, attendance at the three groups was fairly low (31%). There are likely to be a number of reasons for this. Some women’s plans changed and they really could not
attend. A few women had premature babies before the groups were due to start. In addition some moved and we hadn't picked up the change of address, so women did not get their invitation in time. Unfortunately, a few women changed their minds about coming to the groups, while for others, we just could not arrange a time to suit their particular needs and our availability of a room. There are probably other reasons too, we are interested in finding out what these might have been.

**Did the Support Groups Help?**

When we analysed the responses, unfortunately, despite our best intentions, we have to conclude that the groups did not make any difference to postnatal depression rates.

This is the first time in Australia that this sort of evaluation has been used for postnatal unhappiness. The information gained is very useful to have and will add to the total body of research on the subject. We very much appreciate your assistance.

Could you please complete the enclosed small questionnaire and return it in the enclosed reply paid envelope. One again, thank you very much for taking the time, we know just how busy it is being a mother.

With many thanks.

Yours sincerely

Georgie Stamp  
Midwife Researcher

Angela Taylor  
Research Assistant