



The
University
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Sheffield.

**Measuring the postnatal health outcomes for mothers and
fathers during the first twelve months after the birth of a baby**

By:

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Dedication

This has been a long process made better by the love and unfailing support of my husband, children and their significant others, family and friends who for the most part, weren't quite sure why I was doing it! I know how proud they are of me and I will forever be grateful to them for so much.

For my parents, who have always loved me and have wanted me to be happy.
Bella, I miss you.

To my three small people, now all grown up. I love you more than you can imagine.

To Richard, my soulmate with love.

'Life affords no greater responsibility, no greater privilege, than the raising of the next generation.'

C. Everett Koop

'Our lives are to be used and thus to be lived as fully as possible, and truly it seems that we are never so alive as when we concern ourselves with other people.'

Harry Chapin

Abstract

Objectives: The transition to parenthood is regarded as a potentially life changing event. The surrounding literature tends to dwell upon the negative aspects. Much emphasis is placed upon the mother's mental health status, particularly screening for potential psychopathology, the aim being to diagnosis the presence of postnatal depression and provide suitable treatment. Whilst the value of screening for and being vigilant of potential problems for mothers and fathers in the postnatal period cannot be devalued, this approach provides little knowledge of what it is that makes mothers and fathers happy at this time. The aim of the study was to evaluate both the positive and negative health outcomes for mothers and their partners.

Study Design: Longitudinal Cohort Study

Methods: Women who delivered a live infant(s) at the Jessop Hospital, Sheffield between March 2008 and October 2009 were recruited to the study. Mothers were not eligible for participation if they required admission to Intensive Care or High Dependency Unit or if their infant required admission to the Neonatal Intensive Care Unit.

The health status of mothers and their partners was measured using self-reported outcome measures at five time points (1, 3, 6, 9 and 12 months postpartum). These questionnaires were a selection of generic and parent specific instruments, which measured positive and/or negative outcomes. These were; Positive Affect Negative Affect Schedule (PANAS), Edinburgh Postnatal Depression Scale (EPDS), Short Form 12 (SF-12) and the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) and the Sheffield Postnatal Health Instrument (S-PHI). The primary statistical analysis was conducted on parents who had completed questionnaires at all five time points. The baseline (one month postpartum) scores were compared to the average of the four follow up scores using paired samples t-test. Pearson Correlation coefficients were calculated using scores from 'households' to ascertain if there was any correlation between the parents.

Results: 710 participants (398 mothers and 312 fathers) were recruited at baseline and questionnaires were returned by 186 participants (112 mothers and 74 fathers) at twelve months postpartum. The mean age for mothers taking part in the study was 29 years of age (range 16 to 48 years) and 32 years of age for fathers (range 18 to 59 years).

There was a statistically significant increase in the PANAS Positive Affect for mothers from a mean score of 35.1 (SD 7.2) at baseline to an average follow-up score of 39.2 (SD 5.8), mean difference 4.1 (95% CI: 2.8 TO 5.5, $P < 0.001$). For fathers, there was no change with a mean score of 38.8 (SD 7.2) at baseline and a mean average follow-up score of 38.8 (SD 6.3), mean difference 0.0 (95% CI: 1.6 to 1.7, $P = 0.947$). There was a weak positive but not statistically significant correlation between mothers and fathers at twelve months (0.27, (95% CI: -0.15 to 0.61, $P = 0.202$).

The results for the mothers' domains of the S-PHI showed that there was a statistically significant difference between the mean baseline score and the average follow up score in 9 out of 11 domains. Of those nine domains eight showed a statistically significant decrease and one a statistically significant increase between the mean baseline score and the average follow up score. Only the 'relationship with extended family' domain results showed a statistically significance increase, suggesting a worsening over time with a mean score of 20.7 (SD 19.5) at baseline and a mean average follow up of 26.3 (SD 18.1) mean difference 5.5 (95% CI 2.7 to 8.4, $P = < 0.001$). The results for the fathers' domains showed that there was a statistically significant difference in three of the six domains. Two domains, 'relationship with partner' and 'support from partner' there was an increase between the mean baseline score and the average follow up score suggesting a worsening over time. Whereas the results for 'role of father' showed a statistically significant decrease suggesting an improvement over time.

Conclusion: Whilst overall, the health of parents appeared to improve with time; the results of the S-PHI do suggest that there may be concerns about parents' perceived levels of support during the first year after the birth of their infant

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List of abbreviations

CEMACH: The Confidential Enquiry into Maternal and Child Health (Replaced CESDI and CEMD in April 2003)

CEMACE: Centre for Maternal and Child Enquiries (new name for CEMACH from 1st July 2009)

CEMD: Confidential Enquiry into Maternal Deaths

CESDI: Confidential Enquiry into Stillbirths and Deaths in Infancy

DoH: Department of Health

EPDS: Edinburgh Postnatal Depression Scale

F-PHI: Fathers Sheffield Postnatal Health Instrument

M-PHI: Mothers Sheffield Postnatal Health Instrument

NHS: National Health Service

ONS: Office for National Statistics

PANAS: Positive and Negative Affect Schedule

 PA: Positive Affect

 NA: Negative Affect

PN: Postnatal

PND: Postnatal Depression

SF-12: Short Form 12

S-PHI: Sheffield Postnatal Health instrument

WEMWBS: The Warwick-Edinburgh Mental Well-being Scale

WHO: World Health Organization

Chapter 1: Personal Reflection and overview of thesis

1.0. Introduction

The transition to parenthood is considered to be a major life event and for parents there are changes to their relationships and social circumstances that they may not be adequately prepared for (McKellar et al., 2009). Being responsible for a new baby can be daunting and when parents are tired and trying to develop new skills the whole experience can leave them feeling stressed and vulnerable. This can lead to psychological problems for both mothers and fathers (Madsen and Juhl, 2007). As the year progresses and parents go through the transition period they may adapt to their new circumstances and their mental health may improve (Barclay et al., 1997). However there may be other factors which come into play during the transitional period which may have a positive or negative affect upon the mental health of the parents.

As a midwife and mother I am interested to understand how parents navigate through the first year of their infant's life; physically, emotionally and socially. As a midwife I was trained to be vigilant for signs of mental and physical pathology in new mothers. I am particularly interested to explore what mental health means for parents in the postnatal period; not only quantifying the incidence of psychopathology but to also consider what makes parents happy; described as Positive Psychology by Seligman (2003). The aim of this thesis is therefore to examine the impact of having a baby upon mothers' and fathers' physical and mental health and well-being during the first year after the birth, looking at not only the negative sequelae but also the positive outcomes associated with parenthood.

1.1. Personal reflection

Before having children, I had a career as a nurse. I had been a Sister on an Intensive Care Unit and also was a Sister managing my own surgical ward. I coped with the responsibilities and pressures associated with these posts, my training had seen to that. After a career in nursing, I embarked upon a new 'career' as a mother which came with no training! I was

fortunate that I loved being pregnant, giving birth and adored breastfeeding. Being a mother was for me wonderful. Although we did not have family close to help and support, my husband and I were able to look after each other. We had three children in just over three years so life was busy but fulfilling. This was nearly thirty years ago when no one really discussed giving parents support or routinely screening for postnatal depression. It was at a time when mental health problems were still shrouded in stigma and when women were meant to be 'superwomen' coping with work and family. It would have been very difficult to admit to not coping. I was aware at the time that my own experiences did not necessarily match up to those of other women. Although I had three pregnancies fairly close together and had developed pre-eclampsia with my first pregnancy, I was fit and well and coped with the physical demands of being a mother. Nursing is a good training for dealing with exhaustion and responsibility! I was very fortunate too that I did not feel particularly depressed during this time, though I don't remember parents being encouraged to discuss how they felt. I have asked my husband recently how he had felt at the time, but he can't really remember. I am not sure if the experiences of fathers were even considered at this time. When I did obstetrics as a student nurse in the late 1970's, fathers were only just being accepted in the labour wards. There was no real encouragement then, as there is today, to involve fathers in the process of pregnancy and labour. Antenatal classes were just for women and there was no expectation that men would come along to antenatal appointments. The acknowledgment of the importance of fathers is perhaps now reflected in the provision of paternity leave and other changes in family policy.

When my children were school age I went to University and read for a degree in Social Policy and Administration. I was particularly interested in health policy and the effect policy had upon the NHS and its users. Following on from this, the thesis that I submitted for the MA by Research and Thesis in Social Policy looked at social control and infant feeding. This was at the time when the 'Baby Friendly Initiative' had been launched and mothers were being encouraged to breastfeed. I was particularly interested in breastfeeding having

enjoyed so much feeding my own babies. I was horrified to learn that the percentage of mothers who breastfeed for any length of time was so low in the UK and wanted to look specifically at the way in which the Government responded to this situation. After the successful submission of my thesis I subsequently returned to clinical practice and qualified as a midwife.

In nursing and to some extent in midwifery practice, the onus is placed upon observing people for potential health problems and instigating appropriate treatment. In doing so the aim is to restore people back to health as per the medical model of care. My midwifery training had alerted me to the negative sequelae of pregnancy and childbirth in terms of physical and mental health problems. So as a midwife, where my role was mainly involved in looking after mothers and their partners during childbirth, the objective was to facilitate a healthy outcome for both mother and baby. Parents during labour and childbirth have specific stressors, but it is probably true to say that it is once mothers have been discharged from hospital that parents realize the true enormity of becoming parents. In my experience parents are usually very keen to be discharged from hospital within hours of their baby being born and there is little time to debrief parents about their experiences of labour and childbirth. In the UK the midwife's duty of care only extends to the first 28 days of an infant's life, after which time the mother and baby are discharged from midwifery care and the care is then taken over by Health Visitors, an area outside of my own professional experience. Whereas I had had daily or twice daily visits from my community midwife with each child, today mothers appear to be limited to a few visits only in the first weeks of their infant's life. This I found disturbing; what if mother and fathers were having problems between visits? Would these parents know to flag up any problems to their midwife or Health Visitor? I was curious to know whether mental and physical health problems in the postpartum are indeed transient and whether parents recover quickly after the birth of their infant, so perhaps did not require further monitoring from health professionals.

As a midwife I was able to reflect upon my experiences of motherhood and consider what policies had been implemented since I was a new mother to improve the health and well-being of mothers and fathers. In terms of midwifery practice fathers are now encouraged to have a role in their partner's pregnancy and childbirth. In the community there has been the creation of Sure Start, the aim to improve the lives of young children and their parents. Whilst I know that mothers are now routinely screened for signs of possible postnatal depression, father's health and well-being appears to be still largely ignored.

I had only my own, my husband's, family and friends experience of parenthood to form a picture of what the transition to parenthood actually felt like. This 'sample' was not necessarily representative of the population as a whole. My friends and family were all in stable relationships where both parents were in professional occupations. The majority of friends were health professionals and if they had had problems they at least had the ability to source help. Personally, I found that the positive aspects of being a mother over shadowed any problems that I encountered and I questioned whether I and my family and friends had indeed been very fortunate in our experiences and whether this was actually the norm for most parents.

As a mother and a midwife I was interested to find out what other parents experiences of parenthood were actually like. Curiosity perhaps, but also as a midwife I felt that I would be better placed to talk to parents about what they might experience during the transition to parenthood, therefore informing my practice. Studying for a BA and MA in Social Policy taught me to also consider the subjective well-being of people in society. In clinical practice the emphasis is upon the client's physical well-being, with the hope that by maintaining or restoring health it will improve the individual's mental health status. Thinking about well-being has to bring together not only a person's physical health but also their social and emotional well-being. Looking objectively at mortality and morbidity indices alone does not illustrate how people are feeling. Perhaps this can be illustrated by the example of

breastfeeding. When I wrote my thesis on infant feeding for my MA, I realized that the number of mothers who initiate breastfeeding can be easily measured and recorded. This figure can then be explored in terms of percentages of mothers who did or did not breastfeed and also note the duration of breastfeeding. However, this figure alone does not explain why mothers did not breastfeed or for that matter why they chose to stop breastfeeding. There are many reasons why mothers do or do not breastfeed and how they chose when to cease breastfeeding.

My initial question was to ask what parent's experiences over the first year after having a baby was actually like. Were there aspects that affected the smooth transition to parenthood? Did the parent's health and well-being change over the first year? What could be measured? What areas of parenthood would provide the answers? My instinct was to suppose that their health and well-being would improve over time, but what of the long term effect of physical problems and dysphoria? Were these conditions as self-limiting as I thought? As a midwife I wasn't aware of what really happens to mothers after they leave hospital and what of fathers? For midwives the onus of care is upon the mother and baby, less attention is paid to the needs of the fathers at this time other than to make them feel welcome and involved in their infant's birth. I wondered if fathers did experience problems and if father's needs were truly addressed by health professionals.

I was offered the opportunity to carry out a study examining the transition to parenthood for both mothers and fathers as a basis for a PhD. I felt that it was particularly important to consider the experiences of both parents, as for the majority of parents looking after a baby is a combined effort. I felt that it was also important to not only examine the negative health outcomes associated with parenting but also the positive aspects to being a parent. Within my Social Policy studies, I had been introduced to the notion of positive health whereby even in the presence of physical health problems an individual may actually report a state of positive well-being and I wondered if there might be a sense that the positive aspects of

parenthood ameliorate the possible negative aspects of parenthood. I also wanted to capture a sense of a holistic approach to parents experience and incorporate this into a research project; looking at physical, social and psychological health so that mental health is integrated with physical health. Nursing and midwifery as well as other health professions have moved towards holistic care where the patient or client is treated as a whole entity rather than just as parts of the body affected by disease processes.

When I embarked upon studying for a PhD, I was fortunate to be offered the opportunity to incorporate into my study two newly developed instruments that were designed to measure both positive and negative health outcomes in both mothers and fathers during the postnatal period (The Sheffield Postnatal Health Instrument for Mothers and for Fathers). The S-PHI examines physical, mental and social health and well-being. The separate instruments (M-PHI and F-PHI) present questions that are specifically designed to be pertinent to mothers and fathers. Utilizing these instruments as well as four well established instruments allowed me to explore the impact of having a baby on the health and well-being of parents by measuring postnatal health outcomes. Sadly there do not appear to be many instruments specifically designed to look at parents in the postnatal period.

1.2. Research question

The following thesis describes the process that I went through to answer my principle research questions: ‘What is the impact of having a baby on the well-being of mothers and their partners?’ and ‘How does the health and well-being of mothers and their partners change over the first twelve months of their infant’s life?’ The hypothesis for the study was therefore, ‘the mental health and well-being of mothers and fathers changes over the first twelve months of their infant’s life’ and the ‘Null hypothesis was there is no significant change in the mental health and well-being of mothers and fathers over the first year of their

infant's life'. By utilizing the new Sheffield Postnatal Health Instrument and four other established instruments I hoped to answer my questions.

1.3. Overview of thesis

My early thoughts preparing to embark upon the study were to consider how parenthood is thought of in sociological terms rather than purely in clinical terms. Parenthood is recognized as a role that is a social and biological construct. It is perhaps the construction of this social role rather than the biological role that transforms parents' lives. The transition to parenthood is considered to be a major life event which may impact on all aspects of physical and mental well-being. Being responsible for a new baby can be daunting and when parents are tired and trying to develop new skills the whole experience can leave them feeling stressed and vulnerable. This can lead to psychological problems for both mothers and fathers (Madsen and Juhl, 2007). As the year progresses and parents go through the transition period they may adapt to their new circumstances and their mental health may improve (Barclay et al., 1997). However there may be other factors which come into play during the transitional period which may have a positive or negative effect upon the mental health of the parents. The aim of this thesis is therefore to examine the impact of having a baby upon mothers' and fathers' mental health and well-being during the first year after the birth, looking at not only the negative sequelae but also the positive outcomes associated with parenthood.

Therefore in chapter 2 the concept of parenthood is further explored, introducing the roles of motherhood and fatherhood and the acquisition of these parental roles and how these roles are described in the literature. What it is to be a parent may be defined by society as well as the individuals own expectations of what the role entails. The traditional roles of fathers working and mothers at home have been adapted and in the present day parents are more likely to be dual carers and dual earners; making adaptations to their lives and new circumstances. This transition period when parents make adaptations to their lives may take up

to two years (Xuereb et al., 2012). The adaptation to lifestyle and the increased responsibilities of a baby can have an effect upon the mental and physical health of the parents. This effect is usually thought of as being a negative effect leading to dysphoria, stress, anxiety and depression; however it is important to recognize that parents can derive happiness from becoming parents too.

In chapter 3 the mental health and well-being of parents will be described, providing a clinical overview of the psychological problems that may affect parents in the postpartum and the physical and social factors that may influence their mental health outcomes. Dysphoria in the postnatal period for mothers is well documented (Miller, 2002), but fathers may too suffer from depression, stress and anxiety (Condon et al., 2004). Aspects of mothers' physical health will be considered particularly as physical health can influence mental health outcomes. Many of these physical problems are as a direct result of being pregnant and giving birth. Other problems, for example, sleep deprivation may also have an impact on parents' ability to deal with day to day life.

As well as considering the psychological problems associated with the postnatal period the concept of positive psychology will be discussed. In 'Promoting Mental Health, concepts, emerging evidence and practice' (WHO, 2004) suggest that mental health (rather than mental illness) can be conceptualized as a positive emotion, a subjective sense of well-being and feelings of happiness, a personality trait inclusive of psychological resources of self-esteem and sense of control and a resilience to cope with life stressors (Barry, 2009). Barry (2009) describes positive mental health as a broad concept, incorporating aspects of how an individual feels emotionally, psychologically, socially (in terms of relationships with others and society) and their spiritual and physical well-being. Huppert (2009) describes that mental health is about feeling good and functioning well or flourishing. It is also about how individuals deal with the negative emotions which are normal in everyday life which may compromise their sense of well-being.

Whilst there is a large body of work which examines the mental health outcomes for mothers and a smaller body which looks at fathers' mental health, it is important to recognize that mothers and fathers in the most part function as couples. As couples they share the experience of becoming or being parents, how they function as a couple and how they deal with problems together may influence how they cope with stressful situations. It would therefore seem pertinent to consider the literature available which considers mental health outcomes for parents as a couple.

In chapter 4 the first systematic literature review of studies that have specifically examined the psychological and physical health of both mothers and fathers during the first year after the birth of their infant will be presented. It is perhaps the notion of co-morbidity in terms of mental health problems that has been proposed (Kim and Swain, 2007), which highlights the importance of looking at the quality of life of both parents at this time, with particular reference to both positive and negative mental health status. The studies selected were longitudinal and employed self-reported instruments to generate data. It was apparent from this review then that whilst a wide array of instruments were employed that the majority were generic tools, with few instruments considering the specific experiences of parents or positive mental health outcomes. The result, therefore, was a bias towards quantifying the degree of mental illness in mothers in particular, with little being understood of what might make parents happy.

Therefore, in an aim to answer the proposed research questions, 'What is the impact of having a baby on the well-being of mothers and their partners?' and 'How does the health and well-being of mothers and their partners change over the first twelve months of their infant's life', a new longitudinal prospective cohort study was conducted. In chapter 5 the methods employed to generate data for the present study are described. Initially the parents were recruited through attendance at antenatal parentcraft classes, when this however proved to be unsuccessful and inefficient in terms of generating participants, the recruitment procedure was reviewed. With approval from the North Sheffield Ethics Committee, parents

were approached by post after the birth of their infant and invited to take part in the study. The parents were asked to complete five instruments at each of five time points; one, three, six, nine and at twelve months postpartum. A variety of both positive and negative, generic and parent-specific outcome measures were employed in the study which were; the Sheffield Postnatal Health Instrument (M-PHI and F-PHI), the Edinburgh Postnatal Depression Scale (EPDS), Positive and Negative Affect Schedule (PANAS), Short Form-12 (SF-12) and the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). The Sheffield Postnatal Health Instrument is a recently developed instrument whose strength is that it measures both positive and negative health outcomes with questions specifically formulated for mothers and fathers. It was envisaged that these five instruments would complement each other; providing data on parents' physical health and their mental health status both positive and negative outcomes. S-PHI also examines aspects of the parents' social well-being in terms of relationships with others.

The results of the study are presented across three chapters; 6, 7 and 8. Chapter 6 describes the demographic data collected from the mothers and fathers from the Sheffield Postnatal Health Instrument. Summary statistics pertaining to the demographic characteristics of the parents are presented here. The participants in general were; white, British, educated to degree level and in managerial or professional occupations.

In chapter 7 the results of the mental health specific reported outcomes are presented, this is data from EPDS, PANAS and the WEMWBS. Summary statistics were produced for all the instruments. Paired sample t-tests were performed for parents in subset 5, those who had returned the questionnaires at all five points. Further analysis was performed on the data derived from the EPDS results in terms of looking at the percentage of parents who scored equal to or above their specific operationalized cut-off figure and also using McNemar's test to examine the relationship between the paired parents and the incidence of possible depression. Pearson's Correlation analysis was performed and scatterplots were presented.

The results from the PANAS suggested improvement in terms of enthusiasm and energy levels as well as improvement in feelings of calm and serenity. The WEMWBS results suggested that parents experienced positive mental health outcomes. When looking at the results for the EPDS the majority of parents' mean scores were below the appropriate cut-off figure indicative of depression.

In chapter 8, the results and analysis of the other parent reported outcome instruments are documented; that is the S-PHI and the SF-12. Summary statistics were generated for all of the domains within the M-PHI and the F-PHI as well as summary statistics and paired sample t-tests were also performed for both the mental and physical component of the SF-12. The SF-12 results suggested that parents' perception of their mental and physical health was good. The results from the S-PHI domains indicated that both parents felt positively about the relationship with their baby and their parental roles. The mental health outcome domains also suggested that parents perceived their mental health positively. It is however when looking at the domains representing relationships and support networks that produced less favourable results. Mothers appeared to feel less supported by family during the study. Fathers also appeared to experience less support from their friends. However whilst the results for fathers' relationship with their partner portrayed a good relationship, as did the mothers' relationship with partner domain, fathers' results also indicated a worsening of their relationship with their partner. The physical component of the SF-12 for both parents and the physical domains of the M-PHI indicate improvement in physical health outcomes.

In chapter 9 there is a discussion of the major findings of the study and how these findings relate to previous work carried out in this area. The strengths and limitations of the study are discussed, including the problems of attrition. As a result of carrying out this study there are suggestions of modifications that could be made to provide a fuller picture of the experiences of parents at this time in further research. The implications for clinical practice are discussed.

The aim of this study was to measure the postnatal health outcomes for mothers and fathers during the first year of their baby's life. The results suggest improvement in mothers' physical health status, with the exception of specific health concerns, and overall it would appear that both mothers and fathers are enjoying being parents and this is reflected in their positive mental health status. The level of support that both parents perceive from their social network however is perhaps of concern and future research might perhaps investigate this further. In clinical terms it is important for health practitioners to consider fathers' social support needs at this time as well as to be aware of fathers' potential dysphoria.

The following chapter explores the acquisition of parental roles and how parents adapt to a new lifestyle with the inclusion of a new baby.

Chapter 2: An introduction to the transition to Parenthood

2.0. Chapter Overview

To answer the research questions; ‘What is the impact of having a baby on the well-being of mothers and their partners’ and ‘how does the health and well-being of their partners change over the twelve months after having a baby’ it is important to have an understanding of the concept of parenthood and how this social role might impact upon an individual’s life. It is for this reason that this chapter introduces the notion of the acquisition of parental roles and how parents might adapt to their new circumstances and make changes to their lifestyles in the first year after the birth of a baby. The available literature was therefore explored to develop a sense of what being or becoming a parent might be. Whilst the majority of literature is concerned about motherhood there is a small amount of literature interested in fatherhood.

The transition to parenthood is regarded as a major event in an adult’s life, where parents experience dramatic changes to their lifestyle and relationships (Percival and McCourt, 2000, Kohn et al., 2012). The birth of a baby creates, or adds to, a family unit and as a consequence parents must adapt to new roles and take on new responsibilities (Thomas, 2000). When a couple embark upon parenthood, whether this is planned or not, requires adaptation to their current lifestyle. The inclusion of an infant into a relationship changes it from a couple into a family (Gatrell, 2005). The dynamics of the relationship must adapt to this and the stability of this relationship prior to parenthood may influence how parents cope with these changes (Polomeno, 2000). Condon (2006) notes that during pregnancy mothers develop an attachment to their infant and for the first-time fathers their partner’s emotional connection with a third party may lead to resentment at having to share her. The infant may be regarded as a rival, particularly if there has been a decline in their sexual relationship, suggests Condon (2006). Couples may be emotionally unprepared to take on the parenting role (McKellar et al., 2009). The responsibility for the infant rests with the new parents and

this in itself may be stressful. Parents may struggle with learning new skills and developing a routine to incorporate the needs of the baby, possibly other children, engagement with formal employment outside of the home as well as finding time for their own intimate relationship. Parenthood can therefore change family dynamics and remove parents from supportive social networks, particularly for mothers coming out of the workplace.

Within this chapter the idea of parental roles will be explored, considering what it is to be a parent. Motherhood is ultimately a biological role but also it is important to consider it as a social construct. Mothers are now in a better position to control their own reproductive history but their actual role as a mother might be influenced by societal expectations, employment policy as well as personal circumstances. As well as discussing motherhood within this chapter, the role of fatherhood will be discussed. Fatherhood arguably is more of a social role than a biological one. How men develop this role may also be constrained or influenced by societies expectations and also, as for mothers, their obligation to the workplace.

2.1. Transition to parenthood

The transition to parenthood is usually defined as the period from late pregnancy through the first or second year of the infant's life (Xuereb et al., 2012). Draper (2003) notes, that using the term 'transition' implies a continuous passage rather than necessarily a one-off event. This is a salient point; this assumes that this is a stage in life that happens over time, a continuous process in which adaptation can occur. Rossi (1968) however describes the abruptness of the transition to parenthood; the birth of a child is not a gradual process nor do mothers undergo an apprenticeship with gradually increasing responsibility. She further states that the sudden responsibility of an infant may be overwhelming for some. Whilst the transition to parenthood can be a happy positive experience with the individuals enjoying becoming parents, it is still a period of upheaval that can lead to feelings of stress and anxiety (Schumacher et al., 2008). Parents might struggle emotionally when the reality of parenthood does not match up to their expectations (Cowan and Cowan, 1992). Transition

can therefore be understood as a significant life episode with long-term consequences for individuals (Kalmuss et al., 1992) and as a ‘critical life event’ even if, as Perren et al., (2005) propose, that not all parents experience transition as a crisis. Describing parenthood as a crisis, suggests that the family is a social system whose equilibrium is disrupted by the inclusion or exclusion of members, suggests Russell (1974).

When a couple embark upon parenthood it is likely to be a permanent life-changing event (Morstensen et al., 2012). Although becoming a parent for the first time or adding to an existing family unit may be regarded as a natural part of adult life, it is recognized that the transition to parenthood is associated with significant changes to the couples relationships and responsibilities (Feldman et al., 2004). Belsky and Rovine (1984) suggest that transition to parenthood may be stressful for some parents as a result of three interrelated causes. These they describe as firstly that mothers may experience physical weakness postpartum as a result of pregnancy and childbirth. Secondly looking after the needs of a newborn requires immense energy and thirdly the developmental changes in cognitive and behavioural functioning that parents undergo at this time also demand expenditure of a great deal of energy.

It is noted by Symon et al. (2003) that there are a range of factors such as physical, mental, emotional, social, sexual and spiritual status that can have an impact upon the quality of life of individuals at this time. The birth of a baby also changes family dynamics and may affect the relationship between the parents themselves and their relationship with family and friends (Epifanio et al., 2015). All these factors may put a strain upon the individuals as well as upon their relationships, at a time when particularly new parents are learning new skills and taking on the responsibility for their baby.

This time therefore may be particularly difficult for first time parents but other parents may not be immune from experiencing problems or concerns. Biehl et al. (2012) suggest that many parents underestimate the difficulties adjusting to parenthood, particularly the first

time parents. Parents who already have children and therefore have made the transition to parenthood may have the ability to adapt to their new circumstances more easily suggests Salmela-Aro et al. (2000). For these parents making an addition to their existing family, their prior experiences will inform them of the possible changes to their lives. However in comparison, the first time parent may have little experience to prepare them for their new circumstances. Percival and McCourt (2000) describe that what some women may have is a particularly romanticized vision of motherhood; the danger is that this sets impossible standards to achieve, they suggest.

Parents therefore have to deal with many issues. Delmore-Ko et al. (2000) propose that dramatic changes to employment status, social networks, and financial situation, as well any changes to the mother's physical appearance, are significant in terms of stress levels. For the mother the possible physical changes to her body may cause her to feel debilitated (Gjerdingen et al., 2009). Any perceived changes in body shape and condition may also affect the physical relationship that she has with her partner (Abdool, 2009). Both parents may suffer from some degree of sleep deprivation and this has been associated with postpartum dysphoria (Gale and Harlow, 2003)

For all parents the birth of their baby arguably increases their responsibilities, be they financial or practical (Brotherson, 2007). Parents may have to consider adjustments to their living arrangements to accommodate a baby either by extending their present home or by moving. Whilst the transition to parenthood may be described as a stressful event, parents may develop strategies to cope with this period of time including accessing the support both emotionally, practically and materially from their close family and friends, thus buffering the potential negative feelings.

2.2. Parental Roles

In becoming a parent individuals are in a sense constructing new roles for themselves (Henderson and Brouse, 1991). Their understanding of what constitutes this role may be influenced by societal expectations, by the observation of family and friends and also by how they themselves were parented (Cowan and Cowan, 1992). Cultural and social attitudes applied to the role of mothers and fathers may also shape the parents expectations of what their experiences of being a parent will be like (Henley-Einion, 2003). These norms and values may be specific to place and time (Knightley, 2008), for instance the notion of the ‘traditional’ mother and father roles with mother staying at home and the father working full time may not be as recognizable today as it was in 1950’s Britain. Whereas in the past the father’s role may have been more concerned with providing financial support for the family, now the expectation is that fathers have a dual role of being provider and an equal participant in looking after their infant (Henderson and Brouse, 1991, Barclay and Lupton, 1999). Dragonas et al. (1992) suggests that the concept of fatherhood is subject to the prevailing cultural definitions and that parents must negotiate their roles within the existing social framework.

Historically how society views children has also evolved suggest Harding (2006). She describes that during the late 19th Century and into the 20th Century childhood has established itself as a separate life stage and it is now recognized that children require special protection, stimulation and understanding. Society has become more child centred she argues with the concept of motherhood becoming well defined. Senior (2014) too suggests that historically children’s place in society has changed; where once children were regarded as an economic asset to the family, now she suggests that parents pour capital, both financial and emotional, into their children’s lives. Parenting has become more like a profession she suggests. In the UK both parents are offered parent craft classes during the third trimester of their pregnancy. Whilst these classes may provide the opportunity for parents to meet other parents-to-be and form social networks, the primary intention is to

provide parents with information about childbirth and the immediate care of their infant. It also acknowledges the part of fathers in the care of children and the importance of children in society.

Within this parental role mothers and fathers must negotiate their employment commitments. Parents may have to consider changes to their employment status to adapt to increasing demands on their finances (Keizer et al., 2010). Being a dual-earner family after the birth of their infant may be a career choice, particularly for the mother, or driven by a financial necessity. Internationally the amount of parental leave that parents are able to have, either paid or unpaid, depends upon the family policies in place (Burstrom et al., 2010, Brandth and Kvande, 2002). The amount of time allowed and whether the policy includes paternal leave may have an impact upon the couple's decisions about employment and childcare arrangements (Feldman et al., 2004).

The timing for mothers returning to work after childbirth is also an important consideration for parents. Whilst mothers in the UK may be eligible for statutory maternity leave and statutory maternity pay (Gov.UK, 2016), it must be noted that the policies in place regarding maternity and paternity leave, as well as the potential financial benefits available to parents, are not universal and may differ from country to country. In Sweden, for example, both parents are able to stay at home during the first two weeks postpartum, this in itself may not be unusual, but perhaps a parent being able to take a further 430 days of work at 80% of their usual salary is (Nyberg et al., 2000).

The time that parents can take off work whilst being financially supported by the State may therefore have an impact upon their sense of well-being and how they adjust to parenthood. Chatterji and Markowitz (2005) suggest that longer paid leave is associated with a decline in maternal depressive symptoms, proposing that an increase in paid maternity leave has some lasting benefits for mothers. The physical health of mothers may also benefit from maternity leave suggest McGovern et al. (2006). They found that at five weeks postpartum mothers

continued to experience health problems and needed longer to rest and recover after childbirth. The dual-earner support policy, which dominates in Nordic countries, allows parents to combine paid employment with childcare (Lundberg et al., 2008). Lundberg et al., (2008) propose that increasing the parent's time with the infant increases the opportunities for breastfeeding; the benefits of breastfeeding and its positive influence upon infant mortality and morbidity are well documented, for example Heinig and Dewey (1996). Roe et al. (1999) propose that there exists a competitive relationship between breastfeeding and maternal employment; work they argue constrains breastfeeding intensity. Berger et al. (2005) also conclude that for mothers, in the United States, shorter periods of maternity leave affects their child's health and development, impacting on breastfeeding and regular medical check-ups. The impact of maternity leave upon the infant was also highlighted by Tanaka (2005); in particular the importance of what is described as job-protected paid leave. Tanaka (2005) concluded that paid maternity leave has positive effects on decreasing infant mortality rates.

Whilst the possible problems of unpaid maternity leave and the issues of mothers having to return to work soon after having a baby are acknowledged, Killien (1998) for example, suggested that employment in itself did not interfere with parenting and that whilst combining infant care with employment was challenging, that mothers in her study managed transition well and their perception of parenting was positive. Cowan and Cowan (1992), note too that mothers may benefit from the social networks that exist in their work place and restoring these may be beneficial.

2.2.1. Motherhood

The development and introduction of artificial reproduction techniques and reliable contraception has arguably given women the opportunity to control their maternal careers. Parents are able to plan their families to suit their careers and their circumstances (Fathalla, 2007). It is reported that women who planned their pregnancies have a higher level of subjective well-being, conversely it is also noted that women who rate their own health as

poor, possibly following complications in pregnancy or childbirth, have lower levels of well-being (DoH, 2014).

In choosing to be pregnant the expectation is that women will have optimistic expectations of becoming mothers (Lazarus and Rossouw, 2015, Nicolson, 1999). The socially constructed ideology of motherhood in the Western World is one of excitement, fulfilment and contentment (Lazarus and Rossouw, 2015); a joyous and meaningful experience (Miller et al., 2006). However, with or without the romantic idea of motherhood the reality of becoming a mother may not be as expected (Percival and McCourt, 2000). McIntosh (1993) found that the majority of women were not prepared for the realities of motherhood. The danger then is that mothers feel that they do not meet the high expectations that they have set out for themselves, leaving them to feel guilty and inadequate (Knightley, 2008, McIntosh, 1993).

The study by Barclay et al. (1997) was able to conceptualize the experiences that mothers had in 'becoming mothers'. Their analysis of their data produced six categories; 'realizing', 'unready', 'drained', 'aloneness', 'loss' and 'working it out' which informed 'becoming a mother'. The mothers described having a baby as life changing, an overwhelming process and that the reality was different from their expectations. The physical, mental and emotional demands of caring for an infant left them feeling drained. There were differing views presented on being alone; there was the sense of isolation but there was also the sense of mothers wanting to be left alone to get on with being mothers. Support, where accepted had positive consequences to the mother's well-being, in contrast mothers who received no support from their partners felt resentful.

Perhaps what is striking in the study by Barclay et al. (1997) was the mothers' sense of loss in becoming mothers. Loss of time, loss of control of one's own life, loss of previous lifestyle, loss of rewarding social roles and loss of sense of self were terms offered by the mothers to describe how they felt. It would appear that mothers realized the 'gains' as the

infant grew older where the mother was able to enjoy more interaction with her baby, better sleep and less anxiety.

It is reported that women are now delaying childbirth, with the average age at first birth at nearly 30 years of age (SIRC, 2011). This apparent delay, in relation to women's experiences in the 1930's for example, may be due to improvements in education and formal employment (SIRC, 2011). Cooklin et al. (2012) suggest that mothers who delay having children until they have been employed for a while are more likely to be better educated. They also propose that as a consequence it is the older mothers with higher levels of education who are more likely to return to work postnatally. Gatrell (2005) also describes the characteristics of mothers who are more likely to return to work as; those mothers cohabiting with a heterosexual partner, being educated to degree level or above, having an established career before having children and delaying motherhood beyond the age of 30. It may also be significant that there are more mothers aged between 35 and 49 years of age with pre-school children in the UK in 2010 compared with 1996 (ONS, 2011). These older mothers may have a financial buffer having been employed for a longer period of time before having children; conversely they may have constructed a lifestyle dependent upon their previous salary which may be affected by a period of time of reduced employment.

Whilst fathers are becoming more involved in domestic duties, mothers are still considered to be the primary carers within a family, retaining the responsibility for childcare as well as possible formal employment outside the home (Harding, 1996). There is then an expectation that many women will be involved in some form of formal employment. In the UK, the Office for National Statistics (ONS, 2011) reported that 29.0% of mothers worked full time in the final quarter of 2010, this they noted was an increase from a figure of 23.1% recorded at the same time point in 1996. In terms of part-time work, 37.4% of mothers worked in the final quarter of 2010. When comparing mothers in work with women with no dependent children, there was only a 0.8 percentage points gap between the groups with 66.5% of mothers in employment compared with 67.3% of women with no dependent children. In

1996 this gap represented 5.8 percentage points. It is also noted that the employment rates for women with children who cohabit with their partner were higher than for those not living with their partner (71.8% compared with 55.4%), they propose that this is because there is an increased opportunity for mothers to share childcare responsibilities with their partners.

There are similarities in the experiences of mothers in Australia. Coulson et al. (2010) note that it is not uncommon for women with young infants to participate in paid employment. In their study, 25% of mothers whose infant was between three and five months were employed outside the home. They suggest that this is also the case in the United States, Sweden and the Netherlands. Berger et al. (2005) note that the number of mothers in the United States with young children has increased dramatically over the last thirty years; in 1975 30% of mothers with a child under one were engaged in the labour market compared with 58% in 1998.

For all parents the division of labour in terms of domestic duties and childcare must be negotiated. For dual-earner families the issue of childcare is a major consideration (Knightley, 2008). Depending upon informal care may not be an option if families do not live within easy reach of grandparents or when grandparents themselves are still working and formal childcare may have financial implications. Grych and Clark (1999) note that mothers returning to paid employment had a broader effect upon the family, bringing about changes in family roles and organization. Fathers, they suggest, face additional demands to be involved in childcare and household management. Barclay et al. (1997) reported that it was more common for mothers to lack practical help from their partners, valuing more the help that they had from other women. In the study by Ruble et al. (1988) antenatally few women expected to be doing much more child care than their partners yet more than 40% of mothers postpartum reported a large discrepancy in child care division of labour. Cowan and Cowan (1992) also found that although the expectation was that the parents would work as a team, that the reality once their infant was born was that the mothers did more of the housework than before and that the fathers did much less childcare than either of the parents predicted that they would.

Internationally where there are flexible parental rights to time away from paid employment, the experiences of parents may be different. It was noted by Feldman et al. (2004) that a short maternity leave appears to be related to less optimal parenting. They suggested that there were problems associated with mothers taking shorter maternity breaks; they listed higher maternal depression, lower adaptation to reemployment, reduced marital support and lower preoccupation with their infant as potential problems.

2.2.2. Fatherhood

Fatherhood is described by LaRossa (1988) as an institution composed of two related but distinct elements. These two elements are the culture of fatherhood and the conduct of fatherhood. By culture, LaRossa (1988) includes societal norms, values and beliefs and by conduct he considers what fathers actually do, their paternal behaviours. These two elements, he feels, do not always synchronize so that whilst societal expectations are that fathers take an active physical and emotional role in their children's lives, in reality this may not always be the case. Sevil and Özkan (2009) also suggest that the role of fatherhood is influenced by traditional and societal expectations and the father's own personal beliefs, value judgements and motivation. So whilst fathers may be more inclined to be involved with childcare than in the past, mothers are still the primary carer (LaRossa, 1988).

Bartlett (2004) describes that fatherhood is a more of a social role than biological one. As mothers' role has evolved over time, what perhaps has also changed is the concept of fatherhood. McVeigh et al. (2002) suggest that fathers face the challenge of taking on a new or expanding role. The role has moved away from what was considered the traditional role of provider towards a more proactive role in the care of their infant (Goodman, 2005). Sevil and Özkan (2009) suggest that the transition to fatherhood is as complex as the developmental process of motherhood. For mothers their role begins during pregnancy and is strengthened by the process of childbirth, they propose. Condon (2006) too suggests that for mothers the reality of the pregnancy is usually associated with the first fetal movements that she feels. This creates an attachment for the mother, whereas for fathers the equivalent

is palpating these movements. It is noted by Condon (2006) that this antenatal attachment may be inhibited by dysfunctional partner relationship or by depression.

The process by which men adapt to becoming a parent may therefore be different (Watson et al., 1995). For men this involvement usually begins in the antenatal period where in the UK fathers are encouraged to participate in antenatal parentcraft classes and support and care for their partners whilst in labour and during childbirth (Goodman, 2005). Plantin et al. (2011) describe that there has been a dramatic increase in fathers' attendance at birth in western countries; this involvement in pregnancy and childbirth may positively influence their mental health they propose.

For fathers, pregnancy is described by Quill et al. (1984) as a psychosocial event, requiring significant adaptation which may be stressful. They suggest that this may not correspond with the societal expectations that this is a joyful period in a man's life. Deave and Johnson (2008) suggested that pregnancy is also an important transitional period for fathers, during which time they experience relationship changes, from being a couple to becoming a family. Whereas fathers felt excited about having a baby, the men in the study by Deave and Johnson (2008) also expressed apprehension about the general and practical aspects of childcare, leaving them feeling unprepared for fatherhood. The reality for new parents, Cowan and Cowan (1992) describes, is as entering new and unfamiliar territory where mothers and fathers are on different timetables and different trails.

Condon et al. (2004) describe fatherhood as an important life event that affects all aspects of psychosocial function and argue that men may also have gender specific risk factors for perinatal psychological distress. Buist, et al. (2002) describes the anxieties associated with fatherhood, for example concerns expressed about control and intimacy in their relationship with their partner.

Barclay and Lupton (1999) acknowledge that there is a body of literature that represents fatherhood as potentially pathological. They identified interrelated themes that they

proposed shape the experiences and self-identity of both fathers and mothers as they become parents for the first time. These themes included renegotiating paid employment and domestic work, expectations and symbolic meaning of fatherhood and fathers changing relationship with their partners.

In renegotiating paid employment and domestic work, Barclay and Lupton (1999) reported that many of the fathers found that they lacked the skills necessary to attempt domestic tasks; others in comparison felt competent in domestic tasks prior to the birth of their infant and as so felt at an advantage and therefore did not feel resentful about taking over the domestic role. In terms of childcare there were areas of possible difficulty. As Barclay and Lupton (1999) describe, fathers have to invest time and energy learning and perfecting the skill of child care, however most fathers in their study did not do this. The reasons the authors offered, were that some mothers did not allow their partners the opportunity to look after their infant, that the fathers' paid employment restricted the time available and for one father he deemed caring for his infant was not appropriate. Some fathers, whose time with their infant was restricted, were not happy about the situation whereas the few who were able to participate in childcare found the emotional rewards of caring for their infant at an early stage significant.

The notion of involvement for fathers is addressed in the second theme described by Barclay and Lupton (1999); the expectations and symbolic meanings that men attach to fatherhood. Here the authors describe how the men in their study had adopted the carer and nurture discourses found within the concept of 'new' fatherhood and merged these with the provider and guide discourses relating to 'traditional' fatherhood. Fathers in the study had expectations prior to the birth of how they would be involved in their infant's care but some found that these expectations were unrealistic, particularly in the first few months of their infant's life. With mothers being the primary carer, especially with breastfeeding, many men felt that they had no role to play and found the infant to be more demanding than they had anticipated. The parents themselves may have different views on the role of fathers,

producing tension between them (Barclay and Lupton, 1999). The changing relationship with the other parent was also highlighted.

The study by St John et al. (2005) perhaps portrays fatherhood in a more positive light. They described six major themes for fathers, these were listed as; making a commitment and taking on responsibility, maintaining the integrity of the family, balancing activities and perceiving himself as a father. The fathers in their study appeared to embrace the new responsibilities associated with having a new baby. They were able to negotiate the division of labour with their partner and make changes and sacrifices to their lives to accommodate change. These fathers appeared able to negotiate their new roles with their partners and some of the fathers felt that sharing parenting strengthened their relationship.

Fathers are mostly described as having a supportive role, whether they are adequately prepared to fulfil this role may affect how well they cope emotionally. Baafi et al. (2001) found that most fathers were satisfied with fatherhood most of the time during the first six months postnatally with some reservations. They suggested that most men are able to deal with the transition to fatherhood with their anxieties resolving over time, infrequently reaching a level of clinical illness. Donovan (1995) argues however, that as the focus is upon men in a supporting role the exploration of the meaning and effects of pregnancy and presumably also of the postnatal period upon men, has been neglected.

Deave and Johnson (2008) stressed the importance of support from health care professionals during the antenatal period for fathers. In their study, fathers felt that the healthcare provision and information was largely woman-focused leaving them feeling excluded. It can be argued that whereas there is both professional and kinship support for mothers to help them with the transition into motherhood the same level of support may not exist for fathers for them to adjust to their new role. In the UK, fathers are encouraged to attend antenatal parent craft classes as well as being present at the birth of their child; however it is suggested

that as care focuses upon the needs of the mothers that fathers may feel that their needs are not being addressed particularly at parent craft classes (Early, 2001, Fägerskiöld, 2008).

Changes to the role of fathers in family life in the UK may therefore be a reflection of the changes in societal expectations and family dynamics. With the greater expectation that mothers spend time outside the home engaged in formal employment, the responsibility for childcare more likely falls to both parents.

2.3. Summary

To answer the research questions; ‘What is the impact of having a baby on the well-being of mothers and their partners’ and ‘how does the health and well-being of their partners change over the twelve months after having a baby’, this chapter explored the roles of mothers and fathers and described the transition to parenthood as a complex developmental process (Sevil and Özkan, 2009). The chapter introduced the concept of transition to parenthood and the possible problems associated with the development of a new social role. Making the transition to parenthood has been described as stressful (Belsky and Rovine, 1984) and as a critical life event (Perren et al., 2005). It has been acknowledged that for both parents the changes to their roles and responsibilities can bring happiness but may also cause anxiety and stress. Norms and values of a particular society may influence how these roles are constructed; there may also be individual expectations of how these roles develop and there may be problems for parents if these expectations go unmet.

Making the transition to parenthood therefore makes demands of parents at a time when mothers may be physically compromised and both parents may have work responsibilities and the care for other children to consider. Parents are possibly learning new skills and having to adapt their life styles. Condon (2006) describes the possible issue of paternal resentment at having to share their partner with their infant. The concept of fatherhood is also an important consideration. Transition can therefore be considered a significant life

challenge. This may impact upon parents' sense of well-being, both positively and negatively.

In the following chapter how the transition to parenthood affects the health and well-being of parents will be explored. As identified the transition to parenthood can be a life choice that brings happiness to the individual, it also may be a time when parents may suffer from dysphoria and stress. The mental health of the parents and the factors which may influence parents' sense of well-being will be discussed.

Chapter 3: The health and well-being of parents

3.0. Chapter overview

It is envisaged that the birth of a baby will bring happiness to the parents and whilst for the majority of parents this is the case, for some the challenges that they are faced with can have a negative impact upon their health and well-being (Holden, 1991, Wee et al., 2013). Having explored the concept of health, this chapter will then go on to focus particularly upon the mental health status of both mothers and fathers, examining the psychological conditions that affect parents, but also to explore factors which may influence the psychological adjustment of parents at this time such as physical health and social well-being.

3.1. Introduction

Whilst it has long been recognized that mothers may suffer from mental health problems postpartum, there is now a body of work that acknowledges that fathers too are also not immune to problems (Condon et al., 2004, Madsen and Juhl, 2007). Fatherhood may affect all aspects of psychosocial function; research by Condon et al. (2004) suggests that men may also have gender specific risk factors for perinatal psychological distress. There may be an element of co-morbidity with the mental health of one parent influencing that of the other (Kim and Swain, 2007).

Becoming a parent can impact upon the individual's health and well-being (Schytt and Waldenström, 2007). Whilst the mental health of parents is a key factor in their health and well-being in the postpartum period other factors such as physical health and social well-being may influence or contribute to the quality of life of parents. Mothers particularly after pregnancy and childbirth can feel debilitated in the short term but can suffer longer term physical problems, for example incontinence and backache (Thompson et al., 2002). Whilst the focus is upon the negative sequelae of parenthood, less may be understood about the possible healthy elements associated with parenting.

3.2. Health and well-being of parents

To begin to evaluate health and well-being it is important to have a working definition of what it is to be in good health and understand the concept of health and how it is interpreted by health professionals and by society as a whole. What constitutes health and well-being has been described as the absence of disease by the medical model perspective (Anderson and Podkolinski, 2000) whereas the positive definition proposed by the World Health Organization (WHO) talks about well-being and not just the absence of disease or infirmity (Nettleton, 2006, Mackenbach et al., 1994). Baggott (1994) suggests that in describing health with these positive attributes the WHO recognizes mental and social as well as the physical health of the individual. The WHO definition has been criticized as being utopian and it fails to take into account that health is a relative concept; the health of individuals and society should be seen in relation to their environments, expectations and capacities (Baggott, 1994). The Department of Health (2014) describes well-being as ‘feeling good and functioning well’. It also noted that the WHO describes well-being as existing in two dimensions; objective well-being which relates to objective measures of well-being either from self-reported disclosure of specific health conditions or from official statistics and subjective well-being which involves asking the individual how they feel about their own well-being and includes positive measures, not just the absence of negative factors (Diener, 1984).

What is emerging now therefore is the notion of positive health particularly when considering mental health status. This not just the absence of disease but actually trying to identify what it is that makes people feel good (University of Pennsylvania, 2013). When thinking about an individual’s mental state then, historically there has been more interest in identifying mental illness and providing some form of treatment than identifying mental health (Gable and Haidt, 2005). More recently there has been interest in studying positive psychology; examining the reasons why people are happy and what for them makes life worth living (Seligman and Csikszentmihalyi, 2000), what makes people feel joy, be

altruistic and create happy families (Gable and Haidt, 2005, Huppert, 2009). Seligman and Csikszentmihalyi (2000) suggest that psychologists know little about what makes people flourish. Seligman et al (2005) suggest that ‘positive psychology’ can be thought of as an umbrella term which encompasses the study of positive emotions, positive character traits and enabling institutions. Kobau et al. (2011) describe positive psychology as studying positive attributes, psychological assets and strengths. The movement towards studying the conditions and processes that play a part in the ability of individuals, groups and institutions to flourish and achieve optimal functioning is not meant to detract from the important issue of identifying and treating mental illness. Considering not only mental illness but also positive mental health provides a better picture of human experience (Gable and Haidt, 2005, Kobau et al. 2011). As Parkinson (2006) and Keyes (2002) note, positive mental health is more than the absence of mental illness and that mental health and mental illness can coexist.

Keyes (2002) describes how positive health can be measured using structured scales measuring the presence of positive affect. It is not assuming that if an individual does not have any mental illness they must therefore be mentally healthy. Keyes (2002) illustrates this concept by suggesting that individuals might be mentally languishing rather than flourishing. He suggests that individuals that are moderately mentally healthy are neither languishing nor flourishing and that individuals free of mental illness may not feel healthy or function well (Keyes, 2005). He also suggests that mental illness and mental health are highly correlated but belong to separate continua, so that treating or preventing mental illness does not necessarily result in mental healthy people. Van Lente et al. (2012) also suggest that positive mental health and negative mental health (illness) are two discrete dimensions of mental health rather than two ends of one continuum. Therefore the lack of mental illness does not necessarily equate to mental health, mental health is therefore not the absence of psychopathology (Keyes, 2005).

In studying positive mental health and well-being acknowledges that individuals possess positive traits that might actually improve mental well-being and then perhaps use this knowledge in health promotions (Gable and Haidt, 2005). Parkinson (2006) acknowledges that this significant shift towards recognizing mental health and well-being is evident in policy and practice, not only in the UK but also in Europe. Prince et al. (2007) also support the importance to integrate mental health awareness into all elements of social and health policy, health care delivery and the planning of health systems. Health promotion rather than disease prevention is therefore considered the way forward (Kobau, 2011).

The importance of measuring well-being is highlighted by the Office for National Statistics (ONS). In 2010 the ONS launched the UK's Measuring National Well-being programme to measure the well-being of the nation. Whereas formal government statistics present a picture of the financial status of the country in terms of for example GDP, it is the data from the National Well-being programme that informs policymakers whether the well-being of the individual is changing as a result of social policies which have been put in place.

Measuring not just health but well-being is part of Government initiatives. The Department of Health (2014) describe a two-way relationship between well-being and health, proposing that both mental and physical health can influence well-being and that well-being can influence health. It is important then to consider not only the physical functioning of the parents but also their social functioning and in particular how parents make the transition to parenthood and how this may affect their overall sense of well-being.

In terms of looking at the experiences of women, Borders (2006) argues that there is a lack of formal or informal rituals that acknowledge a women's transition to motherhood and as a result, new mothers and clinicians have a limited understanding of what constitutes postnatal health. Kline et al. (1998) describe how much research is concerned with maternal obstetric outcomes, with particular focus upon severe physical complications rather than the more common physical and psychological problems associated with childbirth and the

puerperium. They also suggest that quality of life outcomes, functional status, duration of postpartum recovery time and the effect on long term maternal health of obstetric interventions are issues that are relatively understudied. Borders (2006) notes that in the U.S.A. once the mother's six week postnatal check has been performed that a mother's physical and mental health are largely ignored.

It is important therefore to measure parent's quality of life rather than only considering the presence of ill health at this time. However in terms of monitoring maternal health the emphasis is upon maternal mortality and morbidity, documenting the negative sequelae of pregnancy and childbirth. Bowling (1991) argues that in concentrating upon a negative definition of health provides little information about the state of health for the majority of individuals who do not have chronic physical or substantial impairment, Bowling (1995) suggests that most instruments which measure health status are actually measuring deviations away from health and are in fact measuring ill health.

This is not to say that it is not important to recognize the influence of pregnancy and childbirth upon maternal mortality and morbidity. The main body of evidence into negative outcomes for mothers and their babies is derived from the Confidential Enquiry into Maternal Deaths which has subsequently been replaced by the Centre for Maternal and Child Enquiries (CMACE). In the UK the formal enquiry into maternal deaths was not established until the first report which covered the years 1952-1954 (Neilson, 2005). These confidential enquiry reports continue to the present time and since 2014 these reports have been published yearly. Following the amalgamation of other enquiries, in its current form the enquiry now also includes the health of children up to 16 years of age and further it is concerned now with morbidity as well as mortality of mothers and their children (Weindling, 2003).

In terms of reporting on maternal deaths, the reports classify the cause of the death and whilst the main concern is maternal death from physical causes, the reports also

acknowledges 'coincidental' deaths. This category includes death from factors unrelated to motherhood, for example road traffic accident fatalities and accidental street drug overdose to death from suicide and murder, which may follow a history of domestic abuse (CMACE, 2011). In terms of mental health, Oates (2003) highlights that psychiatric disorders, suicide in particular, was a leading cause of maternal death as reported by the Confidential Enquiry into Maternal Deaths 1997-1999. She describes that while suicide accounted for 28% of maternal deaths, mothers also died from substance misuse and other complications of psychiatric problems.

Stewart et al. (2006) note that the 2001 Confidential Enquiry into Maternal Deaths reported that suicide was the leading cause of death during the first year postpartum. Of the 39 mothers who committed suicide it was reported that 10 had severe depression and nine had psychosis (Almond, 2009). Further, Stewart et al. (2006) suggest that the rates of suicide are underestimated and that depression is a silent cause of morbidity and mortality in mothers.

The purpose of the reports then is to reflect upon these deaths in such a way as to improve clinical decision-making, delivery of care and service provision; for example beginning in the antenatal period mothers are now asked if they are experiencing domestic abuse. It also allows for monitoring of maternal mortality over time.

This formal assessment of maternal health outcomes has therefore made an important contribution to improvement of care for women, particularly during pregnancy, in an attempt to reduce maternal deaths and improve outcomes. In focusing upon the wider public health issues, particularly poor health and social outcomes, the Report's findings and recommendations have also influenced policies designed to reduce health inequalities (CMACE, 2011). Whereas the mortality and morbidity for women associated with the postpartum period is well documented (CMACE, 2011), there is no equivalent report in the UK examining the outcomes for fathers in terms of mortality or morbidity. The physical and

mental health effects of becoming a father are understudied and therefore largely unknown (Garfield et al., 2006).

In the UK there is a legal obligation to provide maternity care for the mother and her child. The vision set out by the Department of Health (2007) was that mothers should be provided with a midwife first and foremost and the skills of a doctor only as necessary. This policy shift suggested a movement away from a medical model driven maternity care provision towards a more holistic woman-centered approach, with the midwife supporting the mother and her family. Treating pregnancy and childbirth as a normal physiological event, places perhaps more emphasis upon the positive health outcomes, whilst recognizing the possible negative health outcomes for the mother. After the birth of their infant it is then important to consider how the transition to parenthood affects parents' health and well-being.

To understand the health and well-being of parents it is therefore important to consider not only their mental health status but also their physical health and social well-being in an effort to examine the parents holistically. Mental, physical and social health are closely interwoven and deeply interdependent suggests the World Health Report (2001). The notion of the relationship between mental and physical health is stressed by Kolappa et al. (2013) in their editorial, where they recognize that comorbidity often exists between mental health and what they describe as non-communicable diseases. In this instance 'non-communicable diseases' could perhaps be understood as conditions associated with pregnancy and childbirth. In the following sections the mental, social and physical factors which may affect well-being during transition will be discussed.

3.3. Parents' Mental Health Status

The World Health Report (2001) acknowledges the social and economic cost of mental illness on the individual and upon society. The Royal College of Psychiatrists (2010) published a position statement in which it is stated that mental health underpins overall

health; mental illness is associated with increase in physical illness whereas positive mental health is associated with increase in physical health and enhanced psychosocial functioning.

During the transition to parenthood, both mothers and fathers may experience dysphoria, anxiety and stress (McKenzie and Carter, 2013). The mental health of parents can impact upon their ability to parent, their parenting styles and this therefore may ultimately affect the child's sense of well-being and development (Green et al., 2007, Ramchandani et al., 2005, Schumacher et al., 2008, Goodman, 2004). The cognitive and psychosocial development of babies and infants is dependent upon the interaction that occurs with parents and it has been shown that improvements in the mental health of mothers can have a positive effect upon the child's health (WHO, 2001).

The birth of a baby is expected to bring feelings of happiness to parents but this may be tempered by the increased responsibility that the birth of a child brings. The association between mother's emotional state and child infant bonding has been established (Moehler et al., 2006). There is also a recognition that parental mental health problems can negatively impact upon children's cognitive development (Mensah and Kiernan, 2010). Mothers with postnatal depression were less likely to engage in positive parenting and more likely to engage in poor parenting practice, for example using corporal punishment and feeding their infant inappropriate foods, compared to mothers who did not have postnatal depression, suggested Zajicek-Farber (2009). Whilst Zajicek-Farber (2009) found that infants of depressed mothers were taken to significantly fewer well-child health visits, Wolkind (1985) reported that the children of mothers with depressive symptoms were more often presented to their doctor with minor illness, proposing that these mothers may have been hoping the doctor would recognize her needs. Ramchandani et al. (2005) also found that the children of depressed fathers also had an increased risk of behavioural problems at three and half years of age. As Green et al. (2007) describe looking after young children can be stressful and this stress can be exacerbated by factors such as living in poverty and by parents not being able to find time and energy to look after their children.

Whilst there is evidence that mothers and fathers experience happiness in being pregnant and becoming parents (Oates et al., 2004) the emphasis in research is concentrating upon the incidence and severity of parental mental health problems. To what extent this swing in mood could be regarded as part of the normal process of becoming a parent is not well defined. Perhaps for clinicians any dysphoria becomes significant when the parent requires some form of medical treatment. However, parents themselves may have some expectation of sadness or depression postnatally and therefore may not present to their health professional for help (Percival and McCourt, 2000).

3.3.1. Maternal mental health problems

It has been noted by Hopkins et al. (1984), for example, during the puerperium mothers are at greater risk of developing severe mood disorders. It is suggested that the incidence of postpartum non-psychotic depression is a considerable public health issue affecting 10-15% of mothers in the UK (Robertson et al. 2003, Royal College of Psychiatrists, 2014).

Postnatal depression is also understood to be a global phenomenon (Oates et al., 2004) and a public health problem (Almond, 2009, Warner et al., 1996) as it may also affect the health and well-being of the other parent and may affect their children's well-being and development (Cox and Holden, 2003).

The term 'postnatal depression' is used as a broad all-encompassing term for the range of mental health issues that may affect mothers postnatally from the 'baby blues' through to the extreme condition of puerperal psychosis, with mothers described as experiencing different levels of psychological disturbances during the postpartum (Nicolson, 1998). Reducing all elements of maternal dysphoria into one term detracts from understanding that there are a range of psychological conditions which can affect mothers at this time. Everingham, et al. (2006), suggest that the diagnosis of postnatal depression collapses a diverse range of experiences into a single medical disorder and in the process loses detail that gives meaning to the mother's experience.

Hynes (1999) describes that there are three distinctive types of psychological disturbance for the mother in the puerperium. She lists these as postnatal or 'third day blues', postnatal depression and puerperal psychosis. In this section this range of psychological problems will be described considering their aetiology and incidence.

3.3.1.1. Third day blues

The 'third day blues', 'baby blues' or 'postpartum blues' is regarded as a transient condition and a normal reaction to new motherhood and as such a common phenomenon (Hopkins et al., 1984). It is described as a fleeting unexpected mood change with a 'peak' of dysphoric symptoms around the third to fifth day postpartum probably due to hormonal and biological factors (Brockington, 1996, Boyce, 1994). The incidence of 'baby blues' is estimated to range between 15 to 80 % of all births but being but a brief experience it is not regarded as a serious problem and does not require any treatment other than reassurance for the mother (Kennerley and Gath, 1989, Percival and McCourt, 2000).

3.3.1.2. Postnatal depression

The two types of psychiatric disorder of the puerperium are described as postnatal depression and puerperal psychosis (Hynes, 1999). It is the incidence of postnatal depression and puerperal psychosis that therefore concerns health practitioners as this has implications for the long term health and well-being of the parents and their child (Gale and Harlow, 2003). The clinical presentation of depression by mothers at this time is not dissimilar to the signs and symptoms of major depression exhibited at other times in an individual's life (Robertson et al. 2003, Royal College of Psychiatrists, 2014, Gale and Harlow, 2003). It is important therefore for health practitioners to be able to specifically identify postnatal depression.

The possible causes of postnatal depression are understood to be complex; Boyce (1994) suggests that postnatal depression has a multifactorial causality pertaining to social,

psychological, hormonal, biological and interpersonal factors. Percival and McCourt (2000) suggest that the causes of postnatal depression may be social, physiological, psychological or all three. Hynes (1999) describes that it may be provoked by 'demand overload', being more prevalent in women who have experienced other stress-inducing life events; others describe the effect that changes in hormones might have upon the woman's psychological health. Age was reported to be a significant factor in postpartum depression, with younger mothers (18-24 years) being more likely to experience mild to severe depressive symptoms than older mothers (Mayberry et al., 2007).

Henshaw (2005) also suggests that a past history of psychopathology, dysphoric mood during pregnancy, low level of social support, a poor marital relationship and the occurrence of stressful life events as being the strongest predictors of postnatal depression. Antenatal depression has also been linked to the development of postnatal depression by Bowen et al., (2009). Leigh and Milgrom (2008) propose that antenatal depression is the strongest predictor of postnatal depression, quoting a possible incidence of 13% of mothers suffering from depression in the antenatal period. Rubertsson et al. (2003) also identified depressive mood in 8% of mothers in their antenatal sample.

Everingham, et al.(2006) discuss the importance of the diagnosis of postnatal depression in women and in particular the way in which research now highlights the postnatal experiences and difficulties for fathers in understanding the mother's experience. Enkin, et al. (2000) argues that there is no persuasive evidence to support the traditional biochemical explanation for postnatal depression. They suggest that women with young children are often depressed. They instead suggest that sociological and psychological studies have provided strong evidence to show a relationship between some social conditions and postnatal depression.

The Royal College of Psychiatrists (2014) suggest that it is unlikely that there is one single cause of postnatal depression but rather that a combination of stressors contribute to the development of depression at this time. A range of risk factors for postnatal depression have

been identified and these include; past medical history of psychopathology, depression or anxiety during pregnancy and ‘baby blues’, low social support, poor relationship with partner and having had a recent stressful event as well as physical problems such as underactive thyroid (Royal College of Psychiatrists, 2014, Scottish Intercollegiate Guidelines Network, 2002, Gale and Harlow, 2003).

Logsdon, et al. (2006) suggest that new mothers are unlikely to seek treatment for their depression and as a consequence many women remain undiagnosed and therefore untreated, this possibly having an affect not only upon her own well-being but that of her partner, infant and other family members. Perhaps the most difficult aspect for clinicians is therefore trying to define mother’s and father’s levels of depression as there are degrees of dysphoria from sadness or melancholy to extreme levels of depression and deciding what level of dysphoria is significant.

Postnatal depression is viewed by Nicolson (1999) as a normal response to the losses that women incur when they become mothers for the first time or subsequent times. These losses include their autonomy, sense of identity, time, sexuality and health. She describes that motherhood requires major shifts in domestic and work patterns whilst still mothers are still recovering from the birth of their infant. So whilst having a baby is, she describes, shocking, painful, physically damaging and leads to anxiety and distress, she also acknowledges that it is also pleasurable and magical. She concludes that postpartum depression is not pathological and suggests that it is potentially a healthy response to loss.

3.3.1.3. Puerperal psychosis

Puerperal psychosis is described as a severe psychiatric illness related to manic-depressive illness (Boyce, 1994). It is suggested that the incidence of puerperal psychosis affects 1-2 women following delivery in a 1000 births and is characterized by severe depression or mania; the mother’s behaviour may be so extreme that she requires admission to an inpatient mental health unit as the condition is considered to be life threatening (Gaskell 1999, Boath

2008, Heron et al. 2007, Brockington 2004, Royal College of Psychiatrists, 2014). The condition usually presents rapidly within the first few days after childbirth and rarely beyond the first two or three weeks (Hynes, 1999). Puerperal psychosis has a high and specific heritability and the recurrence rate is about one in four pregnancies (Brockington, 2004). Hopkins et al. (1984) note that mothers with this condition may have feelings of guilt resulting from thoughts of infanticide.

3.3.1.4. Incidence of maternal depression

In the UK, the NICE guidelines recommend that mothers are screened for depression by a health professional both in the antenatal and postnatal periods using depression identification questions (NICE, 2014, Williams et al., 2016). Holden (1991) states that depressed mothers may find it difficult to confide in others about their depression; in screening mothers this creates an opportunity for health professionals to discuss depression with them. In the UK, the Confidential Enquiry suggests that the prevalence of mental health problems within the maternal postnatal population as 10%, with some of these mothers suffering from severe mental health problems (Lewis, 2007). Global research however quotes the figure for maternal postnatal depression of up to 40% (Najman, et al., 2000). The reported incidence of mental health problems in parents may vary; in part due to the way in which these statistics are generated as there is not one tool which is used exclusively by all countries to measure the incidence of depression, stress or anxiety but also it is important to note when the parents were assessed. Even when the same instrument is employed there is also the issue of researches using differing cut-off scores (Halbreich and Karkun, 2006). It is also suggested that due to the use of culturally inappropriate measures, the under-reporting of symptoms and the stigma of mental illness, there is a potential inaccuracy in the global figures, perhaps making postnatal depression a bigger health issue than first considered (Pope et al., 2000). There may also be issues in defining postnatal depression; Stern and Kruckman (1983) quoted by Robertson et al (2003), suggest that postpartum depression does not exist in some cultures. Rather than it not existing, it may be that different cultures interpret the condition

differently (Cox, 1988). Oates et al. (2004), for example, in their study used the term ‘morbid unhappiness’ as this term was universally understood across 11 countries, whereas ‘postnatal depression’ was not. In summary, while depression in the postpartum can be identified and treated, there is no consensus about the actual cause but many and varied risk factors have been proposed.

3.3.2. Paternal mental health problems

For some fathers, the new baby is absorbed into an existing life framework or for others a new baby may be regarded as a new alien life structure (Bradley et al., 2004). This description perhaps illustrates that fathers too may be overwhelmed by the addition of a baby into their lives. First-time fathers in particular may feel neglected and marginalized during the first year after the birth of their baby (Bartlett, 2004). Research examining father’s experiences of parenting within the first year of their infant’s birth is fairly limited and tends to consider their functional status (Sevil and Özkan, 2009, Baafi et al., 2001) and role adaptation as a new parent (McVeigh et al. (2002) and the effect of their partner’s mental health has upon their well-being (Roberts et al., 2006). St. John et al. (2005) note that there are few studies which consider the impact of fatherhood upon the father himself. From their study they concluded that fatherhood is complex; with fathers finding that new or expanding fatherhood is challenging and sometimes stressful. Fathers may have the challenge in the early postnatal period of trying to participate in the care of their infant whilst still negotiating other commitments such as work and family (St. John et al., 2005).

The incidence of mental health problems in new fathers in the postnatal period may be more difficult to define as the aetiology of postnatal depression and psychosis implicates hormonal imbalance. Edoka et al. (2011) suggest that paternal depression is under-researched and is not a widely recognized condition. Goodman (2004) notes that depression and dysphoria in fathers is a serious problem with 24-50% of fathers whose partner has depression will also experience dysphoria. Burgess (2011), from a meta-analysis of 43 studies, suggests that the estimates of paternal depression vary widely, quoting a figure of

10.4% of new fathers experiencing severe depression. In Japan the prevalence of paternal depression at four months was recorded as 13.6%, with maternal depression, low marital relationship satisfaction mental health problems and economic anxiety being cited as possible causes (Nishimura et al., 2015).

Burgess (2011) also suggested that men's depression peaked at three to six months postpartum, however as few studies continued beyond three months that this finding, it is suggested, should be treated with caution. Whilst it is recognized that women may experience degrees of depressive symptoms postnatally less is known or understood about the experiences of fathers at this time. This may reflect that men are less likely in general to access health services (Bonhomme, 2007) and that in general depressive symptoms in men are often undiagnosed and untreated (Emslie et al., 2006). Warren (1983) suggests that the empirical data on male depression is limited due to the main focus being upon the experiences of women. She notes that there are differences in the experiences and expressions of depression in men compared with women, suggesting that for many men depression may be a private experience unshared with others. The non-detection of depression she suggests is due to men having the ability to camouflage their feelings from others, thus the problem remains private.

The study by Condon et al. (2004) suggests that it is during pregnancy rather than the postnatal period which is the most stressful time for fathers. Quill et al. (1984) too propose that fathers may become stressed earlier than the postnatal period. They argue that each step of the process from planning to conceive, through to early fatherhood requires significant adaptation for men and is therefore potentially stressful. The fathers contact with health professionals during pregnancy may be limited and as the emphasis is upon the health of the mother then the father's psychological health may be overlooked. Warren (1983) also argues that men may feel that depression is incompatible with the male sex role and may threaten their sense of masculinity. This she gives as one reason that men may choose to keep their depression hidden, she also suggest that men may be punished by others for expressing

feelings of depression. Depression in fathers in the postnatal period may therefore be difficult to detect. Certainly the causes of depression at this time may relate more to the expectations that fathers have about their role as a parent and how this equates to their actual experiences. The male sex role emphasizes competence, achievement and success suggests Warren (1983), these may be areas that are put to the test when men as fathers are learning new skills and taking on new responsibilities. Men may also take on responsibility for increasing their financial security and their ability to support an expanding family may prove stressful.

Men may see their role as supporting their partners, particularly if the partner is suffering from postnatal depression. As Roberts et al. (2006) describes providing informal care for someone who is suffering from a psychological disorder at any time can be daunting with the carer themselves experiencing adverse health outcomes. If this is also during the postnatal period then the situation may be compounded by other stressors unique to this time. Davey et al. (2006) quotes an extensive list of incapacitating symptoms for postnatal depression in mothers and suggests that the severity of some of these symptoms must have a detrimental effect on the father. The study by Meighan et al. (1999), albeit involving a small sample (eight), highlighted the depth of the impact that the partner's postnatal depression has upon the men. In the study the men talked about the major disruption in their lives and also how even after their partners recovered that their relationship was altered. The impact of the mother's postnatal depression on the fathers was particularly significant in terms of the support that the mother was unable to give him. In normal circumstances the parents would rely upon the support of each other to cope with new experiences (Meighan et al., 1999). Similar findings were reported by Beestin et al. (2014), again reporting the results of a small study (14 fathers). They highlighted the issues for fathers when the mothers' depression caused them to withdraw from parenting. Some fathers reported feelings of isolation taking on both parent roles and being overwhelmed having sole responsibility for their family and household. The absence of their partner shaped their experience (Beestin et al., 2014).

Condon (2006) describes the possible ramifications upon the relationship between the parents when the mother has postnatal depression. The father, he suggests, may find the mothers behaviour and her withdrawing from physical affection difficult to cope with leading to feelings of rejection. If the mothers health necessitates the partner or family members to take on more and more care for the infant then this might lead to the mother's feelings of uselessness Condon (2006) suggests.

It is also suggested that for half of the mothers that this is their first episode of depression; it may therefore be the first experience that they have of living with their partner whilst depressed (Davey et al., 2006). Roberts et al. (2006) suggest that approximately one in ten men experience the dual stressor of living with someone with postnatal depression as well as caring for a new baby. Davey et al. (2006) suggest further that depending upon how depression is measured, that the incidence of depression in fathers whose partners have postnatal depression could range internationally from 3%-33%. In the study by Doucet et al. (2012), they found that the partners of mothers who had puerperal psychosis reported a great deal of stress as a consequence of providing support for their partners as well as caring for their infant and any other children.

Goodman (2004) suggests the incidence of depression in fathers as 25.5% to 50% where their partners had depression. Currently fathers are not routinely assessed although authors, for example Saisto et al. (2008), call for the assessment of fathers in the antenatal period to be a standard procedure. Schumacher et al. (2008) also supports the idea that fathers should be evaluated for mental health problems, particularly where there is presence of depression in their partner. This perhaps highlights the awareness that fathers too may experience levels of dysphoria as a consequence of being or becoming a parent.

The fathers' formal employment may also influence their mental health suggested Cooklin et al. (2015). Work that involved long hours or unsociable hours were linked to more

psychological distress, whereas jobs which provided optimal conditions and quality promoted mental health status in fathers they propose.

3.3.3. The influence of social support on parents' mental health status

The possible affect that social support has upon the adaption of parents to their new role is an important issue and may have a moderating effect on the levels of dysphoria and stress for parents (Leahy-Warren at al., 2011). Social support is regarded as important for parents both antenatally and postnatally and the partner is usually the main source of this support. Dennis and Ross (2006) note that poor quality partner relationship has been linked to an increased risk for postnatal depression. It is at this time, particularly for first-time parents, that the parents may need support to cope with the changes to their lives that they are experiencing. Leahy-Warren at al., (2011) suggest that support may positively influence mental health outcomes, noting that lower levels of social support were related to higher rates of postnatal depression. Cutrona (1984) suggested a complex relationship between social support and depression, this support may infer positive benefits to the individual parents in terms of their emotional well-being. Support can come in the form of material help; financial or practical support. The use of social networking through the internet may have increased the available sources of support for parents. This may be particularly useful if family and friends are not nearby. The provision of antenatal and postnatal groups or classes are available in the UK for parents to share their experiences, although in the postnatal period it may be mothers only who are able to access these sessions as their partners have returned to work.

Postnatally, health professionals, particularly Community Midwives and Health Visitors as well as GPs are a good source of information and support for parents. In the UK, Community Midwives have a statutory duty to attend mothers and their babies for a minimum of 10 days and up to a maximum of 28 days postpartum (NB this has changed since the study was conducted). The degree of care provided to mothers is determined in part by the needs of the mother and baby but also by the dictates of the service. Generally the

mother and baby are seen by the Community Midwife the day after discharge from hospital, at about day six postnatally when the mother is offered screening for her baby and then at day 10 when the mother is usually considered well enough to no longer need the services of a midwife (Bick and Arthur, 1995, also professional knowledge). It is usually at this point that the Health Visitor takes over the care of the infant. Whilst the Health Visitor generally visits mothers at this time, mothers can also visit Baby Clinics where they will be seen by a Health Visitor. The role of the health professionals is to assess the mother and baby's physical and emotional well-being. In the UK 'Sure Start' is also in place to provide support for parents. The Royal College of Psychiatrists (2010) describe Sure Start as providing multi-component interventions including health services and childcare for the benefit of parents and children.

Whilst it is acknowledged that there is less of a trend for adult children to live close to their parents, Belsky and Rovine (1984) suggest that contact with parents and close family members actually tends to increase following the baby's birth. Family were the main point of reference and the parents' supporters when in need suggest Xuereb et al. (2012). Comparing their parenting experiences with friends and work colleagues provided them with useful information. Bost et al. (2002) found that mothers particularly benefited from friendship relationships. They described that in general those parents who reported higher satisfaction with friendship relationships reported less depression. The social support that individuals experience is therefore recognized as having a buffering effect against the development of stress, anxiety and depression, with higher levels of social support being related to lower levels of depression and anxiety disorders (Landman-Peeters et al. 2005).

When Bost et al. (2002) examined the social networks of mother and fathers from the prenatal period to two years postpartum; they found that whilst the social network size decreased over time, the frequency of contact with family members tended to increase. This increase in contact with family members, they suggest, may reflect the need for support for

parents who are less adjusted to their new roles. The authors further proposed that support from close family members may serve as a buffer against postnatal depression.

It may be that mothers and fathers require social support at differing times and there may also be gender differences in the way parents access support from others and the available support mechanisms. Deave and Johnson (2008) observed that the fathers perceived that they had few support systems and few fathers mentioned their own fathers as a source of support, this in contrast to the mothers' experience. Cowan and Cowan (1992) found that 20% of new or expectant fathers could not name four people who they could call upon to provide support. They propose that this reflects that in society generally women are much more likely to be part of a network of people that they might confide in than perhaps men are. Bost et al. (2002) also found that compared to mothers, fathers reported declines in the number of friends in their network and the frequency of contact with these friends.

3.3.4. Partner or marital relationship and mental health

The parent's relationship, often assessed in terms of 'marital satisfaction' has also been linked to the psychological adjustment of the parents during the transition period. Parents, particularly in the first few weeks of their child's life, may find a reduction in the time and frequency that they have alone as a couple, or the time that is spent alone as an individual. This may impact on their well-being. Sleep disruption has been linked to a decline in marital satisfaction (Medina et al., 2009). They describe how during the transition period parents have to address the needs of their infant, balance home and work and renegotiate household strategies. Dealing with these demands requires the cognitive skills which they suggest are most affected by sleep disturbance. They describe these cognitive skills as verbal fluency (the ability to communicate needs and goals); sustained attention (the ability to focus on goals), working memory (to be able to juggle and address multiple goals) and perhaps in terms of marital satisfaction, cognitive flexibility and the ability see the situation from their partner's point of view.

Belsky (1985) describes that the presumption is that marital quality declines during the transition to parenthood and during childrearing years yet, as he proposes, this might not be the case with the benefits of parenthood outweighing any costs associated with this time. Relationships are important as they act as a buffer against the impact of adverse life events and might contribute to the individual's psychological adjustment during these times (Cowan and Cowan, 1992).

From being a family unit comprised of two people to then include a child produces four different relational systems described by Feldman (2000) as; husband-wife, mother-child, father-child and the higher order family system. The importance of identifying these systems is to then recognize that they may influence each other and then how this might affect the quality of the relationship particularly between the parents.

Whilst most parents assume that there will be equal involvement in childcare more often the mother takes primary responsibility (Delmore-Ko et al. 2000). Cowan and Cowan (1992) described in their work that mothers do more housework than before their baby was born and fathers take part in less childcare than either of the parents predicted they would. If the parents expectations of how the workload will be divided between them does not mirror the reality this too can be stressful.

Whether or not parents lived together and whether or not they were happy with the pregnancy also had an impact upon their levels of anxiety or depression. Whilst many studies describe parents as married couples or as cohabitating couples, it must be acknowledged that there are parents who do not have a significant partner that they share parenting with. This group of lone parents, usually mothers, must be distinguished from parents who although share parenting, do not cohabit. As a single lone parent they may face a different set of problems compared to other parents, for example managing financial, employment and childcare issues on their own, as well as needing to access support from sources other than their partner. It is important to note that lone parents now make up one

quarter of all families and that only 16% of births are to parents who are neither married nor cohabitating (One Parent Families, 2009). This therefore perhaps suggests that there is a population of parents who may have separated at some point during their child's life. Possibly then there are parents who fall into this category during the first year of their child's life.

3.4. Parents' physical health

3.4.1. Maternal physical health problems

It is important to consider the physical health of mothers in the postpartum, particularly with the link made between physical and mental health (Brown and Lumley, 2000, WHO, 2001). It is suggested that physical health can impact upon a mother's mental or emotional well-being and also the health of their children and yet mother's physical health is relatively neglected (Torkan et al, 2009). It is understood then that pregnancy and childbirth may have a negative effect on women's physical health; it might be assumed that these problems are transient, comparatively minor or self-limiting (Webb et al., 2008). However, work examining urinary incontinence in middle aged women suggests that the stresses of pregnancy and the process of childbirth appear to be associated with the prevalence of incontinence in later life (Menezes et al., 2010). Woolhouse et al. (2014) also suggest that poor physical health in the early postpartum is associated with poorer mental health throughout the first twelve months of having a baby. Gjerdingen et al. (2009) also report that whilst many physical problems associated with pregnancy and childbirth usually resolve by six weeks postpartum, in their study they identified problems that persisted beyond this time. The prevalence of health problems associated with the postpartum was noted in the study by Williams et al. (2007). They reported that 87% of mothers experienced at least one index of morbidity at twelve months postpartum. These problems included pain, dyspareunia, urinary and faecal incontinence. It is therefore important not to be dismissive of physical problems associated with pregnancy and childbirth and assume that they are self-limiting, and yet as Gjerdingen and Center (2003) propose health problems may persist beyond the

acknowledged six week recovery period. Although these physical health problems may not be life threatening, they may still have an impact upon a mother's sense of well-being and her ability to deal with the stresses associated with having a baby. Woolhouse et al (2014) concluded from their study that poor physical health in the first few months after childbirth is associated with mothers suffering from poor mental health throughout the twelve months postpartum. This notion is explored by many researchers, Brown and Lumley (2000) for example, describe an association between depression and maternal health. In their study they found that where mother's EPDS score was equal to or greater than the cut-off score of 13, that is indicative of depression, that this was associated with mothers complaining of tiredness, relationship problems, sexual problems, urinary and faecal incontinence, back pain, colds and more minor illnesses than usual.

Glazener et al (1995) suggest that maternal morbidity postnatally is not only extensive but is under-recognized. Brown and Lumley (1998) also suggest that there is under-estimation of postpartum morbidities probably due to under-reporting by the mothers themselves, this they suggest is probably due to the mother's embarrassment in disclosing problems. There may be other reasons why there is under-reporting of health problems and what Albers (2000) describes as a 'hidden morbidity'. She too suggests that mothers may be embarrassed to discuss their problems, but that there may be also a sense that these health problems are a normal aspect of giving birth and that there is a perception that little that can be done to relieve these health problems. Also at this time, Albers (2000) suggests, there is a sense that the attention of the mother and family is directed away from the mother herself and onto the baby. Whereas major postnatal problems, for example haemorrhage and infection, are significant complications these are uncommon and usually respond to treatment. It is perhaps the other more common problems which are more insidious in the long term and may have more impact upon mother's sense of well-being and her ability to function.

Incontinence, both urinary and faecal, has been described by both Logan (2001) and Wells (1996) as a major health problem for mothers following childbirth. The aetiology of

postnatal stress incontinence is described as a combination of anatomical and physiological changes to the body during pregnancy and childbirth (Robb and Tooze-Hobson, 2005, Kapoor et al, 2005). The effect of hormones upon connective tissue, the baby's weight and head circumference, as well as the mode of delivery and use of epidural anaesthesia (may reduce sensation to void urine) can contribute to mothers developing urinary incontinence. The occurrence of third or fourth degree tears, causing damage to the anal sphincter muscles, can lead to development of faecal incontinence.

Incontinence can have a detrimental impact on mother's quality of life and it has been reported that incontinence can be a long term problem for women (Kapoor et al, 2005). At six months postpartum, Handa et al (2007), found that both urinary and faecal incontinence have negative impact upon quality of life scores, and for those women who suffered from both urinary and faecal incontinence there was also a negative impact upon sexual function. Schytt et al. (2004) suggest that one mother in five have symptoms of stress incontinence. The study by Burgio et al. (2003) reported an incidence of 11.4% at six weeks and 13.3% at twelve months postpartum.

The incidence of incontinence may be however under reported. Strahle and Stainton (2006) suggest that discussing incontinence is difficult for women as there is a perceived social stigma associated with this condition. There may also be a sense that this is a 'normal' consequence of childbirth (Mason et al. 2001). Robb and Tooze-Hobson (2005) also suggest that mothers may not seek help until symptoms are severe.

There are other physical problems associated with pregnancy, childbirth and the postpartum and it is important to acknowledge that these physical symptoms have the potential to affect a woman's quality of life (Chien et al., 2009). Mothers in the study by Cheng and Li (2008) continued to complain of backache, tiredness, sleep disorders and sexual problems six months postpartum, whereas, Saurel-Cubizolles et al. (2000) found that prevalence of these problems actually worsened between five and 12 months postpartum. Though the authors do

consider that perhaps that the health of mothers does not actually worsen, more that after five months the problems are no longer regarded as normal by the mothers and therefore disclose the problem.

Not only do these physical problems have the potential to interfere with the mother's activities of daily living, Saurel-Cubizolles et al. (2000) propose that sexual problems can have a detrimental effect on the mother and her partner's happiness. Mothers who are affected by problems with incontinence or enduring pain from perineal trauma may not present to their health professional for help due to embarrassment or feel that their symptoms are in some way normal (Brown and Lumley, 1998). In the UK, women are invited to postnatal health check at six weeks postpartum when these physical symptoms may be understood to be acceptable, there is no further routine formal health check for postnatal women. Women must therefore be proactive in bringing their physical or mental symptoms to the attention of a health professional. Women may also feel that these symptoms will appear trivial or that they do not have the time to present their symptoms to their health professional.

The demands of caring for an infant have also been highlighted, particularly in terms of tiredness, sleep deprivation and fatigue (Troy, 2003, Medina et al., 2009). Troy (2003) notes that women rank postpartum fatigue as a major problem, which she suggests can affect mother's ability to attain full functional status. She lists physical factors relating to childbirth and breastfeeding, psychological factors (sleeping difficulties, non-supportive partner and depression) and situational factors as the causes of postpartum fatigue.

Issues surrounding breastfeeding appear to be a common problem particularly for first-time mothers and their partners, not only in terms of learning a new skill but also the issue of fatigue particularly during the time when breastfeeding is being established (Nyberg and Sternhufvud, 2000). There may also be health problems associated with breastfeeding, for example sore nipples and mastitis which may influence a women's decision whether to

continue to breastfeed. The choice to breastfeed may be linked to a mother's sense of maternal identity and the societal notion of being a 'good mother' (Cooke et al., 2007). They suggest that it is those mothers who have strong beliefs about the importance of breastfeeding to their maternal role that are more likely to breastfeed for longer, despite any problems that they are experiencing. These women who have a strong commitment to breastfeeding are at a much higher risk of developing postnatal distress should they have to cease to breastfeed they propose. It is acknowledged that psychological distress, irrespective of whether it is associated with breastfeeding problems or not, may lead to cessation of breastfeeding. They argue that some mothers may become depressed because they have given up breastfeeding before they intended to. Warner et al. (1996) found that depression was more common in mothers who bottle fed their babies. Whilst they concluded that the causal relationship was uncertain, they did propose that breastfeeding may enhance a mother's self-esteem making depression less likely, conversely mothers who were discontented with their maternal role or who had depression may be less inclined to breast feed their babies.

3.4.1.1. Obstetric risk factors and maternal health problems

In this section the mother's obstetric history as a risk factor for morbidity and mortality will be considered. It is noted that women who had previously suffered from perinatal loss or termination of pregnancy due to fetal anomalies had markedly higher stress level scores compared to the other mothers (Skari et al., 2002, Miller, 2002). Skari et al. (2002) also suggested that other aspects of obstetric history such as previous traumatic birth also increased the development of postnatal psychological distress.

Physical and psychological problems associated with childbirth are common and may have a significant negative and long-term impact upon mother's well-being report Rowlands and Redshaw (2012). Particularly the mode of delivery has been linked to the development of postnatal depression in mothers (Koo et al., 2003). Koo et al. (2003) concluded that mothers

who had undergone an emergency delivery were twice as likely to experience postnatal depression at six weeks postpartum than those mothers who had an elective or non-emergency delivery. Whilst Gale and Harlow (2003) suggested that having a caesarean section may be implicated in the development of postnatal depression, that there was no association between postnatal depression and complications during labour. Patel et al. (2005) however concluded that women who have an emergency caesarean section or assisted delivery were not at an increased risk of postnatal depression. This finding was supported by Carter et al. (2006) who having reviewed the evidence for a link between delivery by caesarean section and postnatal depression concluded that an association could not be established. Rowlands and Redshaw (2012) found that mothers who had undergone a vaginal forceps delivery were most likely to suffer from enduring psychological problems postnatally. The reason for this they proposed was that forceps delivery was usually the conclusion of a longer labour, during which time the mother would have been subjected to fetal monitoring and an intense period of anxiety for the welfare of her infant.

Saisto et al. (2008) found that for mothers who had had normal spontaneous vaginal deliveries and had positively experienced breastfeeding; their risk of experiencing parenthood as stressful 2-3 years later was reduced. It may also be then that mothers who have had a positive experience previously may regard subsequent pregnancy and the postnatal period in a more positive light.

Other aspects of the mother's obstetric history may also be significant. For example an unintended or perhaps mistimed pregnancy may be associated with psychosocial risks suggests Orr and Miller (1997). They propose that an unintended pregnancy may expose mothers to psychosocial stressors particularly in the areas of family relationships, finances, work and education. If this is also linked to inadequate support from her partner, it may have the effect of increasing levels of depressive symptoms and decrease overall life satisfaction they argue. From their study findings they concluded therefore that unintended pregnancy may be associated with significant risks to the mother's well-being.

Cartwright (1988) also found that whilst a substantial proportion of her sample adapted to an unplanned pregnancy, there were problems associated with their unplanned pregnancy that for the remaining group, notably an increase in depression both antenatally and postnatally. Leathers and Kelley (2000) found that 33.9% of men and 29% of women described their pregnancy as being unintentional, suggesting to them that most of the pregnancies were mistimed rather than unwanted. However they did suggest that this was a risk factor for women developing postnatal depressive symptoms, particularly for those women who had intended to become pregnant when their partners had not. It is perhaps difficult to realize if unintended or mistimed pregnancy is a significant issue. Eliciting from women whether their pregnancy was planned or unintended is fraught with problems (Barrett et al., 2002) and therefore may not be commonly used within questionnaires.

3.4.1.2. Maternal sexual health and sexual relationship

An important aspect of an adult's life is the sexual relationship that they share with their partner. Satisfaction with their sexual relationship is often described as an aspect of marital relationship and may affect the parent's quality of life if they encounter problems. Condon (2006) describes that problems with sexual activity between parents starts during pregnancy and for the majority of couples these issues only recover slightly during the first twelve months after having a baby. The quality and frequency of sexual activity between parents postpartum can be affected by tiredness and fatigue as well physical trauma sustained by the mother during childbirth (Corkill, 1996). These physical problems although are often self-limiting may impact upon the emotional and physical well-being of the mothers. The NICE guidelines direct that mothers should be asked about resumption of sexual intercourse and possible dyspareunia between two and six weeks postnatally, perhaps implying that the expectation is that most women will have resumed sexual intercourse by this time. McDonald and Brown (2013) propose that the common assumption that most mothers resume sexual activity by six weeks postpartum does not mirror the choices that many parents make. Although Khajehei (2009) found that couples on average do resume sexual

intercourse at approximately seven weeks sexual expression may be reduced during the first month postpartum. There are however, couples who do continue to experience problems, Khajehei et al. (2009) reported that sexual dysfunction is a highly prevalent problem for 38-63% of women. Schytt et al. (2005) suggests that physical symptoms, such as tiredness, headache, back, neck and shoulder pain remain and actually increase over time. Khajehei et al., (2009) found that most of the women in their study had some sort of sexual disorder post-delivery, this however may be a reflection of the type of delivery that the women experienced; with half of the participants in their study having had a normal vaginal delivery, perhaps importantly with an episiotomy and the rest having undergone a caesarean section.

Morof et al. (2003) describe that whilst the majority of women may have resumed or have attempted to resume sexual intercourse by six months postpartum that intercourse was less frequent. This resumption in sexual intercourse may however be affected by mothers experiencing postnatal depression, with this group significantly less likely to have resumed intercourse by six months postpartum. In terms of sexual problems, for example lack of libido, vaginal dryness and dyspareunia, both depressed and non-depressed mothers followed a similar pattern of experiencing high levels of problems at three months postpartum and to a lesser degree at six months postpartum (Morof e al., 2003). Depressed women however reported significantly more problems than the non-depressed women. Whilst the findings of the study by Morof et al. (2003) suggest an association between sexual problems and depression they were unable to demonstrate causality. They proposed that women with depression evaluate their health in a more negative manner or that conversely it is the experience of negative sexual health outcomes that may contribute to the development of postnatal depression.

Whilst then researchers have documented how childbirth affects mothers physical health, less is written about how these issues affect the couples sexual relationship. Reference is

made to how breastfeeding affects mother's sexuality, usually in terms of sex hormones and fatigue (particularly due to demands of feeding her baby).

3.4.2. Paternal Physical Health

Although less is written about the physical health of fathers, Drake et al. (1988) suggests that physical, as well as psychological, symptoms in pregnancy are not restricted to mothers. They suggest that whilst fathers report fewer symptoms that this may reflect under-reporting. This reluctance to acknowledge symptoms may be due to differences in societal role expectations whereby fathers are expected to be healthy and provide for their families. Whilst fathers do not suffer the physical problems related to childbirth they may experience physical symptoms associated with stress and the lack of sleep after their infant is born. Gay et al. (2004) noted that fathers as well as mothers complain of fatigue associated with sleep disturbance.

3.5. Summary

This chapter highlighted that health is often thought of in terms of pathology; the presence of illness and the negative sequelae associated with illness. By measuring morbidity and mortality within the population, statistics are generated that can be analysed, to identify areas of concern and by doing so put in place policies to address these concerns. This is therefore looking at individuals more objectively than subjectively. It has been described within this chapter the importance of being able to quantify the experiences of mothers not just in terms of psychopathology, for example the incidence of depression, but it is also important to recognize the effects of, for example, the potential lasting effect of damage to the perineum sustained during childbirth; particularly when considering women remaining continent into old age. There is also the influence of the mothers' physical health upon her mental health status; the possible causes of postnatal depression are as suggested complex and multifactorial (Boyce, 1994).

It has also been acknowledged that fathers are not immune from mental health problems after the birth of a baby and may also experience levels of anxiety or depression that may affect their well-being. Links have been made to various aspects of parent's lives that may contribute to their dysphoria, for example lack of social support, poor obstetric history or experiences of depression in the past.

Problems with their sexual relationship may also be a cause of distress and depression for the parents. The physical problems associated with pregnancy and childbirth may affect sexual expression and enjoyment. It has also been suggested that the demands of breastfeeding affects sexual desire for some women with non-breastfeeding women experiencing a more positive sexual relationship (Byrd et al. 1998). A mother's obstetric history has been shown to have an impact upon her mental health. The importance of support that parents derive from family and friends has been highlighted. The broad themes of social support, partner or marital relationship, physical health, obstetric history and sexual relationship appear to overlap and influence the parents' health and well-being.

The majority of parents do not parent in isolation but form a family unit, sharing the care of their baby together. Looking at the mental health of parents as two separate entities perhaps therefore does not allow for comparisons to be made between them, nor highlight the potential influence that one parent has upon the other in terms of mental health status. If there is a probability that comorbidity exists between parents it would therefore seem pertinent to examine the experiences of mothers and fathers as a couple or family unit (Kim and Swain, 2007).

Within this chapter the notion of positive pathology has been described. From this perspective, rather than considering illness, it is proposed that it is important to consider what makes people happy, what makes them flourish particularly in times of personal crisis or endeavour. It is perhaps important to ask parents' how they feel, their subjective view of their world, what it is about their experiences and relationships that makes them happy. As

Keyes (2002) notes positive health may also be measured using structured scales. In trying to identify the presence of positive psychology does not detract from the need to record and quantify the incident of illness or negative sequelae, but rather to present a complete picture of the individuals' health status by being aware also of positive outcomes.

When examining the experiences of parents in the postnatal period, what is known about the experience of parents both in terms of negative and positive psychology? Where does the onus lie? What emphasis is given to the notion of positive psychology and looking at the benefits to parents' health of being parents? Examining the literature surrounding parenthood dwells on the incidence of mental illness particularly for mothers; not only quantifying the levels of depression but looking at how this depression impacts on their infant and their relationship with each other. This proposes the medical model of care where by identifying a problem a solution may be found to ameliorate the condition. This is important, to restore an individual back to health but it ignores what makes people happy, what makes them flourish during times of potential stress and crisis. In dwelling only upon the negative sequelae of parenthood does not present the whole picture. To attempt to find out what studies have been performed which investigate this issue, a systematic literature review was performed to identify if there are gaps in our knowledge of the effects of having an infant on the health and well-being of parents.

In chapter 4 therefore, a systematic literature review will be presented which explored the mental health of both parents using objective measures of well-being from self-reported instruments. The purpose of the review is therefore to identify studies that examined the mental health and well-being of parents as a couple, particularly looking at the instruments that were employed and their findings. The review will identify what the instruments used where attempting to identify in terms of negative or positive health outcomes.

Chapter 4: Systematic literature review

4.0. Chapter overview

The previous chapters explored the roles of motherhood and fatherhood and described the transition to parenthood as a psychological and complex developmental process where both parents have to deal with the acquisition of new roles, the transformation of both their family and their own identity (Epifanio et al. 2015, Gatrell, 2005). In chapter 3, the mental and physical health problems for parents were examined, highlighting the potential negative sequelae associated with pregnancy and childbirth particularly in terms of mothers' physical and mental health. It has long been recognized that the transitional period is a significant time for the mental health of mothers and more recently it has been acknowledged that fathers may too suffer from dysphoria at this time. Whilst the expectation is that this will be a happy time in the lives of parents, for some, these changes and experiences produce what Currid (2004) describes as severe biopsychosocial distress. Epifanio et al. (2015) propose that both parents are at a greater risk of psychological disorders at this time.

Is this the complete picture of parents' experiences during the transitional period? Traditionally health professionals working with the medical model of health are trained to identify and alleviate potential problems and in doing so restore the individual back to good health and therefore the onus is upon recognizing negative sequelae (Glasgow Centre for Population Health, 2011). Has this emphasis on identifying and quantifying problems associated with pregnancy and childbirth, to inform clinical practice, influenced the research carried out in this area? What of the positive health benefits to having children? As described in chapter 3, there is a movement towards examining an individual's health in terms of positive health. Rather than looking for the presence of illness the emphasis is trying to identify 'health assets'. These are the factors which produce stronger health; it is what may help people to stay healthy and recover more quickly from illness (University of Pennsylvania, 2013).

When looking at the literature around transition and the health and well-being of parents it appeared that less was written about how the health of parents' might actually improve at this time.

The purpose of reviewing the literature systematically therefore, was to identify the studies which had used self-reported quality of life measures to assess parents' health and well-being postnatally. Muldoon et al. (1998) describes quality of life research as seeking to examine not only the functional status of the individual but also their subjective appraisal of their health status.

This is the first systematic literature review that has been conducted to look specifically at the health and well-being of both parents in the transition period. This chapter reports on this systematic literature review of studies that examined the experiences of both mothers and fathers during the first year after the birth of their infant. The electronic databases, particularly concerned with health and social science, were examined in the light of a defined inclusion and exclusion criteria. The data extraction yielded 37 papers for inclusion; the majority of the studies were carried out in North America (18). The studies were examined in terms of study characteristics, looking particularly at the instruments employed in the study, but also looking at when the instruments were administered and the results of the studies. The most commonly instrument employed was the Edinburgh Postnatal Depression Scale; further analysis was performed on the results from these studies to attempt to quantitatively synthesize these results. The systematic review highlighted that studies looking at the health and well-being of mothers and fathers concentrate upon the negative mental health outcomes of being parents. There are few parent specific instruments and none used which were specific to fathers.

4.1 Introduction

The aim of the systematic literature review was to examine studies which had attempted to capture the experiences of both mothers and fathers in the first twelve months after the birth of their infant through the administration of self-reported instruments. In examining the literature surrounding parents' health and well-being during this period, it was hoped to not only quantify the number of studies which had been carried out, but to explore various factors. These factors included; identifying the purpose of study in terms of whether or not the study was attempting to identify positive and/or negative outcomes, the key points of the study, what instruments were administered and at what time points. Other important factors included the sample size and location of the study.

Whilst a substantive body of work has explored the mental health status of mothers, the literature exploring the experiences of fathers is not as extensive. The research looking at maternal mental health examined such aspects as the potential causes and risk factors for depression, (Inandi et al. 2005, Corwin et al. 2005, O'Hara et al. 1984, van Son et al. 2005), the effects of maternal depression upon the cognitive development of the infant and mother-infant relations, (Milgrom et al. 2006, Moehler et al. 2006) the relationship with partners (Lemola et al. 2007) and the application of screening tools to identify dysphoria and depression (Figueira et al. 2009, Hanlon et al. 2008). Research exploring the experiences of fathers tends to describe the experience of paternal depression (Edmondson et al. 2010, Madsen and Juhl, 2007), the experience of living with a partner who has postpartum depression (Roberts et al. 2006, Davey et al. 2006) and the transition to fatherhood (McVeigh et al. 2001). In concentrating upon the negative sequelae of motherhood and fatherhood, the concept of positive mental health appears to be less well reported. However in employing instruments which look primarily for negative mental health outcomes, then positive mental health may be regarded as an absence of problems.

There is much research then that considers the health and well-being of either mothers or fathers. Whilst it is important to examine the health and well-being of mothers and fathers separately, the majority of parents create a family unit and it may therefore be more pertinent to look at the mental health status of both parents together during this time. Parents construct emotional bonds and a dependency that may affect their mental health and well-being during the transition to parenthood (Cowan and Cowan, 1992). Anding et al. (2016) suggests there may be an element of co-morbidity present in the parental relationship. It is for this reason that it was felt that it was important to look only at research that examined the health of both parents.

The aim of the review therefore is to:

- Identify the literature which examines the experiences of both mothers and fathers during their transition to parenthood, with particular reference to both positive and negative mental health outcomes.
- To look at the self-reported instruments employed by the studies in terms of whether they primarily measure positive or negative mental health outcomes.
- To examine the findings of these studies.
- To identify gaps in evidence base.

4.2. Methods

4.2.1. Search strategy

A systematic literature search for papers was conducted using the following eight electronic databases which are particularly concerned with health and social sciences;

- ASSIA
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- EMBASE
- Intermed
- MEDLINE via OVID
- PsycART
- PsycINFO
- SCOPUS

All databases were searched from the earliest possible time available up to and including January 2015. The aim was to identify studies which surveyed both mothers and fathers over the postnatal period, therefore the following search terms were used:

- mother\$, father\$, mum\$ or dad\$, parent\$, couple\$.
- Maternal, paternal.
- Postnatal, postpartum, puerperium. Postnatal and postpartum period.
- Parenting, 'transition to parenthood'.
- Cohort, longitudinal and follow-up studies.

At this stage the search was not narrowed down by the inclusion of terms relating to mental health. It was felt that because the emphasis in research that looks at mothers' experiences focuses upon the negative aspect of mental health in terms of depression, stress and anxiety, that papers which look at positive mental health outcomes may be overlooked in the initial search.

As well as retrieving papers from systematically searching electronic databases, additional papers were traced through citation searching using Google Scholar and hand searching the reference lists and bibliographies for all relevant papers (Papaioannou et al., 2009).

4.2.2. Inclusion criteria

Studies were included if they met the following criteria:

1. The studies examined the mental health status of both parents.
2. Only studies that employed self-reported instruments which looked specifically at mental health were included.
3. Studies were included irrespective of whether it was the mother's first or additional pregnancy or her partner's first or subsequent child.
4. Studies were included even if the partner or father did not co-habit with the mother.
5. As the review was examining longitudinal studies, the data was collected at a minimum of two time points. Studies were included whose baseline data collection was within the antenatal period and where the study then continued into the postnatal period. Studies were also included where the collection of data was only generated in the postnatal period. Consideration of data was included up to the twelve month time point.
6. Irrespective of their country of origin, the papers included were those written in English with full text, abstract and reference list, published within an English language peer-reviewed journal.

4.2.3. Exclusion criteria

1. Studies that depicted a same sex relationship were excluded.
2. Whilst there was no upper age limit for respondents, parents under the age of 16 were excluded as the review was examining the experiences of adults rather than minors.

3. As the purpose of the review was to examine the parent's experience, those studies that focused upon the effect that maternal or paternal depression or illness had upon the child's development were excluded.
4. Similarly, those studies that looked at how abusive behaviour of the parents affected the child's well-being were also excluded.
5. Studies where the parents had given up their infants for adoption, or had suffered a stillbirth or the death of their baby during the first year were excluded as these parents would not be experiencing transition with a child.
6. Studies were excluded where the experiences of parents whose child had been admitted to Neonatal Intensive Care were examined. These parents may experience stress related to the condition of their infant and this may impact upon how they experience transition to parenthood.
7. Studies that described the experiences of women who have required transfer to Intensive Care were excluded as these mothers may not be fully able to develop the role of mother for a period of time.
8. Studies that examined the experiences of parents following artificial reproduction techniques were excluded as their previous experiences may affect their experiences of parenthood.

4.2.4. Data extraction

To assess the suitability for inclusion of the studies into the review, a data extraction form (appendix 1) was used based upon the Centre for Reviews and Dissemination form (2009). The data extraction form allowed documentation of the information regarding the study characteristic and findings as well as the participant's characteristics and the use of self-reported instruments.

A total of 9,655 publications were identified by searching the databases. Many of the papers were duplicated across the databases. Of these 254 appeared relevant, however at abstract

stage 188 were discarded as the studies did not meet with the inclusion /exclusion criteria. A further 29 papers were discarded at the full reading stage, as for example the instruments used did not measure mental health. Finally this process yielded 37 relevant studies.

4.2.5. Citation Search

For each of the 37 papers identified for inclusion in the systematic review citation searching was performed using the database Google Scholar as recommended by Papaioannou et al. (2009). The results of this are shown in Table 4.1. Whilst the citation search produced relevant papers, these papers were already included in the literature review and therefore not duplicated.

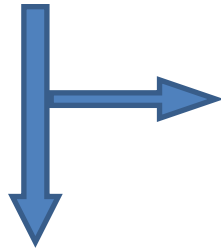
Table 4.1. To show the number of citations for each paper and the number of potential papers for inclusion.

Author	Number of citations	Potentially Relevant	Discarded on examination	Papers for inclusion
Abbasi, M. et al. (2014)	1	0	0	0
Areias, M. et al.(1996)	273	30	21	9*
Biehle, S. et al. (2012)	18	0	0	0
Castle, H. et al. (2008)	24	0	0	0
Crockenberg, S. et al. (2006)	0	0	0	0
D'Anna-Hernandez, K. et al. (2013)	0	0	0	0
Edhborg, M. et al. (2005)	71	2	0	2*
Edhborg, M. et al. (2000)	75	2	0	2*
Elek, S. et al. (2002)	61	0	0	0
Escribà- Agüir, V et al. (2011)	43	0	0	0
Figueiredo, B. and Conde, A. (2010)	38	0	0	0
Figueiredo, B. et al. (2008)	48	2	0	1*
Gjerdingen, D and Center, B. (2003)	57	1	1	0
Goodman, S. et al. (2014)	2	0	0	0
Guedes, M. et al. (2014)	0	0	0	0
Hildingsson, I. et al. (2014)	5	1	1	0
Hock, E. et al. (1995)	47	3	2	1*
Iles, J. et al. (2011)	33	0	0	0
Kaitz, M. and Katzir, D. (2004)	12	0	0	0
Keeton, C. et al. (2008)	55	0	0	0
Lane, A. et al. (1997)	201	3	0	3*
Leathers, S. an Kelley, M. (2000)	64	0	0	0
Lu, L. (2006)	14	0	0	0
Matthey, S. et al. (2000)	115	1	0	1*
Mayes, L. and Leckman, J. (2007)	17	0	0	0
McDaniel, B. and Teti, D. (2012)	6	0	0	0
Monk, T. et al. (1996)	29	0	0	0
Morse, C. et al. (2000)	113	2	0	2*
Muscat, T. et al. (2012)	2	0	0	0
Ngai, F.W. and Ngu, S. (2013)	1	0	0	0
Perry-Jenkins, M. et al. (2011)	7	0	0	0
Reece, S and Harkless, G.	98	0	0	0
Skari, H. et al. (2002)	120	1	0	1*
Soliday, E. et al. (1999)	89	1	0	1*
Terry, D. (1991)	65	0	0	0
Wallace, P and Gotlib, I. (1990)	144	1	0	1*
Wright, P. et al. (1986)	49	1	1	0

Key * indicates studies previously included in the systematic literature review.

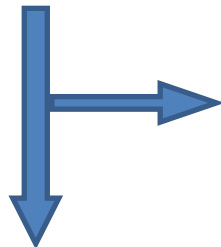
Figure 4.1. Flowchart showing electronic screening of papers for inclusion in literature review.

Total references retrieved 9,655



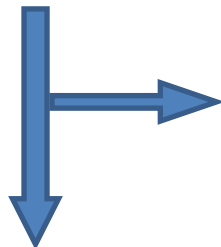
9,401 papers rejected at title stage

Total abstracts screened 254



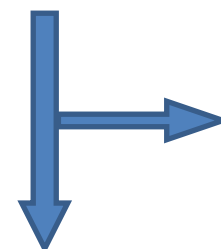
188 papers rejected at abstract stage

Total full papers 66



29 papers rejected at full reading

Papers for inclusion 37



0 papers from citation searching

Total Papers for inclusion in review = 37

4.3. Results

4.3.1. Overview

Thirty seven studies were identified as administering a self-reported instrument/s which measured the mental health status of the participants. The studies examined the experiences, in terms of mental health, of both mothers and their partners with whom they shared a relationship with during the first year postpartum. In all cases it was presumed that this was the father of the child but this was not made explicit by the studies. Whilst 19 stipulated that this was the parent's first child, this criterion was not used as an inclusive or exclusive factor in the selection of studies. Eight of the studies disclosed that they were comparing data for first-time parents with data generated from parents who had at least one other child; the aim to compare and contrast the transition experience.

4.3.2. Global distribution of studies

The studies were also characterized by their country of origin; the importance of this was to identify the regions of the world where research into the mental health of both parents is being conducted. The global distribution of longitudinal studies looking at both mothers and their partner's experiences of transition to parenthood is presented in Table 4.2.

Table 4.2. To show country of origin for the studies

	Country of Origin	Number of studies
UK and Europe	England	2
	Republic Of Ireland	1
	Portugal	3
	Spain	1
Scandinavia	Norway	1
	Sweden	3
Asia	Iran	1
	Israel	1
	Hong Kong	1
	Taiwan	1
Australasia	Australia	4
North America	USA	18
Totals	12	37

The majority of studies (49%) were conducted in the USA (Biehle et al. 2012, Crockenberg et al. 2006, D'Anna-Hernandez et al. 2013, Elek et al. 2002, Figueiredo et al. 2008, Gjerdingen and Center 2003, Goodman et al. 2014, Hock et al. 1995, Keeton et al. 2008, Leathers and Kelley 2000, Mayes and Leckman 2007, McDaniel and Teti 2012, Monk et al. 1996, Perry-Jenkins et al. 2011, Reece and Harkless 1998, Soliday et al. 1999, Wallace and Gotlib 1990, Wright et al. 1986.)

Scandinavia produced four studies; notably Sweden produced three of these (Edhborg et al. 2000, Edhborg et al. 2005 and Hildingsson et al. 2014). There were seven studies produced within European countries, with the UK studies contributing two to this total (Castle et al. 2008 and Iles et al. 2011). Australia produced a total of four studies (Matthey et al. 2000, Morse et al. 2000, Muscat et al. 2012 and Terry 1991).

4.3.3. Study characteristics

The characteristics of the studies incorporated in the review are displayed in Table 4.3. The mothers were described by the studies in terms of their parity, whether this was their first pregnancy (primigravida) or whether this was a subsequent pregnancy (multigravida). Whether the fathers had previously had children with another partner was not made explicit in any of the studies. All of the 37 studies included primigravida and 21 also included parents where the mother was a multigravida. Ten of the studies did not disclose the number of primigravida or multigravida in their study (Abbasi et al. 2014, D'Anna-Hernandez et al. 2013, Edhborg et al. 2000, Figueiredo and Conde 2010, Figueiredo et al. 2008, Lane et al. 1997, Lu 2006, Mayes and Leckman 2007, Monk et al. 1996 and Skari et al. 2002)

In terms of the timing of the data collection, 28 studies collected data in the antenatal period as well as during the postpartum period. Of the 37 studies in the review nine collected data only in the postpartum. One study, as well as collecting data antenatally and postnatally, also survey parents pre-pregnancy (Abbasi et al. 2014).

The frequency of the data collection in the antenatal period was one to three times; with 24 studies collecting data once, two studies collecting data twice and two studies collecting data three times. In the postpartum the frequency of data collection was one to four times; eight studies collected data once, 18 collected data twice, eight collected data three times and three collected data four times.

Studies which surveyed parents across both the antenatal and postnatal period; 18 studies collected data three times, 10 studies collected data twice, four studies collected data four times and five studies surveyed parents five times. The timing for completion of the study; 10 of the studies had completed surveying parents on or before three months postpartum, a further 15 had completed by six months postpartum, one by nine months and the remaining 11 by 12 months postpartum. The sample size ranged from 59 (Muscat et al., 2012) to 1454 participants (Hildingsson et al., 2014).

Table 4.3. to show study characteristics of final papers included in the systematic review

Authors	Country of Origin	Number of Primigravida	Number of Multigravida	Number of Mothers	Number of Fathers	Antenatal time points	Postnatal time points
Abbasi, M. et al. (2014)	Iran	Not disclosed	Not disclosed	513	513	4: pre pregnancy, 1 st , 2 nd and 3 rd trimester	1: 3 months
Areias, M. et al. (1996)	Portugal	54	0	54	42	1: 6 months	2: 3 months (sub sample), 12 months
Biehle, S. et al. (2012)	USA	104	0	104	104	1: 3 rd trimester	2: 1 and 4 months
Castle, H. et al. (2008)	England	86	0	86	66	1: 3 rd trimester	1: 6 weeks
Crockenberg, S. et al. (2006)	USA	92	0	92	84	1: 3 rd trimester	2: 5 and 6 months
D'Anna-Hernandez, K. et al. (2013)	USA	Not disclosed	Not disclosed	64	64	-	3: 1, 6 and 12 months
Edhborg, M. et al. (2005)	Sweden	55	51	106	105	-	3: day 1-5 and 2 months
Edhborg, M. et al. (2000)	Sweden	Not disclosed	Not disclosed	326	304	-	2: 2 and 12 months
Elek, S. et al. (2002)	USA	44	0	44	44	1: 9 months	4: 1, 2, 3 and 4 months
Escribà- Agüir, V. et al. (2011)	Spain	496	191	687	669	1: 3 rd trimester	2: 3 and 12 months
Figueiredo, B. and Conde, A. (2010)	Portugal	Not disclosed	Not disclosed	260	260	3: 1 st , 2 nd and 3 rd trimester	2: 1 st week and 3 months
Figueiredo, B. et al. (2008)	USA	Not disclosed	Not disclosed	43	43	2: 20 and 30 weeks	1: 14 days
Gjerdingen, D. and Center, B. (2003)	USA	132	0	132	129	1: 2 nd or 3 rd trimester	1: 6 months
Goodman, S.H. et al. (2014)	USA	255	0	255	114	-	3: 3, 6 and 12 months
Guedes, M. et al. (2014)	Portugal	99	0	99	99	1: 3 rd trimester	2: 1 and 6 months
Hildingsson, I. et al. (2014)	Sweden	365	418	783	671	1: 3 rd trimester	2: 2 and 12 months
Hock, E. et al. (1995)	USA	142	0	142	142	1: during pregnancy	2: 6 weeks and 9 months
Iles, J. et al. (2011)	UK	Not disclosed	Not disclosed	372	372	-	3: 1 st week, six weeks and 3 months
Kaitz, M. and Katzir, D. (2004)	Israel	55	0	55	55	1: during pregnancy	3: 3, 6 and 12 months

Authors	Country of Origin	Number of Primigravida	Number of Multigravida	Number of Mothers	Number of Fathers	Antenatal time points	Postnatal time points
Keeton, C. et al. (2008)	USA	153	0	153	153	1: 3 rd trimester	4: 1, 4, 6 and 12 months
Lane, A. et al. (1997)	ROI	Not disclosed	Not disclosed	308	181	-	2: day 3 and 6 weeks
Leathers, S. and Kelley, M. (2000)	USA	124	0	124	124	1: 3 rd trimester	2: 3-4.5 months
Lu, L. (2006)	Taiwan	Not disclosed	Not disclosed	253	230	-	2: 6 weeks and 6 months
Matthey, S. et al. (2000)	Australia	157	0	157	157	1: during pregnancy	3: 6 weeks, 4 and 12 months
Mayes, L. and Leckman, J. (2007)	USA	Not disclosed	Not disclosed	41	36	1: 8 months	2: 2 weeks and 3 months
McDaniel, B. and Teti, D. (2012)	USA	148	0	148	132	-	2: 1 and 3 months
Monk, T. et al. (1996)	USA	Not disclosed	Not disclosed	37	37	1: 2 nd trimester	3: 1,4 and 12 months
Morse, C. et al. (2000)	Australia	327	0	327	327	2: 24-26 weeks and 36 weeks	2: 1 and 4 months
Morse, T. et al. (2012)	Australia	Not disclosed	Not disclosed	35	24	1: during pregnancy	1: 4 months
Ngai, F.W. and Ngu, S. F. (2013)	Hong Kong	171	32	203	203	1: during pregnancy	2: 6 weeks and 6 months
Perry-Jenkins, M. et al. (2011)	USA	113	0	113	113	1: 3 rd trimester	4: 1 month, about 15 weeks, 6 and 12 months
Reece, S. and Harkless, G. (1998)	USA	28	16	44	44	1: 3 rd trimester	1: 4 months
Skari, H. et al. (2002)	Norway	Not disclosed	Not disclosed	127	122	-	3: 0-4 days, 6 weeks and 6 months
Soliday, E. et al. (1999)	USA	26	25	51	51	1: during pregnancy	1: during first few weeks
Terry, D. (1991)	Australia	123	0	123	123	1: 3 rd trimester	2: 4 weeks and 4 months
Wallace, P. and Gotlib, I. (1990)	USA	97	0	97	97	1: 4 months	2: 1 and 6 months
Wright, P. et al. (1986)	USA	41	0	41	41	1: 3 rd trimester	1: 3-4 months

4.3.4. The instruments used in the studies to measure the mental health of parents

The studies employed a wide variety of self-reported instruments to measure the mental health status of parents. The 27 self-reported instruments are listed in Table 4.4 and the studies which employed them. The instruments are designed to measure either positive or negative mental health status or both positive and negative mental health status, and this is also noted here.

Table 4.4. List of instruments used to measure mental health.

INSTRUMENTS	Positive/ Negative mental health status	AUTHORS
Beck Depression Inventory (Beck et al., 1961)	Negative	Goodman, S.H. et al. (2014) Kaitz, M. and Katzir, D. (2004) Matthey, S. et al. (2000) Mayes, L. and Leckman, J. (2007) Morse, C.A. et al. (2000)
Blues Questionnaire (Kennerley and Gath, 1987)	Negative	Edhborg, M. et al. (2005)
Brief Symptom Inventory-18 (Derogatis, 2000)	Negative	Guedes, M. and Canavarro, M. C. (2014)
Center for Epidemiological Studies-Depression Scale (Radloff, 1977)	Negative	Biehle, S. and Mickelson, K. (2012) Crockenberg, S. and Leerkes, E. (2003) Elek, S. et al. (2002) Figueiredo, B. et al. (2008) Hock, E. et al. (1995) Keeton, C.P. et al. (2008) Leathers, S. and Kelley, M. (2000) Monk, T. et al. (1996) Perry-Jenkins, M. et al. (2011) Soliday, E. et al. (1999)
COPE (Carver, Scheier and Weintraub, 1989)	Negative	Soliday, E. et al. (1999)
Edinburgh Postnatal Depression Scale (Cox, Holden and Sagovsky, 1987)	Negative	Abbasi, M. et al. (2014) Areias, M.E.G. et al. (1996) Castle, H. et al. (2008) D'Anna-Hernandez, K. et al. (2013) Edhborg, M. et al. (2005) Edhborg, M. et al. (2000) Escribà-Agüir, V. and Artazcoz, L. (2011) Figueiredo, B. and Conde, A. (2010) Iles, J. et al. (2011) Kaitz, M. and Katzir, D. (2004) Lane, A. et al. (1997) Matthey, S. et al. (2000) Morse, C.A. et al. (2000) Muscat, T. et al. (2012)
Experience of Motherhood/ Fatherhood Questionnaire (Astbury, 1994)	Positive & Negative	Edhborg, M. et al. (2000)
Feminine Gender Role Stress Scale (Gillispie and Eisler, 1992)	Negative	Morse, C.A. et al. (2000)
General Health Questionnaire (Goldberg, 1972)	Positive & Negative	Matthey, S. et al. (2000) Skari, H. et al. (2002) Terry, D. (1991)
Global Self-Esteem Scale (Messer and Harter, 1986)	Positive & Negative	Crockenberg, S. and Leerkes, E. (2003)
Highs Scale (Glover, Liddle, Taylor, Adams and Sandler, 1994)	Negative	Lane, A. et al. (1997)
Hospital Anxiety and Depression Scale (Zigmond and Snaithe, 1983)	Negative	Castle, H. et al. (2008)

INSTRUMENTS	Positive/ Negative mental health status	AUTHORS
Impact of Event Scale (Horowitz, Wilner and Alvarez, 1979)	Negative	Skari, H. et al. (2002)
Masculine Gender Role Stress Scale (Eisler and Skidmore, 1987)	Negative	Morse, C.A. et al. (2000)
Parenting Stress Index (Abidin, 1983)	Negative	Soliday, E. et al. (1999) Wallace, P. and Gotlib, I. (1990)
Perceived Stress Scale (Cohen, Kamarck and Mermelstein, 1983)	Negative	Lu, L. (2006) Reece, S.M. and Harkless, G. (1998)
Positive and Negative Affect Scale (Watson, Clark and Tellegen, 1988)	Positive & Negative	Morse, C.A. et al. (2000) Soliday, E. et al. (1999)
Posttraumatic Stress Disorder Questionnaire (Watson, Juba, Manifold, Kucala & Anderson, 1991)	Negative	Iles, J. et al. (2011)
Psychological Screening Inventory (Lanyon, 1973)	Negative	Wright, P.J. et al. (1986)
Short Form 12 (Ware, Kosinski and Keller, 1996)	Negative	Ngai, F. and Ngu, S.(2013)
Short Form 36 (Ware, Snow, Kosinski and Gandck, 1993)	Negative	Abbasi, M. et al. (2014) Gjerdingen, D. and Center, B. (2003)
Social Readjustment Rating Scale (Holmes and Rahe, 1967)	Negative	Wright, P.J. et al. (1986)
Spielberger State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg and Jacobs, 1983)	Negative	Figueiredo, B. and Conde, A. (2010) Figueiredo, B. et al. (2008) Iles, J. et al. (2011) Keeton, C.P. et al. (2008) Skari H. et al. (2002) Terry, D. (1991)
State Anger and Anxiety Scales (subscales of the State-Trait Personality Inventory, Spielberger, 1979)	Negative	Morse, C.A. et al. (2000)
Swedish Parenthood Stress Questionnaire (revised version of the Parental domain of the Parenting Stress Index, Abidin, 1983)	Negative	Hildingsson, I. and Thomas, J. (2014)
Symptom Checklist 90-R (Depression subscale) (Derogatis, 1994)	Negative	Lu, L. (2006) McDaniel, B.T. and Teti, D.M. (2012)
Well-being Questionnaire (Bradley and Lewis, 1990)	Positive & Negative	Castle, H. et al. (2008)

The most commonly used instrument was the ‘Edinburgh Postnatal Depression Scale’ (Cox et al., 1987) with 14 studies; Abbasi et al. (2014), Areias et al. (1996), Castle et al. (2008), D’Anna-Hernandez et al. (2013), Edhborg et al. (2000), Edhborg et al. (2005), Escribà-Agüir and Artazcoz (2011), Figueiredo and Conde (2010), Iles et al. (2011), Kaitz and

Katzir (2004), Lane et al. (1997), Matthey et al. (2000), Morse et al. (2000) and Muscat et al. (2012). This instrument is a parent specific instrument which measures negative mental health status.

The second favoured instrument was the 'Centre for Epidemiological Studies-Depression Scale' (Radloff, 1977) with ten studies; Biehle and Mickelson, (2012), Crockenberg and Leerkes (2003), Elek et al. (2002), Figueiredo et al. (2008), Hock et al. (1995), Keeton et al. (2008), Leathers and Kelley (2000), Monk et al. (1996), Perry-Jenkins et al. (2011) and Soliday et al. (1999). This is a generic instrument which measures negative mental health status.

The third most commonly used instrument was the Spielberger State-Trait Anxiety Inventory (Spielberger et al., 1983) with six studies; Figueiredo and Conde (2010), Figueiredo et al. (2008), Iles et al. (2011), Keeton et al. (2008), Skari et al. (2002) and Terry (1991). This instrument also measures negative mental health status and is a generic instrument.

Of the 27 instruments, 23 considered only negative mental health outcomes; Beck Depression Inventory (Beck et al., 1961), Blues Questionnaire (Kennerley and Gath, 1987), Brief Symptom Inventory-18 (Derogatis, 2000), Center for Epidemiological Studies-Depression Scale (Radloff, 1977), COPE (Carver, Scheier and Weintraub, 1989), Edinburgh Postnatal Depression Scale (Cox, Holden and Sagovsky, 1987), Feminine Gender Role Stress Scale (Gillispie and Eisler, 1992), Highs Scale (Glover, Liddle, Taylor, Adams and Sandler, 1994), Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983), Impact of Event Scale (Horowitz, Wilner and Alvarez, 1979), Masculine Gender Role Stress Scale (Eisler and Skidmore, 1987), Parenting Stress Index (Abidin, 1983), Perceived Stress Scale (Cohen, Kamarck and Mermelstein, 1983), Posttraumatic Stress Disorder Questionnaire (Watson, Juba, Manifold, Kucala & Anderson, 1991), Psychological Screening Inventory (Lanyon, 1973), Short Form 12 (Ware, Kosinski and Keller, 1996), Short Form 36 (Ware,

Snow, Kosinski and Gandek, 1993), Social Readjustment Rating Scale (Holmes and Rahe, 1967), Spielberger State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg and Jacobs, 1983), State Anger and Anxiety Scales (subscales of the State-Trait Personality Inventory, Spielberger, 1979), Swedish Parenthood Stress Questionnaire (revised version of the Parent domain of the Parenting Stress Index, Abidin, 1983) and Symptom Checklist 90-R Depression subscale (Derogatis, 1994).

The other four instruments measured both positive and negative mental health outcomes; Experience of Motherhood/Fatherhood Questionnaire (Astbury, 1994), General Health Questionnaire (Goldberg, 1972), Global Self-Esteem Scale (Messer and Harter, 1986), Positive and Negative Affect Scale (Watson, Clark and Tellegen, 1988) and Well-being Questionnaire (Bradley and Lewis, 1990). There were no instruments used that measured purely positive mental health outcomes.

4.3.5. Parent specific or generic instruments

The 27 instruments can be characterized further in terms of whether they principally measured either ‘mental health’, ‘depression’, ‘stress’, ‘anxiety’, ‘quality of life’ or ‘life events’ The instruments can also be defined as either generic or parent specific. This information is illustrated in Table 4.5.

Of these 27 instruments only six instruments were designed to look specifically at the mental health of parents; Highs Scale (Glover et al., 1994), Blues Questionnaire (Kennerley and Gath, 1987), Edinburgh Postnatal Depression Scale (Cox et al., 1987), Experience of Motherhood/ Fatherhood Questionnaire (Astbury, 1994), Parenting Stress Index (Abidin, 1983) and the Swedish Parental Stress Questionnaire (Östberg and Hagekull, 2000). The Swedish Parental Stress Questionnaire is a revised version of the Parenting Stress Index.

The six parent specific instruments were used by 17 of the 37 studies; Abbasi et al. (2014), Areias et al. (1996), Castle et al. (2008), D’Anna- Hernandez et al. (2013), Edhborg et al.

(2000), Edhborg et al. (2005), Escribà-Agüir and Artazcoz (2011), Figueiredo and Conde (2010), Hildingsson and Thomas (2014), Iles et al. (2011), Kaitz and Katzir (2004), Lane et al. (1997), Matthey et al. (2000), Morse et al. (2000), Muscat et al. (2012), Soliday et al. (1999) and Wallace and Gotlib, (1990). Of these 17 studies, two employed two parent specific instruments; Edhborg et al. (2005) and Lane et al. (1997).

Of the six parent specific instruments only one, the Experience of Motherhood/Fatherhood Questionnaire (Astbury, 1994), measured both negative and positive aspects of parenthood. The other five measured negative mental health outcomes; this included the EPDS which was used by 15 of the 37 studies.

4.4. Findings of studies

The results of the studies are described in terms of instruments used and are presented within the six categories of ‘mental health’, ‘depression’, ‘stress’, ‘anxiety’, ‘quality of life’ or ‘life events’ as detailed in Table 4.5.

Whilst all of the studies included in the literature review surveyed both mothers and fathers, there were occasions where an instrument was offered only to the mothers in the study. For this reason the results are presented as for ‘mothers and fathers’ and then for ‘mothers’. There were no examples where only fathers were offered a particular instrument.

Table 4.5. Generic and parent specific instruments used in the studies in the review, categorized by what the instrument primarily measured.

Category	Type	Instruments
Mental Health	Generic	Brief Symptom Inventory (Derogatis, 2000)
		General Health Questionnaire (Goldberg, 1972)
		Global Self-Esteem Scale (Messer and Harter, 1986)
		Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983)
		Positive and Negative Affect Scale (Watson et al., 1988)
		Psychological Screening Inventory (Lanyon, 1973)
	Parent Specific	Highs Scale (Glover et al., 1994)
Depression	Generic	Beck Depression Inventory-18 (Beck et al., 1961)
		Center for Epidemiological Studies-Depression Scale (Radloff, 1977)
		Symptom Checklist 90R (Depression Subscale) (Derogatis, 1994)
	Parent Specific	Blues Questionnaire (Kennerley and Gath, 1987)
		Edinburgh Postnatal Depression Scale (Cox et al., 1987)
Stress	Generic	COPE (Carver, Scheier, Weintraub, 1989)
		Feminine Gender Role Stress Scale (Gillispie and Eisler, 1992)
		Masculine Gender Role Stress Scale (Eisler and Skidmore, 1987)
		Perceived Stress Scale (Cohen et al., 1983)
		Posttraumatic Stress Disorder Questionnaire (Watson et al., 1991)
	Parent Specific	Experiences of Motherhood/Fatherhood Questionnaire (Astbury, 1994)
		Parenting Stress Index (Abidin, 1983)
		Swedish Parental Stress Questionnaire (Östberg and Hagekull, 2000)
Anxiety	Generic	Spielberger State-Trait Anxiety Inventory (Spielberger et al., 1983)
		State Anger and Anxiety Scales (subscale of State-Trait Anxiety Inventory, Spielberger et al., 1983)
Quality of Life	Generic	Short Form 12 (Ware et al., 1996)
		Short Form 36 (Ware et al., 1993)
		Well-being Questionnaire (Bradley and Lewis, 1990)
Life Events Scales	Generic	Impact of Event Scale (Horowitz et al., 1979)
		Social Readjustment Rating Scale (Holmes and Rahe, 1967)

4.4.1. Mental Health

Seven instruments looked at general aspects of mental health of parents (Brief Symptom Inventory-18, General Health Questionnaire, Global Self-Esteem, Hospital Anxiety and Depression Scale, Positive and Negative Affect Scale, Psychological Screening Inventory and Highs Scale): of these seven only one was designed specifically for use with parents and then more specifically for mothers (Highs Scale).

4.4.1.1. Mothers and Fathers

- **Brief Symptom Inventory-18 (Generic-negative)**

Guedes and Canavarro (2014) produced the only study to use this instrument. The instrument usually consists of 53 items which aim to evaluate psychological distress and psychiatric disorders; however in this instance only 18 items were used in the assessment of the parents. Of those, only the items relating to anxiety and depression were used in the final analysis. The aim of the study was to compare the psychosocial adjustment of primiparous couples with a maternal age of 35 plus, with their younger counterparts. The sample consisted of 58 couples in the 'advanced maternal age' group and 41 couples in the comparison group. The parents completed the questionnaire at three time points; once in the antenatal period during the third trimester and twice in the postnatal period; at one and six months postpartum. The authors noted that regardless of age, the transition to parenthood is more similar than different between the older age group and the younger mothers. Whilst transition to parenthood was more distressing for mothers than fathers in terms of depression and higher anxiety levels, anxiety levels were found to decrease over time. The authors proposed that gender differences in depression and anxiety levels related to mothers experiencing more changes than men; for example physical changes and taking maternity leave.

- **General Health Questionnaire (Generic- positive/negative)**

Three studies employed this instrument; one study used it only in the postnatal period (Skari et al. 2002) and two studies used it in both the antenatal and postnatal period (Matthey et al. 2000 and Terry 1991). Skari et al. (2002) assessed both primiparous and multiparous parents (n=249) at three time points; during the first four days postpartum, six weeks and six months postpartum, their aim to compare maternal and paternal psychological distress during the postpartum. A case score, derived from a total GHQ-28 score, of ≥ 6 was used to measure psychological distress and a score of ≥ 2 indicated clinically important depression. Using these cut-off scores, they reported higher levels of clinically important depression in mothers (6%) compared with fathers (2%). However Matthey et al. (2000), who only surveyed primiparous couples (n=157), found that whilst antenatally the mother's mean scores were higher than fathers that by 12 months postpartum their scores did not differ. They assessed antenatally and at 12 months postpartum, however they employed a higher cut-off score of >7 to indicate the presence of significant depression or distress.

Whilst Skari et al. (2002) and Matthey et al. (2000) administered all 28 items of the instrument; Terry employed only 12 items of the General Health Questionnaire to measure non-specific psychiatric morbidity. Terry (1991) sampled 123 primiparous couples during the third trimester and at one and four months postpartum. The aim of the study was to identify parental stress during the transition to parenthood. As the scores were highly correlated with the scores from the State Anxiety Scale, the scores were combined to create a composite measure of psychological well-being. From these results it was proposed that mothers experienced lower levels of psychological well-being than fathers in the immediate postpartum.

To summarize; the findings from these three studies suggests that whilst initially there was a difference in the mental health of mothers and fathers, with mothers experiencing higher levels of dysphoria, overall there was an improvement over time. It is also noted that only

the study by Matthey et al. (2000) collected data up to twelve months postpartum and then only assessing primiparous couples.

- **Hospital Anxiety and Depression Scale (Generic-negative)**

Only one study by Castle et al. (2008) employed this instrument. They assess 86 mothers and 66 fathers during the third trimester and at six weeks postpartum. Their aim was to examine whether the social support perceived during pregnancy is linked to distress postnatally. No cut-off score was suggested, however they did conclude that mothers perceived significantly less anxiety in the postnatal period compared with the antenatal period; mean score antenatally was 8.4 and 6.9 postnatally. For the depression subscale, mothers scored 4.8 antenatally and 4.9 postnatally. Fathers showed significantly lower anxiety but significantly higher depression scores postnatally than mothers. The mean score for the paternal anxiety subscale was 6.4 antenatally and 5.6 postnatally whereas the mean scores for paternal depression were 2.9 antenatally rising to 4.0 postpartum. It was noted that the study only reflects parents' experiences up to six weeks postpartum.

- **Positive and Negative Affect Scale (Generic- positive/negative)**

This instrument was used in two studies; Morse et al. (2000) and Soliday et al. (1999). Morse et al. (2000) sampled 327 primiparous couples at four time points; mid and late pregnancy, one month and four months postpartum. As the study concentrated upon the results of another instrument (EPDS) the results from this instrument were not recorded. Soliday et al. (1999) also employed this instrument, sampling 26 primiparous couples and 25 multiparous couples antenatally and during the first few weeks postpartum. The study also employed other instruments and did not detail the results specifically from this instrument.

- **Psychological Screening Inventory (Generic-negative)**

Only one study in the review (Wright et al., 1986) used this instrument. The aim of their study was to examine marital adjustment for parents during transition to parenthood and rather than looking specifically for the incidence of depression in parents. The questionnaire

was distributed to 42 primiparous couples during the third trimester and again at three months postpartum. It was reported that there was a tendency for life stress to increase postnatally. They found that for fathers, high levels of psychological discomfort predicted positive marital adjustment.

4.4.1.2. Mothers only

- **Highs Scale (Parent specific/ negative)**

Only one study (Lane et al., 1997) employed this instrument and only administered it to the mothers in their study. The instrument is designed to identify individuals suffering from hypomania, a milder form of mania. The 308 mothers, whose parity was not disclosed, were asked to complete the questionnaire at three days and six weeks postnatally. It was reported that at three days postnatally 18% and at six weeks postnatally 9% of mothers scored equal to or above the cut-off figure of 8 which suggests a state of elation. The higher scores were associated with single status, failure to obtain school qualifications and bottle feeding.

- **Global Self-Esteem Scale (Generic- negative)**

Crockenberg and Leerkes (2003) used this instrument to assess 92 primiparous mothers. The specific time points where this instrument was administered and the results were not made explicit.

4.4.1.3. Summary of the results for instruments looking at the mental health of parents

The findings from the studies who employed instruments that looked in general at the mental health of parents suggested that mothers experienced higher levels of anxiety, depression and stress than the fathers did (for example Skari et al. 2002, Terry, 1991). Whilst it was noted that overtime the mental health of parents improved (for example Castle et al. 2008) Wright et al. (1996) suggested that there was a tendency for life stress to increase in the postpartum.

4.4.2. Depression

Twenty nine studies employed one or more of the five instruments that specifically measured levels of depression (Beck Depression Inventory, Center for Epidemiological Studies-Depression Scale, Symptom Checklist: Depression subscale, Blues Questionnaire and the Edinburgh Postnatal Depression Scale). Four studies used two of these instruments (Edhborg et al. 2005, Edhborg 2008, Kaitz and Katzir 2004, Matthey et al. 2000 and Morse et al. 2000).

4.4.2.1. Mothers and Fathers

- Beck Depression Inventory (Generic- negative)

Five studies employed this instrument; Goodman et al. (2014), Kaitz and Kazir (2004), Matthey et al. (2000), Mayes and Leckman (2007) and Morse et al. (2000). Goodman et al., (2014) and Kaitz and Kazir (2004) administered this instrument to mothers only and the details are presented below. Matthey et al. (2000), Mayes and Leckman (2007) and Morse et al. (2000) examined the experiences of parents both in the antenatal period as well as the postnatal period.

Mayes and Leckman (2007) surveyed 41 mothers and 36 fathers at three time points; 8 months gestation, two weeks and three months postpartum. The parents were both primiparous and multiparous. They proposed that parents whose perception of their own mothers as uncaring experienced more fluctuation in mood in the peripartum, suggesting that mental representations of their own early experiences may contribute to the development of depressive disorders. Whilst there was no difference between parents in terms of fluctuation of mood over time, mothers tended to report more dysphoria than fathers (BDI score of 6.1 for mothers compared with 4.0 for fathers at three months postpartum). Utilizing a cut-off score of 14 to indicate the possible presence of depression, 14.6% of mothers had scores above the cut-off score for depression at either one or both postpartum time points. No fathers in the sample had clinically significant levels of depression in the postpartum. They

concluded that both mothers and fathers who reported that their own mother was less caring reported more dysphoria at every time point. Fathers whose perception of their own father as being less caring, also experienced more dysphoria.

Matthey et al. (2000) assessed 157 primiparous couples to examine the incidence of co-morbidity and how parental depressive symptomology changes with time. They surveyed fathers at four time points; antenatally and at six weeks, four and 12 months postpartum. Mothers, however, were only assessed antenatally and at 12 months postpartum. A cut-off figure of 9 was used but as this may have contributed to false positives, a cut-off score of 16 was also employed. Fathers had lower rates of clinically significant distress than mothers, significantly more mothers than fathers scored above the cut-off points at two of the four assessment points. Co-morbidity was assessed by determining the likelihood that both parents recorded high scores as each time point. They concluded that at six weeks and 12 months postpartum that there was significantly greater risk of fathers scoring high on the Beck Depression Inventory if their partner also scored highly. However this risk was not apparent antenatally or at the four month time point.

Morse et al. (2000) employed a short form (11 items) of the Beck Depression Inventory at four time points, mid and late pregnancy, one month and four months postpartum. The objective of the study was to examine moods and the adjustment to the transition to parenthood. The sample consisted of 327 first time couples. As the study concentrated upon the results of another instrument (EPDS), the results from this instrument were not recorded.

- **Blues Questionnaire (Parent specific- negative)**

This questionnaire was used by Edhborg et al. (2005). The purpose of administering the instrument was to measure the incident of postnatal blues symptoms in both parents on each day during the first week after the birth of their infant. To identify parents who were suffering from the blues, an overall mean percentage score was generated over the five days for the entire sample, those individuals whose mean percentage score was above the peak

score were deemed to be suffering from the blues. They gave 106 primiparous and multiparous couples this instrument to complete for five days starting on the day after delivery. It was reported that mothers experienced significantly more blues symptoms than the fathers did, with mothers' mean percentage scores peaking on the fourth day postnatally whereas the fathers' mean percentage scores peaked on day one. They also proposed that the timing of the blues in mothers is probably related to hormonal changes and as a stress reaction to giving birth. Fathers, they suggested may be reacting to the tension and tiredness related to their infant's birth.

- [Centre for Epidemiological Studies-Depression Scale \(Generic-negative\)](#)

Ten studies offered this instrument to their participants (Biehle and Mickelson, 2012, Crockenberg and Leerkes 2003, Elek et al. 2002, Figueiredo et al. 2008, Hock et al. 1995, Keeton et al. 2008, Leathers and Kelley 2000, Monk et al. 1996, Perry-Jenkins et al. 2011 and Soliday et al. 1999). Of these, two were administered to mothers only (Crockenberg and Leerkes, 2003 and Hock et al. 1995).

Biehle and Mickelson (2011) sampled 104 primiparous couples during the second trimester of pregnancy and at one and four months postpartum. Their study was concerned with the development of parenting efficacy; low levels they suggest can be associated with distress, anxiety and depression. They reported that for both mothers and fathers there was a reduction in depressive symptoms in the postpartum period compared with the antenatal period. However they did note that a father's depression impacted upon a mother's parenting efficacy development. They proposed that this may be due to the parent whose partner has mental health problems feels more pressure to deal with parenting tasks alone or there may be a contagion of emotion whereby emotions are transferred from one parent to the other.

Elek et al. (2002) collected data from 44 couples at nine months gestation and at four, eight, 12 and 16 weeks postpartum to examine levels of fatigue antenatally and postpartum. Whilst it was suggested that the majority of parents did not experience depressive symptoms, it was

suggested that when using a cut-off score of 15 to identify those parents whose scores would require clinical referral, then mothers were more likely to experience higher levels of dysphoria during pregnancy whereas fathers were more likely to experience higher levels of dysphoria at four months postpartum than at any other time.

Leathers and Kelley (2000) investigated the consequence of unintended pregnancy on the mental health of co-habiting parents. They assessed parents during the third trimester and at three to four months postpartum and reported that in their sample of 124 couples, mothers had more depressive symptoms during pregnancy than during postpartum period, whilst for fathers there was no significant change over time. Using a cut-off score of over 16, 30.6% of mothers and 7.3% of fathers in the antenatal period reported scores indicative of probable depression. Whilst at four months postpartum, 11.3% of mothers and 6.5% of fathers scored above the cut-off score. Those mothers whose pregnancy was intended, but where their partners viewed the pregnancy as unintended, were at greater risk of depressive symptomology the authors suggested.

Perry-Jenkins et al. (2011) investigated how parental employment and changes in work conditions may be associated with changes in mental health status of parents. They sampled 113 couples five times; during the third trimester, one month postpartum, one month after the mothers returned to full-time employment (on average 15 weeks postpartum), 6 months and at one year postpartum. They reported that mothers had significantly higher levels of depressive symptoms than fathers across all time points, although mothers' mental health status did improve over time. In terms of the effect of employment; for mothers the support from co-workers predicted fewer depressive symptoms at twelve months postpartum. Also mothers who worked long hours, but had support from their supervisor had the lowest levels of depressive symptoms at twelve months postpartum. Where fathers reported increases in job autonomy and decreases in job urgency (the degree of speed and time pressure experienced) the authors predicted fewer depressive symptoms.

Figueiredo et al. (2008) explored the notion that the relationship between parents is relevant to their psychological adjustment during the transition to parenthood. In their study of 43 primiparous and multiparous couples, sampled at 20 and 30 weeks gestation and at 14 days postpartum, utilizing a cut-off score of 16 to indicate possible depression they concluded that those individuals who have a more negative relationship with their partners are more likely to experience depression than individuals with a less negative relationship with their partner.

Keeton et al. (2008) collected data from 153 primiparous couples during the third trimester and at one, four, six and twelve months postpartum. Using a cut-off score of 16, they reported that antenatally 44% of mothers and 15% of fathers scored above the cut-off score. The results for both mothers and fathers suggested an improvement over time with 25% of mothers and 11% of fathers scoring above the cut-off figure at 12 months postpartum.

Monk et al. (1996) sampled 37 primiparous and multiparous couples during the second trimester and at one, four and 12 months postpartum. They noted that there were different patterns of mood when comparing mothers with fathers, but also when comparing first-time parents with experienced parents. They reported that for first-time parents, mother's levels of depressive symptoms were highest during pregnancy while father's symptoms peaked at one month postpartum. They also concluded that a decrease in the amount of time spent together as a couple was associated with decreases in depressive symptomology in mothers whereas decreased time for fathers was associated with an increase in depressive symptoms.

Fifty-one couples (26 primiparous and 25 multiparous) participated in the study by Soliday et al. (1999), during the third trimester of pregnancy and then again at one month postpartum. Using a cut-off figure of greater than 16, it was reported that in the postpartum 39.2% of mothers were classified as depressed compared with 25.5% of fathers in the same period. Of these 39.2% of mothers, 15% were experiencing severe depression. Using this instrument it was suggested that no fathers had severe depression postpartum.

To summarize the findings from the studies which employed the Centre for Epidemiological Studies-Depression Scale; of the eight studies who surveyed both mothers and fathers, only three of the studies continued until 12 months postpartum (Perry-Jenkins et al. 2011, Keeton et al. 2008 and Monk et al. 1996). Figueiredo et al. (2008) and Soliday et al. (1999) completed their studies within the first few weeks postpartum. The remaining studies completed by four to five months postpartum. Elek et al. (2002) Leathers and Kelley (2000) and Monk et al. (1996) all concluded that mothers experienced more dysphoria or depression during pregnancy than postnatally with improvement noted during the postpartum. Fathers, however, were more likely to experience dysphoria or depression in the postnatal period suggested Elek et al. (2002) and Monk et al. (1996). In general, the studies employing the Centre for Epidemiological Studies-Depression Scale suggested that mothers experience more dysphoria and higher levels of depression than fathers and that the mental health and well-being for both mothers and fathers improves over time.

- [Edinburgh Postnatal Depression Scale \(Parent specific- negative\)](#)

This was the most commonly used instrument with 14 out of the 37 studies included in the review utilizing it; Abbasi et al. (2014), Areias et al. (1996), Castle et al. (2008), D'Anna-Hernandez et al. (2013), Edhborg et al. (2000), Edhborg et al. (2005), Escribà-Agüir and Artazcoz (2011), Figueiredo and Conde (2010), Iles et al. (2011), Kaitz and Katzir (2004), Lane et al. (1997), Matthey, et al. (2000), Morse, et al. (2000) and Muscat, et al. (2012).

The EPDS was administered both in the antenatal as well as the postnatal period, with ten studies surveying parents during the antenatal period; Abbasi et al. (2014), Areias et al. (1996), Castle et al. (2008), Escribà-Agüir and Artazcoz (2011), Figueiredo and Conde (2010), Kaitz and Katzir (2004), Matthey et al. (2000), Morse et al. (2000) and Muscat et al. (2012). Of these, three studies surveyed parents more than once during this period; Abbasi et al. (2014), Figueiredo and Conde (2010) and Morse et al. (2000). Abbasi et al. (2014) also surveyed parents pre-pregnancy. During the postnatal period the majority of studies concentrated upon surveying parents using the EPDS during the first four months

postpartum, however one study assessed parents at six months postpartum (D'Anna-Hernandez et al. 2013) and six at 12 months postpartum (Areias et al. 1996, D'Anna-Hernandez et al. 2013, Edhborg et al. 2000, Escribà-Agüir et al. 2011, Kaitz and Katzir 2004 and Matthey et al. 2000).

Of the 14 studies, five surveyed mothers only (D'Anna-Hernandez et al. 2013, Edhborg et al. 2000, Kaitz and Katzir 2004, Lane et al. 1997 and Matthey et al. 2000). The results are detailed below.

Abbasi et al. (2014) surveyed 416 couples at five time points; prior to pregnancy, three times antenatally and at three months postpartum. They described, using a cut-off figure of 13 or more, that 41% of women prior to pregnancy were experiencing depression. They reported that this figure had decreased to 32.7% by the first trimester. This figure peaked during the third trimester (37.1%) then decreased to 34.1% by three months postpartum. In comparison the percentage of fathers with possible depression was reported as 38% prior to pregnancy with this figure decreasing to 20.5% by three months postpartum.

Morse et al. (2000) surveyed 327 primiparous couples during the second and third trimester, at one month and at four months postpartum using a cut-off score of 10 to indicate distressed mood. In both mothers and fathers the percentage that scored above the cut-off score decreased over time with the percentage of mothers peaking at four weeks postpartum (21.6%), reducing to 13.9% at four months postpartum. The results for the fathers showed the highest percentage of fathers with distress was during the second trimester (12.0%) reducing to 5.8% at four months postpartum. When the mother's age and the EPDS score were considered together, it was reported that at one month postpartum the group aged 20-24 years and mothers over 35 years of age had higher scores than the middle age groups but that at four months postpartum the 20-24 years of age group had the highest scores.

The study by Castle et al. (2008) evaluated primiparous parents (86 mothers and 66 fathers), only at six weeks postpartum. The mean scores were 7.16 for mothers and 5.14 for fathers.

The rate of depression in the study by Escribà-Agüir and Artacoz (2011) was measured using the EPDS during the third trimester, at three and 12 months postpartum, assessing 769 primiparous and multiparous couples. Using a cut-off score of 12/13 for mothers and ≥ 11 for fathers, it was reported that the levels of depression in the antenatal period were higher in mothers than fathers, 10.3% and 6.5% respectively. However at 12 months postpartum the incidence of depression was similar for both parents.

Edhborg et al. (2005) used a lower cut-off figure of 9/10 for both mothers and fathers to assess for the incidence of depression and to make comparisons between them. There were 106 primiparous and multiparous couples who completed all the questionnaires at both time points (at one day and two months postpartum). It was reported that the mean EPDS score was significantly higher in mothers than fathers at both time points. At one week the mean score for mothers was 6.1 compared with fathers' mean score of 4.3. At one month postpartum these mean scores were 4.4 for mothers and 2.5 for fathers. The percentage of mothers who scored above the cut-off figure was 21% at one week and 9% at one month postpartum.

The study by Iles et al. used a cut-off of 12/13 to highlight probable depression in their sample of 207 mothers and 206 fathers. The majority of parents were multiparous. Both mothers and fathers were assessed at six weeks and three months postpartum. The mean scores for mothers were 7.1 at six weeks and 5.3 at three months postpartum. This compares with the fathers' mean score of 3.9 and 3.4 for the same time points.

Figueiredo and Conde (2011) administered the EPDS to 260 primiparous and multiparous couples at five time points; during the first, second and third trimester, after childbirth and at three months postpartum. The results showed that the percentage of mothers and fathers who scored above the cut-off score of ≥ 10 declined over time. The percentage of mothers scoring above the threshold was 20% of the sample during the first trimester and this fell to 11.1%

by three months postpartum. The percentage for fathers was 11.3% during the first trimester; this figure was 7.2% at three months postpartum.

Areias et al. (1996) incorporated the EPDS into their study as well as other instruments. The EPDS was administered to 54 mothers and 42 fathers during pregnancy and at three and 12 months postpartum. Unfortunately the results were not documented.

Muscat et al. (2012) employed the EPDS to examine the relationship between parent's expectations of their infant's sleeping and feeding habits and whether the disconfirmed expectations are associated with parents developing postnatal depressive symptoms. They surveyed primiparous and multiparous parents both antenatally and at four months postpartum. Whilst they concluded that discrepancies between antenatal expectations and postnatal experiences were not associated with the severity of depressive symptoms, the results for the instrument were not documented.

To summarize the findings from the studies which employed the EPDS; whilst the studies employed variations in the cut-off score from 9 to 13, the general consensus was that mothers experienced more depressive symptoms than fathers and that there was improvement the mental health of both mothers and fathers over time. An explanation for why there is an increase in the percentage of fathers who score above the threshold score for possible depression at three months postpartum is proposed by Figueiredo and Conde (2011). They suggested that fathers are particularly vulnerable to depression at three months postpartum, because it is at this time that fathers have to make adjustments to their lives and learn to adapt to parenthood. They may also find new interactions with family more difficult to deal with than mothers do. There are also other risk factors to fathers developing depression between three and twelve months postpartum, these have been described as the presence of maternal depression and fathers having suffered from depression previously (Edhborg et al, 2000). Mothers conversely are more likely to suffer from depression during pregnancy as they prepare for childbirth (Figueiredo and Conde, 2011). It is perhaps the

anxiety surrounding forthcoming childbirth and mothers increasing fatigue that means that mothers are more likely to suffer from depression than fathers at this time (Edhborg et al, 2000).

Whilst comparing results between instruments is particularly problematic, at times there may even be difficulty comparing the results of studies that have used the same instrument. For example the EPDS is a screening tool which relies upon cut-off scores to indicate probable presence of depression. Studies using this tool reported using a range of cut-off scores from 9/10 to ≥ 13 . Some studies employed two figures using a lower cut-off score for fathers. Studies using the EPDS reported results using either a mean score or a percentage of the sample who had scored above the stated cut-off score or using the results as both figures. The higher percentages of parents with probable depression reported in the study by Muscat et al. (2012) compared to other studies may reflect the use of a lower cut-off of ≥ 10 . Whilst it is not possible to compare numerical findings across studies reporting their results as percentages, studies that described their results as a mean score across the antenatal and postnatal periods reported values of between 6.4 and 7.16 for mothers and 2.8 to 5.14 for fathers where disclosed.

Due to the nature of the reporting of the EPDS results by the studies and in an attempt to quantitatively synthesize the results a forest plot analysis was performed. Forest plots provide a visual representation of the results of multiple individual studies within a meta-analysis, plotted against the same axis (Verhagen and Ferreira, 2014).

There were 14 studies that employed EPDS.

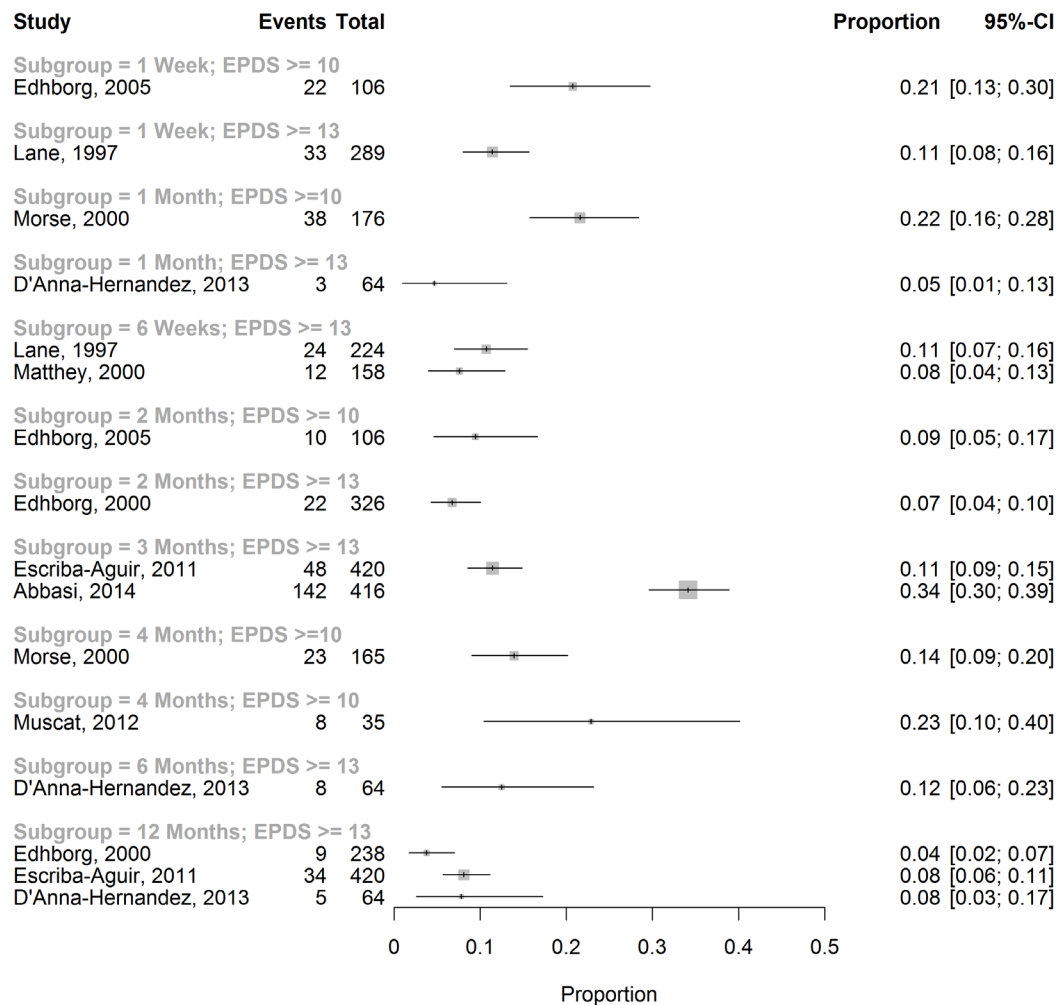
Mothers:

- 10 studies reported proportions, with the study by Figueiredo (2011) being excluded because the denominator was not reported clearly.
- 2 studies only reported means and standard deviations (Castle et al. 2008 and Iles et al. 2011).
- 1 study reported correlations with other results (Kaitz and Katzir, 2004).
- The study by Areias et al. (1996), did not make it clear how EPDS is used or reported.

Fathers:

- 7 studies reported proportions, with the study by Figueiredo (2011) being excluded because the denominator was not reported clearly.
- 2 studies only reported means and standard deviations (Castle et al. 2008 and Iles et al. 2011).
- 1 study reported correlations with other results (Kaitz and Katzir, 2004).
- In 3 studies, there were no results presented for the fathers (D'Anna-Hernandez et al. 2013, Edhborg et al. 2000, Matthey et al., 2000).

Table 4.6. Mothers forest plot results



Quantifying heterogeneity:

$I^2 = 92.3\%$ (89.1, 94.6)

Test of heterogeneity:

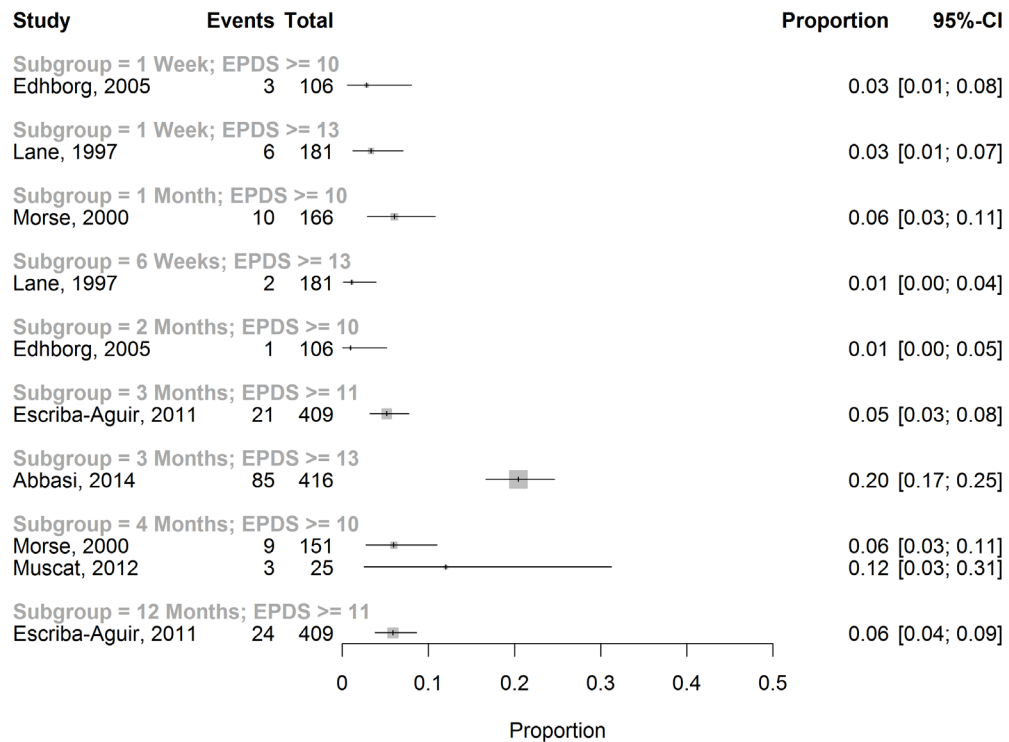
$Q = 195.78, P < 0.001$

The forest plot illustrates that there are many variables associated with the mothers' studies. In terms of time points there is a wide variation from one week to twelve months postpartum. When mothers are assessed may have a bearing upon the results; assessing within the first week may only identify the transient condition called 'baby blues', whereas

identifying mothers who have clinical depression at twelve months may be more meaningful. There is also a variation in the operationalized cut-off figure employed by the different studies, five of the studies used ≥ 10 and the other seven used ≥ 13 to identify mothers who may have clinical depression.

The I^2 value is 92.3%, as the I^2 quantifies the heterogeneity from 0 to 100% this suggests high heterogeneity present (Verhagen and Ferreira, 2014). It therefore would not seem appropriate to combine the studies into the summary.

Table 4.7. Fathers forest plot results



Quantifying heterogeneity:

$I^2 = 91.1\%$ (85.7, 94.4)

Test of heterogeneity:

$Q = 100.57$, $P < 0.001$

As with the mothers' Forest Plot results, there is variation in assessment points from one week to twelve months. However, where there is more variation in the operationalized cut – off figure, with four studies using ≥ 10 , two studies using ≥ 11 and three using ≥ 13 . As for the mothers' results the I^2 result for fathers is high, 91.1%, again it would not seem appropriate to combine the studies into the summary.

- Symptom Checklist 90-R (Depression subscale) (Generic- negative)

Two studies used this instrument; Lu (2006) and McDaniel and Teti (2012). Lu (2006) administered the instrument to 253 mothers and 230 partners at six weeks and six months postpartum. She reported that mothers experienced worse mental health than fathers. McDaniel and Teti (2012) assessed 150 primiparous couples at one and three months postpartum. Whilst the average scores for mothers and fathers were below the cut-off figure of 10, it was noted that 26% of mothers and 14% of fathers scored above the cut-off figure at either the one month or at the three month time point indicating possible presence of depressive symptoms.

4.4.2.2. Mothers only

- Beck Depression Inventory (Generic- negative)

In two studies (Goodman et al. 2004 and Kaitz and Katzir 2004) this instrument was offered only to mothers. Goodman et al. (2004) surveyed 255 primiparous and multiparous mothers who participated at least at one of the three time points (three, six and 12 months postpartum) using a cut-off score of 14 or higher to indicate at least mild depression. The authors suggested that 13%-21% of mothers postnatally had at least mild depression. They were particularly interested in the relationship between maternal depression and father's involvement. Overall their findings suggested support for the compensatory/buffering model whereby higher levels of maternal depression is positively associated with fathers' greater participation with their infant.

Kaitz and Katzir (2004) administered the instrument to 40 mothers at three and six months postpartum, however the results of the questionnaire were not included in the paper.

- Centre for Epidemiological Studies-Depression Scale (Generic-negative)

Two studies administered this instrument only to the mothers in the study (Crockenberg and Leerkes, 2003 and Hock et al. 1995). Crockenberg and Leerkes (2003) sampled mothers at two time points; antenatally and at five months postpartum. They reported that of the 92

mothers, 16 (17%) antenatally and 10 (11%) at five months postpartum met the clinical cut-off for depression; however this cut-off figure was not disclosed.

Hock et al. (1995) surveyed 142 primiparous mothers who completed the scale in the antenatal period and also at six weeks and nine months postpartum. Whilst the levels of depressive symptomology were relatively stable over time, it was concluded that low marital satisfaction and marital sex role traditionalism are risk factors for depressive symptomology in mothers postpartum.

- **Edinburgh Postnatal Depression Scale (Parent specific-negative)**

This instrument was designed specifically to look at mothers' mental health (Cox and Holden, 2003). Fourteen studies administered the EPDS with five of these surveying mothers only (D'Anna-Hernandez et al. 2013, Edhborg et al. 2000, Kaitz and Katzir 2004, Lane et al. 1997 and Matthey et al. 2000).

D'Anna-Hernandez et al. (2013) evaluated depressive symptomology in mothers (n=32) using a cut-off figure of 13. At six months postpartum 12.5% of mothers had a score above the cut-off figure indicative of postnatal depression.

Edhborg et al. (2000) surveyed 326 primiparous and multiparous mothers at two months postpartum and 238 primiparous and multiparous mothers at twelve months postpartum using the EPDS instrument to measure depression. A cut-off score of 12/13 was utilized. At two months postpartum 22 mothers (7%) were identified as being possibly depressed, 11 of these were primiparous. At one year postpartum the percentage of mothers scoring above the cut-off figure had decreased to nine (4%) with six of these mothers being primiparous. It was noted however that six of the mothers who scored above the cut-off figure at two months had dropped out before the end of the study.

In the study by Lane et al. (1997), 370 mothers completed the EPDS on the third day postpartum and at six weeks postpartum. Using a cut-off score of ≥ 13 the mean score for the first time point was 6.8 with 4.8% of mothers scoring above the cut-off figure. At the second

time point the mean score was recorded as 6.9 and 4.7% of mothers scoring above the cut-off threshold.

Having utilized other instruments to assess levels of dysphoria in parents, the study by Matthey et al. (2000) used the EPDS on only one occasion (six weeks postpartum). They used a cut-off score of >12 to indicate the presence of significant depression. The mean score was reported as 6.4.

Kaitz and Katzir (2004) administered the EPDS to 40 mothers at three and six months postpartum, unfortunately the results are not documented.

4.4.2.3. Summary of the results for instruments looking at levels of depression in parents.

The five instruments employed to assess parent's levels of depression produced similar findings. Edhborg et al. (2005) reported that mothers suffered more than fathers with postnatal blues, which they suggested for mothers was due to the effect of hormones. Many studies suggested that mothers were more likely to suffer from depression than fathers (for example; Perry-Jenkins et al. 2011, Soliday et al. 1999, Escribà-Agüir et al. 2011, Edhborg et al. 2009 and Lu 2000). Mayes and Leckman (2007) reported that there were no fathers in their study who had clinically significant levels of depression postnatally and Elek et al. (2002) also found that the majority of parents had no depressive symptoms.

In terms of timing, it was reported by, for example, Elek et al. (2002), Monk et al. (1996) and Abbasi et al. (2014) that mothers were more likely to suffer from depression antenatally than postnatally. Depressive symptoms in fathers, in comparison, were likely to peak at one month postnatally suggests Monk et al. (2000).

Matthey et al. (2000) suggested that co-morbidity may exist between parents in that fathers were at a significantly greater risk of depression if their partner also scored highly. Monk et al. (2000) also observed that decreased time as a couple was associated with a decrease in

depressive symptoms in mothers and an increase in depressive symptoms in fathers. Figueiredo et al. (2008) also suggested that the quality of couples' relationship may influence parents' levels of depression.

Other studies considered factors which may have influenced the development of postnatal depression in parents. Mayes and Leckman (2007) suggested that mental representations of parents' early experiences may contribute to the development of depressive symptomology. Leathers and Kelley (2000) suggested that where pregnancy is intended by the mother but where their partners view the pregnancy as unintended were at greater risk of depression. Support from co-workers was thought to reduce depressive symptoms (Perry-Jenkins et al., 2000) whereas Hock et al. (1995) found that low marital satisfaction and marital sex role traditionalism were risk factors for the development of depression in mothers. Generally the findings from the studies suggested that there was improvement in mental health status over time for both mothers and fathers.

4.4.3. Stress

The experience of stress for parents was measured by eight instruments, of these six were generic instruments (COPE, Experiences of Motherhood/Fatherhood Questionnaire, Feminine Gender Role Stress Scale, Masculine Gender Role Stress Scale, Perceived Stress Scale and Posttraumatic Disorder Questionnaire) and two were parent specific instruments (Parenting Stress Index and the Swedish Parental Stress Questionnaire).

4.4.3.1. Mothers and Fathers

- COPE (Generic-negative)

The study by Soliday et al. (1999) was the only study to administer this instrument and then using only three of the 15 COPE subscales (undisclosed) to assess how parents responded to stress. The instrument was administered at one time point only, which was during the

antenatal period. Correlations were performed between these results and other measured variables.

- Experience of Motherhood/ Fatherhood Questionnaire (Parent specific-positive/negative)

These two instruments were used by Edhborg et al. (2000). These questionnaires were given to parents at 12 months postpartum in an effort to explore the relationship between parental depression (as measured with EPDS) and their experience of parenthood. Edhborg et al. (2000) sampled 238 mothers and 223 fathers and reported that mothers who had depressive symptoms were less satisfied with their experience of motherhood at 12 months postpartum than parents in families without postnatal depression.

- Feminine Gender Role Stress Scale /Masculine Gender Role Stress Scale (Generic-negative)

Morse et al. (2000) used these instruments in association with other depression scales. The study assessed 284 primiparous couples during the second trimester and at four months postpartum. The results were not made explicit.

- Parenting Stress Index / Swedish Parenthood Stress Questionnaire (revised version of the Parent domain of the Parenting Stress Index) (Parent specific-negative)

The Parenting Stress Index was employed by two studies; Soliday et al. 1999 and Wallace and Gotlib 1990. Soliday et al. (1999) administered the index to 51 primiparous and multiparous couples antenatally and again one month postpartum. They suggested that the Parenting Stress Index significantly predicted postpartum depression in both mothers and fathers.

Wallace and Gotlib (1990) employed this instrument to assess the marital adjustment of a sample of 97 primiparous couples at six months postpartum. They concluded that parenting stress was a significant predictor of marital adjustment.

- The Swedish Parenthood Stress Questionnaire (revised version of the parent's domain of the Parenting Stress Index) (Parent specific- negative)

The only study to employ this instrument was the study by Hildingsson and Thomas (2014) who administered the index to 783 primiparous and multiparous mothers and 671 primiparous and multiparous fathers at one year postpartum. They found that mothers reported higher levels of parental stress than fathers in three of the five subscales.

- Perceived Stress Scale (Generic-negative)

Lu (2006) and Reece and Harkless (1998) were the only two studies to use this instrument. Lu (2006) reported that parental stress had negative effects on marital satisfaction and mental health. Mothers (n= 253) in this study perceived higher stress levels at both six weeks and six months than fathers (n=230). Reece sampled 50 primiparous and multiparous couples at two time points; antenatally and at four months postpartum. They suggested that there was no significant difference in the stress scores at either time point between mothers and fathers.

- Posttraumatic Stress Disorder Questionnaire (Generic-negative)

The only study to use this instrument was Iles et al. (2011). The mothers (n=207) and fathers (n=206) were asked to complete the questionnaire at six weeks and at three months postpartum. It was reported that there was no significant association between the mode of delivery and parental symptoms of posttraumatic stress. They also suggested that first-time fathers reported higher levels of acute stress and posttraumatic stress than fathers who already had children. It was suggested that symptoms of posttraumatic stress and postpartum depression were positively related within couples.

4.4.3.2. Summary of the results for instruments looking at stress levels in parents.

Whereas Hildingsson and Thomas (2014), employing the Swedish Parenthood Stress Questionnaire, suggested that mothers experienced higher levels of parental stress than

fathers, Reece and Harkless (1998) using the Perceived Stress Scale found no significant difference in the levels of stress between mothers and fathers. The findings of several of the studies did note the negative effect that stress has upon the parents experiences of parenthood (Edhborg et al. 2000) as well as marital satisfaction (Lu, 2006).

4.4.4. Anxiety

The parental experience of anxiety was measured with two instruments; Spielberger State-Trait Anxiety Inventory and the State Anger and Anxiety Scales (subscale of State-Trait Anxiety Inventory).

4.4.4.1. Mothers and Fathers

- **Spielberger State-Trait Anxiety Inventory (Generic negative)**

There were six studies in the review that used this instrument; Figueiredo and Conde (2010), Figueiredo et al. (2008), Iles et al. (2011), Keeton et al. (2008), Skari et al. (2002) and Terry (1991). Of these six studies, four administered the questionnaire in the antenatal period as well as postnatally; Figueiredo and Conde (2010), Figueiredo et al. (2008), Keeton et al. (2008) and Terry (1991).

Figueiredo and Conde (2010) assessed 260 primiparous and multiparous couples during the first, second and third trimester and at three months postpartum. They reported that mothers were more likely than fathers to show high anxiety levels during the third trimester of pregnancy and after childbirth than during early pregnancy or three months postpartum. Figueiredo et al. (2008) administered the questionnaire to 43 primiparous and multiparous couples during the second trimester and two weeks postpartum. They reported that parents with a less positive relationship with their partner show higher anxiety than those parents with a more positive partner relationship.

Iles et al. (2011) assessed 212 couples with this instrument during the first week postpartum. They found high anxiety levels in 35.5% of mothers and 34.4% of fathers at one week

postpartum, whereas Skari et al. (2000) suggested only 12% of mothers and 11% of fathers had clinically important state anxiety during the first week after the birth of their infant. Their sample included 127 mothers and 122 fathers who completed the questionnaire at birth to four days and at six weeks and six months postpartum.

Keeton et al. (2008) administered the instrument at five time points; during the third trimester, one, four, six and 12 months postpartum to 153 primiparous couples. The percentage of fathers who scored at or above the cut-off score (not disclosed) ranged from 12%, at one month postpartum to 18% at six months postpartum. At the 12 month time point 14% of fathers were anxious. In comparison the percentage of mothers who scored at or above the cut-off score ranged from 36% antenatally to 19% at one month postpartum. By the 12 months time point the percentage of mothers who were thought to be anxious was 24%.

This instrument was administered by Terry (1991) to 123 couples at three time points; during the third trimester and at four and 18 weeks postpartum. The results were not detailed.

- State Anger and Anxiety Scales (subscales of the State-Trait Personality Inventory) (Generic-negative)

Morse et al. (2000) incorporated this instrument in their study. They assessed 327 primiparous couples at four time points; mid and late pregnancy, one month and four months postpartum. As previously described, as this study concentrated upon the results of another instrument (EPDS) the results from this instrument were not recorded.

4.4.4.2. Summary of the results for instruments looking at parents experiences of anxiety.

There was a variation in the findings for the studies that employed the Spielberger State-Trait Anxiety Inventory. Iles et al. (2011), reported high anxiety levels in 35.5% of mothers

and 34.4% of fathers at one week postpartum, whereas Skari et al. (2000) reported 12% of mothers and 11% had high anxiety levels at the same time point. Keeton et al. (2008) noted an improvement with time.

4.4.5. Quality of life

Two instruments were used to examine quality of life of parents; Short Form 12/36 and the Well-being Questionnaire.

4.4.5.1. Mothers and Fathers

- Short Form-12 /36 (Generic- negative)

Three studies used the Short Form questionnaire; one study used SF-12 (Ngai and Ngu, 2013) and two the SF-36 questionnaire (Abbasi et al., 2014 and Gjerdingen and Center, 2003).

Ngai and Ngu (2013) sampled 203 primiparous and multiparous couples antenatally and at six weeks and six months postpartum. They reported that the mental health status of mothers decreased significantly in the early postpartum period with a gradual improvement by six months postpartum. The fathers in comparison reported an increase in mental health well-being at six weeks postpartum, which was better than reported by their partners. The study also suggested that the mental health component of a couple's quality of life was positively associated. The physical functioning of the mothers was lowest during pregnancy with a gradual improvement over time. The father's physical health was a constant throughout.

Abassi et al. (2014) considered the health of 513 couples from conception, during each three trimesters to a final time point three months postpartum. They reported that the results for the mental health component of the SF-36 for both parents showed a similar pattern, both mothers and fathers score peaked at three months postpartum followed by a decline in mental health status over time, however the father's results suggested poorer mental health than for mothers. It was also reported that there was a significant relationship between

mental health and mode of delivery with mothers who had had a caesarean section producing higher scores indicating positive mental health. Gjerdingen and Center (2003) assessed 128 primiparous couples with five items from the Short Form-36 during pregnancy and at six months postpartum. Both mothers and fathers experienced declines in both mental and physical health that persisted at least six months postpartum.

- **Well-being Questionnaire (Generic-positive/negative)**

Castle et al. (2008) administered the Well-being Questionnaire to 86 mothers and 66 fathers during the third trimester and at six weeks postpartum. They reported that the general well-being scores were significantly higher for mothers in the postnatal period suggesting that mothers perceived significantly less anxiety and a greater sense of well-being at this time compared with fathers.

4.4.5.2. Summary of the results for instruments looking at parent's quality of life

Whilst the results from the study by Ngai and Ngu (2013) suggested an improvement in mental health and well-being of both parents over time, Abbasi et al. (2014) suggest that the mental health of parents worsened over time. Abbasi et al. (2004) also suggest, contrary to the study by Ngai and Ngu (2013), that the fathers mental health status is worse than mothers. Castle et al. (2008) also found that mothers perceived less anxiety than the fathers.

4.4.6. Life events scales

Two instruments were administered to examine the effect of life events on parent's mental health; Impact of Events Scale and Social Readjustment Rating Scale.

4.4.6.1. Mothers and Fathers

- **Impact of Events Scale (Generic-negative)**

Skari et al. (2002) utilized this instrument to measure postnatal stress in 127 mothers and 122 fathers at three time points; during the first four days postpartum, six weeks and six months postpartum. The instrument incorporates two subscales; intrusion and avoidance. The percentage of mothers whose score was ≥ 20 , indicative of severe stress response was 9.2% compared to fathers' score of 1.8% at the first time point. At six weeks the percentage of mothers who scored ≥ 20 was 1.0% and for fathers this percentage was 2.0%. Skari et al. (2002) also reported that in terms of avoidance scores that mothers and fathers had similar scores.

- **Social Readjustment Rating Scale (Generic-negative)**

The study by Wright et al. (1986) incorporated this instrument into their study. Forty-one primiparous couples were offered the instrument during the third trimester and three months postpartum, the data derived from this questionnaire were used in a regression analysis and therefore not made explicit.

4.4.6.2. Summary of the results for instruments looking at life events scales

The study by Skari et al. (2002) suggested that the levels of postnatal stress decreased with time.

4.5. Discussion

4.5.1. Overview

The literature search identified 37 studies which examine the mental health status of parents during the first year after the birth of their infant. The summary table for the studies can be found in the appendix. Predominately the studies investigated levels of depression, dysphoria, emotions and stress levels amongst the parents. Hock et al. (1995), Wallace and Gotlib (1990) and Wright et al. (1986) considered marital adjustment and satisfaction in relation to mental health status. Only five of the studies considered the parents' physical health; Elek et al. (2002) considered levels of fatigue and McDaniel et al. (2012) related poor sleeping quality with increased depressive symptoms. Abbasi et al. (2014), Gjerdingen and Center (2003) and Ngai and Ngu (2013) all administered Short Form-12/36 which has a physical component.

Whilst all included studies incorporated a self-reported instrument only six of the 27 instruments used in the studies were specifically designed to look at the mental health of parents at this time (Highs Scale, Blues Questionnaire, Edinburgh Postnatal Depression Scale, Experiences of Motherhood/Fatherhood Questionnaire, Parenting Stress Index and Swedish Parental Stress Questionnaire). The Highs Scale was used by only one study (Lane et al. 1997) and then only sampled mothers postnatally. Five of these six instruments measured negative aspects of mental health and only the Experiences of Motherhood/Fatherhood Questionnaire measured both positive and negative mental health status. This questionnaire was used by only one of the 37 studies and then only once at 12 months postpartum (Edhborg et al., 2000). The orientation of instruments towards negative mental health status resulted in the majority of studies reporting the negative sequelae of parent's transition to parenthood. As a consequence there was nominal coverage of levels of happiness or positive mental health. Terry (1991) noted also that mothers experienced lower levels of psychological well-being than fathers in the postpartum. Skari et al. (2002) also

reported higher levels of depression in mothers than in fathers postnatally. Perry-Jenkins et al. (2011) suggested that mothers had higher levels of depression than fathers from the third trimester of pregnancy through to twelve months postpartum. Gjerdingen and Center (2003) also reported that the decline in the mental health of parents persisted to at least six months postpartum. Matthey et al. (2000) reported that whilst they observed that mothers had higher levels of depression than fathers antenatally, that by twelve months postpartum the rates of depression were similar.

Mothers were also reported to experience more parental stress suggests Hildingsson and Thomas (2014) and Lu (2006). Iles et al. (2011) reported that there was no significant association between the mode of delivery and stress. First time fathers had higher levels of acute stress than fathers with other children (Iles et al., 2011)

Matthey et al. (2000) assessed co-morbidity and found that at times that having a partner with high depression scores posed a risk to fathers also experiencing higher levels of depressive symptoms.

None of the instruments used placed the emphasis purely upon positive aspects of parenthood. Whilst in some instances instruments were administered to mothers only, no study administered an instrument only to the fathers.

4.5.2. Timing of administration of questionnaires

Of the 37 studies included in the review, 28 administered questionnaires to parents in the antenatal period which allowed comparisons to be made. Twelve of the studies completed their data collection on or before three months postpartum and only twelve studies completed their study at twelve months postpartum. Within the category of instruments looking at depression, only one study surveyed parents up to twelve months. Guedes and Canavarro (2014), although only surveyed parents up to six months postpartum, recognized that physical problems may influence mother's mental health. By extending the time period

of a study may allow the mothers physical health to return to pre-pregnancy state and therefore to observe whether there is a link between physical and mental health which endures beyond the six month period through to the twelve month period. As generally mothers return to work after six months postpartum, data generated after this date and up to twelve months postpartum may allow inferences to be made about the effect of returning to work upon, particularly, mother's mental health status. In completing the studies at twelve months postpartum allows any changes over time to be observed.

4.5.3. Timing of depressive symptoms, anxiety and stress

The studies highlighted that mothers and fathers tended to experience mental health problems at different times. Not all of the studies surveyed parents in the antenatal period, but those that did facilitated comparisons between the two periods. Leathers and Kelley (2000) suggested that the majority of parents did not have depression, but mothers were more likely to have dysphoria in the antenatal period, whereas father's dysphoria peaked at four months postpartum (Elek et al., 2002). Abbasi et al. (2014) found that mothers had the highest levels of depression during the third trimester of pregnancy.

Postnatal blues is thought to be confined to the first few weeks postpartum and Edhborg (2005) proposed that mothers experienced more postnatal blues symptoms than fathers and that the timing of the blues for mothers coincides with hormonal changes which occur on day three/four postpartum.

Biehle and Mickelson (2012) reported that both mothers and fathers experienced a reduction in depressive symptoms in the postpartum period compared with during pregnancy. Morse et al. (2000) and D'Anna Hernandez et al. (2013) identified these peaks in depression levels at three and six months postpartum respectively. Ngai and Ngu (2013) also reported that mothers' mental health status decreased in the early postpartum period followed by a gradual improvement, and as for fathers, their mental health status increased by six months postpartum. A reduction in depressive symptoms for both parents with time was noted by

Elek et al. (2002), whereas Leathers and Kelley (2000), using the same instrument, saw no change in the fathers mental health status over time. Figueiredo and Conde (2010) suggest that mothers are more likely to experience increased levels of anxiety during the third trimester of pregnancy and around childbirth, but not during early pregnancy or at three months postpartum. Wright et al. (1986) suggested that life stress tends to increase postpartum.

4.5.4. Rates of depression and anxiety

The percentage of mothers with depressive symptoms during the antenatal period has been recorded as high as 44% (Keeton et al. 2008). The reported percentages of mothers experiencing clinically significant depressive symptoms in the postpartum period ranged from 6% (Skari et al. 2002) to 39% (Soliday et al.1999). The same results for fathers ranged from 2% (Skari et al. 2002) to 25% (Soliday et al.1999).

Whilst comparing results between instruments is particularly problematic, at times there may even be difficulty comparing the results of studies that have used the same instrument. For example the EPDS is a screening tool which relies upon cut-off scores to indicate probable presence of depression. Studies using this tool reported using a range of cut-off scores from 9/10 to ≥ 13 . Some studies employed two figures using a lower cut-off score for fathers. Studies using the EPDS reported results using either a mean score or a percentage of the sample who scored above the stated cut-off score or using the results as both figures. The higher percentages of parents with probable depression reported in the study by Muscat et al. (2012) compared to other studies may reflect the use of a lower cut-off of ≥ 10 . Whilst it is not possible to compare numerical findings across studies reporting their results as percentages, studies that described their results as a mean score across the antenatal and postnatal periods reported values of between 6.4 and 7.16 for mothers and 2.8 to 5.14 for fathers where disclosed.

Examining the distribution of studies by country of origin identifies those areas of the world where the experience of parents as a couple is under researched. Areas of the world which did not produce any relevant studies include for example South America, Africa and large parts of Asia. Kumar (1994) reported that apart from a few notable exceptions, that research looking into postpartum depression is confined to developed countries predominately Western Europe and North America. It is possible that researchers in these areas of the world have looked at mothers' and fathers' experiences separately (Stern and Kruckman, 1983). Analysing the country of origin acknowledges that different countries have different welfare states which can then affect the health and well-being of their citizens. The financial and practical support that parents derive from the State will depend upon the political ideology of the country and the emphasis is placed upon supporting families within the country's welfare provision. This relates not only to financial support in terms of benefits paid to families, but also the employment legislation which allows parents to take maternity and paternity leave. Differences in the provision of healthcare in different countries may also impact upon the health and well-being of parents.

4.6. Conclusion

The systematic literature review highlights that the aim of the studies examining both mothers' and fathers' well-being was to examine the mental health outcomes in the postpartum. Of the 37 studies, only eight utilized instruments which also measured positive mental health outcomes. The majority of studies were, therefore, only measuring negative mental health outcomes. In doing so it was noted that the studies provided a wide range of results in terms of percentages of those with depressive symptoms; 6-39% of mothers and 2-25% of fathers. The studies seem to suggest therefore, that depression is more prevalent in mothers than fathers. Whilst Matthey et al. (2000) suggest that the incidence of clinically significant depression is lower in fathers than mothers they also suggest that there may be an element of under-reporting. The factors associated with the development of depression are discussed, for example Lane et al. (1997) and Skari et al. (2002). Therefore considering the

overall findings from the 42 studies, mothers experienced higher levels of depressive symptomology than fathers (for example, Mayes and Leckman 2007, Skari et al. 2002, Lu 2006, Matthey et al. 2000, Guedes and Canavarro, 2014). Guedes and Canavarro, 2014 reported that regardless of parental age, mothers experienced more distressing depression than fathers. Fathers, they suggested were more likely to experience anxiety.

The studies administered their instruments at many different time points, from antenatally and during the first few days postnatally through to twelve months postpartum. Whilst the results seemed to suggest that parents' mental health improved over time, only 11 of the 37 studies continued to twelve months postpartum. The majority of studies (25) did not follow the respondents beyond six months postpartum. In the UK it is usual for mothers to consider returning to work after six months; in doing so what implications does that have for the parents' health and well-being? Only one study surveyed the parents at nine months postpartum (Hock et al. 1995).

The mental health of parents is an important issue in terms of quality of life for both parents and their children and it is perhaps for this reason that much research concentrates upon the incidence and severity of mental health problems at this time. Generally the findings from the studies within the review suggest that the mental health of parents improves over the transitional period. In general too, the studies concluded that mothers are more likely than fathers to suffer from depression, anxiety and stress at this time. Whilst many of the studies compared the depression and anxiety scores between parents, few described the experiences of parents in terms of co-morbidity. The majority of instruments were offered to both parents but there were some exceptions, for example the Highs Scale, which looks specifically at euphoria in mothers, was offered to mothers only by Lane et al. (1997).

As the review illustrates, many self-reported instruments are available to health professionals and researchers to measure the probability that the mother in particular, but also the father, may be suffering from clinical depression, anxiety and stress. It is difficult to

present an absolute figure of the incidence of mental health problems in parents at a global level, in part due to the way in which the statistics are generated and partly as there is not one tool which is used exclusively by all countries to quantify the incidence of depression, stress or anxiety in parents. The variation in the incidence of depression reported across studies in terms of the percentages of mothers and fathers suffering from depression, particularly in the postpartum period, may therefore be as a result of the use of different instruments to measure mental health status. The time points at which the parents were surveyed, as well as the length of the study may have a bearing upon the results. There may be cultural variations, as noted previously the included studies came from Europe, Scandinavia, Australasia, USA and parts of Asia; there may be cultural differences in how mental health problems are perceived and whether mental health problems are stigmatized thus influencing how parents respond to questions.

The variation in measuring mental health status is therefore evident when examining the instruments used by the studies in the review. It is therefore difficult to make a true assessment of the prevalence of depression when comparing findings between studies that have employed different instruments to measure depression. Another variation relates to the timing of the data collection with a wide range of follow up points used by the studies, including data collection in the antenatal period as well as the postnatal period. Given that the findings from the studies imply that the incidence of depression in the population declines over time; it is difficult to compare results generated at different time points. However an advantage of longitudinal studies is that trends may be observed over time (Bryman, 2001) and whilst it is difficult to make direct comparisons, the studies suggest an overall improvement in mental health over the first year. The timing of the assessment of parents is of particular importance as is the length of the study. Whereas ‘postpartum blues’ is thought to be limited to the first week postpartum (Brockington, 1996), the development of postpartum depression may not present for a while after birth. Parents may be happy at any time and the selection of instruments and timing may reflect what the study is trying to

measure. As Ziebland (1994) describes it is not only the outcome of the study that is of interest but also the magnitude of change and in the case of parents it may be pertinent to assess parents up to the 12 month time point so that the real change in mental health status can be truly demonstrated.

The review illustrates the limited number of parent specific instruments used by the studies. Parents may be exposed to unique triggers for depression at this time and therefore generic instruments may be inappropriate for measuring specifically postnatal depression. Jenkinson and McGee (1998) suggest that the advantage of disease-specific instruments, in this case assessing for postnatal depression, over generic instruments is that they are particularly relevant to the participants, but also should be more sensitive to changes in their health status.

Perhaps one of the most important aspects of this review is that the majority of studies concentrate upon evaluating negative mental health outcomes. Where the instruments which measure both positive and negative mental health status were used, the emphasis was still upon quantifying the negative mental health status. The orientation of instruments towards negative mental health status resulted in the majority of studies reporting the negative sequelae of parent's transition to parenthood. As a consequence there was nominal coverage of levels of happiness or positive mental health. Studies made limited reference to levels of positive mental health; positive mental health appears to be described as an improvement away from poor mental health rather than a sense of positive well-being. The theme of these studies therefore is assessing parents primarily for depression, anxiety and stress in the antenatally and postnatally. This approach detracts from attempting to identify the positive health outcomes; those health assets that help individuals to achieve health and wellness (Rotegård et al., 2010). In identifying what might make an individual feel well, despite possible health problems, might inform social policy.

4.7. Summary

In this chapter the studies which explored the experiences of both mothers and fathers during the transition to parenthood were examined. The findings from these studies were described with reference to the instruments which were used to generate data to examine parents' mental health status. The majority of instruments employed were generic and were concerned with investigating psychological problems. Although some parent specific instruments were used these were in the minority. Transition to parenthood is a long process which has been described as taking anything up to two years (Xuereb et al. 2012) but perhaps the most critical time in terms of making adjustments to lifestyle happen within the first twelve months postpartum.

In chapter 5 the present study which examined the mental health of parents in the first year postpartum will be described. The study incorporated self-reported instruments which examined both positive and negative mental health outcomes as well as the physical health of parents. Of the five instruments employed, two were parent specific.

Chapter 5: Methods

5.0. Chapter overview

The purpose of this chapter is to define the aims of this study and describe the methods employed to generate data. The generation of data involved the self-administration of five questionnaires at five time points during the first twelve months after the birth of their infant. The rationale for the choice of instruments and time points will be described. Recruitment and high levels of attrition were a major issue for the study and the strategies used to manage these problems are also discussed.

5.1 Introduction

In the previous chapter it was highlighted that there is only a small body of work which has explored the experiences of both mothers and fathers during the transition to parenthood. Of all the instruments used to assess parents' mental health status the three most commonly used were concerned with identifying and quantifying mental illness within the sample (EDPS, Center for Epidemiological Studies-Depression and Spielberger State-Trait Anxiety Inventory). Only six of the 37 studies also incorporated an instrument that aimed to identify positive mental health status. The onus therefore appears to be identifying the incidence of mental health problems in parents. As a result little is known of parents' mental health; that is what makes them happy. Huppert (2009) argues that research which is pathology orientated uses measures which fail to distinguish between negative experience and positive experiences or in this case differentiate between mental illness and mental health. The incidence of positive mental health, therefore, appears to be under researched. Seligman et al. (2005) stress the importance of understanding how, why and under what conditions individual and communities flourish; with this information it might be possible to promote mental health. Further Seligman (2003) suggests that objective measures of good health do not actually represent levels of happiness and that it is important to consider an individual's subjective perception of how healthy they think that they are.

5.2. Aims of research

The aim of the research was to evaluate both the positive and negative aspects of postnatal health for mothers and their partners during the first year of their infant's life, using self-administered instruments. The intention was to consider what the impact of having a baby was upon the mental health and well-being of parents and how this may change over time. Importantly the study may quantify the incidence of postnatal depression in the sample, which can be compared to other studies, but also to provide information on aspects of mental health, for example parents' relationships with others and how this makes parents happy. By collecting data from parents over a period of a year, it was envisaged that after analysis, any changes in health status could be identified. The aims of the study therefore were:

1. Measure the impact of having a baby on the mental health and well-being of mothers and their partners during the first 12 months of having a baby.
2. Assess how the mental health and well-being of mothers and their partners changes over time specifically during the first 12 months of having a baby.

5.3. Study hypothesis

The hypothesis was that:

The mental health and well-being of mothers and fathers changes over the first twelve months of their infant's life.

The Null hypothesis was that:

There is no significant change in the mental health and well-being of mothers and fathers over the first year of their infant's life.

5.4. Study Design

Examining the characteristics and findings of the studies in the literature review has influenced the choice of instruments, frequency of data collection and duration of the present study. The majority of instruments used to generate data by the studies were generic instruments. Although the most commonly used instrument in the review was a parent specific tool, the EPDS, it only measures negative mental health status.

The systematic literature review highlighted that to assess the quality of life and health status of the parents, the studies had employed a longitudinal design whereby the respondents were offered a variety of person reported outcome measures to complete at particular points during a specified time period. The studies that were identified in the systematic literature review, not only employed a variety of instruments, but also surveyed their participants at a variety of different time points from pre-pregnancy through to twelve months postpartum. Examining the characteristics of the samples showed that whilst all of the 37 studies looked at the experiences of primigravida, only 21 also sampled multigravida women. The frequency of data collection and the duration of the study varied across the studies with only 11 of the 37 studies administering instruments up to twelve months postpartum.

5.4.1. Assessment time points

Whilst the majority of studies in the literature review did administer instruments to their participants in the antenatal period, the decision to survey the parents only in the postnatal period in this study was in part due to the time constraints of a PhD study. Also, the aim of this study was to investigate possible changes in health status over the first twelve months after having a baby, rather than comparing how parents felt antenatally with their health status postnatally.

Although only 11 of the 37 studies identified in the literature review assessed parents to the twelve months time point, for this study it was also considered important to survey the parents up to twelve months after the birth of their infant. In doing so, as much as possible of the parents' experience of having a baby can be quantified and analysed. During the first year of an infant's life there are many experiences to capture; changes and adaptations that parents have to make to their lives alongside the development of their baby into a toddler. Particularly for first time parents, caring for their infant involves learning new skills and dealing with changes to their circumstances. Parents may have to adapt to a new role and deal with increased responsibilities. For fathers, the return to work after paternity leave might bring with it more adjustment. Fathers may be pleased to return to an established role in the work place or they might rather be at home seeing their infant grow. In the UK fathers tend to return to work after a few weeks. The return to work for the fathers may also have an impact on how the mothers feel, particularly if the father is part of the mothers support framework. In the early postnatal period, mothers may be experiencing physical problems associated with labour and childbirth and the exacerbation of other health problems. Examining mothers' health during the first year may indicate whether health problems associated with pregnancy and childbirth are transient or whether mothers may experience longer term issues. In assessing parents at one month and three months postpartum it was anticipated that these initial experiences would be captured.

When considering further time points that might be important, assessing parents at six and nine months seemed to be appropriate. If mothers are contemplating returning to work, whilst the timing for their return may be dependent upon their employers, most likely mothers return to work at around the six to nine months. Returning to work for the mother may be another stressor, or it may be that mothers find returning to work beneficial not only financially but also mentally. During these later months there may also be more positive outcomes; the infant may be sleeping for longer periods, the daily routine may by now be perfected and possible problems such as breast feeding have been resolved. The infant too is

developing and is becoming more responsive to their parents. By surveying the parents at these five times during the first twelve months of their infant's life any changes in their health and well-being concurrent with changes in their child's development and their social circumstance might become apparent.

5.4.2. Instruments employed in the study

As previously discussed, the majority of instruments employed by the studies in the systematic literature review were assessing parents for negative mental health outcomes and in particular postnatal depression, with little consideration to the parents' experience of positive mental health outcomes. This emphasis upon employing instruments that reported negative mental health outcomes in the studies in the systematic review did not aid my decision of which instruments to include in this study, except to reinforce the need to include a balance of parent specific instruments with generic instruments and to include instruments that measured both positive and negative health outcomes. Considering parents' holistically also determined that it was important to be able to measure parents' social circumstance; particularly their relationships with their partner and others and whether these relationships made parents feel happy.

It was also important to include an instrument which measures the physical health and well-being of parents. As described, mothers' and to a lesser degree, fathers' physical health can be affected during the postnatal period, mothers from health problems associated with pregnancy and childbirth and for both the effect of sleep deprivation and stress on their lives. It therefore seemed very important to incorporate an instrument into the study which would examine parents' health outcomes, as physical health can impact upon mental health (WHO, 2004).

For this study therefore, five instruments were chosen which might provide an insight into parents' mental health, both positive and negative outcomes as well as their physical health

and social circumstances. Recently two new postnatal health instruments which aim to measure the self-perceived health status of both mothers and their male partners for the first year of their infant's life have been developed and validated in Sheffield (Jones et al., 2011). As well as the Sheffield Postnatal Health Instrument (M-PHI or F-PHI) parents were asked to also complete the Positive Affect Negative Affect Schedule (PANAS), the Edinburgh Postnatal Depression Scale (EPDS), Short form 12 (SF-12) and the Warwick-Edinburgh Mental Well-being Scale (WEMWBS). These five instruments are described in more detail below.

5.4.2.1. Sheffield Postnatal Health Instruments (M-PHI and F-PHI)

The instruments available to specifically assess the health of parents in the postnatal period tend to concentrate upon the negative sequelae, particularly the development of postnatal depression and problems with the acquisition of new roles and responsibilities. Whilst it is important to acknowledge the significance of these instruments in the diagnosis and treatment of postnatal depression, they do not explore the positive aspects associated with parenting. The Postnatal Health Instrument for Mothers (M-PHI) and the Postnatal Health Instrument for Partners (F-PHI) however were designed to measure both the positive and negative experiences of both the mothers and also their partners during the first year after the birth of their infant/s. The two instruments consider various dimensions of self-perceived mental and physical health that are considered to be important to mothers and their partners. The development of the instruments involved the participation of both mothers and their partners so as to capture the aspects pertinent to this particular population (Jones et al., 2011). The two instruments were designed to be used independently; each composed of questions designed specifically to evaluate the experiences of either the mother or her partner. The instruments may be used as a 'stand-alone' questionnaire providing a 'snapshot' picture of the individual's experiences, or may be administered at several time points

over the first year, thereby allowing clinicians to monitor clinical changes in an individual's health and well-being as necessary.

The mother's version of the Sheffield Postnatal Health Instrument consists of three parts. Part One presents the respondent with 29 core questions. These questions are self-rated using a five-point Likert scale with the choice of response being, 'never', 'rarely', 'sometimes', 'often' and 'always'. A numerical rating is assigned to each response. These 29 core questions form six domains; each domain examines a particular aspect of the mother's postnatal experience and are described as; 'relationship with baby', 'control and powerlessness', 'sleep', 'emotional well-being', 'mood' and 'social support'. The resulting rating for each domain is therefore the sum of the results for each question within that domain.

Part Two consists of five modules which concentrate upon key aspects of the mother's experience. These are; 'physical health', 'relationship with extended family', 'sexual relationship', 'infant feeding' and 'relationship with partner'. The questions in these modules are also self-rated using the same Likert scale described as for Part One. In Part One and Part Two the mothers are asked to complete the questionnaires with reference to how they felt in the previous four weeks only.

Part Three, for both of the Sheffield Postnatal Health instruments, generates demographic information about the participants. The parents are both asked to state their date of birth, their infant's date of birth and the date that they completed that set of questionnaires. They are also asked if they have other children and if so their ages. The parents are asked to define their ethnic origin, selecting from a choice of responses. To ascertain their level of educational attainment the parents are asked about their educational qualifications, again providing a selection of responses for them to choose from. The parents are asked about

their current living situation as well as their occupation. Those who are living with their partner are asked to describe their partner's occupation.

The father's questionnaire is shorter than the mother's questionnaire and only consists of two parts. Part One has 27 core questions examining the father's health and well-being during the first year after their partners have had a baby. These questions form six domains. These domains are described as; 'role as a father', 'support from partner', 'support from friends', 'relationship with partner', 'mood' and 'relationship with baby'. The father's 27 core questions were also self-rated using the same Likert scale described as for Part One of the mothers' questionnaire. Part Two of the father's questionnaire contains the demographic questions as described above, except the response to 'what is your current living situation' where the responses are gender specific. The accumulated scores for each domain of the M-PHI and the F-PHI range on a scale from zero to 100, where zero is the best possible health status and 100 is the worst possible health status as measured by the questionnaire.

Table 5.1. to show constituent parts of the Sheffield Postnatal Health Instrument (M-PHI and F-PHI)

M-PHI	Part 1	29 questions creating 6 domains	<ol style="list-style-type: none"> 1. Relationship with baby 2. Control and powerlessness 3. Sleep 4. Emotional well-being 5. Mood 6. Social support 	Likert scale Accumulated scores with a range of 0-100 Zero= best health, 100= worst health
	Part 2	5 modules	<ol style="list-style-type: none"> A. Physical health B. Relationship to extended family C. Sexual relationship D. Infant feeding E. Relationship with partner 	Likert scale Accumulated scores with a range 0-100 Zero= best health, 100= worst health
	General details		<ul style="list-style-type: none"> • Date of birth • Infant's date of birth • Today's date • Number of other children • Ethnic origin • Highest level of educational qualification • Current living situation • Main occupation • Partner's main occupation 	Demographic information
F-PHI	Part 1	27 questions creating 6 domains	<ol style="list-style-type: none"> 1. Role as father 2. Support from partner 3. Support from friends 4. Relationship with partner 5. Mood 6. Relationship with baby 	Likert scale Accumulated scores range 0-100
	General details		<ul style="list-style-type: none"> • Date of birth • Infant's date of birth • Today's date • Number of other children • Ethnic origin • Highest level of educational qualification • Current living situation • Main occupation • Partner's main occupation 	Demographic information

5.4.2.2. Positive and Negative Affect Schedule (PANAS)

This is a generic self-reported instrument which was developed by Watson, Clark and Tellegen (1988). It is a self-reported measure of the two primary dimensions of mood, that is Positive Affect (PA) and Negative Affect (NA) which are regarded as distinct and independent concepts (Tennant et al., 2007). PANAS consists of 20 single word items that describe an emotion; ten reflecting PA and ten NA. Each item is scored on a five-point scale which ranges from 'very slightly or not at all' represented by a score of one, to a score of five which represents 'extremely'. Watson et al. (1988) described PA as reflecting the extent to which an individual feels alert, active and enthusiastic. A high PA, they suggest, is a state of high energy, pleasurable engagement and full concentration whereas a low PA reflects lethargy and sadness. The NA scale in contrast, engages with a broad range of aversive affects including fear, guilt, contempt and anger, a high NA therefore indicates subjective distress and unpleasant engagement, a low NA reflects a state of serenity and calm (Watson et al. 1988, Crawford and Henry, 2004).

5.4.2.3. Edinburgh Postnatal Depression Scale (EPDS)

This is a ten item parent-specific self-reported scale employed to screen for postnatal depression. This has been shown to be valid for men to use (Condon et al., 2004). It was originally designed to assess depressive mood in postnatal women and has been validated for use in the UK. It is an instrument that allows the individual to self-rate their feelings over the preceding seven days. It was developed by Cox et al (1987) and was designed to be acceptable to all women, particularly to those who do not consider that they may be unwell. Cox and Holden (2003) reported that the instrument has demonstrated acceptability to women from a range of geographical and sociological areas.

As well as having satisfactory reliability and validity, Cox et al. (1987) suggest that the scale is sensitive to changes in the severity of depression over time. Each item is scored by the individual on a four-point scale of zero to three, the total score therefore ranging from zero

to 30. Cox et al. (1987) suggested an operationalized cut-off score of 12/13 and above being indicative of depressive symptomology of varying severity. However as described below, this cut-off figure can be adjusted as seen appropriate, and that if the instrument was used routinely by primary care workers that it might be more appropriate to lower the threshold to 9/10. It is stressed by the authors that the EPDS questionnaire was not meant to be a substitute for a clinical examination. The higher the score therefore reflects the increased levels of depression experienced by the respondent. Aitken and Jacobson (1997) suggest that the EPDS has a high specificity and sensitivity for identifying possible cases of postnatal depression.

It was originally designed to assess depressive mood in postnatal women and has been validated for use in the UK. Since then it has also been validated for use with antenatal women and men (Cox et al., 1996). Day (1999) describes that whilst many tools exist, the EPDS is the instrument that has been adopted as a specific measure of postnatal depression in women. Beck (2001), however, suggests that although this is the only tool specifically designed to identify mood disorders that it is not written in the context of new mothers. It has been suggested by Shakespeare et al. (2003) from their study, that routine screening with the EPDS was less than acceptable for the majority of women. They describe that for some women screening with the EPDS was intrusive, particularly in those women who did not feel unwell. Further, they suggest that confronting a mother with a tool to screen for a stigmatizing illness was perceived as threatening. They cite examples of women who deliberately lied when completing the questionnaire to show that there was nothing wrong. Shakespeare et al. (2003) suggested that additional training for health professionals might improve the process of screening by avoiding intrusion and stigma for mothers.

As it was envisaged that this tool would be used in the community, it was also important that the scale could be easily computed and interpreted by the health worker irrespective of their specialist knowledge of psychiatry (Cox et al., 1987). It was also recognized that the time

taken to complete the scale must also be acceptable to the respondent and health worker and not appear to be time consuming. Therefore, it only takes 5 minutes to complete and it can be administered by health professionals that are not doctors. In the UK the EPDS is routinely administered by Health Visitors and Community Midwives during both the antenatal and postnatal periods. It can be administered at any time point; the study by Jardri et al. (2006) confirmed that it was valid to use the tool between the third and fifth day postnatally with a positivity threshold lowered to 9.5/30. The tool can also be administered again during the postnatal period as required.

The EPDS has been translated into other languages and validated for use in different cultures (Cox and Holden, 2003). For example the study by Uwakwe (2003) showed that the EPDS can be used to distinguish between depressed and non-depressed Nigerian postnatal women. Other studies have found that whilst the EPDS is validated for use in different cultures it has been suggested that the cut-off point may have to be adjusted, for example Yamashita (2000) suggested an optimal cut-off of 8/9 in Japanese women and 9/10 in Chinese women (Lee et al., 1998). Leonardou et al. (2009) suggested a cut-off point of 11/12 for use with Greek women. Hanlon et al. (2008) however found that the EPDS was not a valid tool to use to measure perinatal common mental disorders in the rural Ethiopia, suggesting that the EPDS was poorly understood and that it was difficult to identify an optimal cut-off point. Barnett et al. (1999) studied whether Vietnamese and Arabic translations of the EPDS were culturally appropriate. While they suggest that these translations are acceptable to women and appear to be suitable screening tool, they also describe issues around cultural differences in that some cultures do not have a word for depression and that there may be stigma attached to mental illness which may influence how individuals complete the questionnaire. These issues aside, the EPDS still remains universally accepted by health practitioners as the tool of choice for women in the UK to screen for possible postnatal depression and is therefore an important inclusion in the study.

5.4.2.4. The 12-item Short Form Health Survey (SF-12)

The SF-12 contains 12 items measuring generic quality of life status. It was derived from the Short Form-36 Health Survey, producing a shorter more practical form to measure self-reported general mental and physical health status of adults (Resnick and Parker, 2001). It was developed by Ware, Kosinski and Keller (1996) who recognized that the Short Form-36 may be too long to include in large scale screening. The SF-12 is available translated into the five main non-English languages spoken in the United States (Ware et al., 1996). The SF-12 has been used to assess the health status particularly for populations who are suffering from particular health conditions, for example congestive cardiac disease and depression (Resnick and Parker, 2001). It is a self-administered questionnaire which should take only a few minutes to complete. An algorithm is used to generate two scores or components; physical component summary (PCS) and a mental component summary (MCS) (Ware, Kosinski and Keller, 1996). The possible scores range from 0-100; where a score greater than 50 indicates better mental or physical health and conversely a score of less than 50 indicates worse health.

5.4.2.5. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

This is a generic self-reported questionnaire which provides positive statements about feelings and thoughts; each statement is weighted. These responses collectively generate one score which ranges between 14 and 70. It was developed at the Universities of Warwick and Edinburgh to measure the mental well-being of adults in the UK. The aim of developing this instrument was in an effort to capture a wide conception of well-being, including psychological functioning, affective-emotional aspects as well as cognitive-evaluative dimensions (Tennant et al., 2007). The aim of the instrument therefore is to support mental health promotion initiatives by focussing on measuring positive mental well-being. Stewart-Brown et al. (2009) suggest that this instrument differs from others in that it only covers positive aspects of mental health. It presents fourteen positively phrased statements with five

categories of response from ‘none of the time’ scoring one, to ‘all of the time’ scoring 5, a higher score therefore suggests a higher level of mental health.

5.4.2.6. Summary of Instruments

In summary, the study employed five instruments, two parent specific (S-PHI and the EPDS) and three generic instruments (WEMWBS, PANAS and SF-12). The S-PHI and PANAS both measure positive and negative mental health outcomes. The EPDS however measures only negative mental health outcomes; this perhaps contrasts with the WEMWBS which endeavours to measure positive mental health. The S-PHI and SF-12 both examine the physical health status of the respondents. The choice of instruments is fundamental to generating data that examines the physical health and well-being of parents of the course of the first year postpartum.

Instrument	Number of items	Scoring ranges	Meaning of high/low scores
S-PHI	M-PHI: Part 1= 6 domains Part 2= 5 modules F-PHI: Part 1=6 domains Demographic questions	Each item scored on likert scale. Items form domains. Potential score of 0-100 for each domain	Zero equates to best health outcome. A score of 100 equates to worse health outcome
PANAS	20 single worded items. Two mood scales: 10 items measure positive affect and 10 items measure negative affect.	Each item scored from 1-5 on likert scale. Therefore possible score of 10 to 50 for both Positive and Negative Affect domains.	High PA indicates state of high energy, pleasurable engagement and full concentration. Low PA indicates sadness and lethargy. High NA indicates subjective distress and unpleasant engagement. Low NA indicates serenity and calm. Therefore important to consider both PA and NA.
EPDS	10 negatively worded items	Each item on a four point scale scoring 0-3. Therefore total score 0-30.	High score indicates depressive symptoms. Variable operationalized cut-off figure which indicates possible depressive symptomology. Cox and Holden (2003) suggested figure of 12/13 for mothers and ≥ 10 for fathers.
Short Form 12	12 items to create 2 scales representing mental and physical functioning and overall health. Physical Component (PCS) and Mental Component Scale (MCS)	Questions combined, scored and weighted. Scores 0-100	> 50 indicates better mental or physical health < 50 indicates worse mental or physical health
WEMWBS	14 positively worded items	Each item scored on a scale of 1-5. Therefore making total possible score of 14-70.	A higher score therefore suggests a higher level of mental health.

Table 5.2. to describe instruments used in study

5.5. Statistical Analysis

This section describes the statistical tests utilized in the study. The data were analysed using SPSS Statistics for Windows Version 21 (IBM Corp., Armonk, NY).

It was noted that there was a high level of attrition across the study. Unfortunately parents were not consistent in completing the questionnaires sequentially. Some would come back to the study after missing a time point. As it was difficult to follow the progress of parents across the study the parents were assigned to a subset. For each of the five instruments the subset represented the number of sequential instruments that were completed. This had the benefit of producing consistent numbers across time so that any changes related to the same group of people could be analysed.

5.5.1. Sheffield Postnatal Health Instrument (M-PHI and F-PHI)

As described, the M-PHI consists of three parts; the core questions forming six domains, the five modules considering the mother's experience and finally demographic questions. The F-PHI consists of 27 questions forming six domains and a section with demographic questions. For both the M-PHI and the F-PHI, the results from each domain were analysed separately. The standardized questionnaires were coded following the scoring systems and summary statistics for each domain were generated. The mean scores for each domain were plotted at each of the five time points and each of the subsets of parents to illustrate patterns over time and allow comparisons to be made of the profile of participants who completed all time points and those who had missing data. Methods of summary measures were also used to identify changes over time along with the calculation of effect sizes (Matthews et al., 1990). A summary measure for the follow up time points was therefore produced. Paired sample t-tests were performed for all the domain data for subset 5 (those parents who had completed all five time points for each individual instrument) to calculate the mean difference between baseline and the average follow-up scores as the most appropriate method to measure the changes over time.

Within the S-PHI mothers and fathers were asked identical demographic questions. The age of the participant was noted and the mean and distribution presented. To ascertain whether the age of the mother affects their participation an independent samples t-test was performed. The parents were also asked about the number of other children they had and the distribution at each time point was noted. The parents were asked to describe their ethnic origin, their level of educational qualifications and their current living situation and this information was quantified for each time point.

It was important to compare the demographic characteristics of the respondents and the non-respondents in an effort to identify the differences and to try and assess whether it was these differences that had an impact upon recruitment rates. For example, whilst mothers were not directly asked about the mode of birth of their infant, this information was collected through PROTUS, the Jessop Wing Hospital database. The mode of birth of the mothers who took part and those who did not was examined using a Chi-squared test to examine if there was a relationship between mode of birth and mother's participation and how likely that the observed results are due to chance. A Chi-squared test was also performed when looking at the incidence of multiple births in participating mothers and non-participating mothers to examine if having a multiple birth influenced participation.

The parents were asked to state their occupation and this information was categorized using a classification based upon the Standard Occupation Classification from the Office for National Statistics. However for the purposes of this study, other categories were required to take into account the characteristics of this particular population. For example, whilst not recognized as an occupation, the role of parent and student were pertinent inclusions into the classification scheme. The distribution of parents within this classification was also noted for each time point and displayed graphically.

5.5.2. PANAS

Summary statistics were generated for both the PA and NA values for both mothers and fathers for all five time points for all five subsets. The mean scores were plotted for each time point. Paired samples t-tests were performed to compare baseline (one month score) to average follow up score to detect changes over time for subset 5. Using Pearson's Correlation coefficient and scatterplots the association between mothers' and fathers' scores at baseline and twelve months were investigated.

5.5.3. EPDS

Summary statistics were generated for both mothers and fathers for all five time points for all subsets. The mean values were plotted graphically to illustrate any change. The EPDS uses an operationalized cut-off score which is indicative of depressive symptoms. For this study the cut-off figure for mothers was ≥ 13 and ≥ 10 for fathers. These cut –off figures were decided upon with reference to work by Cox and Holden (2003) who recommended these cut-off figures as being appropriate. The mean scores were examined to identify the percentage of mothers and fathers who scored equal to or greater than the operationalized cut-off figure. These mean figures were also displayed graphically.

The EPDS scores were first analysed as a continuous variable with paired sample t-tests used to compare the baseline with the average follow-up scores for subset 5. The analysis was then repeated but using the binary categorisation of participants from the EPDS cut-offs. This analysis used McNemar's test to compare the above and below cut-off at baseline and twelve months for subset 5. McNemar's tests were performed to compare the mean scores for mothers in subset 5 at baseline and at twelve months. This was repeated using the mean scores for fathers in subset 5 at baseline and at twelve months. The final analysis compared scores between couples to establish whether co-morbidity existed between parents. McNemar's tests were used to compare mothers' and fathers' scores at baseline and again at twelve months postpartum using the respective EPDS cut-off figures. This analysis was

repeated for the continuous scores using Pearson correlation coefficients and plotting the relationship using scatterplots.

5.5.4. SF-12

The SF-12 consists of two components; physical and mental. Summary statistics were generated for both components for both mothers and fathers for all five time points for all subsets. The mean values were plotted to show potential change over time. Paired sample t-tests were performed using the baseline mean and the average follow-up mean for both mothers and fathers for subset 5. Pearson's Correlation analysis was also performed and the results illustrated using scatterplots.

5.5.5. WEMWBS

Summary statistics were generated for both mothers and fathers for all five time points. This data was presented in graphical and table format. Pearson's Correlation analysis was also performed and the results illustrated using scatterplots.

5.6. Ethical issues

Permission for this study was granted by the North Sheffield Ethics Committee. The study met the University's standards set out regarding ethical research and conduct as well as achieving the appropriate Research Ethics Committee approval to protect the participants (appendix 3). All the information that was collected during the course of the study was kept strictly confidential. All data was stored on NHS or University of Sheffield computers which are password protected and located in restricted access offices. The data was coded so that the participants could not be identified when the study results are published. The study data will be stored securely for a five year period after completion of the study and then formally destroyed. Before the study commenced I was awarded an Honorary Contract to allow me access to the Jessop Wing Hospital and to their clients. I also had to gain access to the Jessop Wing Hospital database through the IT department.

5.7. Sample frame

The sample was systematically selected from a cohort of women who delivered a live infant/s at the Jessop Wing Hospital between March 1st 2008 and October 31st 2009. A sample of about 200 women and their partners was considered appropriate to achieve a figure of 150 completing the study at the 12 months postpartum time point. Research in Australia by Condon, et al. (2004) used a similar methodology. To assess the mental health and well-being of men postnatally, they used self-reported instruments which the participants completed at intervals during the first year. They also used the PANAS as was proposed for this current study. Using the calculation below the sample size of 200 participants at baseline was generated.

In the Condon et al. (2004) study using PANAS their results showed:

Mean (SD) Positive Affect at baseline was 35.58 (7.03)

Mean (SD) Positive Affect at 12 months was 35.42 (7.06) NS

Mean (SD) Negative Affect at baseline was 14.78 (5.54)

Mean (SD) Negative Affect at 12 months was 13.42 (3.70) $p < .05$

Therefore to:-

1) Estimate mean/proportion

If the primary outcome is the mean PANAS Score at baseline, then to estimate this outcome with a 95% CI limits of + or -1 point, around this mean assuming an SD of 7 points, a sample size of approximately 200 participants was required at baseline.

2) To look at change over time

Allowing for 25% non-response rate at 12 months, then a sample size of 200 (baseline and 12 month responders) allowed a minimum standardized effect size of 0.27 to be detected with 90% power and two-sided 5% significance.

However, as the study has progressed it became apparent that there would be approximately a non-response rate at 12 months of 85%. This therefore necessitated revising the original recruitment strategy which will be discussed below.

5.8. Recruitment

5.8.1. Initial approach to recruitment

Initially, it was envisaged that the necessary participation figure of 200 women and their partners would be achieved through recruitment of mothers during clinic appointments and parentcraft classes which are held in the third trimester of pregnancy. It was proposed that parents would be contacted during the antenatal period as at this time there would be the opportunity to discuss the study with the women and their partners before potentially the first set of questionnaires were delivered to them at one month postpartum.

Women and their partners, preferably in the third trimester of pregnancy, were informed about the study whilst attending antenatal clinic appointments. Recruiting during antenatal appointments however was problematic. During clinic appointments women would often be preoccupied with listening out for the clinic staff calling for them or too busy with the clinic procedure to be very interested in taking in details about the study. Women were often busy with their other children that they had brought with them or understandably more concerned about the outcome of their visit to be interested in talking about taking part in a study. Partners often did not attend these appointments so it was difficult to discuss the study with them. Whilst the appropriate time to talk to individuals was considered to be in the third trimester, the women attending clinic could be at any stage of their pregnancy and so may have changed their mind by the time they had had their baby.

It was intended that the partners would be recruited through the mothers. This was particularly pertinent for those women attending parentcraft classes on their own. This

approach was to ensure that the women would be happy for her partner also to take part in the study. Issues concerning confidentiality and anonymity were addressed in the information sheet given out to the women, which also described the purpose of the study and the potential involvement of their partners (Appendix 6). Assurances about the right to withdraw from the study at any time were again made. All participants were advised of supervisory contact details as well as contact details if they wished to complain about the study.

The second opportunity to recruit women was during antenatal parentcraft classes which were held for women and their partners at the Jessop Wing Hospital during the third trimester of their pregnancy. As the partners are invited to these classes it was felt that this would be an opportunity at this stage not only to provide information about the study to the women, but also to invite the partners to take part and to answer any questions relating to the study and their participation. To gain access to parentcraft classes, I approached the lead midwives for parentcraft classes and described to them the aims of the study and the method of data collection. I then asked their permission to attend their classes to make a short presentation to the women and their partners. The midwives gave their permission and full support.

The parents are offered four or five weeks of parentcraft classes during the third trimester of their pregnancy. During this time I made a short oral presentation once to each cohort of classes. Following the presentation I provided the women and their partners with an information sheet and consent form (appendix 6 and 7) with a stamped addressed envelope addressed to Dr. G.L. Jones. Women and their partners, both in clinic and at classes, were asked to return the consent form as soon as possible if they wished to be included in the study. Participants were consented for the expected duration of the study which was for a 12 month period. Assurances about the right to withdraw without prejudice was affirmed during

the presentation but also in the information sheet provided. Issues surrounding anonymity and confidentiality were also addressed during the presentation.

However, by the very nature of parentcraft classes there were only 10 to 13 couples attending over a four or five week period potentially who may have been recruited to the study. Unfortunately of those couples there was only approximately a 10% recruitment rate. Initially I only attended the second week of the parentcraft sessions to present the study to the women and their partners but when it became obvious that the recruitment was poor then this was increased to two attendances during the course in an effort to improve recruitment. This unfortunately had little apparent success. This method of recruitment was therefore proving to be time consuming and was not yielding the levels of recruitment necessary.

Following the return of the signed consent form, the database at the Jessop Wing (PROTOS) was checked periodically to see if the women who had consented to take part had delivered their babies so that the first questionnaires could be sent out. It became clear however that the non-response rate was a significant problem particularly as it was much higher than the 25% anticipated. It was also realized that there were women and their partners who although had completed the first set of questionnaires, did not respond to the following set of questionnaires sent out to them. As a consequence these parents had no further involvement in the study.

Another possible problem from recruiting parents in the antenatal period was that there could be a significant delay between parents returning their signed consent forms and then receiving the first set of questionnaires at one month postpartum and the subsequent return of the completed questionnaires. This was problematic particularly when working within the time constraint of a PhD study.

With a possible high attrition rate therefore, the possibility was that there would be insufficient participants taking part at the end of the study. It was recognized that to recruit

the desired figure of 200 participants by this method would necessitate more time than available to a PhD study. It was also acknowledged that this initial population was mostly derived from parentcraft classes which tended to appeal mainly to the first time parents and therefore created a potential bias.

There was also the issue that some of the women and their partners who had given consent had either forgotten their intention to take part in the study or had changed their minds by time they had given birth and received the first set of questionnaires one month postnatally. Another consideration concerning the initial methodology, as mentioned, was that women attending parentcraft classes tend to be primigravida, that is first-time parents, therefore creating a possible bias. The results would therefore be skewed more towards the experience of first time mothers rather than those who already had had children. It was anticipated that the mothers who had other children would be recruited at clinic attendances; unfortunately as the recruitment here was also poor this did not happen.

The study was well supported by the hospital staff, particularly from the lead midwife in antenatal clinic and the lead parentcraft class midwives but also from other midwives who kindly facilitated access to potential participants. The intention was not to disrupt their work schedule or inconvenience them in any way. Their support for the study did give the study a professional credibility.

5.8.2. Main approach to recruitment

With the constraints of postgraduate study it was therefore necessary to consider other forms of recruitment to boost the response rate, particularly when it became apparent that the recruitment rate during the antenatal period was only about 10-12% of the potential participants. Therefore to improve recruitment it was proposed that mothers and their partners would be recruited by post after the birth of their infant/s. A substantial amendment

to the protocol was submitted to the North Sheffield Ethics Committee (Appendix 8) suggesting that a postal survey be conducted in an effort to contact a larger number of women. This method was subsequently given approval by the North Sheffield Ethics Committee as a substantial amendment to the original protocol.

The suggested method involved contacting mothers, who had given birth at the Jessop Wing Hospital, during the first month after their baby was born. To generate the names and addresses of the women who had recently given birth at the Jessop Wing the PROTOS database was accessed. This database provides all the information regarding the birth and initial condition of the mother and infant/s. One month postpartum was chosen as this was the baseline already established in the protocol, but also as it allowed time for the PROTOS database to be accessed and then for the questionnaires to be sent out and received by the parents in time for them to complete and return when their infant was one month old. The inclusion and exclusion criteria are discussed below.

This proposed method of accessing potential participants via the Jessop Wing database and sending questionnaires to them in the post had been used during a previous study during which the Postnatal Health Questionnaire was developed. It was anticipated that the advantages of conducting a postal survey were to 1) reach a larger number of parents in a short period of time, thus increasing the number of study participants and 2) it was also hoped that this approach was more likely to capture the experiences of parents adding to their existing family unit rather than just first time parents who predominately attended antenatal classes. However, the main disadvantage of this method was that it was very time consuming and labour intensive in terms of preparing the sets of questionnaires and generating the dataset and the expense as a result of sending out questionnaires to a large number of potential participants. Therefore to minimize the financial impact of the cost of the postage to the researcher a Royal Mail 'Freepost' registration was set up in 2010. Further to this, an application was made to the Sheffield Teaching Hospitals (NHS Foundation

Trust) Obstetrics, Gynaecology and Neonatology Small Grants Scheme in 2010 (Appendix 13). This is a scheme for funding research projects and an award was secured to cover the cost of postage.

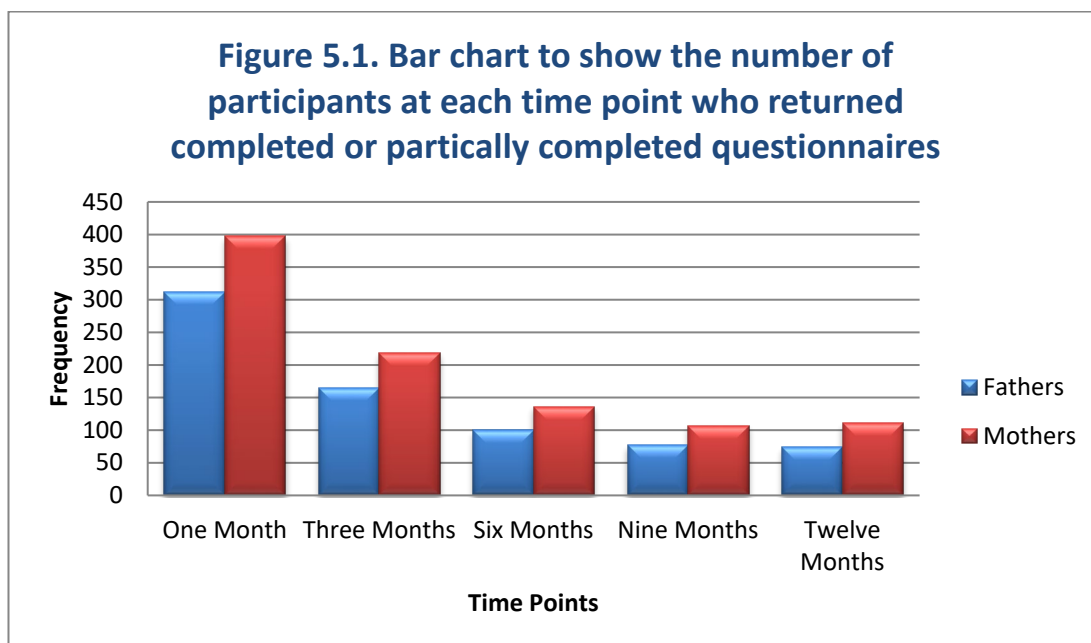
The postal method of recruitment was carried out in two phases. Phase one involved sending out invitation letters, an information sheet and two set of questionnaires (one for mothers and one for partners) to 1009 mothers commencing in December 2008. This generated a 13% response rate. It became clear that it was necessary to use this postal method again to generate sufficient participants. A further 1012 mothers were therefore contacted up to October 2009. A second amendment was applied for in July 2010 suggesting a one –off survey of a sample of mothers and fathers at twelve months to increase the sample size. Fortunately it became apparent that the necessary sample size would be achieved so this was not carried out. The postal survey was completed in October 2010 with the twelve month follow up. The postal survey produced an initial response rate of 15% from a potential 4042 women and their partners. Although the initial response rate appeared to have improved, the issue of securing an adequate response rate at the 12 month point remained. In total therefore 2021 women were approached to take part by this postal method. This therefore equated to a possible 4042 participants (i.e. women and their partners). The sample size required at 12 months follow up was 150, the total response at 12 months was 179.

5.9. Response rates

It was therefore important to monitor the response rates throughout the study. The details of the response are illustrated below.

Table 5.3. Shows the total number of mothers and the total number of fathers who returned completed or partially completed questionnaires at each time point

TIME POINTS	MOTHERS	FATHERS	TOTALS
One month	398	312	710
Three months	219	165	384
Six months	136	100	236
Nine months	107	77	184
Twelve months	112	74	186
TOTALS	972	728	1700



The total response figure at one month was 710; this figure fell to 186 by twelve months postpartum. Both Figure 5.1 and Table 5.1 show that there were more mothers returning the questionnaires at each time point compared with fathers. To achieve statistical significance the study required a minimum response of 150 participants at baseline and also at twelve

months. The sample size was reached with 112 mothers and 74 fathers completing questionnaires at twelve months postpartum.

5.10. Inclusion and exclusion criteria

Women who attended the parentcraft classes between May 2008 and February 2009 and mothers who delivered a live infant at the Jessop Wing Hospital, Sheffield between December 2008 and October 2009 were approached for inclusion in the study. However, mothers were excluded if they required transfer to Intensive Care or High Dependency Unit as the outcome of their admission to these units was not available. The Ethics Committee also stipulated that those mothers whose babies had required transfer to the Neonatal Intensive Care Unit would be excluded. Again this was because the information regarding the outcome of the infant being admitted to the Neonatal Intensive Care Unit would not be available to the study. Women whose pregnancy resulted in neonatal loss were not included in the study.

Whilst every effort would be made to be sensitive to possible misfortune that the parents might experience, it was also acknowledged that during the twelve month postnatal period there was always a very small risk of parents suffering from loss of their infant or indeed the death of the mother during this time. This problem was considered and it was decided that in the event of the death of the mother or infant that the Consultant Obstetrician would write a letter of condolence to the parents. Participants who were unable to read and write in English were not included in the study; in part as there were not the finances available for translation services. Children under 16 years of age were also excluded as stipulated by the North Sheffield Ethics Committee.

The partners were generally recruited through the mothers. Whilst it was assumed that the partners of the women were likely to be the father of the child it was not established and was

not a criterion for exclusion. The partners of gay mothers were unlikely to take part as the partner's questionnaire was specifically designed for men to complete. It was not stipulated that the parents were to cohabit. The breakdown of the relationship between the parents was not considered an obstacle to the parents completing the questionnaires unless the parents felt that they could no longer continue in the study.

5.11. Data collection

This longitudinal cohort study of both mothers and their partners was the first study to employ the M-PHI and F-PHI instruments developed in Sheffield (Jones et al. 2011). The mothers and their partners were asked to complete the appropriate Postnatal Health Instrument questionnaire as well as four other questionnaires at intervals over the first postnatal year; at one month (baseline) and then at three, six, nine and 12 months postnatally.

The postal survey therefore involved accessing the PROTOS database and selecting mothers who met the criteria. In an effort to optimize the returns, these mothers were sent a hand written personally addressed envelope containing a set of self-reported instruments; one set for herself and one to hand to her partner, a hand written personally addressed introductory letter with Mr Dilly Anumba's printed signature, an information sheet (appendix 10 and 11) and a stamped return envelope addressed to Dr. G.L. Jones. The letter explained that if the woman did not have a partner that it would still be appreciated if she would complete her set of self-reported instruments. The information sheet, as before, provided details of the study; assurances about ethical approval, ability to withdraw from the study without prejudice and the complaints procedure as well as contact details for project. The mothers and their partners were invited to complete the relevant set of self-reported instruments at five time points during the first year after the birth of their baby. Both parents were given their own set of self-reported instruments which they were asked to complete independently and not to

compare their answers with their partners. Each page of the instruments carried a unique numerical identifier; no personal identification was attributed to the documents by the researcher. In this instance consent was therefore presumed by the return of the completed questionnaires at one month postpartum.

It was anticipated that the questionnaires would take 30 minutes to complete. With each subsequent set of instruments the participants received a hand written note of thanks for their participation and in anticipation for their continued support for the study.

5.12. Discussion

This study examined the mental health and well-being of mothers and their partners during the first postnatal year and attempted to examine the experiences that are important to parents and how these impact upon their sense of well-being. The use of the Sheffield Postnatal Health Instrument for Mothers (M-PHI) and the Postnatal Health Instrument for Partners (F-PHI), as well as four other established instruments, has enabled the question of what is the impact of having a baby on the mental health and well-being of mothers and their partners and how does this change over time, specifically during the first 12 months of having a baby.

Whilst many instruments concentrate upon the negative aspects of parenting, it is important to also consider the positive aspects. The Sheffield Postnatal Health Instrument for Mothers (M-PHI) and the Postnatal Health Instrument for Partners (F-PHI) considers both positive and negative outcomes associated with parenting. Incorporating the four other instruments contributes to the generation of data and allows comparisons to be made of the results produced. The EPDS is acknowledged as the gold standard in terms of identifying depressive symptoms in both men and women specifically in the postnatal period although it is noted that it may be used in the antenatal period. It is only the EPDS which has been designed specifically to measure mental health in postnatal women. Thio et al. (2006) note that over two decades that the EPDS has produced good results even in postal surveys. The EPDS is meant as a diagnostic aid and not to replace clinical examination and whilst an operationalized cut-off score of 12/13 and above may be indicative of depressive symptomology of varying severity this cut-off score is flexible according to the population. It is useful for measuring negative mental health which is perhaps in contrast with the WEMWEBS which endeavours to measure positive mental health. PANAS considers emotions both negative and positive. Apart from the Sheffield Postnatal Health Instrument

the SF-12 is the only instrument employed which considers physical as well as mental health.

The advantage of employing a longitudinal design is to be able to identify any changes to well-being of the parents during the first twelve months of their infant's life. In doing so it may be possible to identify trends in parent's mental and physical health over this period of time. The benefits of a self-reported instrument are that the participant's response is not being influenced by an interviewer and that the instrument can be completed in a short period of time by the participant, then repeated again at another time point as required.

It is acknowledged that an inherent problem of longitudinal studies is in retaining the participant to the end of the study (Bryman, 2001, Streiner and Norman, 1989). The study has sustained not only a poor recruitment but also an attrition rate which exceeded the anticipated figure. Perhaps it is important to consider the costs versus benefits for these parents to take part in the study. While it is difficult to assess the reasons for non-participation, it may be simply that this group are too busy following the birth to have the time to complete the questionnaires. This is a population who have other commitments and responsibilities and time may be at a premium. At one month postpartum these women may be too tired or unwell to consider taking part at that time but may have wished to take part at a later date. Parents may have been put off by the length of the questionnaires and the time required completing them. Parents may have not have envisaged any personal benefits to completing the questionnaires or as they regarded themselves as well and that the information they could provide would be of little use.

On reflection there were ways in which the response rate may have been improved, perhaps by sending out reminder postcards or by sending out a second copy of the questionnaires. However as consent was assumed by the return of the first set of questionnaires, if the parents did not return their first questionnaire then it was considered that the mother or

father did not wish to take part and there was no further approach made. It may have been pertinent to have proposed in the ethics procedure that non-respondents be followed up by a reminder letter or postcard to try to further enhance the response rate. A second copy of the questionnaire to non-respondents may have also improved response rates but again this may have proven difficult due to the scale of the postal survey and also not possible due to time and financial constraints.

Other studies have used several questionnaires for completion by their participants but it may have been that parents were put off by the quantity of questionnaires to complete when they were already busy with a new baby. Completing all five sets of questionnaires required commitment and it may have been that parents no longer felt that they were able to contribute new information to the study as the time went on. While it was important for the study to identify the positive aspects of parenting, parents may have felt that as with most studies the emphasis would be upon looking for mental and physical health problems and as the year progressed they may have felt well and therefore no longer needed to complete the questionnaires. Whilst there were problems with the low recruitment rate and the high attrition rate the study still produced respondent numbers sufficient to allow for statistical analysis.

Other studies have offered financial incentives to completing a study but this was again not financially practical. There is also the issue of whether a financial incentive affects the data in that completion of the study does not necessarily equate to the participant accurately completing the questionnaire.

A limitation also acknowledged is that for most self-reported instruments the participant must be able to read and write in English. Several women were in touch who would have liked to take part but were unable to do so as English was not their first language. Whilst in some cases questionnaires have been translated into other languages, for example the

Edinburgh Postnatal Depression Scale, providing translated questionnaires was not feasible for this study. The sensitive nature of some of the questions within the questionnaires may also be off putting to some potential participants; for example, questions of a sexual nature or questions relating to suicide which may be culturally sensitive.

The study also had problems with the rates of attrition. It is difficult to account for this and it can only be assumed that as many of these women and their partners might feel mentally and physically well during the first year that they do not consider that their experiences can make a further contribution to the study. There may also be the problem of lack of time and incentive. The study suffered diminished returns for the questionnaires which were sent out around Christmas time, so other factors also appear to have an impact. The return of mothers back to work at six months plus may also have had an influence on return of the questionnaires.

It has been suggested by participants to the study that women and their partners should be able to complete the questionnaire via the internet. This method would have not been suitable initially, when women's names are drawn from PROTOS, but may have been a consideration for the further questionnaires that they received. However the security of the data being transmitted via the internet would have to be established before this could be considered as a viable method. Using the internet does have a cost advantage over sending the questionnaires by post. Several participants also commented that it would have been easier for them to have completed the questionnaire by phone, again a good suggestion but difficult in terms of time for one researcher and also the financial considerations. A change to the format of the questionnaires has been suggested to enhance the response rate. Whilst unable to change the appearance of the questionnaires themselves as this is covered by copyright, using different coloured paper or the sequence of the questionnaires within the set may have had an impact upon response. Within the confines of a PhD study there are probably too many variables to ascertain whether this would enhance response rates or not.

The issue of self-selection bias obviously will remain a concern, and the subsequent data analysis must acknowledge that the findings are a sub group of the original sample. In considering the demographics of those who did not participate compared with those who take part in the study may provide some form of comparison which may enrich the final analysis.

This was a quantitative longitudinal survey using self-administered questionnaires to collect data from both mothers and their partners at five time points up to the end of the first year postpartum. The parents were recruited initially during parentcraft classes but when this method yielded poor figures, the parents were then contacted by post during the first month postpartum. The parents received in the post a set of five questionnaires to complete and return at five time points; one, three, six, nine and twelve months postpartum.

5.13. Summary

In this chapter the details of the present study have been presented. The study methodology is framed within the boundaries of an inclusion and exclusion criteria as approved by the Ethics Committee and also by the imperative to collect data at the appropriate time points and with the appropriate instruments to best reflect the experiences of parents. The problems encountered recruiting suitable numbers of parents and their retention to the study has been described, as well as how the study developed in an effort to counteract these problems. The duration of the study and the choice of time points were influenced by the studies within the literature review.

In the following three chapters the result of the study will be presented. In the following chapter, chapter 6, the results of the demographic questions within the Sheffield-PHI will be presented.

Chapter 6: S-PHI Demographic Results

6.0. Chapter overview

The results of the five instruments have been organized into three chapters. This first chapter summarizes the characteristics of the parents. Only within the S-PHI were mothers and fathers asked questions relating to their social characteristics. Summary statistics were generated for all of these demographic questions. The only information not provided directly by the mothers was the mode of birth for their infant; this information was obtained from PROTOS database. The data for the mode of birth as well as for the mothers' age and for the occurrence of multiple births were examined to identify if there was any relationship between these factors and mothers' participation in the study. These results were also documented here.

6.1. Introduction

With regard to demographic questions, both mothers and fathers were offered the same questions within the M-PHI and F-PHI respectively. The parents were asked their age, their ethnicity and details of their educational attainment. Not including their baby, they were also asked about the number of other children that they had as well as their current living situation. The parents were also asked their occupation and this information was categorized based upon the Standard Occupation Classification (SOC2010), from the Office for National Statistics, which allowed analysis to be standardized into nine categories. However as these categories relate to occupation it was necessary to broaden the classification scheme to include alternative occupations which participants offered; 'parent', 'student', 'self-employed', 'unemployed' and 'Asylum seeker'.

The results for the cohort were examined in terms of subsets. The subsets for all the S-PHI domains are represented by the following:

- Subset 1: Parents who returned the questionnaires at baseline (one month) only. Mothers n=197, fathers n = 162.
- Subset 2: Parents who returned the questionnaires at one and three months postpartum. Mothers n= 62, fathers n = 47.
- Subset 3: Parents who returned the questionnaires at one, three and six months postpartum. Mothers n=20, fathers n =13.
- Subset 4: Parents who returned the questionnaires at one, three, six and nine months postpartum. Mothers n= 13, fathers n= 15.
- Subset 5: Parents who returned all five questionnaires. Mothers n= 71, fathers n = 45.

By examining these demographic factors in terms of subset or in terms of participation or non-participation allowed comparisons to be made between the groups.

In terms of age, mode of delivery and whether it was a multiple birth, the mothers who took part in the study were compared with those mothers who did not return a set of instruments, to examine whether these factors influenced their participation. Pearson Chi-Square tests were also performed to examine any possible relationship between the mother's age and their participation, the mode of birth and the mother's participation and also the incidence of multiple births and the mother's participation.

It must be noted that whilst these subsets reflect the number of sequential questionnaires that were returned by the parents, that within the questionnaires there was missing data and this detailed within the tables.

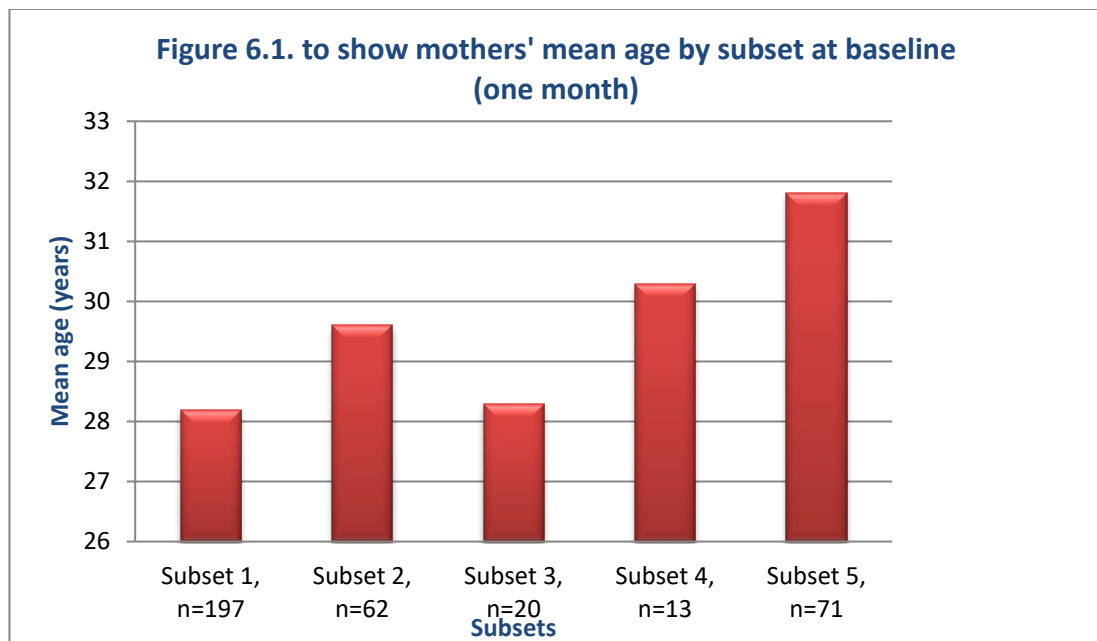
6.2. Age

The mothers and fathers were asked to document their age. The following results examine the parents age at baseline in terms of subsets.

6.2.1. Mothers' age

Table 6.1. Mothers' age by subset at baseline (one month)

	Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
n	197	62	20	13	71
Mean	28.2	29.6	28.3	30.3	31.8
SD	6.3	5.4	3.7	5.7	5.1
Range	16 - 44	20 - 41	22 - 37	19 - 37	17 - 48



The results show that the ages at baseline for mothers' ranges from 16 to 48 years. The youngest participant was in subset 1 and the oldest in subset 5. Subset 1 produced the lowest mean age of 28.2 years. The mean age increased slightly to 31.8 for subset 5. There appears therefore little difference between mothers who completed only the first questionnaire (mean = 28.2) and those who completed the questionnaires at all the time points (mean = 31.8). The

Office for National Statistics (2010) quotes the mean age for mothers giving birth in England and Wales in 2010 as being 29.5 years therefore comparable to the data generated by this study.

6.2.2. Does age affect mothers' participation in the study?

As part of the postal recruitment for the study, 2028 questionnaires were sent out to mothers within the first month after the birth of their baby. Of those 2028, 363 formed the subsets who returned the S-PHI at baseline. The ages of the non-responders was generated from PROTUS. The following describes the age demographics of the sample group as a whole and then the age demographics for responders (363) and non-responders (1665).

Table 6.2. Mothers' age by response at baseline (one month)

	Total sample	Non-responders	Responders
n	2028	1665	363
Mean	29.2	29.0	29.9
SD	6.1	6.0	5.9
Range	16 - 48	16 - 46	16 - 48

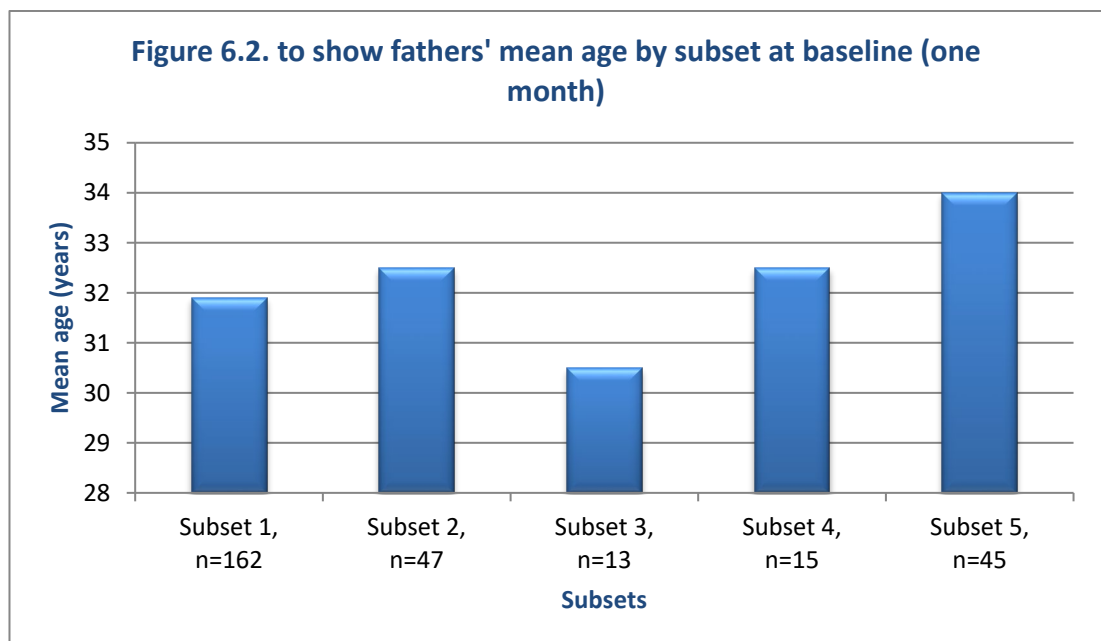
Table 6.2. shows that there was little difference in age between those mothers who took part in the study and those mothers who did not. The mean age ranged from 29.0 to 29.9. Age therefore did not appear to be a factor which influenced whether mothers took part in the study.

To examine the possible relationship between mother's age and participation in the study an independent samples t-test was performed. The results showed that the mean age for the mothers who participated in the study was 30 years of age (n = 363) and the mean age for non-participating the mothers was 29 years of age (n = 1665). Although the result was statistically significant (p = 0.017), as the difference is only 0.9 years (95% CI:0.2 to 1.6) it is so small it probably is not clinically important.

6.2.3. Fathers' age

Table 6.3. Fathers' age by subset at baseline (one month)

	Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
n	162	47	13	15	45
Mean	31.9	32.5	30.5	32.5	34.0
SD	7.0	7.0	4.1	6.1	5.6
Range	18 - 59	19 - 48	24 - 39	21 - 42	23 - 51



The fathers' mean age at baseline ranged from 18 to 59 years of age. Both the youngest respondent and the oldest respondent were in subset 1. The lowest mean age was 30.5 years (subset 3) and the highest mean age was 34.0 years (subset 5).

6.2.4. Summary of parents' age

The mean age for the mothers ranged from 28.2 to 31.8 years. The data from the Office for National Statistics (2010) for the same time period showed that the figures were comparable as nationally the mean age for mothers was 29.5 years. The mean age for fathers ranged

from 18 to 59 years. The oldest father who completed the questionnaire at baseline was 59 years compared with the oldest mother who was 48 years of age.

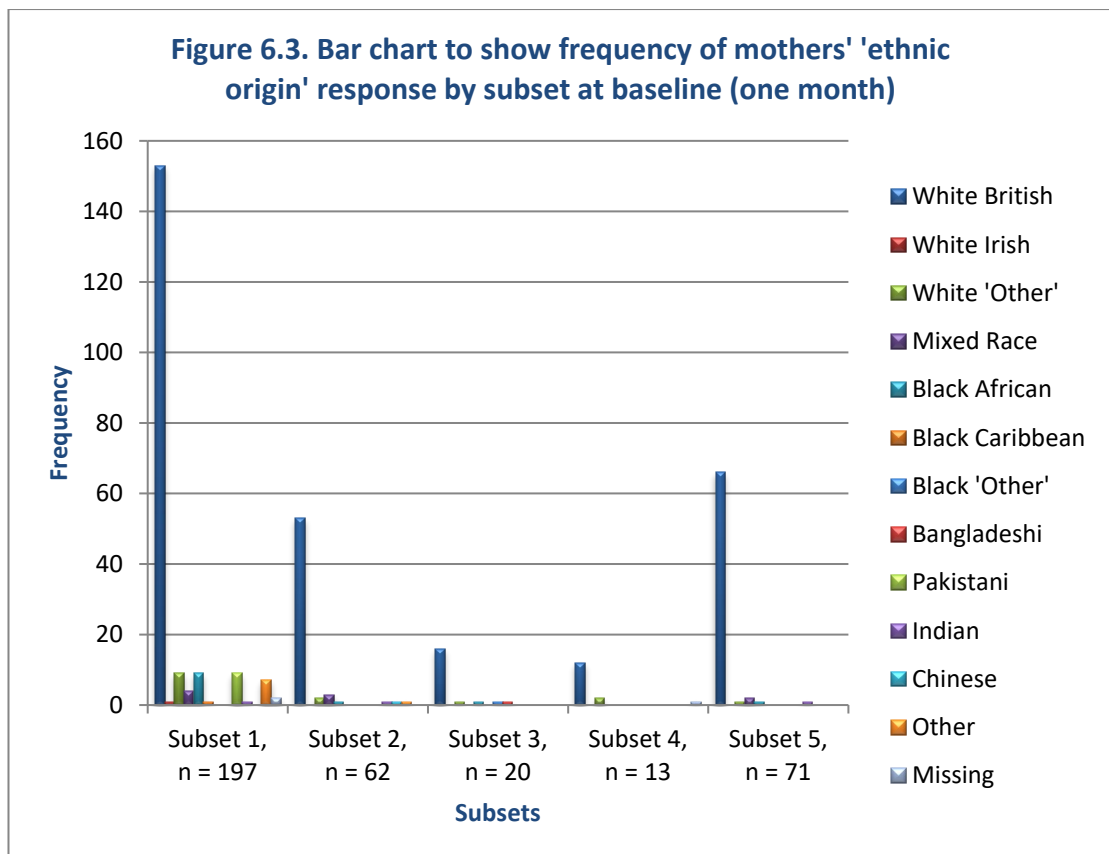
6.3. Ethnic Origin

The parents were asked to define their ethnic origin from the following list; White British, White Irish, White Other, Mixed Race, Black African, Black Caribbean, Black Other, Bangladeshi, Pakistani, Indian, Chinese or ‘Other’. Where parents had selected ‘White Other’ ‘Mixed Race’ or ‘Other’ they were asked to provide further description, however this was rarely provided.

6.3.1. Mothers’ Ethnic Origin

Table 6.4. Mothers’ ethnicity by subset at baseline (one month)

Ethnic Origin	Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
	n (%)	n (%)	n (%)	n (%)	n (%)
White British	155 (77.7)	53 (85.5)	16 (80.0)	12 (92.3)	66 (93.0)
White Irish	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
White ‘Other’	9 (4.6)	2 (3.2)	1 (5.0)	0 (0.0)	1 (1.4)
Mixed Race	4 (2.0)	3 (4.8)	0 (0.0)	0 (0.0)	2 (2.8)
Black African	9 (4.6)	1 (1.6)	1 (5.0)	0 (0.0)	1 (1.4)
Black Caribbean	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Black ‘Other’	0 (0.0)	0 (0.0)	1 (5.0)	0 (0.0)	0 (0.0)
Bangladeshi	0 (0.0)	0 (0.0)	1 (5.0)	0 (0.0)	0 (0.0)
Pakistani	9 (4.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Indian	1 (0.5)	1 (1.6)	0 (0.0)	0 (0.0)	1 (1.4)
Chinese	0 (0.0)	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)
‘Other’	7 (3.6)	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	2 (1.0)	0 (0.0)	0 (0.0)	1 (1.7)	0 (0.0)
TOTALS (%)	197 (100.0)	62 (100.0)	20 (100.0)	13 (100.0)	71 (100.0)

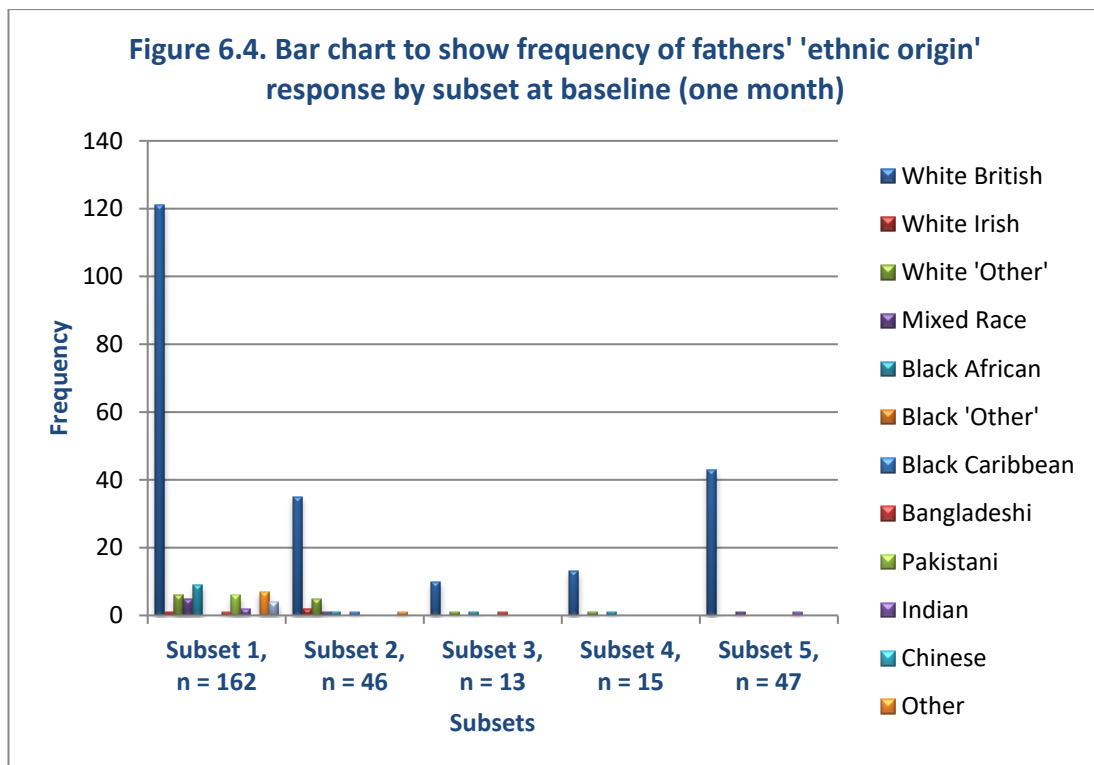


The majority of mothers in all subsets described themselves as ‘White British’. Subset 5 had the highest percentage of mothers who described themselves as ‘White British’ (93%) compared with 77.7% in subset 1. There was a broader range of ethnicity described by mothers in subset 1. One mother, who was in subset 1, described herself as being Nordic.

6.3.2. Fathers' Ethnic Origin

Table 6.5. Fathers' ethnicity by subset at baseline (one month)

Ethnic Origin	Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
	n (%)	n (%)	n (%)	n (%)	n (%)
White British	121 (74.7)	35 (74.5)	10 (76.9)	13 (92.3)	45 (95.7)
White Irish	1 (0.6)	2 (4.3)	0 (0.0)	0 (0.0)	0 (0.0)
White 'Other'	6 (3.7)	5 (10.6)	1 (7.7)	1 (6.7)	0 (0.0)
Mixed Race	5 (3.1)	1 (2.2)	0 (0.0)	0 (0.0)	1 (2.1)
Black African	9 (5.6)	1 (2.2)	1 (7.7)	1 (6.7)	0 (0.0)
Black Caribbean	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Black 'Other'	0 (0.0)	1 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)
Bangladeshi	1 (0.6)	0 (0.0)	1 (7.7)	0 (0.0)	0 (0.0)
Pakistani	6 (3.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Indian	2 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.1)
Chinese	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
'Other'	7 (4.3)	1 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	4 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTALS (%)	162 (100.0)	46 (100.0)	13 (100.0)	15 (100.0)	47 (100.0)



The majority of fathers across all subsets described themselves as ‘White British’. The results show that subset 5 had the highest percentage of fathers who described themselves as ‘White British’ (93%) compared with 74.5% in subset 2. There was a broader range of ethnicity described by fathers in subset 1. There were no fathers who described themselves as being Black Caribbean in any subset. There were 14 fathers across the study who described themselves as ‘White Other’, unfortunately no-one offered a more detailed description of their ethnic origin.

6.3.3. Summary of parents’ Ethic Origin response

The tables and graphs in this section illustrate that the majority of mothers and fathers who took part in the study described themselves as ‘White British’. For those parents who returned the instruments at all five time points, this figure was 93.0% for both mothers and fathers. As a quarter of births for this time were to mothers born outside the UK (ONS, 2011), then other ethnicities appeared to be under represented or not represented at all in the sample. Although the ONS (2010) reported that Poland was the most common country of origin for non-UK born mothers, no mother or father stated that they were Polish. They may

however have described themselves as ‘white other’ and not have clarified their ethnic origin.

6.4. Current living situation

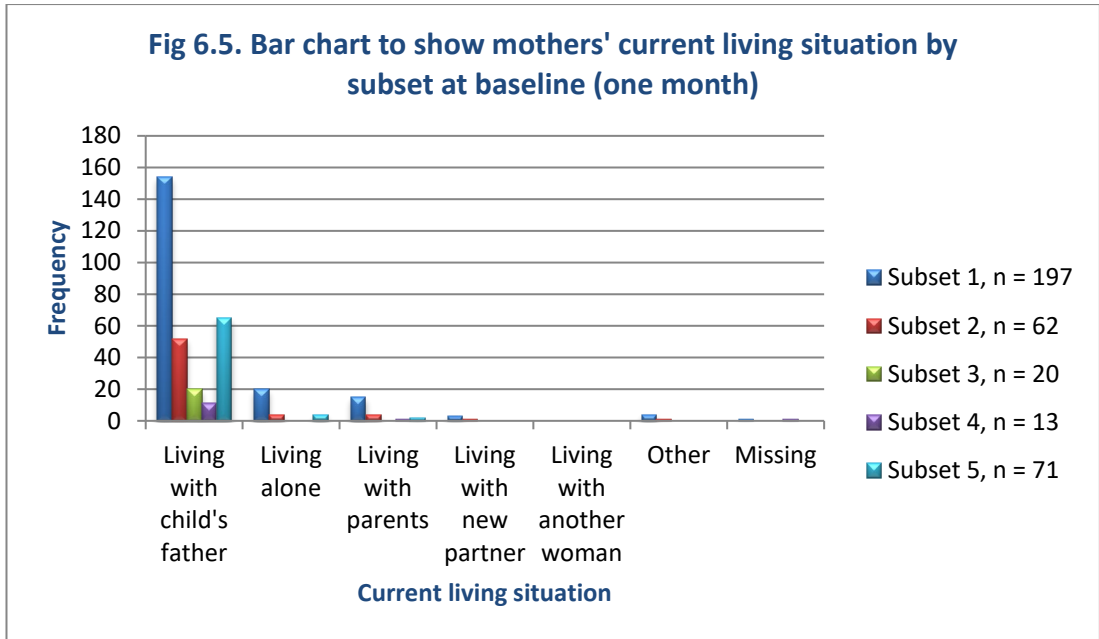
Both mothers and fathers were asked to categorize their current living situation. Again the results from this data will be presented in terms of five subsets.

6.4.1. Mothers’ current living situation

The categories for mothers were; ‘living with child’s father’, ‘living alone’, ‘living with parents’, ‘living with new partner’, ‘living with another woman’ or ‘other’.

Table 6.6. Mothers’ current living situation by subset at baseline (one month)

Living Situation	Subset 1 n (%)	Subset 2 n (%)	Subset 3 n (%)	Subset 4 n (%)	Subset 5 n (%)
Living with child’s father	154 (93.1)	52 (83.9)	20 (100.0)	11 (84.6)	65 (91.5)
Living alone	20 (10.2)	4 (6.5)	0 (0.0)	0 (0.0)	4 (6.5)
Living with parents	15 (7.6)	4 (6.5)	0 (0.0)	1 (7.7)	2 (2.8)
New partner	3 (1.5)	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)
Living with another woman	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other	4 (2.0)	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total (%)	197 (100.0)	62 (100.0)	20 (100.0)	13 (100.0)	71 (100.0)



The majority of mothers in each subset at baseline were living with their child’s father. No mothers described that they were living with another woman. Four mothers in subset 1 and one mother in subset 2 described their living situation as ‘other’ but did not expand on what ‘other’ represented.

Unlike some of the other categories there were changes in the mothers (and fathers) response over time to the question about their current living situation. For that reason the data is described for all five time points for subset 5 to examine whether their living situation had changed over time.

Table 6.7. Current living situation for mothers in subset 5 at every time point

Subset 5 Living Situation	One month n (%)	Three months n (%)	Six months n (%)	Nine month n (%)	Twelve months n (%)
Living with child's father	65 (91.5)	63 (88.7)	65 (91.5)	64 (90.1)	62 (87.3)
Living alone	4 (5.6)	4 (5.6)	4 (5.6)	2 (2.8)	5 (7.0)
Living with parents	2 (2.8)	2 (2.8)	2 (2.8)	3 (4.2)	1 (1.4)
New partner	0 (0.0)	0 (0.0)	0 (0.0)	2 (2.8)	1 (1.4)
Living with another woman	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	0 (0.0)	2 (2.8)	0 (0.0)	0 (0.0)	2 (2.8)
Total (%)	71 (100.0)	71 (100.0)	71 (100.0)	71 (100.0)	71 (100.0)

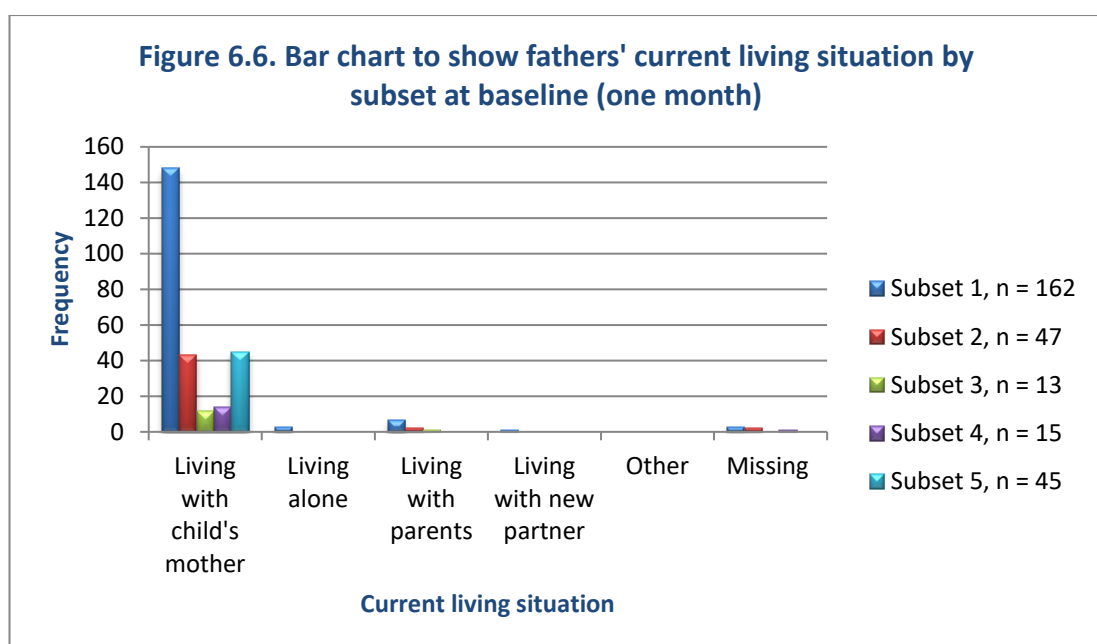
The data shows that the majority of mothers were living with their child's father during the first year of their infant's life. When the results are examined more closely more detail can be provided for the mothers who were not living with their child's father during the study. Two mothers were living alone and one mother was living with her parents during the entire study. One mother was living with her parents up until the twelve month time point when she was then living alone. One mother was living alone except for at nine months when she was living with a new partner. One mother recorded as living alone for the first three time points and thereafter was living with a new partner. One mother disclosed that although she had been living with her child's father for the first three time points, he had left her and now was living with her parents at the nine months time point. At twelve months this mother was recorded as living alone.

6.4.2. Fathers' current living situation

The fathers were offered the following categories; 'living with child's mother', 'living alone', 'living with parents', 'living with new partner' or 'other'.

Table 6.8. Father's current living situation by subset at baseline (one month)

Living Situation	Subset 1		Subset 2		Subset 3		Subset 4		Subset 5	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Living with child's mother	148	(93.1)	43	(95.7)	12	(92.3)	14	(93.3)	45	(100.0)
Living alone	3	(1.9)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Living with parents	7	(4.4)	2	(4.3)	1	(7.7)	0	(0.0)	0	(0.0)
New partner	1	(0.6)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Other	0	(0.0)	0	(0.0)	0	(0.0)	1	(6.7)	0	(0.0)
Missing	3	(1.9)	2	(4.3)	0	(0.0)	0	(0.0)	0	(0.0)
Total (%)	162	(100.0)	47	(100.0)	13	(100.0)	13	(100.0)	45	(100.0)



The majority of fathers in all subsets were living with the mother of their child at baseline. All the fathers in subset 5 were living with the mother of their child at baseline. As with the mothers' data the results for the fathers in subset 5 were examined over time.

Table 6.9. Current living situation for fathers' in subset 5 at every time point

Subset 5 Living Situation	One month n (%)	Three months n (%)	Six months n (%)	Nine month n (%)	Twelve months n (%)
Living with child's mother	45 (100.0)	43 (95.6)	45 (100.0)	43 (95.6)	44 (97.8)
Living alone	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Living with parents	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.2)	1 (2.2)
New partner	0 (0.0)	1 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)
Other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	0 (0.0)	1 (2.2)	0 (0.0)	1 (2.2)	0 (0.0)
Total (%)	45 (100.0)	45 (100.0)	45 (100.0)	45 (100.0)	45 (100.0)

At baseline all the fathers are living with the mother of their child. At the three month time point one father is living with a new partner but by six months he is living with his child's mother again. At nine months one father is living with his parents but by the twelve months assessment point he is living with the mother of his child.

6.4.3. Summary of parents' current living situation

The majority of parents across the study were living together. Examining the parent in subset 5 shows that this was the trend across the twelve months of the study.

6.5. Number of other children

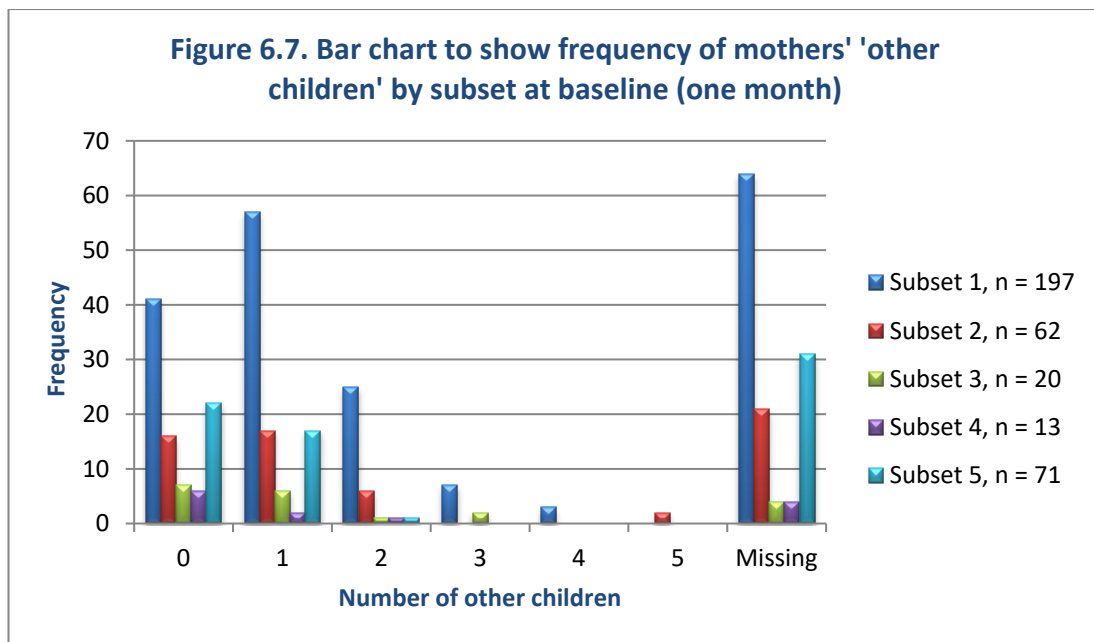
Both mothers and fathers were asked at each time point how many children they had, not including their current infant.

6.5.1. Mothers' number of other children

At all five time points the mothers were also asked how many children they had other than their new baby.

Table 6.10. Mothers' number of other children by subset at baseline (one month)

Number of other children	Subset 1		Subset 2		Subset 3		Subset 4		Subset 5	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
0	41	(20.8)	16	(25.8)	7	(35.0)	6	(46.2)	22	(31.0)
1	57	(28.9)	17	(27.4)	6	(30.0)	2	(15.4)	17	(23.9)
2	25	(12.7)	6	(9.7)	1	(5.0)	1	(7.7)	1	(1.4)
3	7	(3.6)	0	(0.0)	2	(10.0)	0	(0.0)	0	(0.0)
4	3	(1.5)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
5	0	(0.0)	2	(3.2)	0	(0.0)	0	(0.0)	0	(0.0)
Missing	64	(32.5)	21	(33.9)	4	(20.0)	4	(30.8)	31	(43.7)
Total (%)	197	(100.0)	62	(100.0)	20	(100.0)	13	(100.0)	71	(100.0)



The majority of mothers in subset 1 had one other child (28.9%), but the numbers ranged from zero to four other children. Two of the mothers had four children under ten; the third mother, who had four children, had children whose ages ranged from 2 to 23 years. The percentage who had no other children was 20.8% and the missing data for subset 1 was 32.5%.

The majority of mothers in subset 2 also had one other child (27.4%) and again a large percentage (33.9%) of mothers failed to disclose the number of other children they had. In subset 2 there were two mothers that had five other children; one mother had five children under the age of ten and the second mother had children whose ages ranged from 2 to 22 years.

The majority of mothers in subsets 3, 4 and 5 did not have any other children (35.0, 46.2 and 31.0% respectively). The number of other children ranged from zero to 3 for subset 3 and zero to 2 for subsets 4 and 5.

This question produced a large percentage of 'missing' data, 20% (subset 3) to 43.7% (subset 5). This missing data may actually equate to 'no other children', it may be that

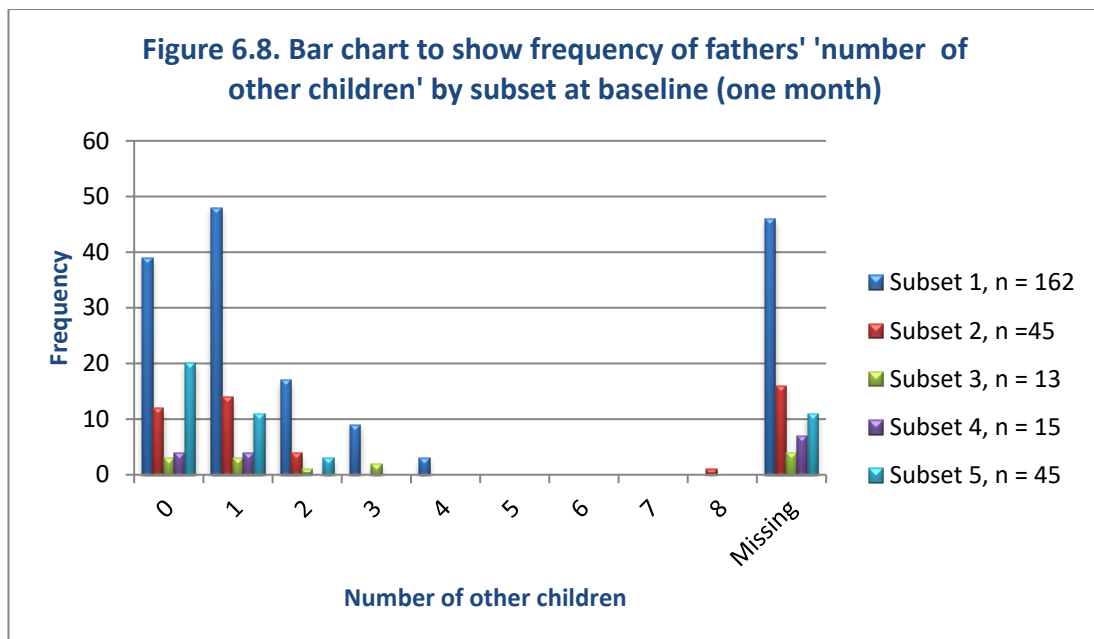
mothers who had no other children simply ignored the question and therefore left the response blank.

6.5.2. Fathers' number of other children

At all five time points the fathers were also asked how many other children they had.

Table 6.11. Fathers' number of other children by subset at baseline (one month)

Number of other children	Subset 1		Subset 2		Subset 3		Subset 4		Subset 5	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
0	39	(24.1)	12	(25.5)	3	(23.1)	4	(26.7)	20	(44.4)
1	48	(29.6)	14	(29.8)	3	(23.1)	4	(26.7)	11	(24.4)
2	17	(10.5)	4	(8.5)	1	(7.7)	0	(0.0)	3	(6.7)
3	9	(5.6)	0	(0.0)	2	(15.4)	0	(0.0)	0	(0.0)
4	3	(1.9)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
5	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
6	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
7	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
8	0	(0.0)	1	(2.1)	0	(0.0)	0	(0.0)	0	(0.0)
Missing	46	(28.4)	16	(34.0)	4	(30.8)	7	(46.7)	11	(24.4)
Total (%)	162	(100.0)	47	(100.0)	13	(100.0)	15	(100.0)	45	(100.0)



As with the mothers' results, there was an issue with fathers leaving this question blank. The percentage of missing data ranged from 24.4% (subset 5) to 46.7% (subset 4).

The majority of fathers in subset 1 had one other child (29.6%). The number of other children ranged from zero to 4. The majority of fathers in subset 2 also had one other child. In this subset there was one father who had eight other children whose ages ranged from 2 to 21 years. The number of other children for fathers in subset 3 ranged from zero to three. In subset 4, there was an equal percentage between those with no other children and those who had one other child. However, here 46.7% of fathers did not answer the question. The majority of fathers in subset 5 did not have any other children (44.4%). The number of other children for this subset, ranged from zero to two.

6.5.3. Summary of mothers' and fathers' 'number of other children' question

The majority of parents who returned the instruments at all five time points (subset 5) had no other children. There was the issue of missing data; it is possible that leaving the question blank signifies that the question does not pertain to their situation. Any difference in the range of numbers of other children between mothers and fathers may be due to parents including children from previous relationships.

6.6. Educational attainment

The parents were asked for their highest educational attainment, from ‘none’ through to ‘Degrees and Higher Degrees’.

6.6.1. Mothers’ highest educational qualification

Table 6.12. Mothers’ highest educational qualification by subset at baseline (one month)

Highest Educational Attainment	Subset 1		Subset 2		Subset 3		Subset 4		Subset 5	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
None	24	(12.2)	3	(4.8)	0	(0.0)	0	(0.0)	1	(1.4)
CSE/ ‘O’ Levels/GCSE	42	(21.3)	12	(19.4)	4	(20.0)	1	(7.7)	6	(8.5)
‘A’ Level/GCE/Further Qualification	55	(27.9)	14	(22.6)	4	(20.0)	3	(23.1)	16	(22.5)
Degree/Higher Degree	69	(35.0)	32	(51.6)	12	(60.0)	8	(61.5)	48	(67.6)
Missing	7	(3.6)	1	(1.6)	0	(0.0)	1	(7.7)	0	(0.0)
Totals (%)	197	(100)	62	(100)	20	(100)	13	(100)	71	(100)

In all subsets the majority of mothers were educated to degree or higher degree level. Of the mothers in subset 5, 67.6% had degrees or higher degrees. This corresponding figure for subset 1 was 35%. Subset 1 also had the highest percentage of mothers who had no educational qualifications (12.2%) compared with zero percent for subset 3 and 4.

6.6.2. Fathers' highest educational qualification

Table 6.13. Fathers' highest educational qualification by subset at baseline (one month)

Highest Educational Attainment	Subset 1 n (%)	Subset 2 n (%)	Subset 3 n (%)	Subset 4 n (%)	Subset 5 n (%)
None	19 (11.2)	4 (8.5)	1 (7.7)	0 (0.0)	1 (2.2)
CSE/ 'O' Levels/GCSE	32 (19.8)	8 (17.0)	4 (30.8)	3 (20.0)	9 (20.0)
'A' Level/GCE/Further Qualification	38 (23.5)	11 (23.4)	2 (15.4)	5 (33.3)	3 (6.7)
Degree/Higher Degree	65 (40.1)	23 (48.9)	6 (46.2)	7 (46.7)	32 (71.1)
Missing	8 (4.9)	1 (2.1)	0 (0.0)	0 (0.0)	0 (0.0)
Totals (%)	162 (100)	47 (100)	13 (100)	15 (100)	45 (100)

In all subsets the majority of fathers were educated to degree or higher degree level. This percentage figure ranged from 40.1% (subset 1) to 71.1% (subset 5). Those with no educational qualifications ranged from zero (subset 3) to 11.2% (subset 1).

6.6.3. Summary of parents' highest educational qualification

The majority of all parents in the study had degrees or higher degrees. The largest percentage of parents who had degrees were in subset 5 and the largest percentage of parents with no educational qualifications were in subset 1.

6.7. Occupation

The mothers and fathers were asked for their current occupation at each time point. This information was then classified based upon the ‘Standard Occupation Classification 2010’ from the Office for National Statistics. This classification scheme uses nine major groups, however it is important to note that some parents described their occupations broadly and their descriptions lay outside this classification scheme. For that reason the following descriptions were also included for this study; parent, student, self-employed, unemployed, asylum seeker and there was also a category for missing data. Some mothers described themselves as homemaker or housewife and these were included in the ‘parent’ category. There were parents who described themselves as ‘unemployed’ rather than as ‘mothers’ or ‘fathers’, it can only be assumed that these are parents who were actively seeking employment at that point of the study. Unfortunately some parents described themselves as ‘self-employed’ rather than describing the actual work that they carried out and therefore it was necessary to include this as a category.

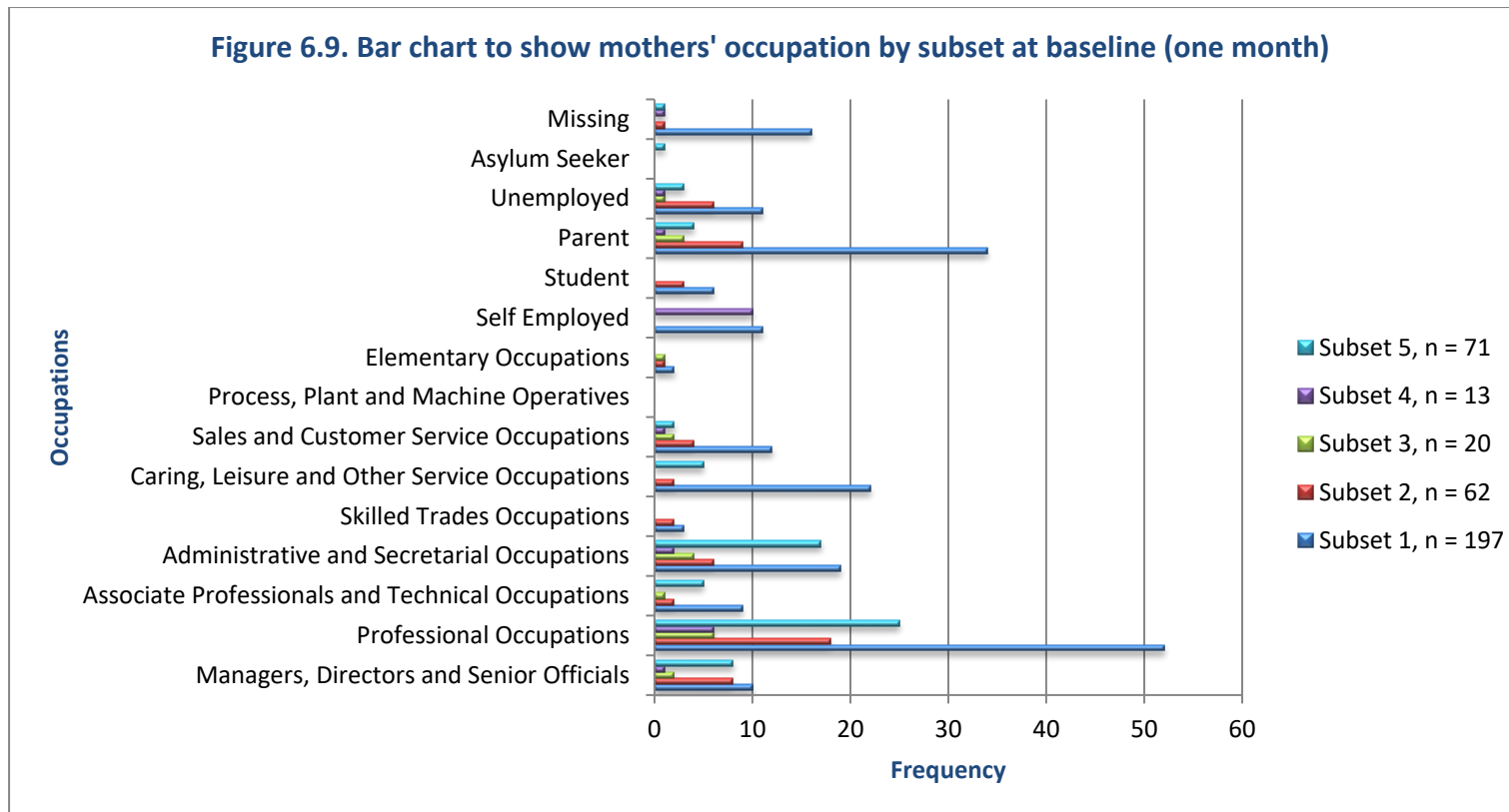
6.7.1. Mothers’ Occupation

The following table illustrates mothers’ occupations by subset.

Table 6.14. Mothers' occupation by subset at baseline (one month)

Occupations	Subset 1		Subset 2		Subset 3		Subset 4		Subset 5	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Managers, Directors and Senior Officials	10	(5.1)	8	(12.9)	2	(10.0)	1	(7.7)	8	(11.3)
Professional Occupations	52	(26.4)	18	(29.0)	6	(30.0)	6	(46.2)	25	(35.2)
Associate Professional and Technical Occupations	9	(4.6)	2	(3.2)	1	(5.0)	0	(0.0)	5	(7.0)
Administrative and Secretarial Occupations	19	(9.6)	6	(9.6)	4	(20.0)	2	(15.4)	17	(23.9)
Skilled Trades Occupations	3	(1.5)	2	(3.2)	0	(0.0)	0	(0.0)	0	(0.0)
Caring, Leisure and Other Service Occupations	22	(11.2)	2	(3.2)	0	(0.0)	0	(0.0)	5	(7.0)
Sales and Customer Service Occupations	12	(6.1)	4	(6.4)	2	(10.0)	1	(7.7)	2	(2.8)
Process, Plant and Machine Operatives	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Elementary Occupations	2	(1.0)	1	(1.6)	1	(5.0)	0	(0.0)	0	(0.0)
Self Employed	1	(0.5)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Student	6	(3.0)	3	(4.8)	0	(0.0)	0	(0.0)	0	(0.0)
Parent	34	(17.1)	9	(14.5)	3	(15.0)	1	(7.7)	4	(5.6)
Unemployed	11	(5.6)	6	(9.6)	1	(5.0)	1	(7.7)	3	(4.2)
Asylum Seeker	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(1.4)
Missing	16	(8.1)	1	(1.6)	0	(0.0)	1	(7.7)	3	(4.2)
TOTALS	197	(100)	62	(100)	20	(100)	13	(100)	71	(100)

Figure 6.9. Bar chart to show mothers' occupation by subset at baseline (one month)



The majority of mothers in all subsets had occupations which were categorized as 'Professional Occupations'. This category includes business research, scientists, engineers, health professionals (including doctors, nurses and midwives) architects and legal professionals. Few mothers described their occupations as being elementary occupations or as process, plant and machine operatives. The percentage of mothers, who described themselves as 'mothers', ranged from 5.6 % (subset 5) to 17.1% (subset 1). At baseline there were mothers who described themselves as being unemployed, rather than 'mothers'. It can only be assumed that they were actively seeking employment at this time. It may have been unclear to parents whether they were being asked for their current employment status or what they did prior to having a baby. One mother described herself as an asylum seeker.

Five mothers described themselves as being self-employed; unfortunately they did not describe what this employment involved to be able to categorize them within the ONS standard occupation structure. A small number were reported as being students.

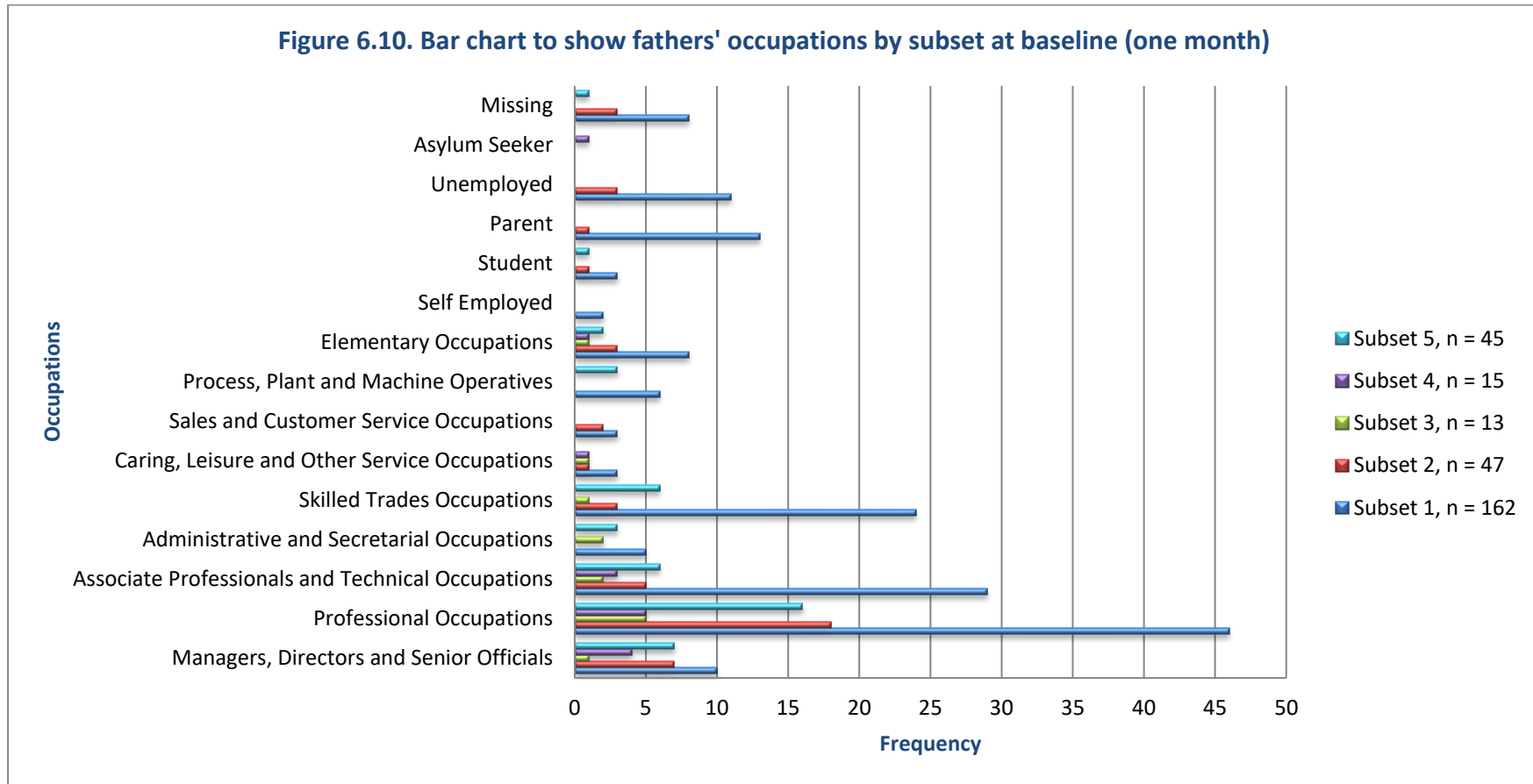
6.7.2 Fathers' Occupation

The following table illustrates fathers' occupations by subset.

Table 6.15. Fathers' occupations by subset at baseline (one month)

Occupations	Subset 1		Subset 2		Subset 3		Subset 4		Subset 5	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Managers, Directors and Senior Officials	10	(6.2)	7	(14.9)	1	(7.7)	4	(26.6)	7	(15.6)
Professional Occupations	46	(28.4)	18	(38.3)	5	(38.5)	5	(33.3)	16	(35.6)
Associate Professional and Technical Occupations	29	(17.9)	5	(10.6)	2	(15.4)	3	(20.0)	6	(13.3)
Administrative and Secretarial Occupations	5	(3.1)	0	(0.0)	2	(15.4)	0	(0.0)	3	(6.7)
Skilled Trades Occupations	24	(14.8)	3	(6.4)	1	(7.7)	0	(0.0)	6	(13.3)
Caring, Leisure and Other Service Occupations	3	(1.9)	1	(2.1)	1	(7.7)	1	(6.7)	0	(0.0)
Sales and Customer Service Occupations	3	(1.9)	2	(4.3)	0	(0.0)	0	(0.0)	0	(0.0)
Process, Plant and Machine Operatives	6	(3.7)	0	(0.0)	0	(0.0)	0	(0.0)	3	(6.7)
Elementary Occupations	8	(4.9)	3	(6.4)	1	(7.7)	1	(6.7)	2	(4.4)
Self Employed	2	(1.2)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Student	3	(1.9)	1	(2.1)	0	(0.0)	0	(0.0)	1	(2.2)
Parent	2	(1.2)	1	(2.1)	0	(0.0)	0	(0.0)	0	(0.0)
Unemployed	13	(8.0)	3	(6.4)	0	(0.0)	0	(0.0)	0	(0.0)
Asylum Seeker	0	(0.0)	0	(0.0)	0	(0.0)	1	(6.7)	0	(0.0)
Missing	8	(4.9)	3	(6.4)	0	(0.0)	0	(0.0)	1	(2.2)
TOTALS	162	(100)	47	(100)	13	(100)	15	(100)	45	(100)

Figure 6.10. Bar chart to show fathers' occupations by subset at baseline (one month)



The majority of fathers in all subsets were classified as being in ‘Professional Occupations’. This percentage ranged from 28.4 % (subset 1) to 38.5% (subset 3). There are three fathers who describe their occupation as ‘father’, two in subset 1 and one in subset 2. There were no fathers in subsets 3, 4 or 5 who described themselves as being unemployed. There were two fathers in subset 1 who described themselves as being self-employed, but again no indication of what form their employment took.

6.7.3. Summary of parent’s occupations.

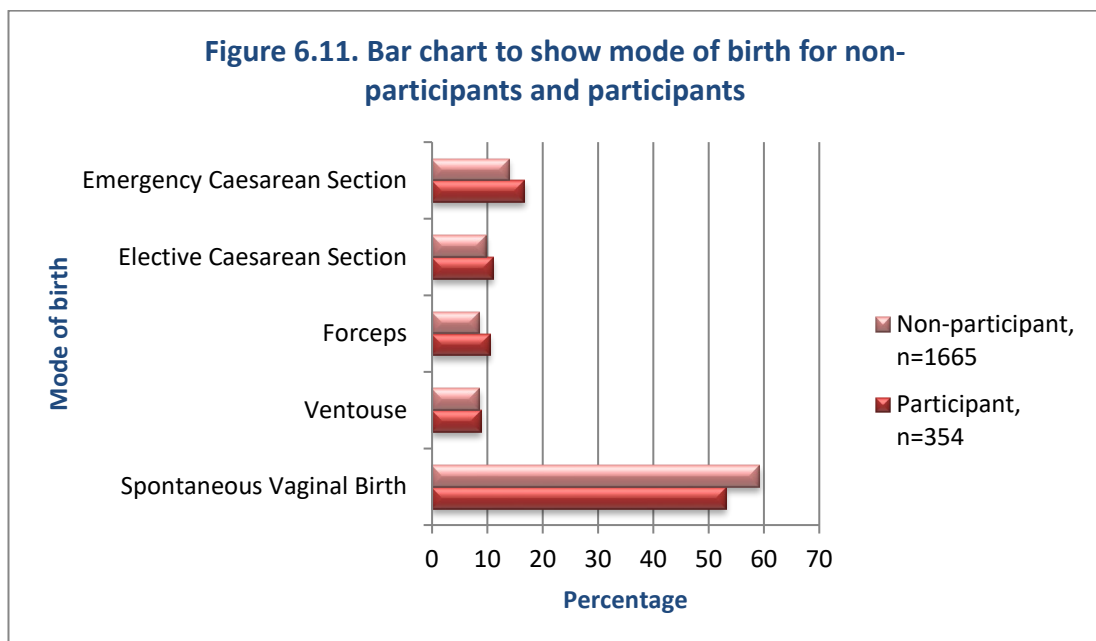
The majority of parents who answered the question regarding occupations were classified as being in professional occupations. In terms of the mothers results, at baseline these mothers would be on maternity leave and therefore may have described themselves as ‘mothers’ rather than by the occupation that they might be returning to.

6.8. Did the mode of birth affect mother's participation in the study?

The mode of birth may have a profound effect upon mother's morbidity and therefore her possible willingness to involve herself in a study. As the first questionnaire was sent out within the first month postpartum the health of the mother following birth may have influenced whether or not she took part in the study. The figures presented relate to the postal recruitment and do not include the mothers seen at antenatal classes.

Table 6.16. Mode of birth for mothers by participation and non-participation

Mode of birth	Non-Participants		Participants	
	n	(%)	n	(%)
Spontaneous vaginal	986	(59.2)	188	(53.1)
Ventouse	144	(8.6)	31	(8.8)
Forceps	142	(8.5)	37	(10.5)
Elective Caesarean section	161	(9.7)	39	(11.0)
Emergency Caesarean section	232	(13.9)	59	(16.7)
Total	1665	(100.0)	354	(100.0)



As expected, the majority of mothers who participated in the study had spontaneous vaginal births (53.1%), with the remaining 46.9% requiring intervention by the medical staff. Of the 46.9%, 19.6% involved a Ventouse or forceps delivery whereby a doctor assists the mother in giving birth with the mother contributing to the effort. Both of the procedures may involve the doctor having to perform an episiotomy (a surgical cut to the perineum to allow instrumental access) which may affect the mother's sense of well-being postnatally. Although episiotomies may be performed by midwives to assist mother delivering vaginally, this is less common. Of the percentage of mothers who required medical intervention, 26.7% of mothers underwent a caesarean section. Having a caesarean section, either planned or as an emergency, constitutes major surgery for the mothers and requires a significant period of recuperation postnatally, particularly if the mother herself was not well antenatally. Comparing the mode of birth of those mothers who took part in the study with those who did not, it is noted that the mothers who did not take part had a higher percentage of spontaneous vaginal birth (59.2%). The percentage of mothers who underwent medical intervention to facilitate the birth of their infant was higher in mothers who participated in the study than those who did not. The assumption that mothers who required medical intervention to deliver their babies would be less likely to wish to be involved in a study does therefore not appear apparent from these particular results.

A Chi-Squared test was performed to evaluate whether mode of birth is related to whether or not mothers took part in the study. The Chi-Squared test was not statistically significant ($p=0.273$) suggesting that there was no association between the mothers mode of birth for their baby and whether they took part in the study.

6.9. Maternal multiple births

Within the sample group there were mothers who gave birth to twins. These twins were born by all modes of delivery. The mothers were whose babies required admission to the Neonatal Intensive care unit were excluded from both samples. The figures presented relate again to the postal recruitment and do not include the mothers seen at antenatal classes.

Table 6.17. Frequency of multiple birth by participation and non-participation.

	Total Study Sample		Non-Participation		Participation	
	n	(%)	n	(%)	n	(%)
Singleton births	1994	(98.9)	1645	(98.8)	349	(98.6)
Twin births	25	(1.2)	20	(1.2)	5	(1.4)
Total births	2019	(100.0)	1665	(100.0)	354	(100.0)

Table 6.17. shows that the percentage of twin births varied only slightly between the mothers who did not participate in the study and those mothers who did (1.2% and 1.4% respectively). As the percentage of twin births for both groups is very small it is therefore difficult to conclude that having a twin birth affects mother's decision to take part in the study.

To assess the relationship between the mother's participation in the study and the incidence of a multiple birth, Chi-Squared test was performed. The Chi-Squared test was not statistically significant ($p= 0.744$) suggesting that there was no association between participation in the study and the incidence of multiple birth.

6.10. Summary

The characteristics of the parents were examined looking at aspects such as age, ethnicity, current living situation, number of other children, educational attainment and occupation. By examining these factors in terms of subset or in terms of participation or non-participation allowed comparisons to be made. In terms of age, for the mothers the age ranged from 16-48 years across the study with the mean age ranging from 28.2 to 31.8 years. This was comparable with the mean age of mothers in the UK documented by the Office for National Statistics (ONS, 2011) as 29.5 years in 2010. There was no real difference between the mean ages of those who took part with those who did not. For fathers the age range was 18 to 59 years and the mean age was 30.5 to 34 years across the subsets.

In terms of the ethnic origin, the majority of mothers who took part in the study described themselves as being 'White', either 'British', 'Irish' or 'other' with other ethnic groups being less well represented. In subset 5, for example, 93% of mothers described themselves as being 'White British'. It is difficult unfortunately, to compare the findings with data from the ONS, as the ONS differentiates between UK and non-UK born mothers, which is not strictly the same as asking about ethnicity. However some ethnic groups were not represented at all, for example there were no Polish mothers. The ONS (2011) refers to the recent influx of Polish people after Poland's entry to the EU in 2004. By 2010, Poland was the most common country of birth for non-UK born mothers. The absence of Polish mothers may be because Sheffield may not have a large Polish population, or it may be that as for other mothers from outside the UK, they have problems with reading English well enough to complete the questionnaire.

In terms of the father's ethnic origin, the majority of fathers also described themselves as being 'White', either 'British', 'Irish' or 'other', In a multicultural society it would appear that perhaps mothers and fathers from other ethnic origins were under represented in the study and this may be due to language problems. Unfortunately with not having the

capability to provide translations for all the questionnaires it meant that only English speaking parents were able to take part which therefore possibly excluding some parents.

In terms of current living situation, the majority of mothers and fathers were living with the child's other parent at baseline with only a small percentage living alone, with parents or with a new partner. When the data for subset 5 was examined it showed that the living situation did not change particularly over time, with the majority of parents living with their child's other parent. The study did not differentiate between married or non-married couples as some studies have done. For this study it was assumed that by living together with their infant represented commitment, and marriage was therefore not recognized as a variable which needed to be considered.

Parents were asked if they had any other children, unfortunately many of the parents left this question blank. It may be assumed that this question was left blank because the parents actually had no other children. The number of other children for mothers in subset 1 ranged from zero to four, with the majority having one other child. For subset 5, the number of other children ranged from zero to two with the majority of mothers having no other children.

In terms of educational attainment the majority of parents had a degree or higher degree with most parents being in professional or managerial occupations.

Overall the parents who took part in the study described themselves as 'White British' and the majority were living with their child's other parent. The majority of parents were also well educated with occupations within the 'professional occupations', 'managerial, directors and senior officials' or 'administrative and secretarial' categories. The results suggested that there was no association between mode of birth or multiple births and participation in the study.

The following chapter presents the findings for the mental health specific reported outcomes; that is results for PANAS, EPDS and WEMWBS. These three instruments

measure emotional well-being; PANAS examines both positive and negative outcomes, WEMWBS examines positive well-being and EPDS specifically aids identification of depression in parents in the postnatal period. Using these instruments at various time points allows trends in mental health to be observed over time.

Chapter 7: Results of PANAS, EPDS and WEMWBS; Mental Health Specific Reported Outcomes Instruments

7.0. Chapter overview

As previously described, the results of the study are organized across chapters 6, 7 and 8. Whereas in the previous chapter the characteristics of the parents were summarized, in this chapter the results of the various analyses undertaken on the subsets for the three instruments that focused upon mental health outcomes are presented; PANAS, EPDS and WEMWBS.

Within this chapter the summary statistics and Pearson's correlation for each of the three instruments are reported and presented in both table and graph form. Further analysis was performed on the data for the EPDS. The EPDS is an instrument designed specifically to identify mothers in the postnatal period who may be suffering from postnatal depression, as it looks specifically at negative mental health outcomes. It is an instrument that uses an operationalized cut-off figure which may be indicative of depression in individuals. This cut-off figure is determined by the clinician or researcher; influenced by different factors such as timing (antenatal or postnatal), or whether administered to men or women, or even the country where the instrument is used. For both mothers and fathers the data was examined in terms of a cut-off figure of ≥ 13 for mothers and ≥ 10 for fathers to identify the percentage of parents whose mean score was above this cut-off figure. Further a McNemar's test was performed pairing mothers and fathers within the same household, to investigate whether co-morbidity exists in terms of possible depression.

In the second part of the chapter further analysis of the datasets with respect to paired sample t-tests are presented. Paired sample t-tests were used to calculate the mean difference between baseline mean and the average follow up scores. This was carried out for each of the three questionnaires presented here.

Where appropriate the results are presented in the form of subsets. The two cohorts, mothers and fathers, are examined in terms of the number of time points they completed. This, perhaps, is particularly important when considering self-reported mental health outcomes. If a parent has poor mental health in the form of depression are they more or less likely to drop out of a study of this kind? The mean values of one subset can therefore be considered against those parents who, for example, completed all five time points.

The summary statistics are presented for each subset, both in table and figure form. The subsets are as described below.

The subsets represent the following:

- Subset 1: mothers/fathers who returned the PANAS/EPDS/WEMWBS at baseline (one month) only.
- Subset 2: mothers/fathers who returned PANAS/EPDS/WEMWBS at one and three months postpartum.
- Subset 3: mothers/fathers who returned PANAS/EPDS/WEMWBS at one, three and six months postpartum.
- Subset 4: mothers/fathers who returned PANAS/EPDS/WEMWBS at one, three, six and nine months postpartum.
- Subset 5: mothers/fathers who returned PANAS/EPDS/WEMWBS at one, three, six, nine and twelve months postpartum.

The subsets have been created for each of the three questionnaires. Whilst the parents were presented with the all of the five instruments as whole booklet, the instruments stand as independent tools and therefore the subsets reflect this. The discrepancy between the subset sample size and the actual subset figure is due to parents completing the questionnaires non-sequentially. The figure within the table therefore reflects those parents who completed the questionnaire sequentially.

7.1. PANAS

The PANAS questionnaire is a generic instrument which produces two scores, a Positive Affect (PA) and a Negative Affect (NA). A high PA is suggestive of a state of high energy, pleasurable engagement and full concentration whereas a low PA reflects lethargy and sadness. Negative Affect scale (NA) in contrast engages with a broad range of aversive affects including fear, guilt, contempt and anger, a high NA therefore indicates subjective distress and unpleasant engagement, whereas a low NA reflects a state of serenity and calm (Watson et al 1988, Crawford and Henry, 2004). There are 20 items (10 positive and 10 negative), with each item scoring from 1-5 this equates to a possible score of 10 to 50 for both aspects. Summary statistics for PANAS are presented in terms of subsets. The results of the Pearson's correlation analysis are also presented for subset 5. Firstly the mothers' results and then fathers' results are presented. It was noted that parents did not necessarily complete both parts of the PANAS and therefore there is a discrepancy between the figures for PANAS Positive Affect domain and PANAS Negative Affect domain.

7.1.1. Mothers' PANAS summary statistics

7.1.1.1. PANAS: Positive Affect Domain

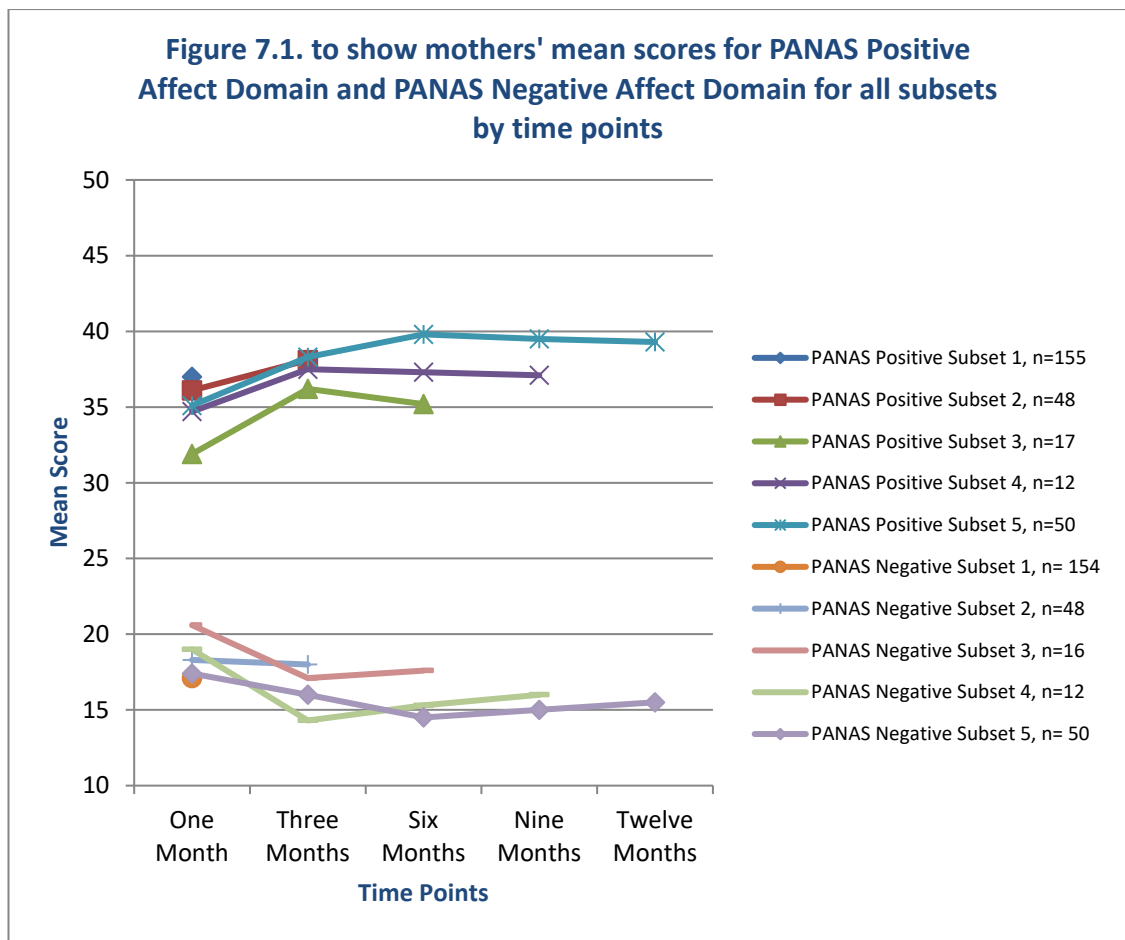
Table 7.1. Summary statistics for mothers' PANAS Positive Affect domain for all subsets by time points

PANAS Positive Affect domain	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 166	155	37.0 (7.5)	-	-	-	-	-	-	-	-
Subset 2 n= 52	48	36.1 (7.3)	48	38.1 (7.8)	-	-	-	-	-	-
Subset 3 n=17	17	31.9 (8.1)	17	36.2 (8.0)	17	35.2 (8.8)	-	-	-	-
Subset 4 n=12	12	34.7 (7.0)	12	37.5 (5.2)	12	37.3 (7.4)	12	37.1 (8.6)	-	-
Subset 5 n=65	50	35.1 (7.2)	50	38.3 (6.4)	50	39.8 (6.4)	50	39.5 (6.6)	50	39.3 (7.6)

7.1.1.2. PANAS: Negative Affect Domain

Table 7.2. Summary statistics for mothers' PANAS Negative Affect domain for all subsets by time points

PANAS Negative Affect domain	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 166	154	17.1 (5.9)	-	-	-	-	-	-	-	-
Subset 2 n= 52	48	18.5 (8.2)	48	18.0 (8.6)	-	-	-	-	-	-
Subset 3 n=17	16	20.6 (7.1)	16	17.1 (6.5)	16	17.6 (7.9)	-	-	-	-
Subset 4 n=12	12	19.0 (5.6)	12	14.3 (3.4)	12	15.3 (4.0)	12	16.0 (4.1)	-	-
Subset 5 n=65	50	17.4 (5.8)	50	16.0 (5.8)	50	14.5 (4.7)	50	15.0 (4.7)	55	15.8 (6.5)



NB Possible score of 10-50. High PA and low NA reflects higher levels of positive mental health

The results showed that the mothers' PANAS Positive Affect mean score at baseline for all subsets ranged from 31.9 (subset 3) to 37.0 (subset 1). For all subsets the mean score ranged from 31.9 (subset 3 at baseline) to 39.8 (subset 5 at the six months time point). The results for subset 5 showed a slight increase in the mean scores from 35.1 at baseline to 39.8 at six months postpartum. As the mean score is moving towards a score of 50, this suggests a slight improvement in terms of energy and enthusiasm. The PANAS Negative Affect mean score at baseline for all subsets, ranged from 17.1 (subset 1) to 20.6 (subset 3). The range of mean scores for all subsets was 14.3 (subset 4 at three months postpartum) to 20.6 (subset 3 at baseline). The results for subset 5 showed a slight decrease in the score from 17.4 at

baseline to 14.5 at six months postpartum, suggesting a move towards a feeling of serenity and calm.

7.1.2. Fathers' PANAS summary statistics

7.1.2.1. PANAS Positive Affect Domain

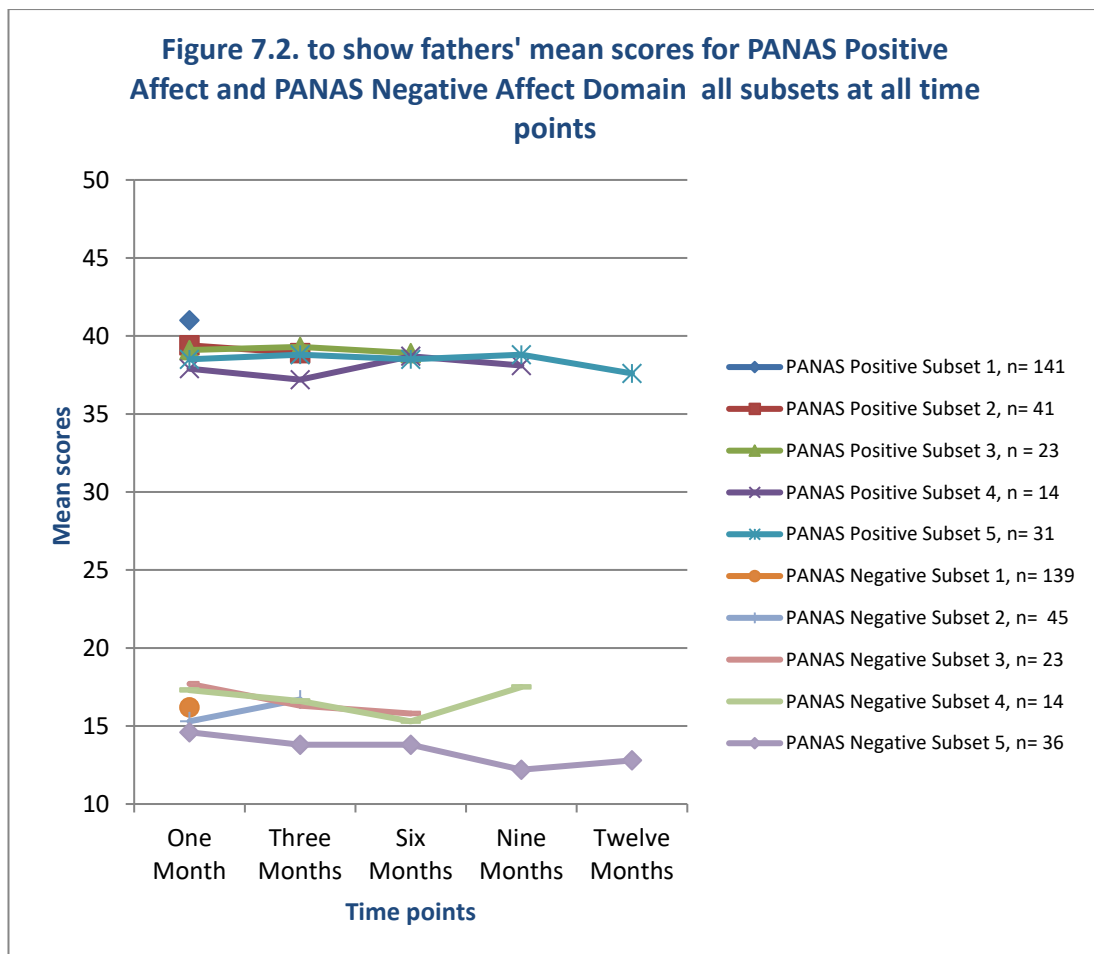
Table 7.3. Summary statistics for fathers' PANAS Positive Affect domain for all subsets by time points

PANAS Positive Affect domain	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 146	141	41.0 (6.9)	-	-	-	-	-	-	-	-
Subset 2 n= 45	41	39.4 (6.4)	41	38.9 (6.5)	-	-	-	-	-	-
Subset 3 n= 23	23	39.1 (6.2)	23	39.3 (6.0)	22	38.9 (7.9)	-	-	-	-
Subset 4 n= 14	14	37.9 (7.9)	14	37.2 (6.5)	14	38.7 (6.7)	14	38.1 (6.9)	-	-
Subset 5 n= 36	31	38.5 (7.0)	31	38.8 (7.5)	31	38.5 (7.2)	31	38.8 (5.9)	31	37.6 (5.9)

7.1.2.2. PANAS Negative Affect Domain

Table 7.4. Summary statistics for fathers' PANAS Negative Affect domain for all subsets by time points

PANAS Negative Affect domain	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 146	139	16.2 (6.4)	-	-	-	-	-	-	-	-
Subset 2 n= 45	44	15.3 (4.4)	44	16.7 (6.2)	-	-	-	-	-	-
Subset 3 n= 23	20	17.7 (8.6)	20	16.3 (6.4)	20	15.8 (6.1)	-	-	-	-
Subset 4 n= 14	14	17.3 (6.3)	14	16.6 (5.9)	14	15.3 (5.9)	14	17.5 (10.3)	-	-
Subset 5 n= 36	31	14.6 (4.7)	31	13.7 (4.6)	31	13.8 (4.6)	31	12.2 (3.2)	31	12.7 (2.6)



NB Possible score of 10-50. High PA and low NA reflects higher levels of positive mental health

The mean score results for the fathers' PANAS Positive Affect domain for all subsets at baseline ranged from 37.9 (subset 4) to 41.0 (subset 1). Overall the mean score for all subsets ranged from 37.2 (subset 4 at three months assessment point) to 41.0 (subset 1 at baseline). The mean score PANAS Positive Affect for subset 5 ranged from 38.5 (one and six months assessment points) to 37.6 at twelve months assessment point. There was, therefore, little fluctuation in this figure over time. The mean score for the fathers' PANAS Negative Affect domain at baseline ranged from 14.6 (subset 5) to 17.4 (subset 3). The mean scores for subset 5 ranged from 14.6 at baseline to 12.2 at nine months assessment point. A score nearer to 10 reflects a greater sense of calm. Overall there is only slight variation in the

PANAS Positive Affect and Negative Affect results over time. The results suggest that fathers' mental health status is stable and fathers are more likely to feel emotionally calm.

7.1.3. Pearson's Correlation results for PANAS

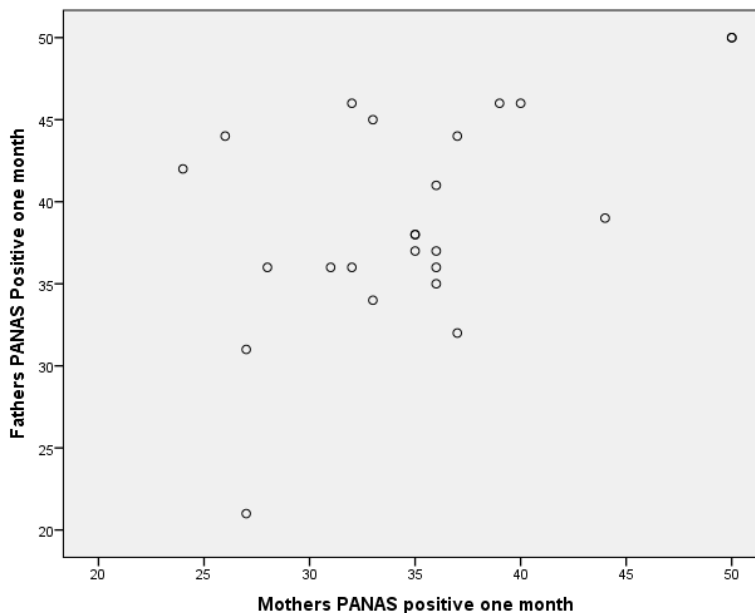
Pearson's correlation was performed to find out whether there was a linear relationship between mothers and fathers, for both PANAS Positive Affect and PANAS Negative Affect at one month and at twelve month, using the data from subset 5. The sample size is small as the parents were paired and it was necessary for both parents to have returned the questionnaire at all five time points.

7.1.3.1. Pearson's correlation for PANAS Positive

Table 7.5. Pearson's Correlation results for PANAS Positive Affect for mothers and fathers in subset 5 at one month and twelve month time points

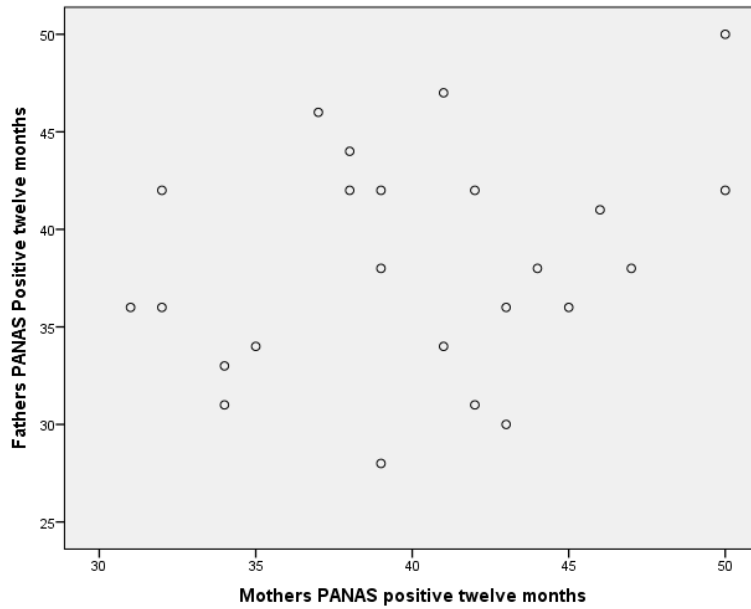
Instrument	n	Correlation coefficient	95% CI		p-value
			lower	upper	
PANAS Positive at baseline	24	0.53	0.16	0.77	0.008
PANAS Positive at 12 months	24	0.27	-0.15	0.61	0.202

Figure 7.3. Scatterplot to show results of Pearson's Correlation between parents for PANAS Positive Affect at one month time point.



The scatter plot looking at the relationship between the PANAS Positive Affect score at one month between mothers and fathers suggests that there may be a weak relationship. The Pearson correlation coefficient is 0.53 (95% CI: 0.16 to 0.77) suggests a weak, positive correlation. This correlation is statistically significant ($p=0.008$).

Figure 7.4. Scatterplot to show results of Pearson's Correlation between parents for PANAS Positive at twelve months time point.



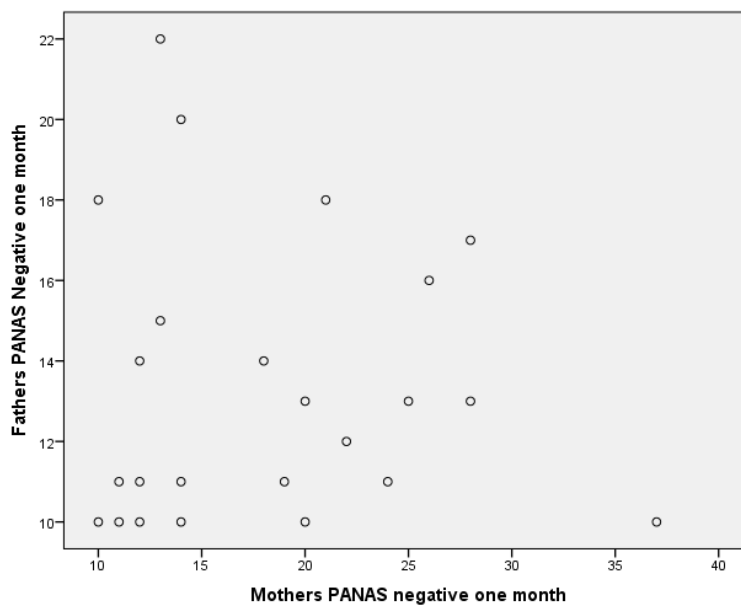
The scatter plot looking at the relationship between the PANAS Positive Affect at twelve months between mothers and fathers suggests that there may be a weak relationship. The Pearson correlation coefficient is 0.27 (95% CI: -0.15 to 0.61) showing that there is not a statistically significant association between mothers' and fathers' scores ($p=0.202$).

7.1.3.2. Pearson's Correlation results for PANAS Negative

Table 7.6. Pearson's Correlation results for PANAS Negative Affect for mothers and fathers in subset 5 at one month and twelve month time points

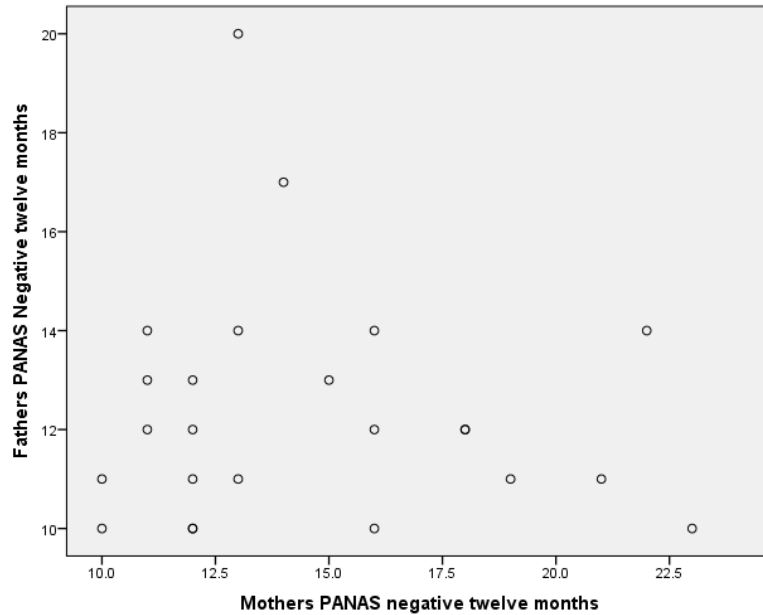
Instrument	n	Correlation coefficient	95% CI		p-value
			lower	upper	
PANAS Negative at one month	24	-0.04	-0.44	0.37	0.855
PANAS Negative at twelve months	24	-0.08	-0.47	0.36	0.718

Figure 7.5. Scatterplot to show results of Pearson's Correlation between parents for PANAS Negative Affect at one month time point.



The scatter plot looking at the relationship between the PANAS Negative Affect at one month between mothers and fathers suggests that there is not an association. The Pearson correlation coefficient of -0.04 (95% CI: -0.44 to 0.37) confirms that there is not a statistically significant association between mothers' and fathers' scores ($p=0.855$).

Figure 7.6. Scatterplot to show results of Pearson's Correlation between parents for PANAS Negative Affect at twelve months time point.



The scatterplot looking at the relationship between the PANAS Negative Affect score at twelve months between mothers and fathers suggest that there is not an association. The Pearson correlation coefficient of -0.08 (95% CI: -0.47 to 0.36) confirms that there is not a statistically significant association between mothers' and fathers' scores ($p=0.718$)

7.1.4. Summary of PANAS results

The mothers' results for subset 5 PANAS Positive Affect domain suggest a slight improvement in mental health status over time in terms of energy and enthusiasm with the mean scores nearer to 50 (mean scores over all subsets ranged from 31.9 to 39.8). This is also reflected in the results for the PANAS Negative Affect domain where the mean score for all subsets ranged from 14.3 to 20.6 therefore suggesting a sense of calm.

The fathers' PANAS results also suggest a slight improvement in their mental health status, with the overall mean score for PANAS Positive Affect ranging from 37.2 to 41.0. The

PANAS Negative Affect mean score ranged from 14.6 to 17.4. The fathers' mean scores are not dissimilar to the mothers' scores for both PANAS Positive and Negative Affect. The results suggest an overall improvement in the mental health status of parents over time.

The results of the Pearson's Correlation, which looked at any possible relationship between the parents' mean scores, suggested that in terms of the PANAS Positive Affect results that there may be a weak relationship between the mean scores at both baseline and at twelve months postpartum. However in terms of the relationship between the parents' PANAS Negative Affect mean scores at baseline and twelve months postpartum, the analysis suggests that there was no association between the mean scores

7.2. Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale is a parent-specific instrument which measures negative mental health outcomes. It has a score ranging from zero to 30. When this questionnaire is used for postnatal women, an operationalized cut-off score of 12/13 and above is regarded as being indicative of depressive symptomology (Cox and Holden, 2003). When screening fathers for depression a cut-off score of over 10 has been shown to have a reasonable sensitivity (Edmondson et al., 2010).

Firstly the summary statistics for each subset for mothers and for fathers is presented. The data was then examined in terms of operationalized cut-off figure. Here a figure of ≥ 13 for mothers and ≥ 10 for fathers is employed to indicate possible depression. McNemar's test was performed at baseline for all subsets and subset 5 at twelve months, to ascertain if there was any relationship between parents in terms of depression. Further, the results from Pearson's correlation with scatterplots are presented here.

7.2.1. Mothers' EPDS summary statistics

Table 7.7. Summary statistics for mothers' Edinburgh Postnatal Depression Scale for all subsets by time point

Edinburgh Postnatal Depression Scale		One Month	Three Months	Six Months	Nine Months	Twelve Months
Subset 1, n = 183	Mean	6.3				
	Range of scores	0-18				
	Number ≥13	16				
	Percent ≥13	8.7				
Subset 2, n= 52	Mean	6.4	6.3			
	Range of scores	0-21	0-18			
	Number ≥13	7	7			
	Percent ≥13	13.5	13.5			
Subset 3, n= 18	Mean	7.2	5.9	8.1		
	Range of scores	0-18	0-18	0-21		
	Number ≥13	4	3	5		
	Percent ≥13	22.2	16.7	27.8		
Subset 4, n = 15	Mean	7.4	5.7	6.1	7.2	
	Range of scores	1-16	0-22	0-27	0-22	
	Number ≥13	2	1	1	3	
	Percent ≥13	13.3	6.7	6.7	20.0	
Subset 5, n= 67	Mean	6.6	5.6	4.7	4.6	5.4
	Range of scores	0-17	0-17	0-16	0-16	0-30
	Number ≥13	7	5	5	6	10
	Percent ≥13	10.4	7.5	7.5	9.0	14.9

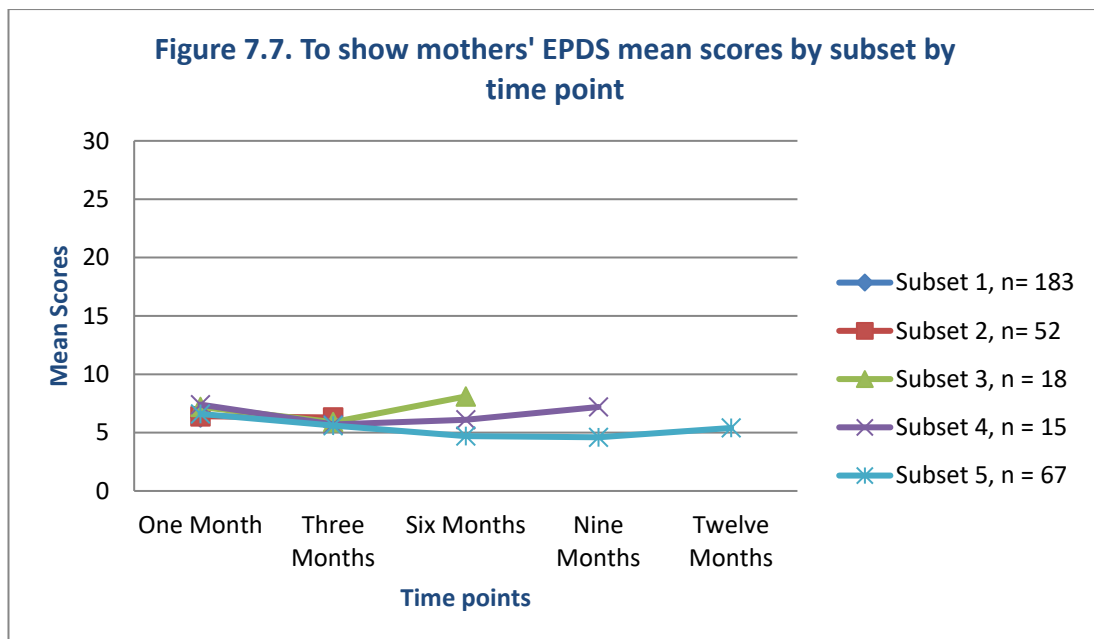


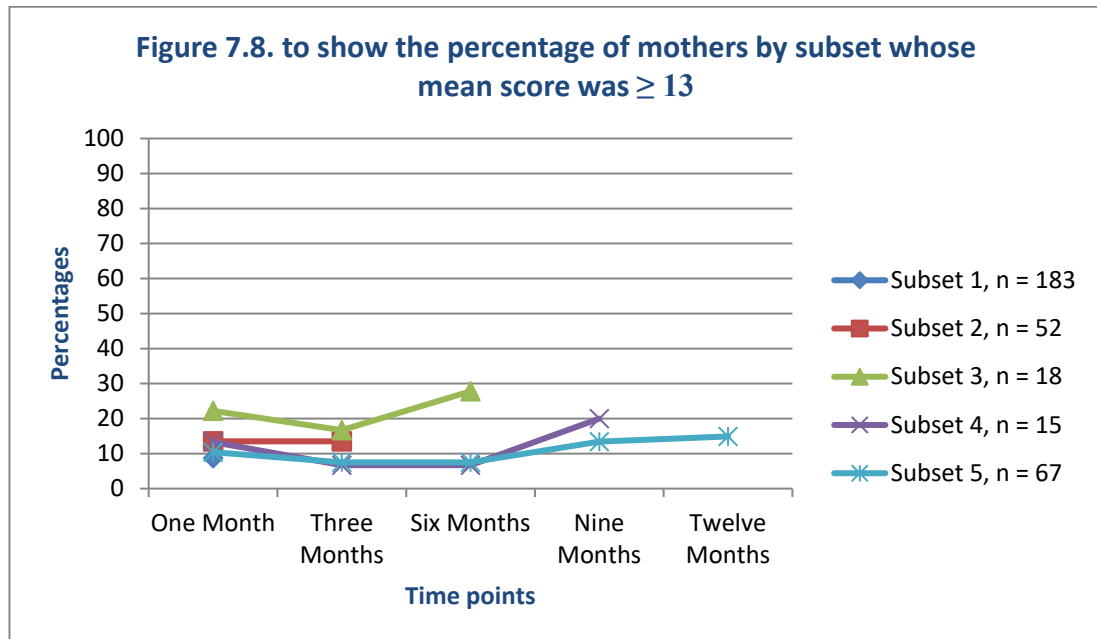
Figure 7.7. illustrates that there was little variation between the subsets with regard to mean scores. At baseline the mean scores ranged from 6.3 (subset 1) to 7.4 (subset 4). Overall the lowest mean score of 4.6 was recorded at nine months time point (subset 5). The highest mean score was 8.1 (subset 3 at six months time point).

However when looking at the range of mean scores (table 7.7) the range is from 0 to the upper figure of 30, 30 being the maximum score possible. The mean score of 30 was recorded by one mother in subset 5 at twelve months postpartum. It is therefore important to consider the percentage of mothers who actually scored above the operationalized cut-off figure.

7.2.2. Analyzing mothers' data with reference to an operationalized cut-off figure of equal to or greater than 13

Having therefore examined the mean scores for mothers in terms of subsets at all time points, it is important to consider the percentage of mothers who actually scored above the operationalized cut-off figure of 13. In the UK the percentage of mothers suffering from postnatal depression is quoted as 12-15% (Pope at al., 2000) but this figure has been quoted

as potentially higher (Cox and Holden, 2003). Globally, as previously quoted, this figure may be as much as 40% (Najman et al., 2000).



Therefore utilizing the data from table 7.7, figure 7.8 displays the percentage of mothers, by subset, whose score was ≥ 13 by time point. At baseline, the percentage of mothers who may be suffering from postnatal depression ranged from 8.7% (subset 1) to 22.2% (subset 3). The results for subset 3 show that whilst this percentage fell from 22.2% to 16.7% at three months assessment point, the percentage of mothers in this subset with possible depression increased to 27.8% by six months postpartum. This equates to five mothers with possible depression in this subset. The results for subset 4 also shows that at baseline the percentage of mothers with possible depression here was 13.3% and that whilst this figure dropped to 6.7% at the six months assessment point it then increased to 20.0% at the nine months assessment point. The percentage of mothers in subset 2 who scored equal to or above 13 was 13.5 at both first two time points. Whilst the percentage of mothers in subset 5 decreased to 7.5% at the six months assessment point from 10.4% at baseline, by twelve months this figure had risen to 14.9%, this figure equating to 10 mothers with possible depression.

Whilst examining the data by subset to show differences over time, by combining values of the subsets might indicate an overall percentage of mothers who may be experiencing postnatal depression over time. This figure can then be compared with values presented in other research.

Table 7.8. To show the total percentages of mothers in the study who scored equal to or greater than 13, by time point.

Time point	Total	Number scoring \geq 13	Percent \geq13
Baseline	335	36	10.7
Three months	152	16	10.5
Six months	100	11	11.0
Nine months	82	9	11.0
Twelve months	67	10	14.9

For the study as a whole, therefore, the percentage of mothers who may have experienced postnatal depression, based upon their EPDS score, ranged from 10.5% at three months postpartum to 14.9% at nine months postpartum.

7.2.3. Fathers' EPDS summary statistics

The Edinburgh Postnatal Depression Scale may produce a score ranging from zero to 30, with an operationalized cut-off score of 10 and above being indicative of depressive symptomology in fathers (Edmondson et al, 2010).

Table 7.9. Summary statistics for fathers' Edinburgh Postnatal Depression Scale for all subsets by time point

Edinburgh Postnatal Depression Scale		One Month	Three Months	Six Months	Nine Months	Twelve Months
Subset 1, n = 129	Mean	4.9				
	Range of scores	0-17				
	Number ≥10	18				
	Percent ≥10	14.0				
Subset 2, n= 34	Mean	4.2	4.1			
	Range of scores	0-11	0-12			
	Number ≥10	4	1			
	Percent ≥10	11.8	2.9			
Subset 3, n= 19	Mean	4.1	4.1	4.0		
	Range of scores	0-19	0-17	0-14		
	Number ≥10	2	2	3		
	Percent ≥10	10.5	10.5	15.8		
Subset 4, n = 11	Mean	5.4	5.5	4.4	5.9	
	Range of scores	0-15	0-15	0-13	0-15	
	Number ≥10	2	2	2	3	
	Percent ≥10	18.2	18.2	18.2	27.3	
Subset 5, n= 26	Mean	3.1	3.2	3.4	3.0	3.7
	Range of scores	0-8	0-14	0-18	0-14	0-13
	Number ≥10	0	2	2	1	2
	Percent ≥10	0	7.6	7.6	3.8	7.6

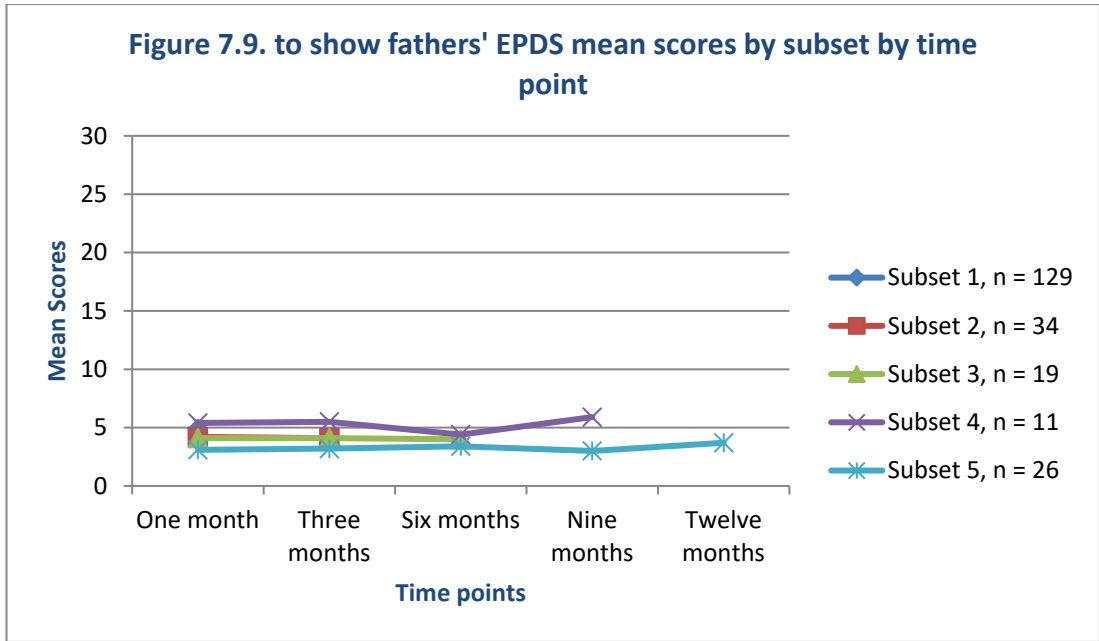
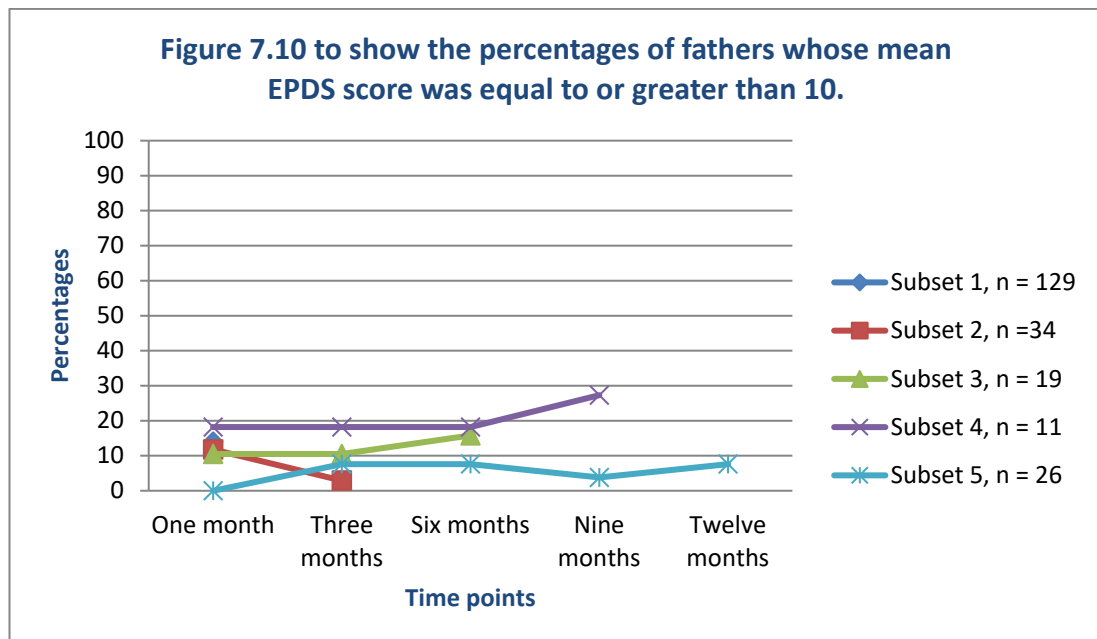


Figure 7.9 illustrates that there was very little difference in mean scores for EPDS between the subsets and over time. At baseline the mean scores ranged from 3.1 to 4.9. The mean scores for subset 5 ranged from 3.0 to 3.7. The overall mean scores ranged from 3.0 (subset 5) to 5.9 (subset 4) both recorded at the nine months assessment point. The mean score for each subset was therefore below the operationalized cut-off figure. However as for the mothers, it is important to examine the percentage of fathers who did actually score above the operationalized cut-off figure of 10.

7.2.4. Analyzing fathers' data with reference to an operationalized cut-off figure of equal to or greater than 10



At baseline the percentages of fathers who scored equal to or above the operationalized score of 10 ranged from 0% (subset 5) to 18.2% (subset 4). The percentage of fathers in subset 4 increased from 18.2% to 27.3% peaking at nine months; this equated to 2 fathers to 3 fathers who may have had depression. The percentage of fathers in subset 5 ranged from 0% to 7.6% over time. As for the mothers' results, it is important to look at these percentages for the whole cohort. These results are displayed in table 7.10.

Table 7.10. To show the total percentages of fathers in the study who scored equal to or greater than 10 by time point

Time point	Total	Number scoring \geq 10	Percentages
Baseline	219	26	11.9
Three months	90	7	7.8
Six months	56	7	12.5
Nine months	37	4	10.8
Twelve months	26	2	7.6

For the study as a whole, therefore, the percentage of fathers who may have experienced depression in the first year of their infant’s life, based upon their EPDS score, ranged from 7.6 (at twelve months postpartum) to 12.5% (at six months postpartum). This range is not dissimilar to the results for mothers’ which was 10% to 14.9%.

7.2.5. Results of McNemar’s test on EPDS data

The mothers’ and fathers’ EPDS results have therefore been examined as two distinct groups. Comparisons have been made between the two groups in terms of rates of depression. However, the majority of parents dwell as a couple within a household and it must be assumed experience the same parenting ups and downs. To examine if there is any occurrence of co-morbidity between couple a McNemar’s test was performed on the data collected at baseline. The results are presented as matched couples for each of the five subsets. The parents were matched as a household where they had completed the same number of time points with regard to the EPDS questionnaire.

Table 7.11. McNemar’s test results for all subsets at baseline, n = 166 couples

	Neither Parent scored above cut-off figure		Mother only scored above cut-off figure		Father only scored above cut-off figure		Both parents scored above cut-off figure		Totals	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Subset 1	83	(79.8)	5	(4.8)	13	(12.5)	3	(2.9)	104	(100.0)
Subset 2	19	(82.6)	3	(13.0)	0	(0.0)	1	(4.4)	23	(100.0)
Subset 3	5	(71.4)	1	(14.3)	0	(0.0)	1	(14.3)	7	(100.0)
Subset 4	4	(66.6)	1	(16.7)	1	(16.7)	0	(0.0)	6	(100.0)
Subset 5	24	(92.3)	2	(7.7)	0	(0.0)	0	(0.0)	26	(100.0)
TOTALS	135		12		14		5		166	

The following two tables (table 7.12 and 7.13) display the results for subset 5 at baseline and at twelve months postpartum as a comparison between mothers and fathers at the beginning and the end of the study.

Table 7.12. McNemar’s test results for Subset 5 at baseline, n =26 couples

		Fathers’ EPDS operationalized cut-off mean score	
		Mean score below 10	Mean score equal to or greater than 10
Mothers’ EPDS operationalized cut-off mean score	Mean score below 13	24	0
	Mean score equal to or greater than 13	2	0

The results show that in the majority of couples (24) neither partner scored above the appropriate operationalized cut-off figure. The p-value for a McNemar test for subset 5 at one month is 0.564. This is not statistically significant and it suggests that there is not an association between depression and being either a mother or a father. There is no difference in depression between mothers and fathers.

Table 7.13. McNemar’s test results for Subset 5 at twelve month time point, n = 26

		Fathers’ EPDS operationalized cut-off mean score	
		Mean score below 10	Mean score equal to or greater than 10
Mothers’ EPDS operationalized cut-off mean score	Mean score below 12	21	2
	Mean score equal to or greater than 12	3	0

The results show that in the majority of couples (21) neither partner scored above the appropriate operationalized cut-off figure. The p-value for a McNemar test for subset 5 at twelve month is 0.655. This is not statistically significant and it suggests that there is not an association between depression and being either a mother or a father. There is no difference in depression between mothers and fathers.

A limitation of pairing up parents who have both completed the EPDS questionnaire at five time points is that the sample size is small, only 26 couples.

Further McNemar’s test was performed examining the mothers in subset 5 EPDS operationalized cut-off mean score at baseline and at twelve months postpartum.

Table 7.14. McNemar’s test results for mothers in Subset 5 at baseline (one month) and at the twelve month time point, n = 67

		Mothers’ EPDS operationalized cut-off mean score at 12 months	
		Mean score below 13	Mean score equal to or greater than 13
Mothers’ EPDS operationalized cut-off mean score at one month	Mean score below 13	54	6
	Mean score equal to or greater than 13	5	2

The p value for the McNemar’s test is 0.763. This suggests that there is no evidence of a statistically significant change in depression from one month to twelve months in mothers in subset 5.

McNemar’s test was also performed examining the fathers in subset 5 EPDS operationalized cut-off mean score at baseline and at twelve months postpartum.

Table 7.15. McNemar’s test results for fathers in Subset 5 at baseline (one month) and at the twelve month time point, n = 26

		Fathers’ EPDS operationalized cut-off mean score at 12 months	
		Mean score below 10	Mean score equal to or greater than 10
Fathers’ EPDS operationalized cut-off mean score at one month	Mean score below 10	24	2
	Mean score equal to or greater than 10	0	0

The p value for McNemar’s test is 0.248. This suggests there is no evidence of a significant change in depression from one month to twelve months in fathers in subset 5.

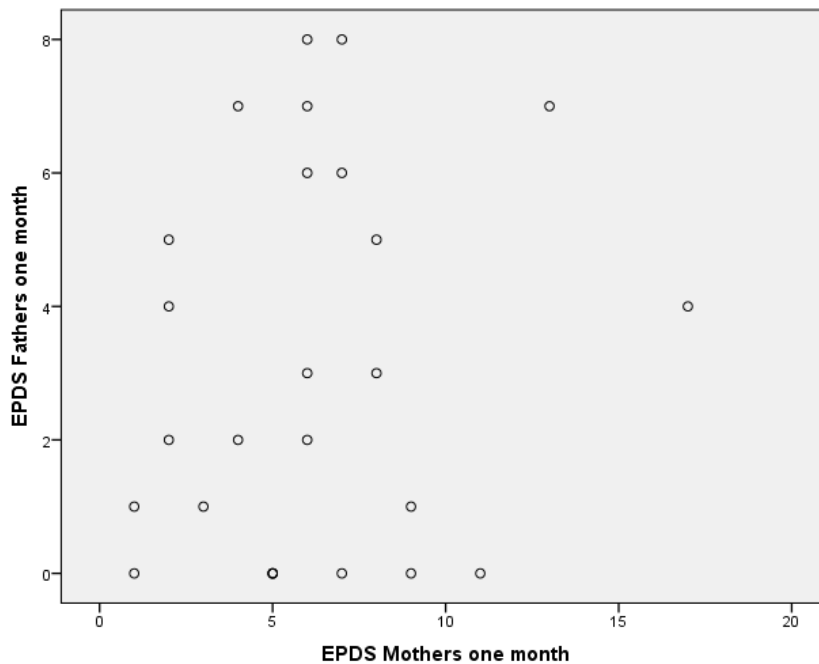
The results for subset 5 at baseline and at twelve months were further analysed using Pearson’s Correlation test.

7.2.6. Results of Pearson’s Correlation on EPDS data for mothers and fathers in subset 5 at baseline and twelve months assessment points

Table 7.16. Pearson’s Correlation results for EPDS for parents in subset 5

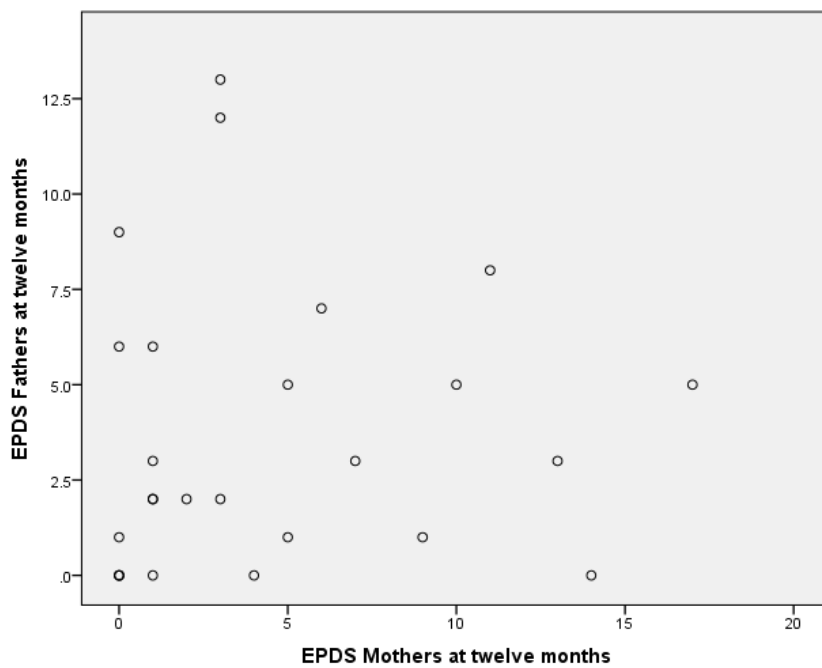
Instrument	n	Correlation coefficient	95% CI	p-value
EPDS at baseline	26	0.165	-0.237 to 0.519	0.422
EPDS at 12 months	26	0.065	-0.33 to 0.441	0.752

Figure 7.11. Scatterplot to show results of Pearson’s Correlation for EPDS between parents in subset 5 at baseline



The scatter plot looking at the relationship between the EPDS score at one month between mothers and fathers suggest that there is not an association. The Pearson correlation coefficient of 0.17 (95% CI: -0.24 to 0.52) confirms that there is not a statistically significant association between mothers' and fathers' scores ($p=0.422$)

Figure 7.12. Scatterplot to show results for Pearson's Correlation for EPDS between parents in subset 5 at twelve months assessment point



The scatter plot looking at the relationship between the EPDS score at twelve months between mothers and fathers suggests that there is not an association. The Pearson correlation coefficient of 0.07 (95% CI: -0.33 to 0.44) confirms that there is not a statistically significant association between mothers' and fathers' scores ($p= 0.752$)

7.2.7. Summary of EPDS results

The EPDS is an instrument that is administered to all pregnant and postnatal mothers in the UK and is also used globally as a measure of postnatal depression. An operationalized cut-off figure is applied and for this study ≥ 13 for mothers and ≥ 10 was used. The range of scores of 0-30 is achievable. In terms of the mothers' results, the range of scores was 0-30 and 0-18 for fathers for the study as a whole. Examining the mean scores by subset it was noted that this figure was less than 10 for both mothers and fathers. The data was then examined with reference to the gender specific operationalized cut-off figures. For mothers the results showed that the highest percentage of mothers who scored above the operationalized cut-off figure was 27.8% at six months postpartum (subset 3) and the lowest figure was recorded by subset 4 at three and six months (6.7%). This figure increased to 20% at nine months (3 out of a sample size of 15). When looking at the total mothers who completed the EPDS, the percentage of mothers with potential depression ranged from 10.5 to 14.9%.

The fathers' results showed that the mean scores for fathers were lower than the mothers' mean scores. Fathers' mean scores ranged from 3.0 (subset 5 at nine months postpartum) to 5.9 (subset 4 at nine months time point). When applying an operationalized cut-off figure of 10 to the data, this produced a percentage that ranged from zero to 27.3%.

Further McNemar's test was performed to examine whether there was any relationship between couples in terms of their experiences of depression. Considering the data for subset 5 at one month and at twelve months postpartum suggest that there is no association between depression and whether the parent is a mother or a father. The results of Pearson's Correlation suggested that there was not a statistically significant association between the mothers and fathers results at either baseline or twelve months time point.

7.3. Warwick- Edinburgh Mental Well-Being Scale

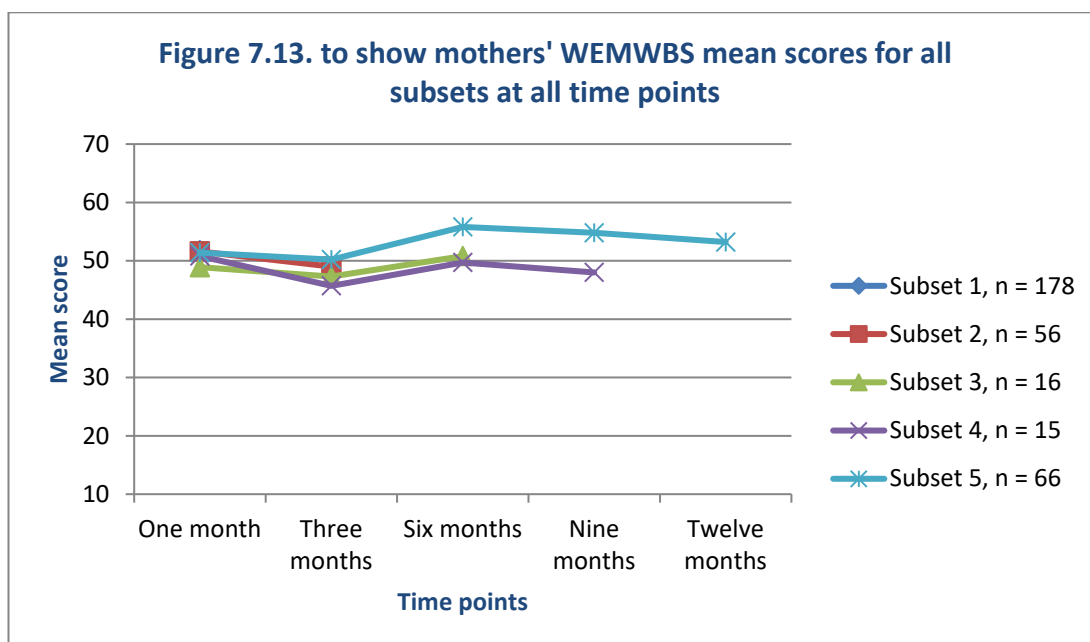
In comparison to the EPDS, the WEMWBS is a generic instrument which measures positive mental health outcomes with all the items being positively scored. The maximum score which can be achieved is 70 and the minimum 14 (Tennant et al, 2007). The summary statistics for all subsets are presented for both mothers and fathers. Results for Pearson's Correlation analysis and scatterplots are also presented

7.3.1. Mothers' WEMWBS results

Summary statistics for WEMWBS are presented in table and visually as graphs.

Table 7.17. To show mothers' WEMWBS results by subset and by time point

WEMWBS	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Subset 1 <i>n</i> = 178	51.8	9.4	-	-	-	-	-	-	-	-
Subset 2 <i>n</i> = 56	51.6	11.0	49.0	10.7	-	-	-	-	-	-
Subset 3 <i>n</i> = 16	48.9	12.8	47.3	12.5	50.8	12.1	-	-	-	-
Subset 4 <i>n</i> = 15	50.8	7.5	45.7	7.8	49.7	11.1	48.0	11.6	-	-
Subset 5 <i>n</i> = 66	51.4	8.1	50.2	7.6	55.8	8.3	54.8	8.7	53.1	10.6

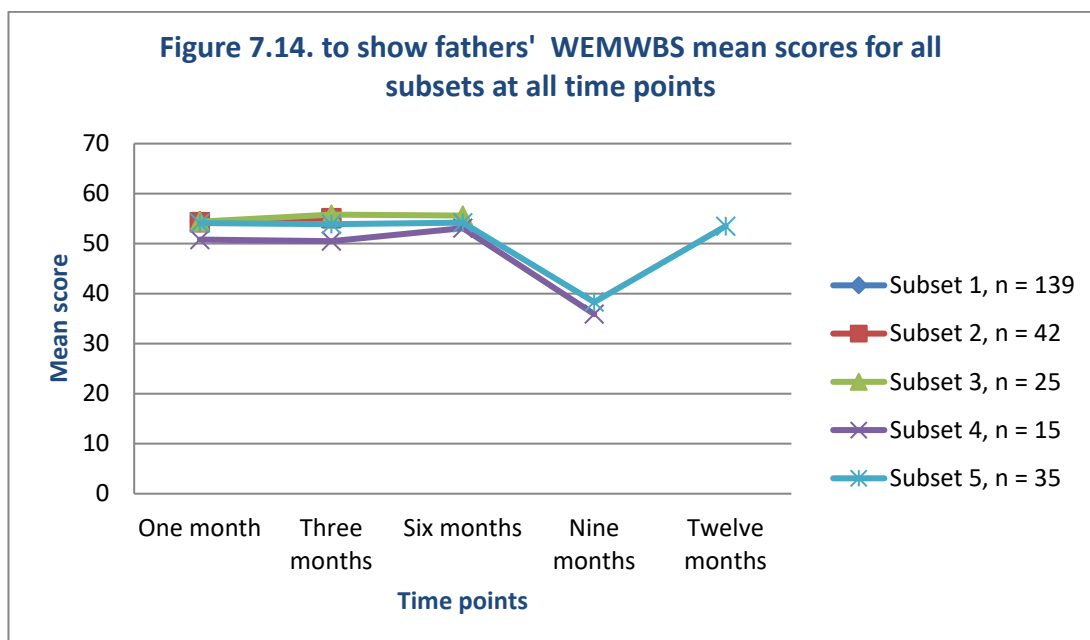


The mean scores for WEMWBS was fairly constant over the twelve month period, with the mean range between at baseline of 48.9 (subset 3) and 51.8 (subset 1). Overall the mean score ranged from 45.7 (subset 4 at the three months assessment point) to 55.8 (subset 5 at the six months assessment point) A score of 70 suggests positive mental health status. Subset 5 showed little variation in the mean score over time, ranging from 50.2 at the three months assessment point to 55.8 at the six months assessment point. Subset 4 showed a slight decline to 45.7 at the three months assessment point from 50.8 at baseline and then recovering to 48.0 at the nine months assessment point.

7.3.2. Fathers' WEMWBS results

Table 7.18. To show fathers' WEMWBS results by subset and by time point

WEMWBS	One Month Mean (SD)	Three Months Mean (SD)	Six Months Mean (SD)	Nine Months Mean (SD)	Twelve Months Mean (SD)
Subset 1 n= 139	54.5 (9.5)	-	-	-	-
Subset 2 n= 42	54.3 (7.8)	55.1 (7.6)	-	-	-
Subset 3 n=25	54.4 (8.1)	55.8 (10.7)	55.6 (9.6)	-	-
Subset 4 n=15	50.8 (10.4)	50.5 (10.8)	53.1 (10.5)	35.9 (8.3)	-
Subset 5 n=35	54.1 (8.1)	53.9 (9.3)	54.2 (9.9)	38.3 (7.0)	53.5 (8.3)



At baseline the mean scores ranged from 50.8 (subset 4) to 54.5 (subset 1). As these figures are nearer to the maximum score of 70 this suggests a more positive sense of well-being. Up

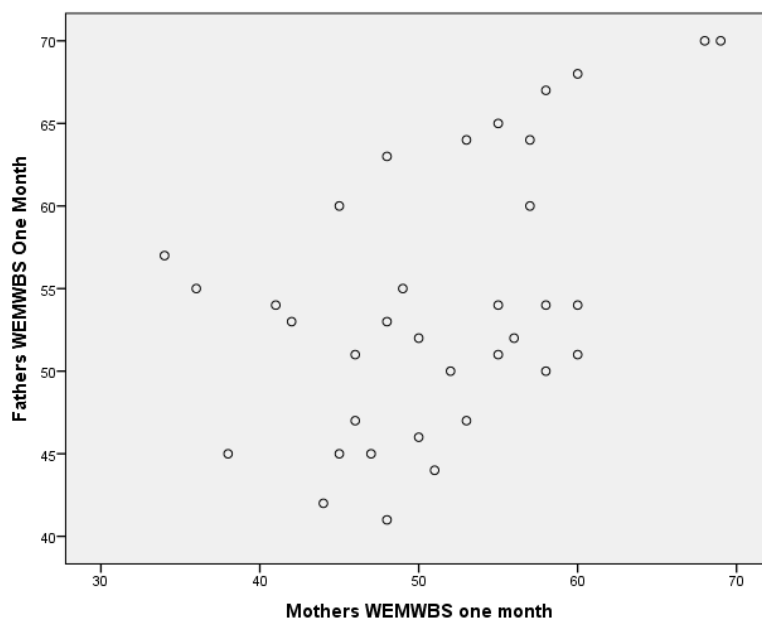
to the six months assessment point there is only slight variation from these scores. However at nine months assessment point both the mean scores for both subset 4 and subset 5 have taken a decline. The mean score for subset 4 at six months assessment point was 53.1 which fell to 35.9. For subset 5 the mean score at six month time point was 54.2 and this fell to 38.3, by twelve months assessment point this figure had recovered to 53.5.

7.3.3. Results of Pearson’s Correlation for WEMWBS

Table 7.19. Pearson’s Correlation results for WEMWBS for subset 5 at baseline and twelvemonths assessment point

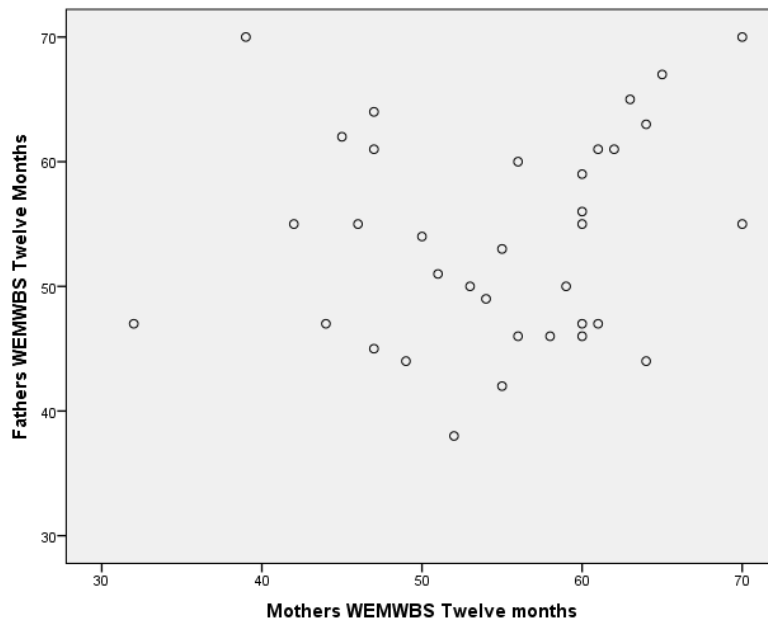
Instrument	n	Correlation coefficient	95% CI	p-value
WEMWBS at baseline	35	0.46	0.19 to 0.71	0.002
WEMWBS at 12 months	35	0.15	-0.18 to 0.46	0.377

Figure 7.15. Scatterplot to show results for Pearson’s Correlation for WEMWBS between parents in subset 5 at one month assessment point



The scatter plot looking at the relationship between the WEMWBS score at one month between mothers' and fathers' suggests that there may be a weak relationship. The Pearson correlation coefficient is 0.46 (95% CI: 0.19 to 0.71) suggests a weak, positive correlation. This correlation is statistically significant ($p=0.002$).

Figure 7.16. Scatterplot to show results for Pearson's Correlation for WEMWBS between parents in subset 5 at twelve months assessment point



The scatter plot looking at the relationship between WEMWBS score at twelve months between mothers' and fathers' suggests that there may be a weak relationship. The Pearson correlation coefficient is 0.15 (95% CI: 0.18 to 0.46) showing that there is not a statistically significant association between mothers' and fathers' scores ($p=0.377$).

7.3.4. Summary of WEMWBS results

Overall there was little variation in the mothers mean score for this instrument. The mean scores over the study ranged from 45.7 to 55.5. However, the results for the fathers' showed a sudden decline for both subset 4 and 5 (35.9 and 38.3, respectively). The mean score for subset 5 did recover to 53.5 by the twelve months time point. The results from the Pearson's Correlation suggest that there was a weak positive statistically significant relationship at one month but not a statistically significant relationship at twelve months postpartum.

7.4. Mothers' paired sample t tests

In the following section the data generated for all three instruments was examined using paired sample t tests. For each of the three instruments mean scores at baseline were compared with the average follow up scores.

Table 7.20. To show mothers' paired sample t -test results for PANAS, EPDS AND WEMWBS for subset 5

QUESTIONNAIRES	Baseline			Average Follow Up			Mean Difference	95% Confidence Intervals		Significance (2-tailed)
	n	Mean	SD	n	Mean	SD		Lower	Upper	p-value
PANAS Positive Affect	50	35.1	7.2	50	39.2	5.8	4.1	2.8	5.5	< 0.001
PANAS Negative Affect	50	17.4	5.8	50	15.3	4.2	-2.1	-3.4	-0.7	0.004
EPDS	67	6.6	3.8	67	5.1	4.0	- 1.5	-2.4	- 0.7	< 0.001
WEMWBS	66	51.4	8.1	66	53.4	7.6	2.1	0.6	3.6	0.007

Significance $p \leq 0.05$

Scoring

PANAS: Highest score for both PA and NA = 50. High PA and low NA equates to better health outcomes.

EPDS: Range 0-30. Zero best possible mental health outcome. A score of ≥ 12 is indicative of possible postnatal depression.

WEMWBS: Range 14-70, upper score indicative of higher levels of positive mental health.

7.4.1. PANAS Positive Affect

There was a statistically significant increase in the mean score between baseline (mean = 35.1, SD = 7.2) and the average follow up score (mean = 39.2, SD = 5.8), $p = <0.001$. The mean difference in scores was 4.1 with a 95% confidence interval ranging from 2.8 to 5.5.

7.4.2. PANAS Negative Affect

There was a statistically significant decrease in the mean score between baseline (mean = 17.1, SD = 5.6) and the average follow up score (mean = 15.1, SD = 4.1), $p = 0.002$. The mean difference in scores was -2.0, with a 95% confidence interval ranging from -3.4 to -0.7.

7.4.3. EPDS

There was a statistically significant decrease in the mean score between baseline (mean = 6.6, SD = 3.8) and the average follow up score (mean = 5.1, SD = 4.0), $p = <0.001$. The mean difference in scores was -1.5 with a 95% confidence interval ranging from -2.4 to -0.7.

7.4.4. WEMWBS

There was a statistically significant increase in the mean score between baseline (mean = 51.4, SD = 8.1) and the average follow up score (mean = 53.4, SD = 7.6), $p = 0.007$. The mean difference in scores was 2.1 with a 95% confidence interval ranging from 0.6 to 3.6

7.4.5. Summary of mothers' paired sample t-test results

For all the questionnaires, PANAS Positive Affect, PANAS Negative Affect, Edinburgh Postnatal Depression Scale and WEMWBS the results showed a statistically significant difference between baseline and the average follow up scores. In the case of PANAS Positive and WEMWBS there was a statistically significantly increase between the baseline and average follow up scores.

7.5. Fathers' paired sample t tests

In the following section the data generated for all three instruments was examined using paired sample t tests. For each of the three instruments mean scores at baseline were compared with the average follow up scores.

Table 7.21. To show fathers' paired sample t -test results for PANAS, EPDS AND WEMWBS for subset 5

QUESTIONNAIRES	Baseline			Average Follow Up			Mean Difference	95% Confidence Intervals		Significance (2-tailed)
	n	Mean	SD	n	Mean	SD		Lower	Upper	p-value
PANAS Positive Affect	31	38.8	7.2	31	38.8	6.3	0.0	- 1.6	1.7	0.947
PANAS Negative Affect	31	14.7	4.8	31	13.2	3.1	- 1.5	-2.9	0.0	0.048
EPDS	26	3.1	2.9	26	3.3	3.5	0.2	-0.5	0.9	0.615
WEMWBS	35	54.1	8.1	35	50.0	7.9	- 4.1	- 5.8	-2.4	< 0.001

Significance $p \leq 0.05$

Scoring

PANAS: Highest score for both PA and NA = 50. High PA and low NA equates to better health outcomes.

EPDS: Range 0-30. Zero best possible mental health outcome. A score of ≥ 12 is indicative of possible postnatal depression.

WEMWBS: Range 14-70, upper score indicative of higher levels of positive mental health.

7.5.1. PANAS Positive Affect

There was no change in the mean score between baseline (mean = 38.8, SD = 7.2) and the average mean follow up score (mean = 38.8, SD = 6.3), $p = 0.947$. The p value is therefore greater than 0.05. The mean difference in scores was 0.0 with a 95% confidence interval ranging from -1.6 to 1.7.

7.5.2. PANAS Negative Affect

There was a statistically significant decrease in the mean score between baseline (mean = 14.7, SD = 4.8) and the average follow up score (mean = 13.2, SD = 3.1), $p = 0.048$. The mean difference in scores was -1.5 with a 95% confidence interval ranging from -2.9 to 0.0.

7.5.3. EPDS

There was non-statistically significant increase in the mean score between baseline (mean = 3.1, SD = 2.9) and the average follow up score (mean = 3.3, SD = 3.5), $p = 0.615$. The p value is therefore greater than 0.05. The mean difference in scores was 0.2 with a 95% confidence interval ranging from -0.5 to 0.9.

7.5.4. WEMWBS

There was a statistically significant decrease in the mean score between baseline (mean = 54.1, SD = 8.1) and the average follow up score (mean = 50.0, SD = 7.9), $p < 0.001$. The mean difference in scores was -4.1 with a 95% confidence interval ranging from -5.8 to -2.4.

7.5.5. Summary of fathers' paired sample t-tests

The results for the paired sample t-tests suggest that there was no statistically significant difference between the baseline score and the average follow up scores for PANAS Positive Affect and EPDS. The results of the paired sample t-tests for the PANAS Negative Affect

and WEMWBS questionnaire suggests that there was a statistical significance decrease between the baseline and average follow up scores.

7.6. Summary

In this chapter the analysis of the data generated for three instruments, PANAS, EPDS and WEMWBS are described. These three instruments examine mental health outcomes. These instruments were offered to both mothers and fathers.

The mother's results for PANAS Positive Affect and PANAS Negative Affect suggested a slight improvement in their mental health outcomes over time. The fathers' results, for this instrument, however showed little change over time, though the values suggested slightly better mental health outcomes compared with the mothers' results. The improvement in mothers' mental health was more noticeable in comparison to fathers' results, where there was little change over time. The results for Pearson's correlation analysis for parents in subset 5 showed at baseline for PANAS Positive Affect a weak positive relationship with a statistically significant correlation between the parents' scores. At twelve months time point there was a weak relationship between the mothers' and fathers' scores but this was not a statistically significant association. The results for the Pearson's correlation for PANAS Negative Affect showed that there was not a statistical association between the mothers' and fathers' scores at either baseline or at twelve months postpartum.

The EPDS was the only parent-specific instrument used in this study and looks at negative mental health outcomes. It is an instrument that is employed clinically to try to identify mothers, particularly, who may be experiencing depression in the postpartum. When examining the mean scores for mothers, this value ranged from 6.3 to 7.4 at baseline. Overall for the cohort the lowest mean score was 4.6 and the highest was 8.1. The mean score however says little about those mothers whose mean score was equal to or above the operationalized cut-off figure of 13. When this result was generated, it was noted that when looking at all five subsets overall, 8.7 to 22.2% of mothers may have clinical depression.

When examining the cohort as a whole, over time 10.5 to 14.9 % of mothers scored above the operationalized cut-off figure.

Whilst it is recognized that mothers suffer from postnatal depression and therefore the expectation would be to see the results here reflecting the incidence quoted in the literature, what is perhaps interesting are the results for the fathers. The results showed the mean scores ranged from 3.0 to 5.9. Less literature is available which looks at the incidence of depression in fathers in the postnatal period, however Madsen and Juhl (2007) in their study using an EPDS cut-off score of ≥ 10 did report an incidence of 5%. When examining the data again in terms of the operationalized cut-off figure of ≥ 10 , this showed that 0 to 18.2% of fathers at baseline may have depression. The cohort of fathers produced a total score of 7.6 to 12.5% who scored ≥ 10 . This is therefore higher than presented in the study by Madsen and Juhl (2007).

The figures produced from the analysis of both the mothers' and fathers' data therefore produced similar results in terms of percentages of parents who may have depression. A McNemar's test was performed on the data to identify if co-morbidity exists within couples. The results for the parents in subset 5 at both baseline and at twelve months postpartum, showed no association between depression and being either a mother or a father. The results from the Pearson's correlation showed that there was not a statistical association between mothers and fathers.

The WEMWBS instrument looked at positive mental health outcomes. The results for mothers over time suggested a positive sense of well-being with the mean scores ranging from 45.7 to 55.8 over the twelve months. The fathers' results also showed a positive sense of well-being with the mean scores greater than 50 except at nine months postpartum. Here the results for subset 4 and subset 5 showed a decline to 35.9 and 38.3 respectively. The results for subset 5 recovered to 53.5 at twelve month time point.

When t-tests were performed for all instruments, the results for mothers in subset 5 showed that the results were all statistically significant with an increase in the PANAS Positive Affect scores and WEMWBS scores and a decrease in PANAS Negative Affect scores and EPDS scores suggesting an improvement in mothers' mental health over time. Except for WEMWBS results, all the fathers' t-test results showed no statistically significant difference between the mean scores and the follow up scores. In terms of the WEMWBS results there was a statistically significant decrease in scores.

In the following chapter the findings from both the S-PHI and SF-12 will be presented. The S-PHI explores both positive and negative aspects of parents' health and well-being. It was designed specifically to be used with parents in the postpartum, each parent being administered a gender appropriate version of the instrument. The S-PHI explores physical, mental and social health and well-being. Also within this following chapter, the results from the SF-12 instrument which was administered to both parents will be discussed. The Short Form-12 instrument examines both mental and physical health.

Chapter 8: Results of other Parent Reported Outcomes Instruments

8.0. Chapter overview

As well as the three instruments detailed in chapter 7, mothers and fathers were asked to complete the Sheffield Postnatal Health Instrument questionnaire (Mothers or Fathers version) and Short Form-12, both producing quality of life measures. The demographic data derived from the S-PHI has been previously described in chapter 6.

Summary statistics are presented for each domain of the S-PHI and for the Physical Component and Mental Component of the SF-12, by subset for each of the five time points. For each domain and SF-12 component paired sample t-tests were performed to calculate the mean difference between baseline and average follow up scores for subset 5. Pearson's Correlation test was performed on the SF-12 results. Scatterplots are also presented.

8.1. Sheffield Postnatal Health Instrument

Both the mother's and the father's versions of the S-PHI explore particular aspects of parenting in the postnatal period. These are areas of health and well-being pertinent to parents particularly in the postnatal period. This instrument examines both positive and negative aspects of parents' health and well-being in the postpartum. The results may be described as a 'snap shot' but perhaps more importantly it allows the results to be compared over the twelve month time period in an effort to describe and illustrate any changes in health that may occur.

The numbers of participants are recorded as those who completed and returned the S-PHI questionnaire as a whole. It was noted that whilst parents returned the questionnaire, they did not necessarily complete each domain or section within the instrument. It is for that reason that the number of respondents who completed each domain is not consistent throughout the results. For each domain the results are presented in the form of subsets. These subsets represent how many sequential time points that were completed by the

parents. Unfortunately mothers and fathers did not always return the questionnaire at each time point and may have missed out a time point. These mothers and fathers were discarded from the results so that a pattern over time could be established. The summary statistics are presented for each subset, both in table and graph form.

8.2. Sheffield Postnatal Health Instrument – Mothers (M-PHI)

As previously described part one of the M-PHI consists of 29 core questions that collectively form six ‘domains’. These domains are; ‘relationship with baby’, ‘control and powerlessness’, ‘sleep’, ‘emotional well-being’, ‘mood’ and ‘social support’. Part two of the questionnaire is divided into five domains described as; ‘physical health’, ‘relationship with extended family’, ‘sexual relationship’, ‘infant feeding’ and ‘relationship with partner’. Part three of the questionnaire gathers demographic information, the results of which are described in chapter 6.

For M-PHI, the subsets represent the following:

- Subset 1: mothers who returned the M-PHI, at baseline (one month) only, n=197.
- Subset 2: mothers who returned the M-PHI at one and three months postpartum, n= 62.
- Subset 3: mothers who returned the M-PHI at one, three and six months postpartum, n=20.
- Subset 4: mothers who returned the M-PHI at one, three, six and nine months postpartum, n= 13.
- Subset 5: mothers who returned the M-PHI at one, three, six, nine and twelve months postpartum, n= 71.

It must be noted that whilst these are the total numbers of mothers who returned the questionnaires, that they did not necessarily complete each domain. This initial figure

therefore represents the potential number per subset and then presented the data for the actual number of mothers who sequentially completed that particular domain.

M-PHI: Please note that each dimension for the core and also the modular questionnaire is calculated on a scale from 0 to 100, where 0 = best possible health outcome as measured by the questionnaire and 100 = the worst possible health outcome as measured by the questionnaire.

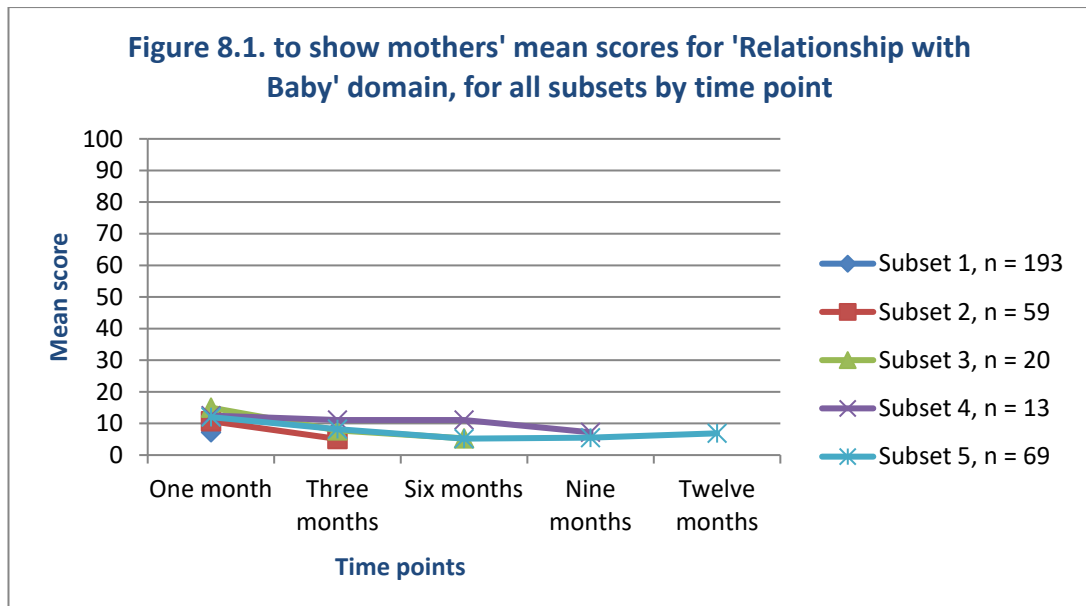
8.3. Part One M-PHI: Core domains

8.3.1. Relationship with Baby Domain

In this domain the mothers were asked about the love and bond that they had developed with their baby. If they were having fun with their baby and enjoying watching their baby develop.

Table 8.1. Summary statistics for mothers' 'Relationship with Baby' domain, for all subsets by time points.

Relationship with Baby	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	193	7.2 (11.2)	-	-	-	-	-	-	-	-
Subset 2 n= 62	59	10.7 (15.2)	59	5.1 (9.3)	-	-	-	-	-	-
Subset 3 n=20	20	15.0 (16.8)	20	7.8 (12.2)	20	5.3 (9.9)	-	-	-	-
Subset 4 n=13	13	12.5 (15.9)	13	11.1 (11.2)	13	11.1 (18.1)	13	7.2 (6.7)	-	-
Subset 5 n=71	69	12.1 (12.6)	69	8.2 (10.1)	69	5.2 (8.4)	69	5.5 (8.6)	69	6.9 (10.9)



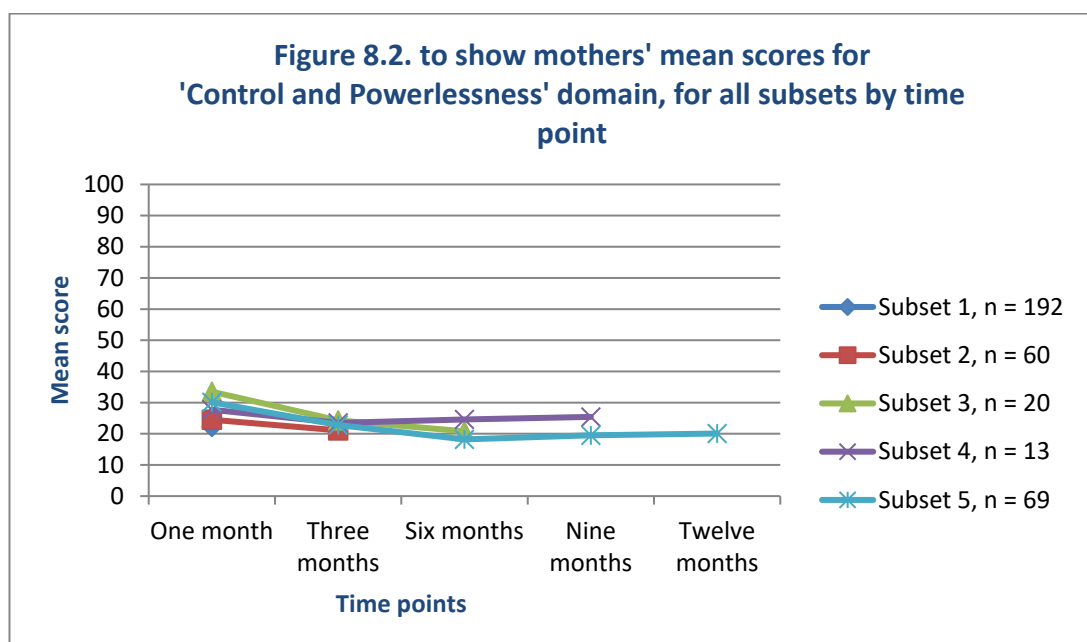
The results show that the mean scores at baseline ranged from 7.2 (subset 1) to 15.0 (subset 3). The trend for subsets 2, 3 and 4 was towards zero suggesting an improvement in this domain, with subset 2 and 3 showing the biggest decline in mean scores between one month and three month time points. The results for subset 5 show that there is a slight increase in the mean scores with time, at baseline this figure was 12.0, at nine months 5.5 and this then increased to 6.9 at twelve months postpartum. Notably all mean scores for all subsets are below 16, with the lowest mean score value recorded being for subset 2 at the three month time point (5.1). At the twelve month time point, the mean score for subset 5 was 6.9. Overall this suggests that mothers had a positive sense of their relationship with their baby, although there is an increase in the mean scores for subset 5 at twelve months postpartum this is only a slight increase.

8.3.2. Control and Powerlessness Domain

In this domain mothers were asked about the sense that their baby was taking over their lives and the feeling that the world was now structured around their infant's life. Mothers were questioned about whether they felt that their life was no longer as before.

Table 8.2. Summary statistics for mothers' 'Control and Powerlessness' domain, for all subsets by time point

Control and Powerlessness	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	192	22.2 (18.2)	-	-	-	-	-	-	-	-
Subset 2 n= 62	60	24.5 (19.1)	60	21.1 (16.2)	-	-	-	-	-	-
Subset 3 n=20	20	33.5 (20.5)	20	24.3 (17.0)	20	20.8 (18.2)	-	-	-	-
Subset 4 n=13	13	27.7 (16.2)	13	23.5 (18.8)	13	24.6 (17.3)	13	25.4 (14.6)	-	-
Subset 5 n=71	69	30.2 (17.2)	69	22.8 (15.9)	69	18.2 (14.7)	69	19.5 (16.2)	69	20.1 (15.7)



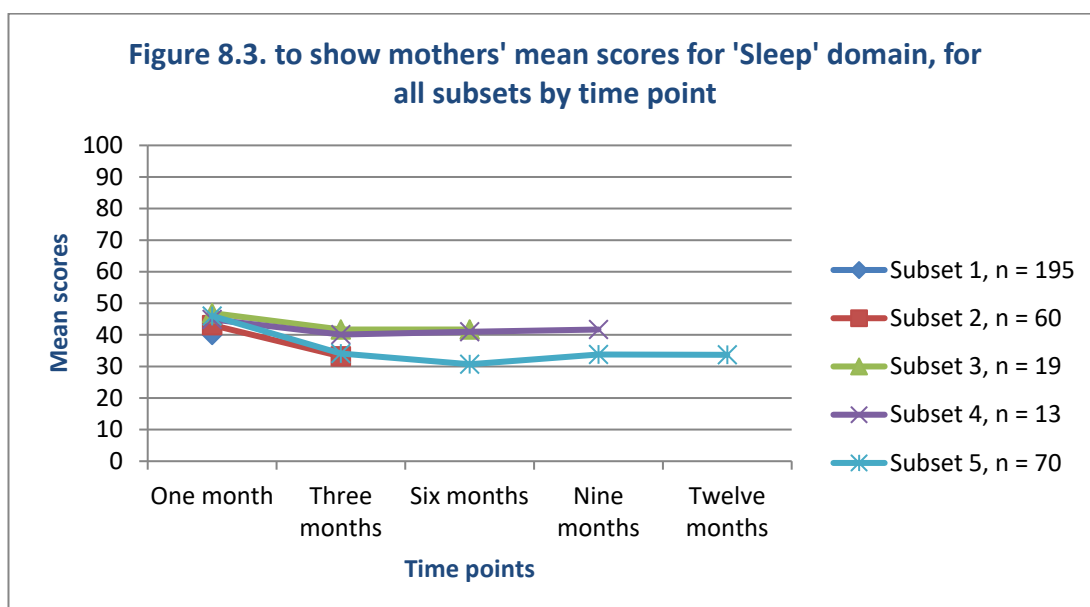
At baseline the range of mean scores for this domain was 22.2 (subset 1) to 33.5 (subset 3). Figure 8.2 illustrates that after an initial decrease in the mean scores at three months that both subset 4 and 5 appear to plateau. At nine months the mean score for subset 4 was 25.4 compared with 19.5 for subset 5. At the twelve month time point, the mean score for subset 5 was 20.1. The mean scores are nearer to zero than 100 therefore suggesting that mothers are not unduly concerned about the effect that their baby is having upon their lives.

8.3.3. Sleep Domain

The lack of sleep after the birth of a baby is a topic that is well discussed amongst new parents. Is this a transient problem or does the lack of sleep impact upon parents' lives for longer than assumed? Mothers were asked about their feelings of tiredness and whether they felt drained of energy and finding it difficult to cope because of it.

Table 8.3. Summary statistics for mothers' 'Sleep' domain, for all subsets by time point

Sleep	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	195	40.0 (17.7)	-	-	-	-	-	-	-	-
Subset 2 n= 62	60	43.1 (22.7)	60	33.2 (22.6)	-	-	-	-	-	-
Subset 3 n=20	19	46.9 (23.3)	19	41.7 (22.2)	19	41.7 (22.2)	-	-	-	-
Subset 4 n=13	13	44.9 (17.2)	13	40.1 (16.3)	13	41.0 (17.8)	13	41.7 (18.3)	-	-
Subset 5 n=71	70	46.0 (18.3)	70	34.1 (18.7)	70	30.7 (19.7)	70	33.8 (23.1)	70	33.7 (21.9)



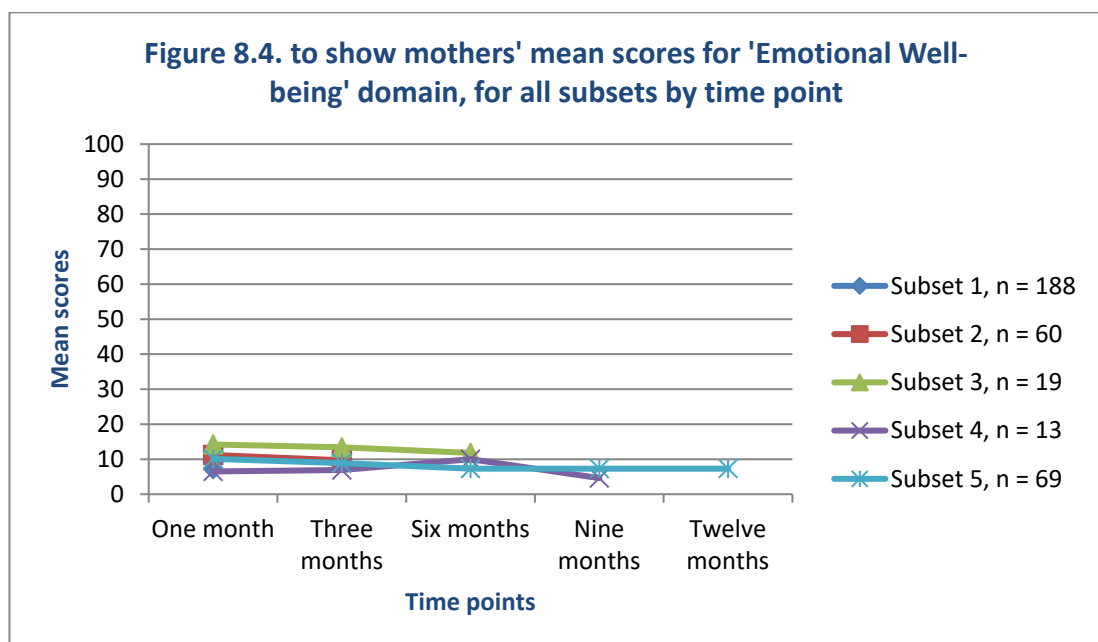
At one month (baseline) the five subset scores ranged from 40.0 (subset 1) to 46.0 (subset 5). The results showed that whilst the mean score for Subset 4 was initially 44.9 at one month, this score only decreased to 40.1 at three months and then plateaued at nine months to 41.7. This compared with 33.8 for subset 5 at the same time point. At the twelve month time point, the mean score for subset 5 was 33.7. Whilst therefore, there is some improvement in this domain, it must be noted that the lowest mean score was 30.7 (subset 5 at six months postpartum). There appears to be only slight improvement in the sleep domain with time.

8.3.4. Emotional Well-being Domain

The questions in this domain focussed on how mothers were feeling.

Table 8.4. Summary statistics for mothers' 'Emotional Well-being' domain, for all subsets by time point

Emotional Well-being	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	188	7.2 (1.1)	-	-	-	-	-	-	-	-
Subset 2 n= 62	60	11.2 (15.6)	60	9.7 (14.9)	-	-	-	-	-	-
Subset 3 n=20	19	14.2 (18.6)	19	13.4 (17.2)	19	11.8 (17.6)	-	-	-	-
Subset 4 n=13	13	6.5 (8.3)	13	6.9 (10.3)	13	10.0 (20.4)	13	4.6 (7.2)	-	-
Subset 5 n=71	69	10.1 (12.9)	69	8.9 (11.9)	69	7.3 (10.4)	69	7.3 (11.0)	69	7.3 (12.8)



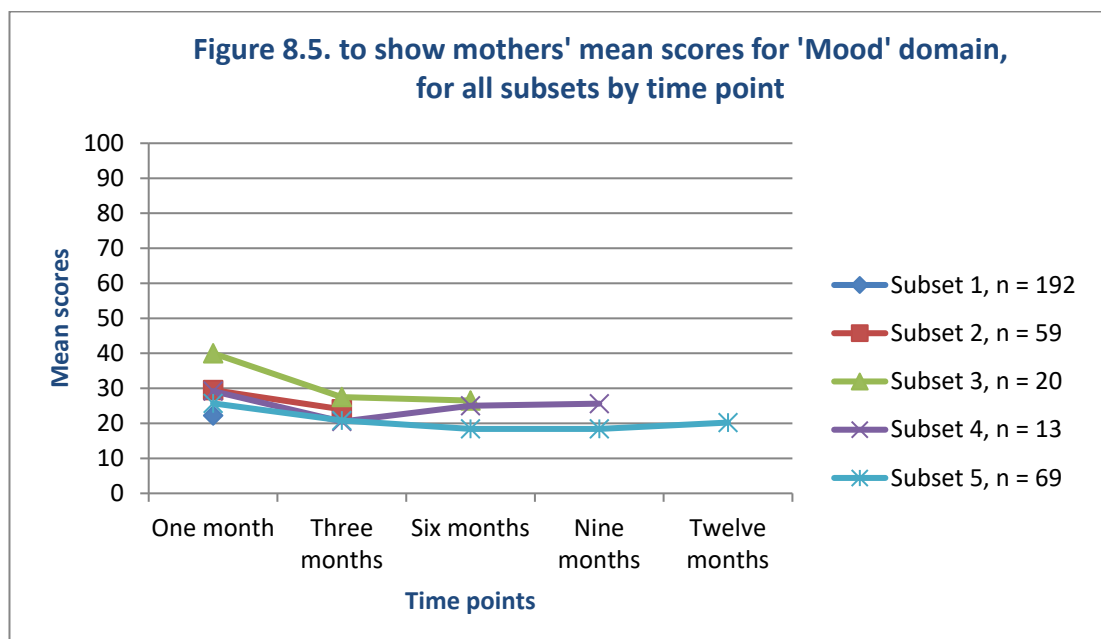
The results show that the range for the five subsets at one month (baseline) was 7.2 (subset 1) to 14.2 (subset 3). Whilst the results for mothers in subset 4 produced the lowest mean score of 4.6 at nine months, this was following a peak at six months of 10.0. The highest mean score of 14.2 was produced by subset 3 at one month. The mean scores for mothers in subset 5 ranged from 10.1 at baseline to 7.3 at twelve months postpartum. The results suggest a positive sense of emotional well-being with time with all the subsets producing similar results.

8.3.5. Mood Domain

The questions in this domain were general questions about the mothers' mood.

Table 8.5. Summary statistics for mothers' 'Mood' domain, for all subsets by time point

Mood	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	192	22.2 (17.5)	-	-	-	-	-	-	-	-
Subset 2 n= 62	59	29.5 (21.6)	59	24.0 (20.3)	-	-	-	-	-	-
Subset 3 n=20	20	40.0 (19.4)	20	27.5 (19.8)	20	26.5 (22.6)	-	-	-	-
Subset 4 n=13	13	29.2 (16.0)	13	20.5 (21.6)	13	25.0 (24.1)	13	25.6 (22.7)	-	-
Subset 5 n=71	69	25.7 (15.6)	69	20.8 (15.8)	69	18.4 (15.8)	69	18.4 (16.2)	69	20.2 (18.9)



The results for the 'mood' domain showed that at one month the scores ranged from 22.2 (subset 1) to 40.0 (subset 3). By the three month time point there had been an improvement

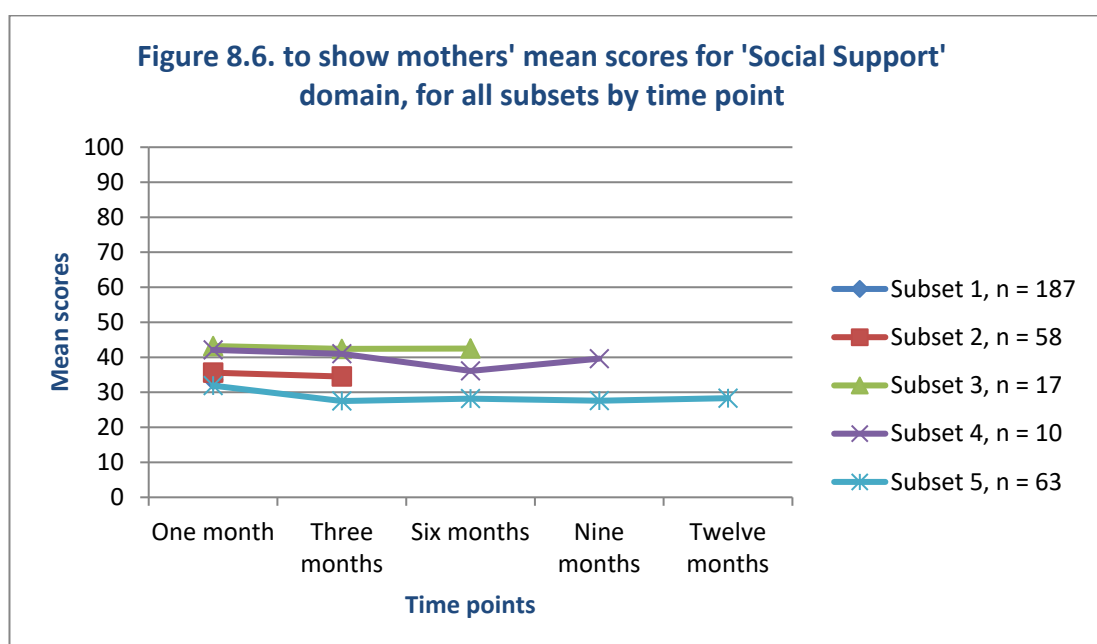
in all the mean scores. However there was a slight increase in the mean scores for subset 4, from 20.5 at three months to 25.6 at the nine month time point. This mean score of 25.6 compares with 18.6 for subset 5 at the same time point. The mothers in subset 5 produced the lowest mean scores of 18.4 at both six and nine months' time points. At the twelve month time point, the mean score for subset 5 was 20.2.

8.3.6. Social Support domain

In this domain mothers were asked about support from their circle of friends and other new mothers. They were also asked about developing new friendships.

Table 8.6. Summary statistics for mothers' 'Social Support' domain, for all subsets by time point

Social Support	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	187	33.5 (21.3)	-	-	-	-	-	-	-	-
Subset 2 n= 62	58	35.6 (21.9)	58	34.5 (21.6)	-	-	-	-	-	-
Subset 3 n=20	17	42.4 (23.8)	17	41.4 (23.6)	17	39.5 (25.1)	-	-	-	-
Subset 4 n=13	10	39.2 (22.6)	10	34.2 (19.2)	10	35.8 (16.0)	10	40.0 (14.5)	-	-
Subset 5 n=71	63	31.9 (16.6)	63	27.5 (17.1)	63	28.2 (15.6)	63	27.6 (18.6)	63	31.9 (18.6)



At one month the mean scores ranged from 31.9 (subset 5) to 42.4 (subset 3). The results for the mothers in subset 4 showed a slight improvement at the three month time point when the mean score decreased to 34.2 from 39.2 at baseline but then rose to 40.0 at the nine month time point. This figure compares with the mean score for subset 5 of 27.6 at nine months. The results show that overall the mean score for mothers in subset 5 was lower than for any other group ranging from 27.5 (three months assessment point) to 31.9 (baseline and twelve months assessment point).

8.4. Summary of the M-PHI Part One Core Domains

The Part One core questions formed six domains examining aspect of mothers' experiences; 'Relationship with Baby', 'Control and Powerlessness', 'Sleep', 'Emotional Well-being', 'Mood' and 'Social Support'.

The possible mean scores for all the domains ranged from zero to 100; the optimum mean score for the domains being zero, suggesting that the mother's perceived sense of health and well-being was excellent and the highest possibly score of 100 suggesting poor perceived health and well-being.

At baseline, the mothers in subset 1 produced the lowest mean score in four of the six domains; 'Relationship with Baby', 'Control and Powerlessness', 'Sleep' and 'Mood'. The lowest mean score for the remaining two domains was recorded by mothers in subset 5. The lowest mean scores at baseline ranged from 6.5, for 'Emotional Well-being' to 40.0 for 'Sleep' domain. Examining the data as a whole, the lowest mean score produced for any domain was for the 'Emotional Well-being' domain where mothers in subset 4 recorded a mean score of 4.6 at the nine month time point.

In comparison, the highest mean score at baseline was for the 'Sleep' domain, where the mothers in subset 3 produced a score of 46.3. This was in fact the highest mean score recorded for any of the domains at any time point. The results for all the domains in Part 1 produced mean score values below 50, therefore suggesting values more toward optimum well-being. The highest mean score for the 'Baby' domain was 15.0 and for 'Emotional Well-Being' domain this figure was 14.2. In comparison the highest mean score for the other domains were; 'Control and Powerlessness' 33.5, 'Mood' 40.0, 'Social Support' 43.2 and 'Sleep' 46.3. The highest mean score for all domains was recorded at baseline and it was the mothers in subset 3 who produced the highest mean score for all domains in Part 1.

Whereas the results for subset 5, for 'Sleep', 'Emotional Well-being', 'Mood' and Social Support', showed the mean scores had plateaued with time, the results for Baby' and 'Control and Powerlessness' showed a slight increase in mean scores by the twelve month time point.

8.5. Part Two M-PHI: Other Domains

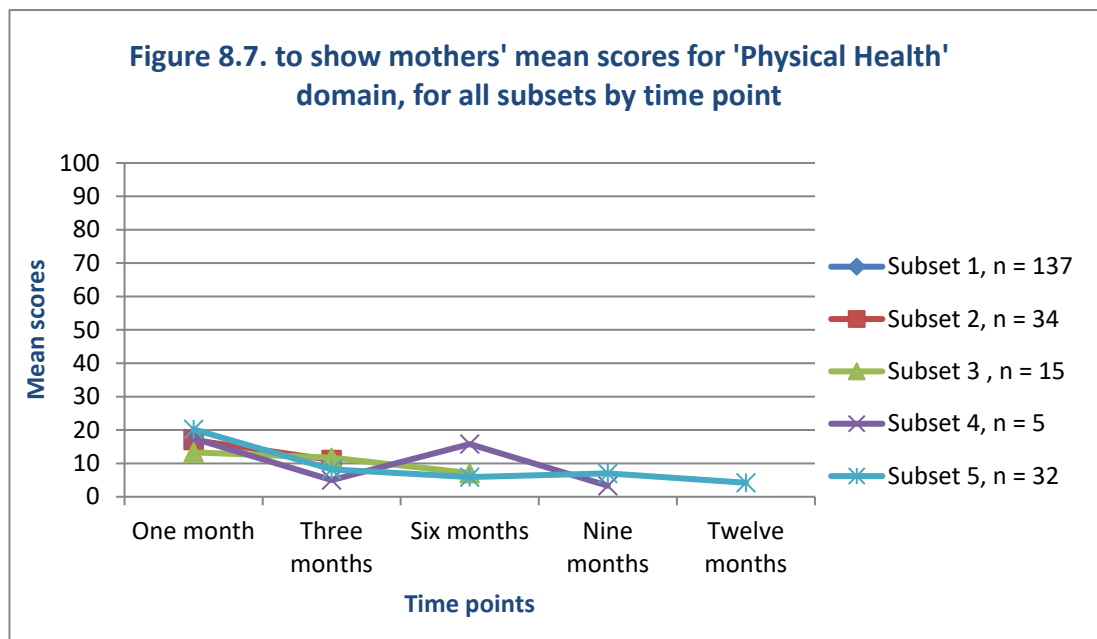
8.5.1. Mothers' Physical Health Domain

Pregnancy and childbirth can have a negative impact upon women's physical health. Mothers can suffer from illnesses and conditions relating to pregnancy or the exacerbation of illnesses experienced in their non-pregnant state. Perhaps the most significant conditions being pre-eclampsia and gestational diabetes but, physical problems such as Symphysis Pubis Dysfunction also can affect mothers' sense of health. Mothers may have to undergo a Caesarean Section or an episiotomy or suffer from perineal tears. Mothers may, therefore, require a recovery period after the birth of their babies.

The following summary statistics presented by subset, illustrate the mothers' subjective experiences of physical health over time. To expand upon this domain mothers were also asked about whether they had experienced pain and where this was and if they had had an infection and whether they had been treated with antibiotics. They were also asked about whether they had had to seek medical advice for themselves. Further they were questioned about their experiences of urinary and faecal incontinence.

Table 8.7. Summary statistics for mothers' 'Physical Health' domain, for all subsets by time point

Physical Health	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	137	17.9 (17.7)	-	-	-	-	-	-	-	-
Subset 2 n= 62	34	17.2 (14.1)	34	11.4 (13.0)	-	-	-	-	-	-
Subset 3 n=20	15	13.3 (6.9)	15	11.7 (14.4)	15	7.1 (5.8)	-	-	-	-
Subset 4 n=13	5	17.5 (16.2)	5	5.0 (11.2)	5	14.2 (21.2)	5	3.3 (3.5)	-	-
Subset 5 n=71	32	20.2 (13.9)	32	8.2 (9.4)	32	5.9 (7.3)	32	7.0 (11.7)	32	4.2 (8.8)



At baseline the scores ranged from 13.3 produced by subset 3, to 20.2 produced by mothers in subset 5. This mean score of 20.2 was the highest score produced at any time point by any subset for the physical health domain. By the three month time point this figure has decreased to 8.2 and was 4.2 at the twelve month time point, indicating an improvement in

physical health of these mothers over time. This apparent gradual improvement was also noted for subset 2 and 3, however, the results for subset 4 showed a peak at six months time point of 15.8. This figure decreased to 3.3 at the nine months time point. Overall the results present a sense of improvement in mothers' physical health.

8.5.2. Mothers' response to 'I have experienced pain'

The mothers were asked if they had experienced pain during the last month and their responses were based on a five point Likert scale which ranged from 'never' to 'always'. The following table presents the results both as number and also percentages of women who responded to the five categories. The table shows the results by subset for each of the five time points.

Table 8.8. Summary statistics for mothers' response to 'I have experienced pain' for all subsets by time point

Pain	Frequency	One Month		Three Months		Six Months		Nine Months		Twelve Months	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Subset 1 <i>n</i> = 197	Never	42	(22.5)								
	Rarely	23	(12.3)								
	Sometimes	68	(36.4)								
	Often	47	(25.1)	-		-		-		-	
	Always	7	(3.7)								
	<i>Totals</i>	187	100.0								
Subset 2 <i>n</i> =62	Never	9	(16.1)	29	(51.8)						
	Rarely	11	(19.6)	6	(10.7)						
	Sometimes	17	(30.4)	10	(17.9)						
	Often	16	(28.6)	7	(12.1)	-		-		-	
	Always	3	(5.4)	4	(7.1)						
	<i>Totals</i>	56	100.0	56	100.0						
Subset 3 <i>n</i> =20	Never	2	(10.5)	6	(31.6)	9	(47.4)				
	Rarely	2	(10.5)	3	(15.8)	1	(5.3)				
	Sometimes	9	(47.4)	6	(31.6)	5	(26.3)				
	Often	4	(21.1)	3	(15.8)	4	(21.1)	-		-	
	Always	2	(10.5)	1	(5.3)	0	(0.0)				
	<i>Totals</i>	19	100.0	19	100.0	19	100.0				
Subset 4 <i>n</i> =13	Never	2	(15.4)	10	(76.9)	9	(69.2)	9	(75.0)		
	Rarely	2	(15.4)	1	(7.7)	2	(15.4)	2	(16.7)		
	Sometimes	6	(46.2)	2	(15.4)	1	(7.7)	1	(8.3)		
	Often	3	(23.1)	0	(0.0)	1	(7.7)	0	(0.0)		-
	Always	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	<i>Totals</i>	13	100.0	13	100.0	13	100.0	13	100.0		
Subset 5 <i>n</i> =71	Never	9	(13.6)	30	(45.5)	38	(57.6)	45	(67.6)	50	(75.8)
	Rarely	13	(19.7)	17	(25.8)	10	(15.2)	7	(12.7)	8	(12.1)
	Sometimes	22	(33.3)	13	(19.7)	14	(21.2)	10	(14.1)	4	(6.1)
	Often	19	(28.8)	5	(7.6)	2	(3.0)	4	(5.6)	2	(3.0)
	Always	3	(4.5)	1	(1.5)	2	(3.0)	0	(0.0)	2	(3.0)
	<i>Totals</i>	66	100.0	66	100.0	66	100.0	66	100.0	66	100.0

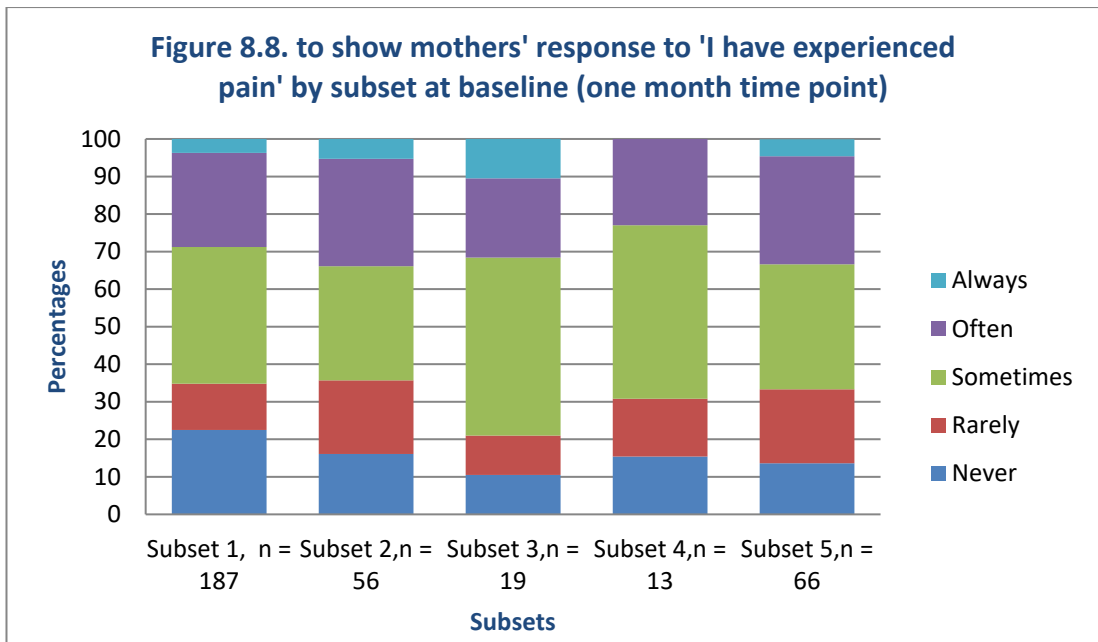
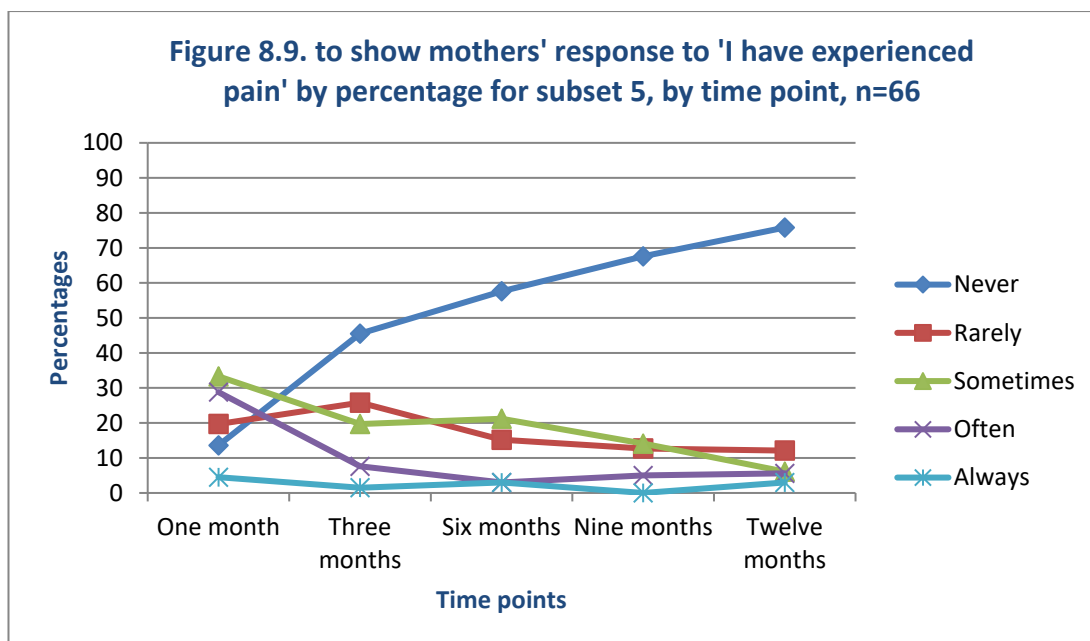


Figure 8.8 illustrates the responses to mothers' experiences of pain at the one month time point. It shows that the majority of mothers indicated that they experienced pain 'sometimes'. In subset 4, there were no mothers who described that they experienced pain as 'always'.

By examining the responses to 'I have experienced pain' from the mothers in subset 5, shows how their experience might change over the course of twelve months. Figure 8.9 illustrates how the mothers in subset 5 response changed over time. It shows that the percentage of mothers who responded 'never' to the question of their experience of pain increased with time to 75.8% with a corresponding reduction in percentage in other responses.



8.5.3. Summary of mothers' response to 'I have experience of pain' by subset.

8.5.3.1. Subset 1

The majority of mothers in this subset reported that they had pain 'sometimes' (36.4%) at baseline. There were 3.7% of the mothers who described experiencing pain 'always' and 22.5% who never experienced pain.

8.5.3.2. Subset 2

At baseline the majority of mothers suggested that they had pain 'sometimes' (30.4%) or 'often' (28.6%). There were 5.4% of mothers who described experiencing pain 'always'. By the three month time point the majority of mothers (51.8%) did not experience any pain, with 7.1% always experiencing pain.

8.5.3.3. Subset 3

The majority of mothers in this subset at baseline described having pain ‘sometimes’ (47.4%). At this same time point 10.5 % of the mothers had pain ‘always’. By the three month time point the majority of mothers described as having pain ‘sometimes’ (31.6%) or ‘never’ (31.6%). There were 5.3% of mothers who described having pain ‘always’. At the six month time point of the majority mothers did not have any pain (47.4%) and there were no longer any mothers who responded ‘always’ to the question of whether they experienced pain.

8.5.3.4. Subset 4

At baseline the majority of mothers described having pain ‘sometimes’ (46.2%). The majority of mothers at three, six and nine months did not have any pain (76.9, 69.2 and 75.0% respectively). There were no mothers in this subset who described as having pain ‘always’ at any time point and at three and nine months no mothers described as having pain ‘often’.

8.5.3.5. Subset 5

At the baseline, the majority of mothers described having pain ‘sometimes’ (33.3%). The percentage of mothers who experienced pain as ‘always’ was 4.5. The results for the following four time points showed that the majority of mothers never experienced pain (45.5, 57.6, 67.6 and 75.8% respectively). The percentage of mothers who described their experience of pain as ‘always’ ranged from zero to 4.5% (baseline).

For all subsets at one month, the majority of mothers described their experience of pain as occurring sometimes or often. The initial complaints were abdominal pain, headaches, mastitis and general breast or nipple pain. Some causes of pain seem to be limited to the first few months postpartum for example pain associated with trauma to the perineum, particularly after suturing of the affected area. At the three month time point the majority of mothers described having pain either sometimes or never. After this time point, the majority

of mothers never experienced pain, however when pain was reported, the most commonly reported cause of pain over the twelve month period was backache, shoulder pain and joint pain including Symphysis Pubis Dysfunction (SPD). The pain associated with the Caesarean section wound may have been exacerbated by the incidence of wound infection which was noted by some of the mothers. The pain following caesarean section was reported at twelve months postpartum.

It is important to recognize that there may be some physical problems which continue to impact upon mother's sense of well-being well into the first twelve months after childbirth.

8.5.4. Mothers' response to 'I have had an infection'

The mothers were also asked if they had had an infection in the previous four weeks recorded on a Likert Scale from 'never' through to 'always' and are presented for all subsets by time point.

Table 8.9. Summary statistics for mothers' response to 'I have had an infection', for all subsets by time point

Infection	Frequency	One Month		Three Months		Six Months		Nine Months		Twelve Months	
		n	%	n	%	n	%	n	%	n	%
Subset 1 n= 197	Never	141	(81.5)								
	Rarely	5	(2.9)								
	Sometimes	13	(6.6)								
	Often	5	(2.9)	-		-		-		-	
	Always	9	(5.2)								
	<i>Totals</i>	173	100.0								
Subset 2 n=62	Never	47	(85.5)	50	(90.9)						
	Rarely	0	(0.0)	0	(0.0)						
	Sometimes	6	(10.9)	3	(5.5)						
	Often	2	(3.6)	0	(0.0)	-		-		-	
	Always	0	(0.0)	2	(3.6)						
	<i>Totals</i>	55	100.0	55	100.0						
Subset 3 n=20	Never	17	(85.0)	17	(89.5)	16	(84.2)				
	Rarely	1	(5.0)	2	(10.5)	0	(0.0)				
	Sometimes	1	(5.0)	0	(0.0)	3	(15.8)				
	Often	0	(0.0)	0	(0.0)	0	(0.0)	-		-	
	Always	1	(5.0)	0	(0.0)	0	(0.0)				
	<i>Totals</i>	20	100.0	20	100.0	20	100.0				
Subset 4 n=13	Never	10	(90.9)	10	(90.9)	7	(63.6)	10	(90.9)		
	Rarely	0	(0.0)	0	(0.0)	3	(27.3)	0	(0.0)		
	Sometimes	1	(9.1)	1	(9.1)	1	(9.1)	1	(9.1)		
	Often	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	-	
	Always	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	<i>Totals</i>	11	100.0	11	100.0	11	100.0	11	100.0		
Subset 5 n=71	Never	48	(84.1)	54	(94.7)	52	(91.2)	51	(87.9)	56	(98.2)
	Rarely	1	(1.8)	0	(0.0)	2	(3.5)	3	(5.3)	1	(1.8)
	Sometimes	4	(7.0)	2	(3.5)	3	(5.3)	0	(0.0)	0	(0.0)
	Often	1	(1.8)	1	(1.8)	0	(0.0)	1	(1.8)	0	(0.0)
	Always	3	(5.3)	0	(0.0)	0	(0.0)	2	(3.5)	0	(0.0)
	<i>Totals</i>	57	100.0	57	100.0	57	100.0	57	100.0	57	100.0

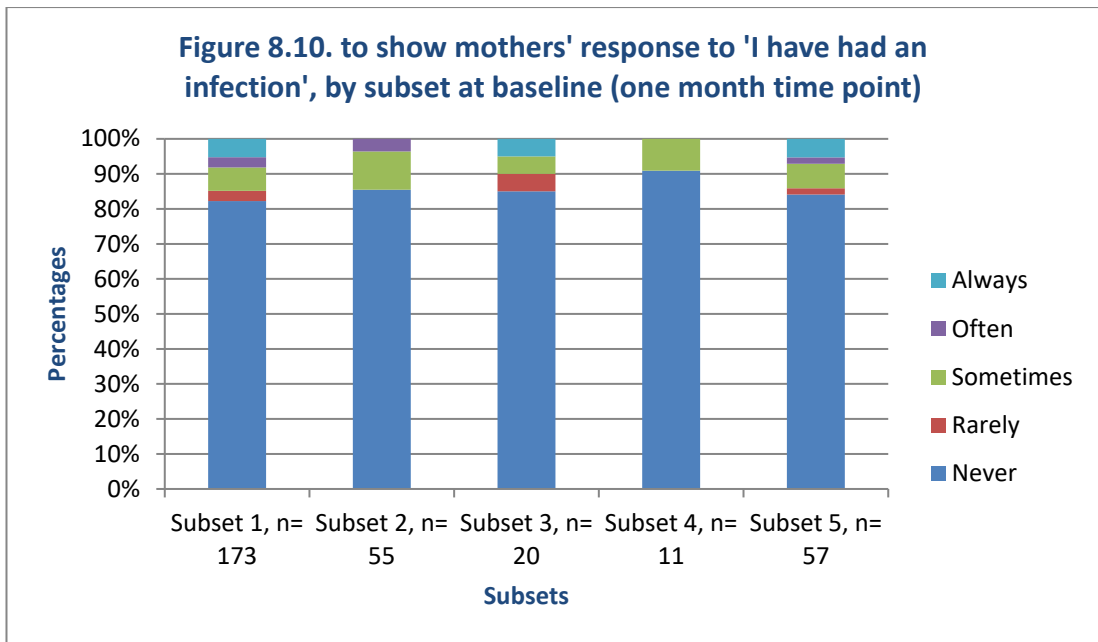
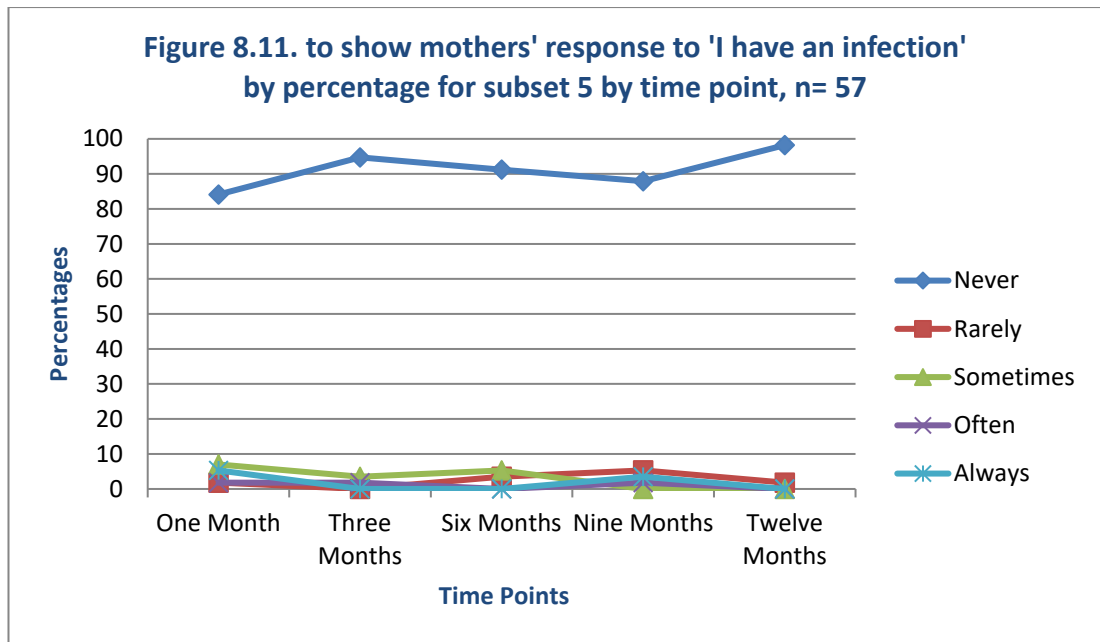


Figure 8.10 examines the mothers’ response to ‘I have had an infection’ by subset at baseline. It illustrates that the majority of mothers did not have an infection at this time. In subsets 2 and 4 there were no mothers who responded that they always had an infection. The results for subset 4 also show the largest percentage of mothers who responded ‘never’ to this question.

The data for subset 5 was plotted (figure 8.11) to illustrate any changes over time to mothers’ response to ‘I have had an infection’ across the twelve month time period.



8.5.5. Summary of mothers' response to 'I have had an infection'

At all the time points and for all the subsets the majority of mothers reported that they did not have an infection during the study period. At baseline a small percentage of mothers in subset 1 (5.2%), subset 3 (5.0%) and subset 5 (5.3%) described that they always had an infection as did 3.5% of mothers in subset 5 at the nine month time point.

For all mothers who reported having an infection, broadly the loci of infection can be categorised into infections following childbirth and other gynaecological infections and those infections that are not related to childbirth (for example respiratory infections). The infections as a result of childbirth included mastitis, caesarean section wound infection and episiotomy wound infection. Mothers also complained of suffering from vaginal candida, bacterial vaginosis and urinary tract infections. At baseline one mother had an infection following retention of products (of pregnancy). These reported infections reduced in frequency over time.

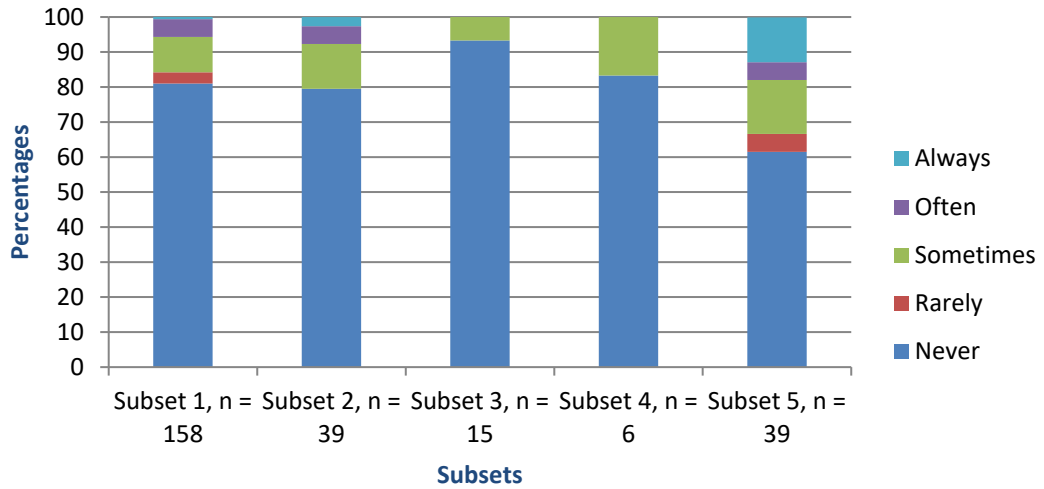
8.5.6. Mothers' response to 'I have had to take antibiotics'

The mothers were also asked if they had to take antibiotics in the previous four weeks. The responses were recorded on a Likert Scale from 'never' through to 'always' and are presented for all subsets by time point.

Table 8.10. Summary statistics for mothers' response to 'I have had to take antibiotics', for all subsets by time point

Antibiotics	Frequency	One Month		Three Months		Six Months		Nine Months		Twelve Months	
		n	%	n	%	n	%	n	%	n	%
Subset 1 <i>n=197</i>	Never	116	(73.4)								
	Rarely	5	(3.2)								
	Sometimes	16	(10.1)								
	Often	8	(5.1)								
	Always	13	(8.2)								
	<i>Totals</i>	<i>158</i>	<i>100.0</i>								
Subset 2 <i>n=62</i>	Never	31	(79.5)	33	(84.6)						
	Rarely	0	(0.0)	0	(0.0)						
	Sometimes	5	(12.8)	4	(10.3)						
	Often	2	(5.1)	0	(0.0)						
	Always	1	(2.6)	2	(5.1)						
	<i>Totals</i>	<i>39</i>	<i>100.0</i>	<i>39</i>	<i>100.0</i>						
Subset 3 <i>n=20</i>	Never	14	(93.3)	13	(86.7)	15	(100.0)				
	Rarely	0	(0.0)	0	(0.0)	0	(0.0)				
	Sometimes	1	(6.7)	1	(6.7)	0	(0.0)				
	Often	0	(0.0)	0	(0.0)	0	(0.0)				
	Always	0	(0.0)	1	(6.7)	0	(0.0)				
	<i>Totals</i>	<i>15</i>	<i>100.0</i>	<i>15</i>	<i>100.0</i>	<i>15</i>	<i>100.0</i>				
Subset 4 <i>n=13</i>	Never	5	(83.3)	5	(83.3)	5	(83.3)	5	(83.3)		
	Rarely	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	Sometimes	1	(16.7)	1	(16.7)	0	(0.0)	1	(16.7)		
	Often	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	Always	0	(0.0)	0	(0.0)	1	(16.7)	0	(0.0)		
	<i>Totals</i>	<i>6</i>	<i>100.0</i>	<i>6</i>	<i>100.0</i>	<i>6</i>	<i>100.0</i>	<i>6</i>	<i>100.0</i>		
Subset 5 <i>n=71</i>	Never	24	(61.5)	36	(92.3)	39	(100.0)	33	(89.5)	37	(96.6)
	Rarely	2	(5.1)	0	(0.0)	0	(0.0)	2	(3.5)	1	(1.7)
	Sometimes	6	(15.5)	3	(7.7)	0	(0.0)	2	(3.5)	1	(1.7)
	Often	2	(5.1)	0	(0.0)	0	(0.0)	2	(3.5)	0	(0.0)
	Always	5	(12.8)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
	<i>Totals</i>	<i>39</i>	<i>100.0</i>	<i>39</i>	<i>100.0</i>	<i>39</i>	<i>100.0</i>	<i>39</i>	<i>100.0</i>	<i>39</i>	<i>100.0</i>

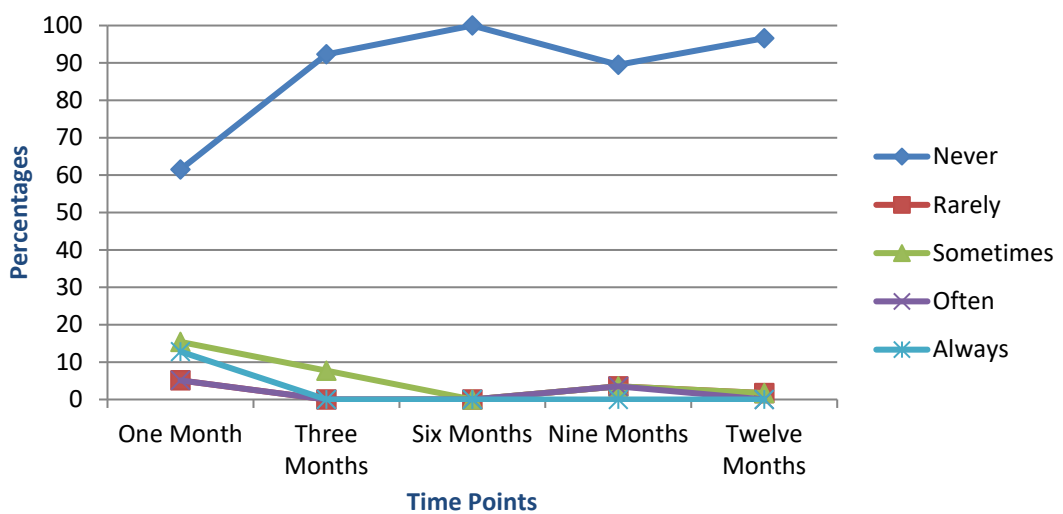
Figure 8.12. to show mothers' response to 'I have had to take antibiotics' by subset at baseline (one month time point).



There were no mothers in subset 3 or subset 4 who described that they had to take antibiotics 'often' or 'always' at the one month time point.

The data for subset 5 was plotted to illustrate any changes to the mothers' health across the twelve month time period. The use of antibiotics appeared to decline with time.

Figure 8.13. to show mothers' response to 'I have had to take antibiotics' by percentage for subset 5 by time point, n= 39



8.5.7. Summary of mothers' response to 'I have had to take antibiotics'

The majority of mothers in all subsets and at all time points did not take antibiotics. The percentage of mothers who did not take antibiotics ranged from 61.5% (subset 5 at baseline) to 100% (subset 3 and 5 at six month time point). Overall there appeared to be an improvement in mothers' health status as based upon their need for antibiotics.

8.5.8. Mothers' response to 'I have had to seek medical advice about my health'

The mothers were asked whether they had to seek medical advice about their own health, their responses were again measured on a Likert Scale ranging from 'never' to 'always'.

Table 8.11. Summary statistics for mothers' response to 'I have had to seek medical advice about my health', for all subsets by time point

Medical Advice	Frequency	One Month		Three Months		Six Months		Nine Months		Twelve Months	
		n	%	n	%	n	%	n	%	n	%
Subset 1 <i>n</i> =197	Never	101	(63.5)								
	Rarely	11	(6.9)								
	Sometimes	23	(14.5)								
	Often	11	(6.9)	-		-		-		-	
	Always	13	(8.2)								
	<i>Totals</i>	159	100.0								
Subset 2 <i>n</i> =62	Never	25	(62.5)	26	(65.0)						
	Rarely	5	(12.5)	4	(10.0)						
	Sometimes	7	(17.5)	4	(10.0)						
	Often	2	(5.0)	1	(2.5)	-		-		-	
	Always	1	(2.5)	5	(12.5)						
	<i>Totals</i>	40	100.0	40	100.0						
Subset 3 <i>n</i> =20	Never	9	(60.0)	11	(73.3)	15	(100.0)				
	Rarely	5	(33.3)	3	(20.0)	0	(0.0)				
	Sometimes	0	(0.0)	1	(6.7)	0	(0.0)				
	Often	0	(0.0)	0	(0.0)	0	(0.0)	-		-	
	Always	1	(6.6)	0	(0.0)	0	(0.0)				
	<i>Totals</i>	15	100.0	15	100.0	15	100.0				
Subset 4 <i>n</i> =13	Never	2	(40.0)	4	(80.0)	3	(60.0)	4	(80.0)		
	Rarely	1	(20.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	Sometimes	2	(40.0)	1	(20.0)	0	(0.0)	1	(20.0)		
	Often	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	-	
	Always	0	(0.0)	0	(0.0)	2	(40.0)	0	(0.0)		
	<i>Totals</i>	5	100.0	5	100.0	5	100.0	5	100.0		
Subset 5 <i>n</i> =71	Never	17	(44.7)	31	(81.6)	31	(81.6)	29	(76.3)	32	(84.2)
	Rarely	7	(18.4)	2	(5.3)	4	(10.5)	3	(7.9)	1	(2.6)
	Sometimes	9	(23.7)	4	(10.5)	2	(5.3)	5	(13.2)	5	(13.2)
	Often	1	(2.6)	0	(0.0)	0	(0.0)	1	(2.6)	0	(0.0)
	Always	4	(10.6)	1	(2.6)	1	(2.6)	0	(0.0)	0	(0.0)
	<i>Totals</i>	38	100.0	38	100.0	38	100.0	38	100.0	38	100.0

Figure 8.14. to show mothers' response to 'I have had to seek medical advice about my health', by subset at baseline (one month time point)

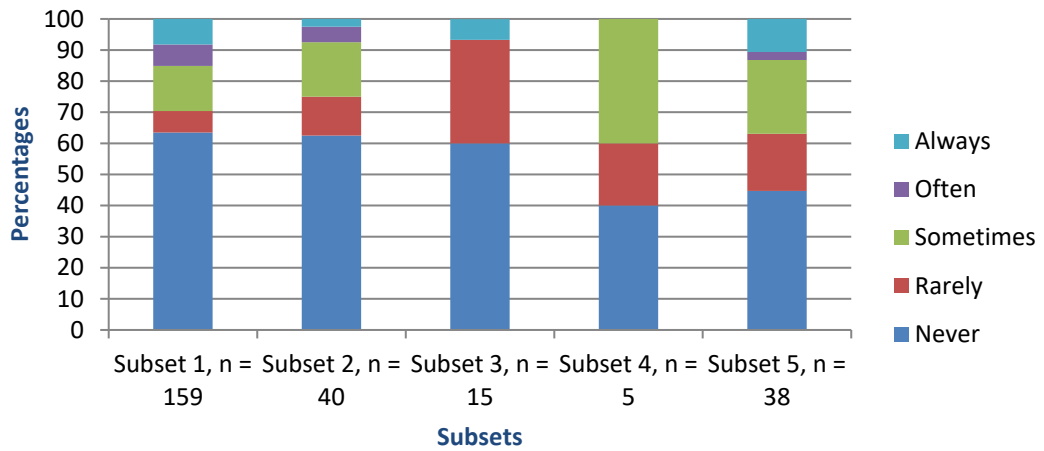
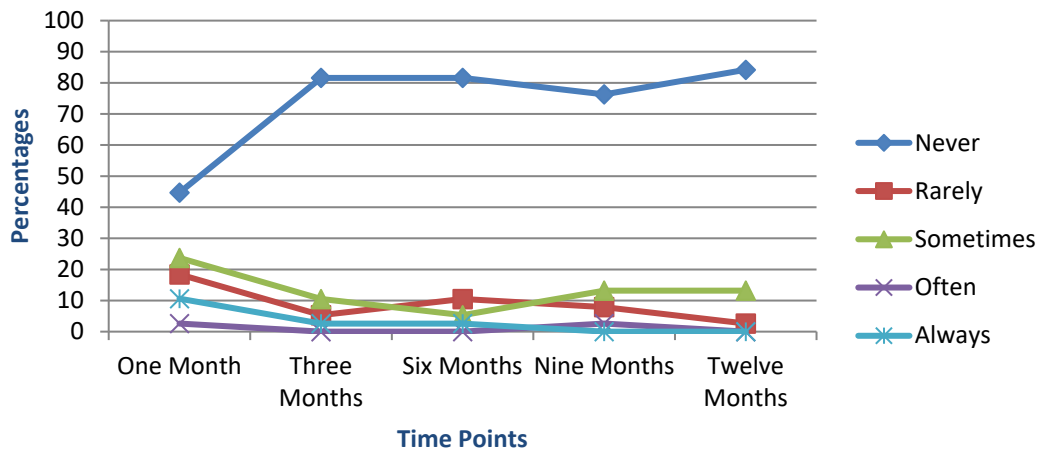


Figure 8.15. to show mothers' response to 'I have had to seek medical advice about my health' by percentage for subset 5 by time point, n = 38



Examining the data for subset 5 (figure 8.15) suggests that mothers' need to seek medical advice for themselves declined over time. The biggest improvement seemed to occur between baseline and three months time point. This perhaps suggests that their health improved over the twelve months after the birth of their child.

8.5.9. Summary of mothers' response to 'I have had to seek medical advice about my health'

The majority of mothers in all subsets and at all time points did not seek medical advice. The percentage of mothers who answered 'never' ranged from 40.0% at baseline (subset 4) to 100% at the six month time point (subset 3).

8.5.10. Summary of mothers' response to: 'I have had an infection', 'I have had to take antibiotics' and 'I have had to seek medical advice about my health'

The majority of mothers did not seek medical advice. However a small number of mothers did suffer from infections and required antibiotic therapy. In terms of mothers' experience of pain, there were some mothers who suffered from enduring pain particularly backache, shoulder and joint pain. Pain from wound infections was an issue as was Symphysis Pubis Dysfunction pain.

8.6. Incontinence

Mothers were asked about problems that they had with both urinary and faecal incontinence again using a Likert Scale ranging from 'never' to 'always'.

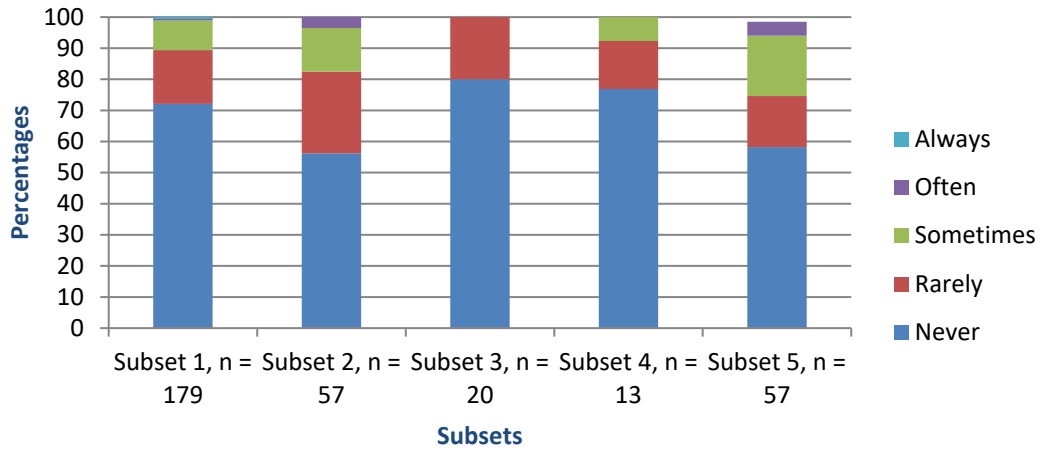
8.6.1. Mothers' response to 'I have had problems with (urinary) incontinence'.

The results for mothers' experience of urinary incontinence are presented by subset in table 8.12.

Table 8.12. Summary statistics for mothers' response to 'I have had problems with incontinence' (urinary), for all subsets by time point

Urinary Incontinence	Frequency	One Month		Three Months		Six Months		Nine Months		Twelve Months	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Subset 1 <i>n=197</i>	Never	129	(72.1)								
	Rarely	31	(17.3)								
	Sometimes	17	(9.5)								
	Often	1	(0.5)	-		-		-		-	
	Always	1	(0.5)								
	<i>Totals</i>		179	100.0							
Subset 2 <i>n=62</i>	Never	32	(56.2)	41	(71.9)						
	Rarely	15	(26.3)	11	(19.3)						
	Sometimes	8	(14.0)	4	(7.0)						
	Often	2	(3.5)	1	(1.8)	-		-		-	
	Always	0	(0.0)	0	(0.0)						
	<i>Totals</i>		57	100.0	57	100.0					
Subset 3 <i>n=20</i>	Never	16	(80.0)	17	(85.0)	17	(85.0)				
	Rarely	4	(20.0)	3	(15.0)	3	(15.0)				
	Sometimes	0	(0.0)	0	(0.0)	0	(0.0)				
	Often	0	(0.0)	0	(0.0)	0	(0.0)	-		-	
	Always	0	(0.0)	0	(0.0)	0	(0.0)				
	<i>Totals</i>		20	100.0	20	100.0	20	100.0			
Subset 4 <i>n=13</i>	Never	10	(76.9)	8	(72.7)	11	(84.6)	7	(53.8)		
	Rarely	2	(15.4)	0	(0.0)	2	(15.4)	5	(38.5)		
	Sometimes	1	(7.7)	3	(27.3)	0	(0.0)	1	(7.7)		
	Often	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		-
	Always	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	<i>Totals</i>		13	100.0	13	100.0	13	100.0	13	100.0	
Subset 5 <i>n=71</i>	Never	32	(58.2)	38	(67.9)	40	(71.4)	39	(69.6)	41	(71.9)
	Rarely	11	(16.4)	10	(17.9)	8	(14.3)	12	(21.4)	9	(15.8)
	Sometimes	11	(19.4)	5	(8.9)	5	(8.9)	1	(1.8)	3	(5.3)
	Often	2	(4.5)	3	(5.4)	3	(5.4)	3	(5.4)	3	(5.3)
	Always	0	(0.0)	0	(0.0)	0	(0.0)	1	(1.8)	1	(1.8)
	<i>Totals</i>		57	100.0	57	100.0	57	100.0	57	100.0	57

Figure 8.16. to show mothers' response to 'I have had problems with (urinary) incontinence', by subset at baseline (one month time point)



At baseline, mothers in subset 3 responded 'never' or 'rarely' to the question of incontinence suggesting the best outcome for all the subsets at this point. The results for subset 5 are illustrated in figure 8.17 to examine whether the experience of mothers in this subset changed over time.

Figure 8.17. to show mothers response to 'I have had problems with (urinary) incontinence' by percentage for subset 5 by time point, n = 57

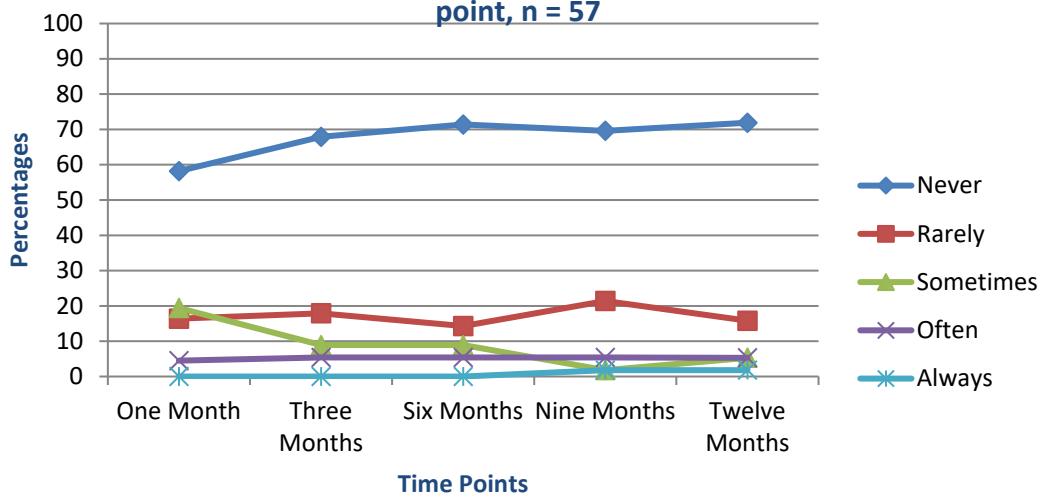


Figure 8.16 illustrates an improvement in the mothers in subset 5 experience of urinary incontinence, from 58.2 at baseline to 71.9% at twelve months responding ‘never’ to the question ‘I have had problems with incontinence’. However, at the nine month and twelve months assessment points one mother responded ‘always’ to the question. At nine months 9% of mothers responded ‘sometimes’, ‘often’ or ‘always’ and this figure increased to 12.4% at twelve months postpartum.

8.6.2. Summary of mothers’ response to ‘I have had problems with (urinary) incontinence’.

The majority of mothers in all subsets and at all time points did not experience urinary incontinence. The percentages of mothers who answered ‘never’ to the question of whether they experienced incontinence ranged from 53.8%, subset 4 at the nine month time point, to 85.0%, subset 3 at three and six months. At baseline the percentage of mothers who responded ‘never’ ranged from 56.2% (subset 2) to 80% (subset 3). For the mothers in subset 2 this percentage improved from 56.2 at baseline to 71.9% at three months time point. For subset 3 the figure for mothers who reported that they never experienced urinary incontinence fluctuated little from 80-85.0%. The results for mothers in subset 4 showed an improvement up to 84.6% who responded ‘never’ but there was a decrease in this figure at nine months postpartum to 53.8%, with 38.5 responding ‘rarely’ and 7.7% responding ‘sometimes’. The results for subset 5 showed gradual improvement over time with 58.2% of mothers describing that at baseline they never experienced urinary incontinence to 71.9% at the twelve month time point.

Whilst the majority of mothers did not have any problems with urinary incontinence, there were mothers whose responses suggested that urinary incontinence was an issue. At baseline 23.9% of the mothers in subset 5 complained of experiencing urinary incontinence ‘sometimes’ or ‘often’. The mothers in subset 2 also produced a high figure of 17.5% for

these two categories; there were no mothers in either of these two subsets who responded 'always'. However, one mother in subset 1 did respond 'always' (0.5%).

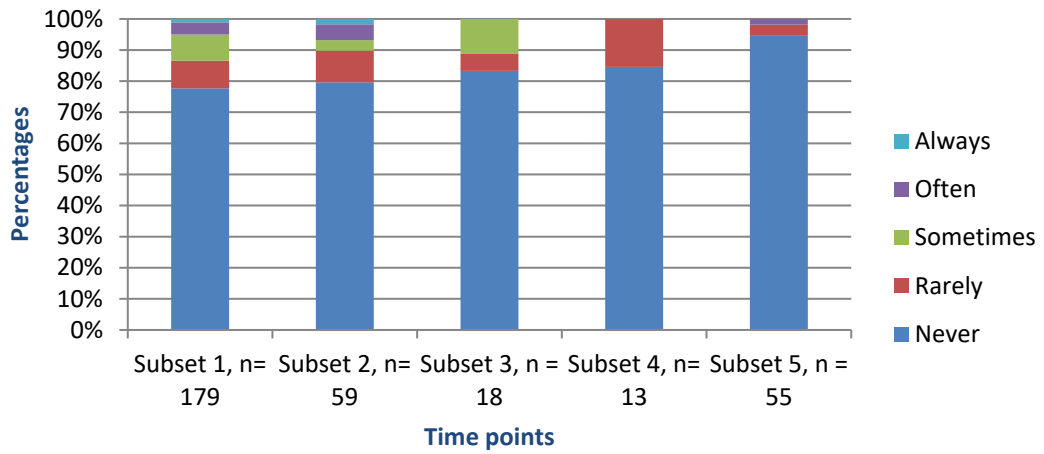
8.6.3. Mothers' response to 'I have had incontinence of bowel motion'.

Mothers were also asked if they had any problems with incontinence of bowel motion. The results are presented in table 8.13.

Table 8.13. Summary statistics for mothers' response to 'I have had problems with incontinence of bowel motion', for all subsets by time point

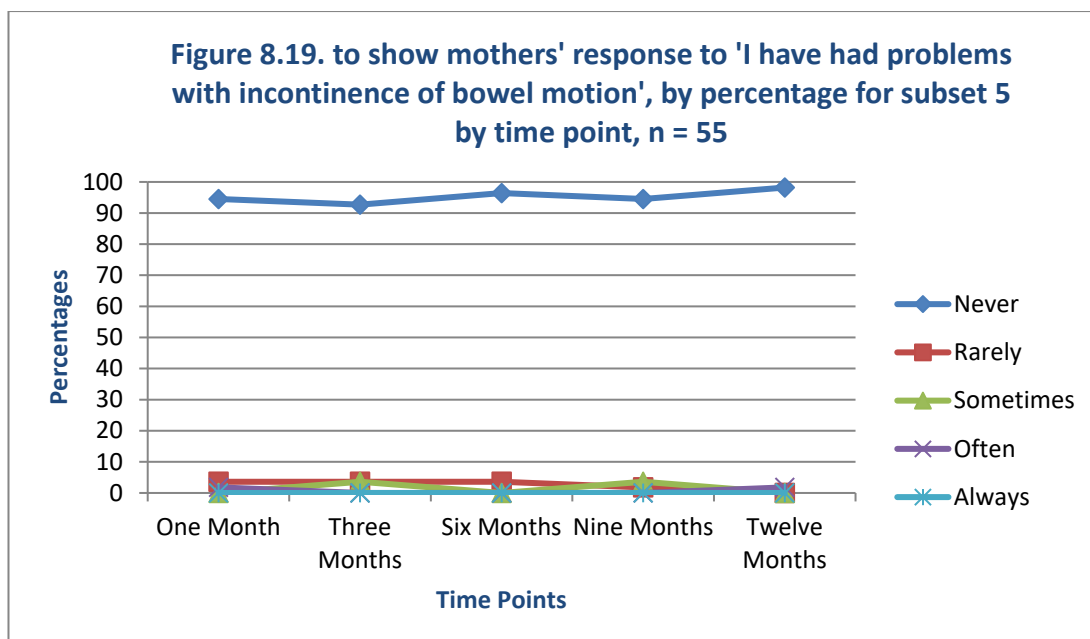
Faecal Incontinence	Frequency	One Month		Three Months		Six Months		Nine Months		Twelve Months	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Subset 1 <i>n=197</i>	Never	139	(77.7)								
	Rarely	16	(8.9)								
	Sometimes	15	(8.4)								
	Often	7	(3.9)								-
	Always	2	(1.1)								
	Totals	179	100.0								
Subset 2 <i>n=62</i>	Never	47	(79.7)	56	(94.9)						
	Rarely	6	(10.2)	1	(1.7)						
	Sometimes	2	(3.4)	1	(1.7)						
	Often	3	(5.1)	0	(0.0)	-		-			-
	Always	1	(1.7)	0	(0.0)						
	Totals	59	100.0	59	100.0						
Subset 3 <i>n=20</i>	Never	15	(83.3)	17	(94.4)	17	(94.4)				
	Rarely	1	(5.6)	1	(5.6)	0	(0.0)				
	Sometimes	2	(11.1)	0	(0.0)	1	(5.6)				
	Often	0	(0.0)	0	(0.0)	0	(0.0)	-			-
	Always	0	(0.0)	0	(0.0)	0	(0.0)				
	Totals	18	100.0	18	100.0	18	100.0				
Subset 4 <i>n=13</i>	Never	11	(84.6)	13	(100.0)	12	(92.3)	12	(92.3)		
	Rarely	2	(15.4)	0	(0.0)	1	(7.7)	0	(0.0)		
	Sometimes	0	(0.0)	0	(0.0)	0	(0.0)	1	(7.7)		
	Often	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		-
	Always	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)		
	Totals	13	100.0	13	100.0	13	100.0	13	100.0		
Subset 5 <i>n=71</i>	Never	52	(94.5)	51	(92.7)	53	(96.4)	52	(94.5)	54	(98.2)
	Rarely	2	(3.6)	2	(3.6)	2	(3.6)	1	(1.8)	0	(0.0)
	Sometimes	0	(0.0)	2	(3.6)	0	(0.0)	2	(3.6)	0	(0.0)
	Often	1	(1.8)	0	(0.0)	0	(0.0)	0	(0.0)	1	(1.8)
	Always	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
	Totals	55	100.0	55	100.0	55	100.0	55	100.0	55	100.0

Figure 8.18. to show mothers' response to 'I have had problems with incontinence of bowel motions' by subset at baseline (one month time point).



At baseline the majority of mothers in subset 5 respond 'never' to having experience of incontinence of bowel motion, however 1.8% responded 'often' at this point. The mothers in subset 4 responded either 'rarely' or 'never' at this time point

Figure 8.18 illustrates the experiences of faecal incontinence for mothers in subset 5 over time. There is a small percentage who have experienced some degree of faecal incontinence (1.8 to 7.2%). This equates to one to four mothers. The percentage of mothers who responded to 'never' ranged from 92.7% at three months to 98.2% at twelve months assessment point.



8.6.4. Summary of mothers' experiences of incontinence

The percentage of mothers who reported that they had never experienced urinary incontinence, ranged from 53.8% to 85.0%. Therefore the percentage of mothers who reported having problems with urinary incontinence either 'rarely', 'sometimes', 'often' or 'always' ranged from 15.0 to 46.2%. This may be a transient problem but is a serious consequence of childbirth. The majority of mothers did not have any problems with faecal incontinence. The percentage of mothers in all subsets and at all time points who responded 'never' to this question ranged from 77.7% (subset 1 at baseline) to 100% (subset 4 at three month time point). A small percentage, representing one or two mothers, described experiencing faecal incontinence 'always' at baseline (subset 1, 1.1% and subset 2, 1.7%). One mother described having faecal incontinence 'often' at twelve months postpartum. The results suggest that the problems that mothers have with faecal incontinence appeared to improve over time. However the percentage of mothers with some form of faecal incontinence ranged from zero to 22.3%. It must also be noted that there was a mother who still had problems 'often' with faecal incontinence twelve months after the birth of her infant. As with urinary incontinence, these results are important when considering mothers' health and well-being.

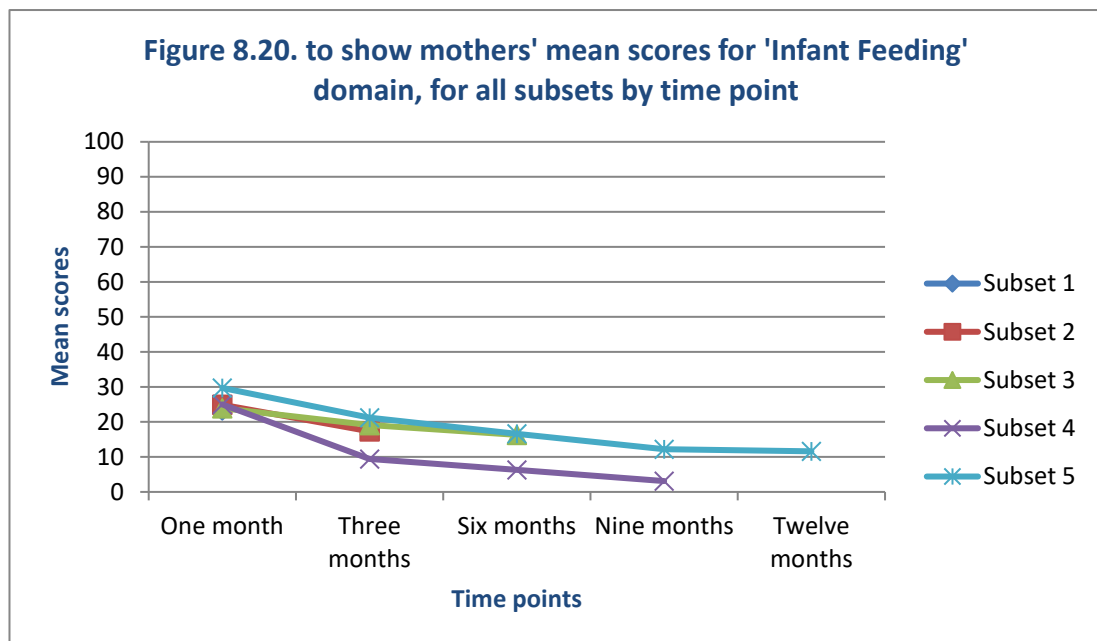
8.7. Infant Feeding Domain

This domain actually refers to mothers' experiences of breast feeding rather than all forms of infant feeding. This domain is therefore different to the other domains; the response is dependent upon the length of time that mothers actually breast fed for, rather than mothers selectively missing out parts of the domain, as perhaps in other areas. The figures here represent the actual numbers of mothers who breast fed by subset. The lack of response therefore equates to mothers no longer breast feeding. For that reason the sample size is not consistent over time as it is for other domains.

The summary statistics presented in table 8.14, suggest how mothers felt about their experience of breast feeding. Further to this the percentages of mothers who were breast feeding at a particular time point are presented in table 8.15. With various promotions to encourage mothers to breastfeed, particularly the Baby Friendly Initiative, it is important to examine the percentage of mothers who initiate breast feeding and also, perhaps more importantly, the percentage of mothers who continue to breast feed.

Table 8.14. Summary statistics for mothers' 'Infant Feeding' domain, for all subsets by time point

Infant Feeding	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n= 197	138	23.3 (22.5)	-	-	-	-	-	-	-	-
Subset 2 n= 62	50	24.9 (20.5)	40	17.3 (18.6)	-	-	-	-	-	-
Subset 3 n=20	17	23.9 (21.2)	19	19.1 (18.7)	15	16.3 (15.6)	-	-	-	-
Subset 4 n=13	10	25.0 (17.2)	6	9.4 (11.7)	5	6.3 (6.3)	4	3.1 (6.3)	-	-
Subset 5 n=71	51	29.7 (18.6)	43	21.2 (14.4)	32	16.6 (14.3)	22	12.2 (15.1)	14	11.6 (13.8)



At baseline the mean score values ranged from 23.3 (subset 1) to 29.7 (subset 5). The results showed improvement for mothers in all subsets. The mothers in subset 4 produced the biggest improvement in mean scores; the mean score at baseline was 25.0 which fell to 3.1

at nine months. The mean score for subset 5 at nine months was 12.2 and at twelve months postpartum was 11.6, therefore a still a higher score than achieved by subset 4. This perhaps suggests that the experience of breastfeeding improved over time.

Table 8.15. Percentages of mothers breast feeding for all subsets by time point

Infant Feeding	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Subset 1 n= 197	138	(70.1)	-		-		-		-	
Subset 2 n= 62	50	(80.6)	40	(64.5)	-		-		-	
Subset 3 n=20	17	(85.0)	16	(80.0)	15	(75.0)	-		-	
Subset 4 n=13	10	(76.9)	6	(46.1)	5	(38.5)	4	(30.8)	-	
Subset 5 n=71	51	(71.8)	43	(14.4)	32	(45.1)	22	(31.0)	14	(19.7)
Totals	266	(73.3)	105	(63.3)	52	(50.0)	26	(31.0)	14	(19.7)

The percentage of mothers who were breast feeding at baseline was 73.3%. At baseline the percentages ranged from 70.1 to 85.0%. At the twelve months time point 19.7% of mothers in subset 5 were still breast feeding.

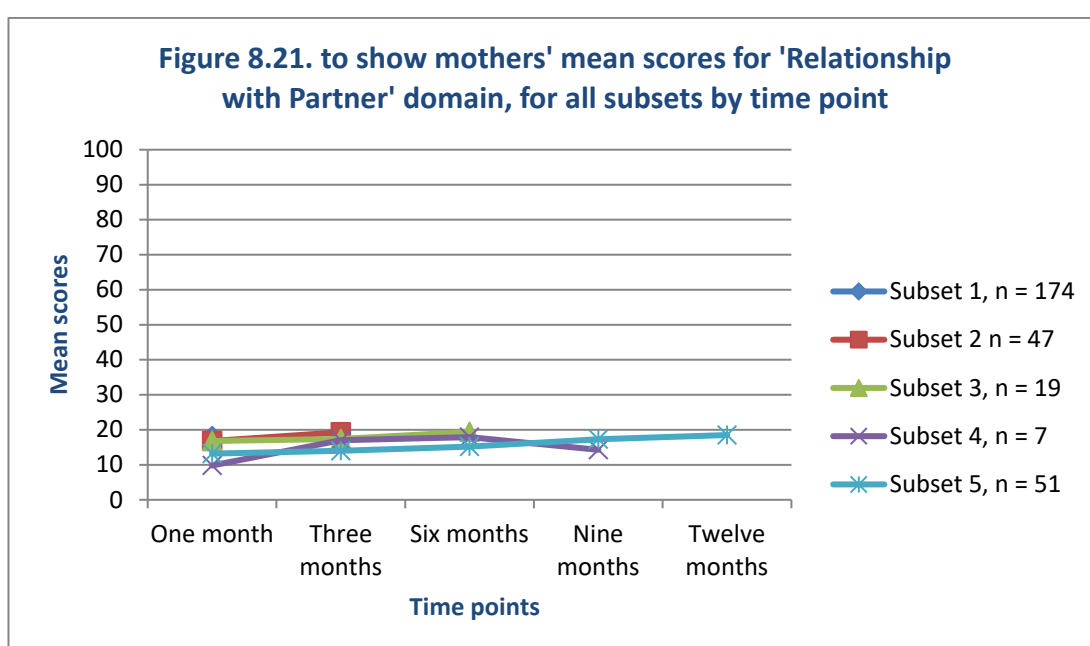
The mothers who added comments to this section complained at one month of problems with sore and cracked nipples. Another described having to ‘grin and bear’ having to swap between formula and breast because of cracked nipples, but stated that she didn’t resent the baby because of it. One mentioned their frustration at not breastfeeding enough and having to ‘top up’ with formula.

8.8. Relationship with Partner Domain

In this domain mothers were asked about their relationship with their partner; did they argue, did they have different views on parenting? The mothers were also asked if they felt that their relationship had suffered since their baby's birth and did the mother feels that she wanted to push her partner away.

Table 8.16. Summary statistics for mothers' 'Relationship with Partner' domain for all subsets by time point

Relationship with Partner	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Subset 1 n= 197	174	18.2 (19.2)	-	-	-	-	-	-	-	-
Subset 2 n= 62	47	16.8 (20.1)	47	19.3 (19.5)	-	-	-	-	-	-
Subset 3 n=20	19	16.8 (15.0)	19	17.4 (14.8)	19	19.4 (19.2)	-	-	-	-
Subset 4 n=13	7	9.8 (10.7)	7	17.0 (11.8)	7	17.9 (11.7)	7	14.3 (16.8)	-	-
Subset 5 n=71	51	13.2 (17.5)	51	14.0 (12.7)	51	15.2 (15.4)	51	17.3 (15.2)	51	18.5 (19.6)



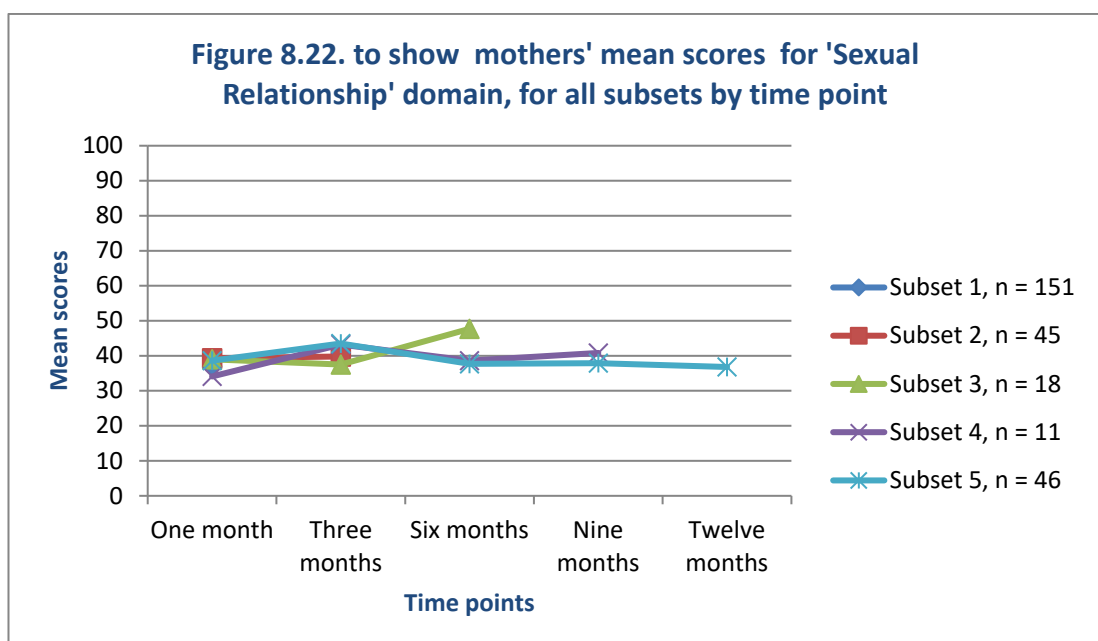
The range of mean scores at baseline was small, 14.4 (subset 5) to 18.2 (subset 1 and 4). All subsets 2-5 showed an increase in the mean score indicating a possible worsening of mothers' experiences. Whereas there was a gradual increase of mean scores for subset 5, 14.4 at baseline to 20.6 at twelve months postpartum, the results for subset 4 show after a slight dip at the six month time point the score then increased to 27.6.

8.9. Sexual Relationship Domain

The questions in this domain asked mothers whether their sexual relationship with their partners was affected by tiredness or because she felt unattractive. The mothers were also asked if they felt worried that their sexual relationship would not be as before.

Table 8.17. Summary statistics for mothers' 'Sexual Relationship' domain, for all subsets by time point

Sexual Relationship	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n= 197	151	37.0 (24.0)	-	-	-	-	-	-	-	-
Subset 2 n= 62	45	39.3 (21.8)	45	39.8 (24.2)	-	-	-	-	-	-
Subset 3 n=20	18	39.0 (22.7)	18	37.5 (22.9)	18	47.7 (20.8)	-	-	-	-
Subset 4 n=13	11	34.1 (23.7)	11	43.2 (21.0)	11	38.6 (26.4)	11	40.8 (28.4)	-	-
Subset 5 n=71	46	38.6 (21.1)	46	43.5 (22.0)	46	37.7 (22.7)	46	37.9 (20.9)	46	36.8 (22.2)



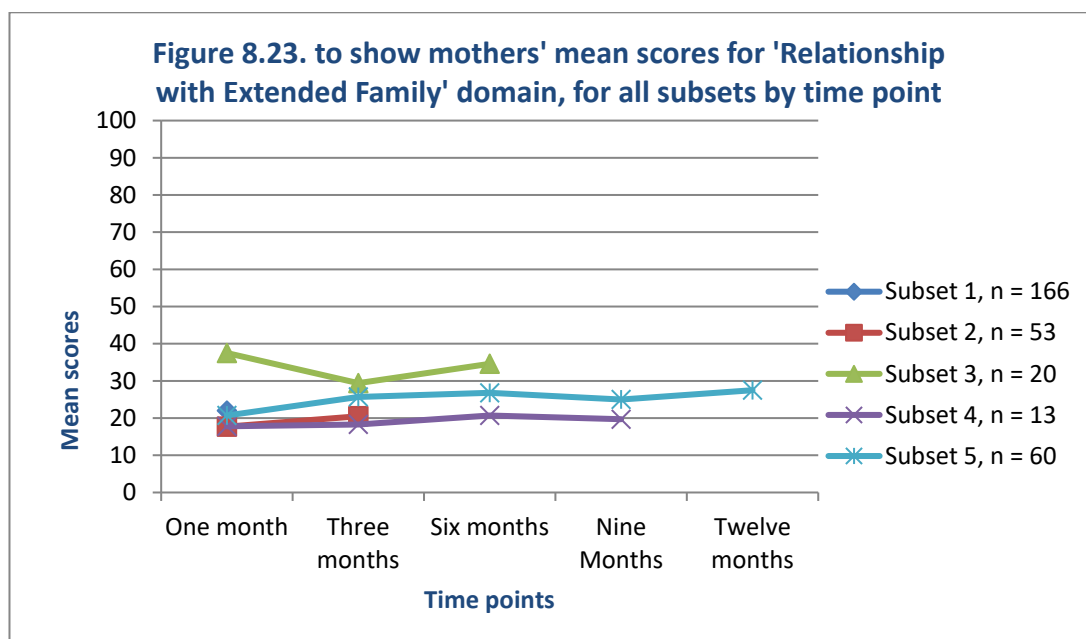
The range of mean scores a baseline was 34.1 (subset 4) to 39.3 (subset 2). The results for mothers in subset 3 and subset 4 showed a slight increase in the mean score values, suggesting a slight worsening in this domain. The mean score for mothers in subset 3 increased from 39.0 at baseline to 47.7 at the six months assessment point. The mean score for mothers in subset 4 increased from 38.6 at baseline to 43.2 at three months time point. There was then a slight decrease in the mean score to 38.6 at six months time point but then this value increased to 40.8 at nine months time point. There was also a slight increase in the mean scores for subset 5 at three months assessment point but this figure then decreased over time.

8.10. Relationship with Extended Family Domain

The mothers were asked whether they felt supported by their parents and family and whether they felt closer to their parents and saw more of their family.

Table 8.18. Summary statistics for mothers' 'Relationship with Extended Family' domain, for all subsets by time point

Extended Family	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n= 197	166	22.0 (22.9)	-	-	-	-	-	-	-	-
Subset 2 n= 62	53	17.7 (17.2)	53	20.5 (22.5)	-	-	-	-	-	-
Subset 3 n=20	17	37.5 (26.7)	17	29.4 (17.2)	17	34.6 (28.6)	-	-	-	-
Subset 4 n=13	13	17.8 (17.3)	13	18.3 (12.9)	13	20.7 (12.9)	13	19.7 (13.7)	-	-
Subset 5 n=71	60	20.7 (19.5)	60	25.7 (19.8)	60	26.8 (20.5)	60	25.0 (20.5)	60	27.5 (21.6)



At baseline the mean scores for subset 1, 2, 4 and 5 ranged from 17.8 to 22.0. The mean score for the mothers in subset 3 however was 37.5. This mean score decreased at the three month time point to 29.4, it then increased to 34.6 at the six month time point. The mean scores for subsets 2, 4 and 5 also increased with time. At the twelve month time point, the mean score for subset 5 was 26.4. This suggests a worsening of mother's experiences in this domain.

8.11. Summary of M-PHI Part Two domains

The summary statistics for the physical health domain suggests that mother's overall physical health improved over the first year after the birth of their infants with two notable exceptions; experience of pain following Caesarean section, which for two mothers persisted through to twelve months postpartum and secondly mothers were still suffering from degrees of both urinary and faecal incontinence at twelve months postpartum. As a measure of physical health, the incidence of infection and the use of antibiotics declined over time. The seeking of medical advice also declined over time.

An improvement was observed in the mean scores for the infant feeding domain over time, particularly when examining the results for subset 4. At baseline, for subset 4, the mean score was 25.0 and at the nine month time point this score had decreased to 3.1, showing an improvement in the mother's experience. The results for subset 5 showed a gradual improvement from 29.7 at baseline and 11.6 at the twelve month time point. The infant feeding domain relates to breast feeding mothers so the expectation is that there would be an improvement with time.

The results for the 'Relationship with Partner' domain showed a slight worsening of the mothers' experience. The results for subset 5 showed a gradual increase in the mean scores from 14.4 at baseline to 20.6 at twelve months postpartum. The results for subset 4 showed some improvement to six months postpartum and then the mean score increased to 27.6 showing a slight worsening in mothers' experience.

However the results for sexual relationship domain changed little over time. However it is noted that at no time did the mean score for any subset fall below 34, with the highest mean score of 45 recorded by subset 4 at three month time point.

In terms of the relationship with extended family there appears to be a slight worsening of mother's experience with time. The results for subset 3 showed some improvement as the mean score decreased from 37.5 at baseline to 29.4 at three months only to increase to 34.6 at six months. The results for subset 5 showed a gradual increase in mean score from 20.8 at baseline to 26.4 at twelve months postpartum.

8.12. Mothers' paired sample t-tests M-PHI domains

Paired sample t-tests were performed to calculate the mean difference between baseline and the average follow-up score for each of the eleven M-PHI domains to evaluate the any changes in the well-being of mothers over time.

Table 8.19. Paired sample t-test results for M-PHI Domains

PHI Domains	Baseline			Average Follow Up			Mean Difference	95% Confidence Intervals		Significance (2-tailed)
	N	Mean	SD	N	Mean	SD		Lower	Upper	p-value
Relationship with baby	69	12.1	12.6	69	6.5	7.5	-5.6	-7.5	-3.6	< 0.001
Control and Powerlessness	69	30.2	17.2	69	20.2	13.4	-9.9	-13.4	-6.5	< 0.001
Sleep	70	46.0	18.3	70	33.1	17.8	-12.9	-16.7	-9.0	< 0.001
Emotional Well-being	69	10.1	12.9	69	7.7	9.8	-2.4	-4.3	-0.4	0.016
Mood	69	25.7	15.6	69	19.5	14.3	-6.2	-9.2	-3.2	< 0.001
Social Support	63	31.9	16.6	63	27.5	14.4	-4.4	-7.3	-1.6	0.003
Physical Health	32	20.2	13.9	32	6.4	7.6	-13.8	-18.0	-9.6	< 0.001
Infant Feeding	10	22.5	18.7	10	15.2	15.8	-7.3	-13.4	-1.2	0.023
Relationship with Partner	51	13.2	17.5	51	16.3	14.2	3.0	-0.7	6.7	0.113
Sexual Relationship	46	38.6	21.2	46	40.0	18.5	0.4	-5.1	5.8	0.894
Relationship with extended Family	60	20.7	19.5	60	26.3	18.1	5.5	2.7	8.4	< 0.001

Significance: p = 0.05

Scoring: PHI domains; Range 0-100 0= best possible health outcome and 100 = worse possible health outcome

The results of the paired sample t-tests for each domain of the M-PHI are described below:

8.12.1. Relationship with Baby domain

There was a statistically significant decrease in the mean score between baseline (mean = 12.1, SD = 12.6) and the average mean follow up score (mean=6.5, SD = 7.5), $p = <0.001$. There was a decrease in the mean scores of 5.6, with a 95% confidence interval ranging from -7.5 to -3.6.

8.12.2. Control and Powerlessness domain

There was a statistically significant decrease in the mean score between baseline (mean = 30.2, SD = 17.2) and the average mean follow up score (mean = 20.2, SD = 13.4), $p = <0.001$. There was a decrease in the mean scores of -9.9, with a 95% confidence interval ranging from -13.4 to -6.5.

8.12.3. Sleep domain

There was a statistically significant decrease in the mean score between baseline (mean= 46.0, SD = 18.3) and the average mean follow up score (mean = 33.1, SD = 17.8), $p = <0.001$. The mean decrease in scores was -12.9, with a 95% confidence interval ranging from -16.6 to -9.0.

8.12.4. Emotional Well-being domain

There was a statistically significant decrease in the mean score between baseline (mean= 10.1, SD = 12.9) and the average mean follow up score (mean= 7.7, SD = 9.8), $p = 0.016$. There was a slight decrease in the mean scores of -2.4, with a 95% confidence interval ranging from -4.3 to -0.4.

8.12.5. Mood domain

There was a statistically significant decrease in the mean score between baseline (mean = 25.7, SD = 15.6) and the average mean follow up score (mean = 19.5, SD = 14.3), $p =$

<0.001. The mean decrease in scores was -6.2, with a 95% confidence interval ranging from -9.2 to -3.2.

8.12.6. Social Support domain

There was a statistically significant decrease in the mean score between baseline (mean = 31.9, SD = 16.6) and the average mean follow up score (mean = 27.5, SD = 14.4), $p = 0.003$. There was a decrease in the mean scores of -4.4, with a 95% confidence interval ranging from -7.3 to -1.6.

8.12.7. Physical Health domain

There was a statistically significant decrease in the mean score between baseline (mean = 20.2, SD = 13.9) and the average mean follow up score (mean = 6.4, SD = 7.6), $p < 0.001$. The mean decrease in scores was -13.8 with a 95% confidence interval ranging from -18.0 to -9.6.

8.12.8. Infant Feeding domain

There was a statistically significant decrease in the mean score between baseline (mean = 22.5, SD = 18.7) and the average mean follow up score (mean = 15.2, SD = 15.8), $p < 0.001$. There was a decrease in mean scores of -7.3, with a 95% confidence interval ranging from -13.4 to -1.2.

8.12.9. Relationship with Partner domain

There was a non- statistically significant increase in the mean score between baseline (mean = 13.2, SD = 17.5) and the average mean follow up score (mean = 16.3, SD = 14.3), $p = 0.113$. The p value is therefore greater than 0.05. There was a small increase in mean scores of 3.0, with a 95% confidence interval ranging from -0.7 to 6.7.

8.12.10. Sexual Relationship domain

There was a non -statistically significant increase in the mean score between baseline (mean = 38.6, SD = 21.2) and the average mean follow up score (mean = 40.0, SD = 18.5), p

= 0.894. There was an increase in mean scores of 0.4, with a 95% confidence interval ranging from -5.1 to 5.8.

8.12.11. Relationship with Extended Family domain

There was a statistically significant increase in the mean score between baseline (mean= 20.7, SD = 19.5) and the average mean follow up score (mean= 26.3, SD = 18.1), $p < 0.001$. There was an increase in mean scores of 5.5 with a 95% confidence interval ranging from 2.7 to 8.4.

8.13. Summary of Paired Sample t-test results for M-PHI Domains

The result of the paired sample t-tests for mothers suggests that in nine of the eleven domains of the M-PHI there was a statistically significant difference between the mean baseline score and the average mean follow up scores; 'relationship with baby', 'control and powerlessness', 'sleep', 'emotional well-being', 'mood', 'social support', 'physical health', 'relationship with the extended family' and 'infant feeding'. In one of these domains, 'relationship with the extended family', there was a statistically significant increase between mean baseline and average mean follow up score suggesting that in this domain there was worsening in outcome over time. In the two other domains, 'relationship with partner' and 'sexual relationship', there was no statistically significant difference observed.

8.14. Sheffield Postnatal Health Instrument –Fathers (F-PHI)

As previously described part one of the F-PHI consists of 27 core questions that collectively form six ‘domains’. These domains are; ‘role as father’, ‘support from partner’, support from friends’, relationship with partner’, ‘mood’ and ‘relationship with baby’.

Please note, scoring as for M-PHI, 0= best possible health status, 100= worse possible health status.

As for the mothers’ results, where appropriate the results are presented with the data in the form of subsets. The summary statistics are presented for each subset, both in table and figure form. As with the mothers’ results, the number expressed here represents the number of participants who returned the PHI questionnaire. For each domain the subset figure represents the sequential response for that domain.

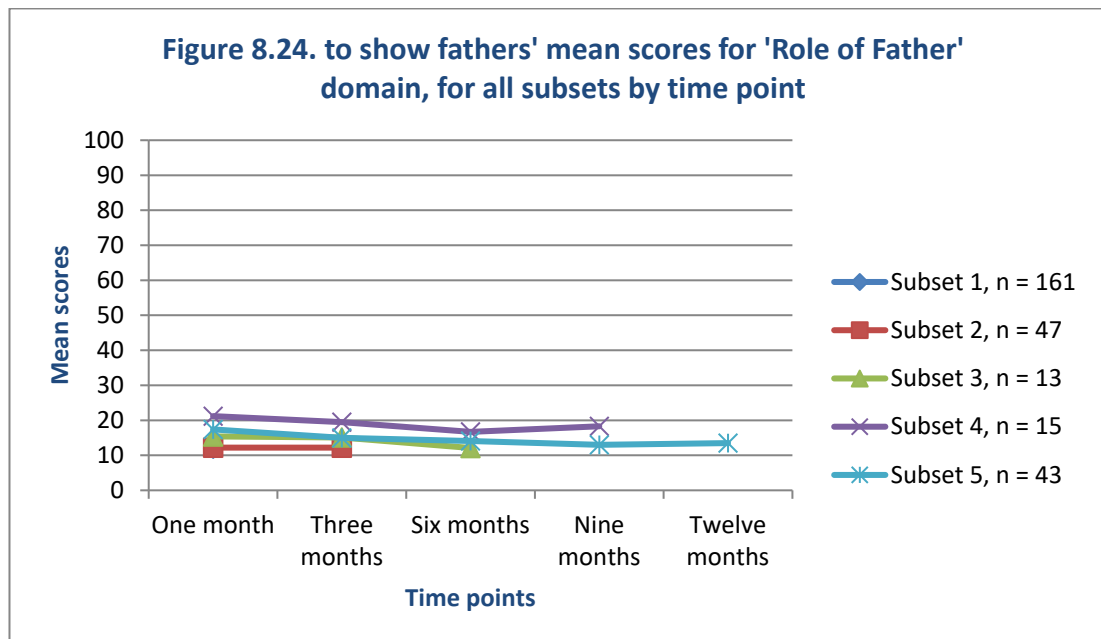
The subsets represent the following:

- Subset 1: fathers who returned the F-PHI at baseline (one month) only, n = 162.
- Subset 2: fathers who returned the F-PHI questionnaires at baseline and three months assessment point, n=47.
- Subset 3: fathers who returned the F-PHI questionnaires at one, three and six assessment time points, n=13.
- Subset 4: fathers who returned the F-PHI at one, three, six and nine months assessment points, n=15.
- Subset 5: fathers who returned the F-PHI at one, three, six, nine and twelve months assessment points, n = 46

8.14.1. Role as Father Domain

Table 8.20. Summary statistics for fathers' 'Role as Father' domain, for all subsets by time point

Role as a Father	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n= 162	161	11.9 (11.3)	-	-	-	-	-	-	-	-
Subset 2 n= 47	47	12.2 (10.2)	47	12.2 (11.8)	-	-	-	-	-	-
Subset 3 n= 13	13	15.4 (12.2)	13	15.1 (11.6)	13	12.1 (12.3)	-	-	-	-
Subset 4 n=15	15	21.2 (15.8)	15	19.5 (14.8)	15	16.7 (13.6)	15	18.3 (14.8)	-	-
Subset 5 n=46	43	17.4 (13.0)	43	15.0 (13.8)	43	14.1 (12.3)	43	13.0 (10.8)	43	13.5 (10.6)

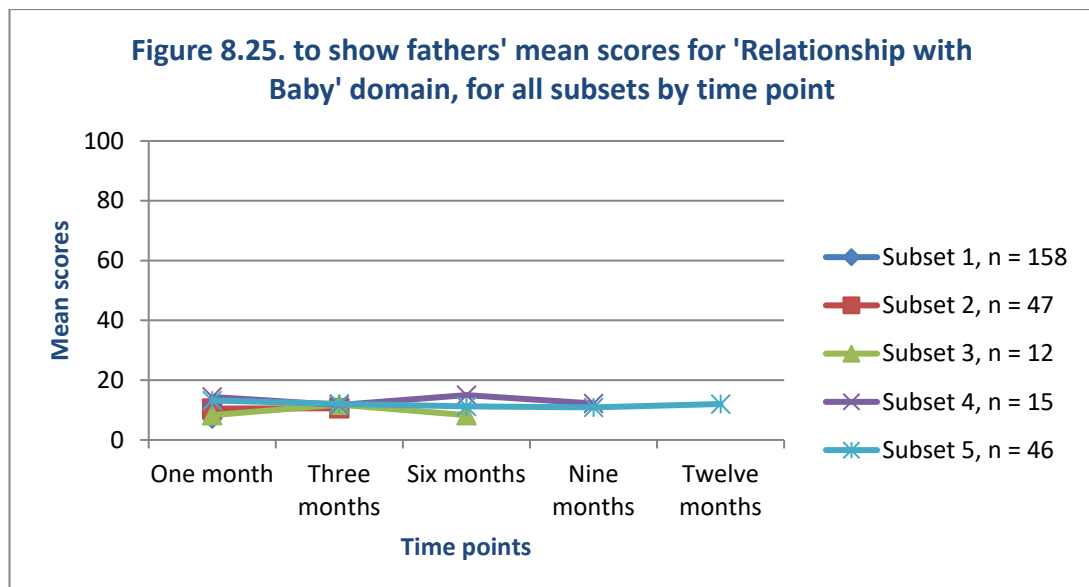


At baseline the mean scores ranged from 11.9 (subset 1) to 21.2 (subset 4). The results for fathers in subset 5 saw some improvement with the mean score reducing over time from 17.4 at baseline to 13.5 at twelve months postpartum. The mean scores for subset 4 remained higher than for the other subsets, producing a mean score of 18.3 at nine months postpartum.

8.14.2. Relationship with Baby domain

Table 8.21. Summary statistics for fathers' 'Relationship with Baby' domain for all subsets by time point

Role as a Father	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n = 162	158	7.2 (10.7)	-	-	-	-	-	-	-	-
Subset 2 n = 47	47	10.5 (16.2)	47	10.6 (13.4)	-	-	-	-	-	-
Subset 3 n = 13	12	8.3 (10.6)	12	11.8 (14.0)	12	8.3 (10.6)	-	-	-	-
Subset 4 n = 15	15	14.4 (15.6)	15	11.7 (13.7)	15	15.0 (16.4)	15	12.2 (13.3)	-	-
Subset 5 n = 46	46	13.2 (13.3)	46	12.1 (13.5)	46	11.2 (12.6)	46	10.9 (11.9)	46	12.0 (12.0)



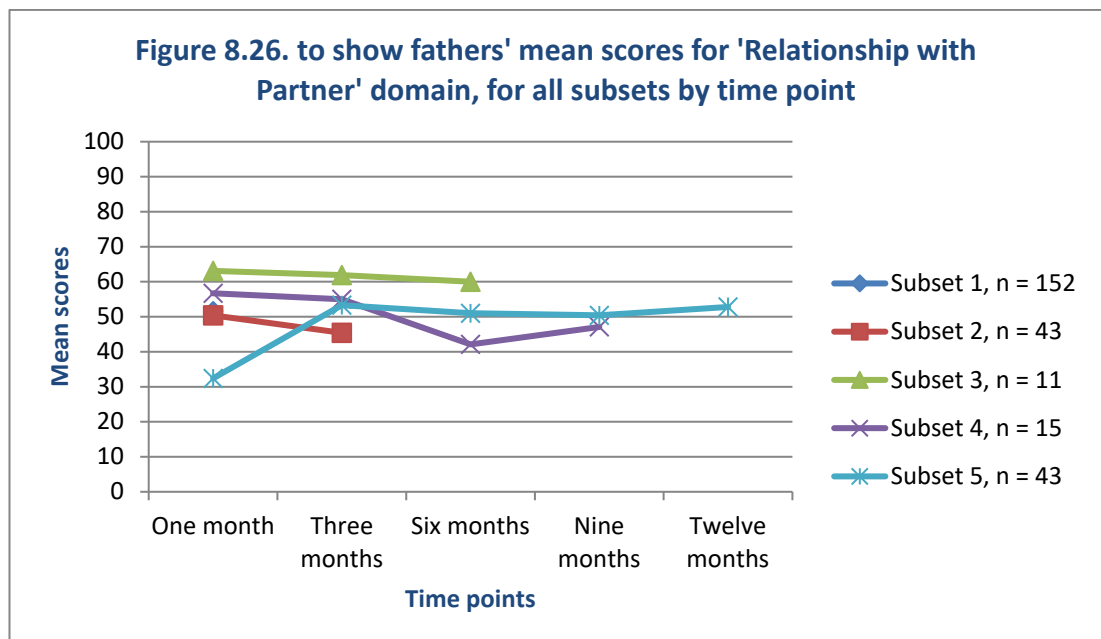
The range of scores at baseline was 7.2 (subset 1) to 14.4 (subset 4). There was a slight peak in the mean scores for subset 3, from 8.3 to 11.5 at three months postpartum and for subset

4, up to 15.0 at nine month time point. All the mean scores for were below 16 suggesting a positive outcome for this domain.

8.14.3. Relationship with Partner domain

Table 8.22. Summary statistics for fathers' 'Relationship with Partner' domain for all subsets by time point

Relationship with Partner	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n= 162	152	51.6 (21.1)	-	-	-	-	-	-	-	-
Subset 2 n= 47	43	50.4 (21.0)	43	45.4 (24.5)	-	-	-	-	-	-
Subset 3 n= 13	11	63.1 (22.4)	11	61.9 (30.1)	11	60.0 (28.8)	-	-	-	-
Subset 4 n=15	15	56.7 (24.6)	15	55.0 (25.6)	15	42.1 (24.8)	15	47.1 (25.9)	-	-
Subset 5 n=45	43	32.4 (25.6)	43	53.3 (20.7)	43	51.0 (22.7)	43	50.4 (20.3)	43	52.8 (23.3)

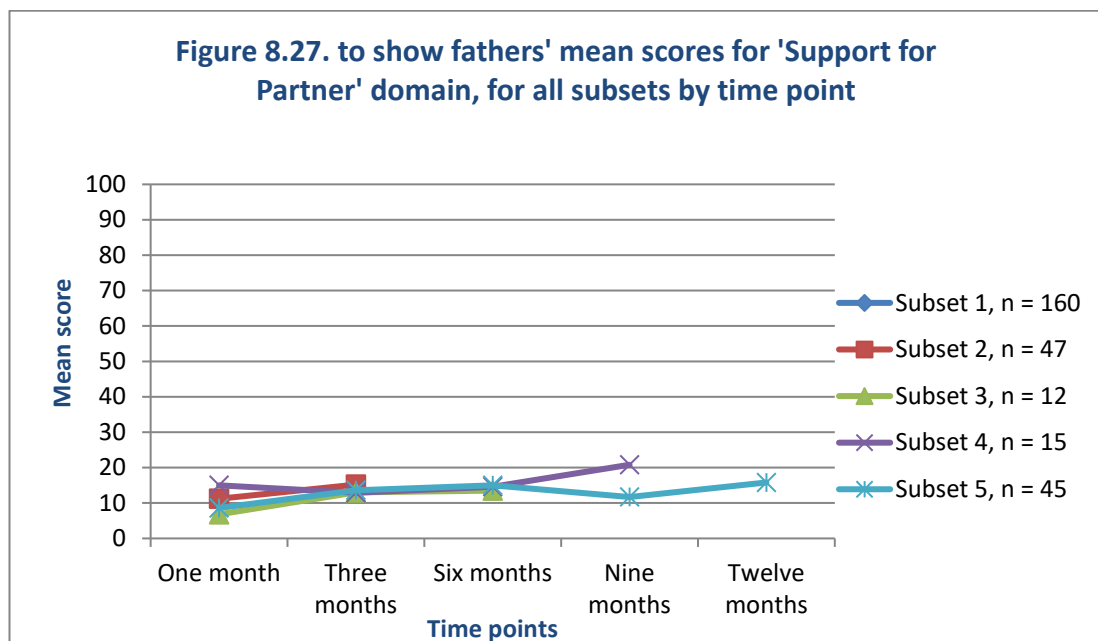


The mean scores at baseline ranged from 32.4 (subset 5) to 63.1 (subset 3). With time the mean score for fathers in subset 2 showed a slight decline from 50.4 to 45.2. The final mean scores for subset 3 and 4 were also lower than their baseline score. The mean score for subset 5 was 32.4 at baseline but this increased to 53.3 at three months time point. At twelve months postpartum the mean score for subset 5 was 52.8. This suggests that for subset 5 there was a worsening of their relationship with their partner.

8.14.4. Support from Partner Domain

Table 8.23. Summary statistics for fathers' 'Support from Partner' domain for all subsets by time point

Support from Partner	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD	n	Mean SD
Subset 1 n= 162	160	11.0 (14.0)	-	-	-	-	-	-	-	-
Subset 2 n= 47	47	11.2 (12.7)	47	15.2 (17.8)	-	-	-	-	-	-
Subset 3 n= 13	12	6.8 (7.8)	12	13.0 (10.1)	12	13.5 (10.6)	-	-	-	-
Subset 4 n=15	15	15.0 (19.3)	15	12.9 (16.3)	15	14.6 (15.6)	15	20.8 (24.1)	-	-
Subset 5 n=46	45	8.6 (11.4)	45	13.6 (15.7)	45	15.0 (18.4)	45	11.7 (13.8)	45	15.8 (16.9)

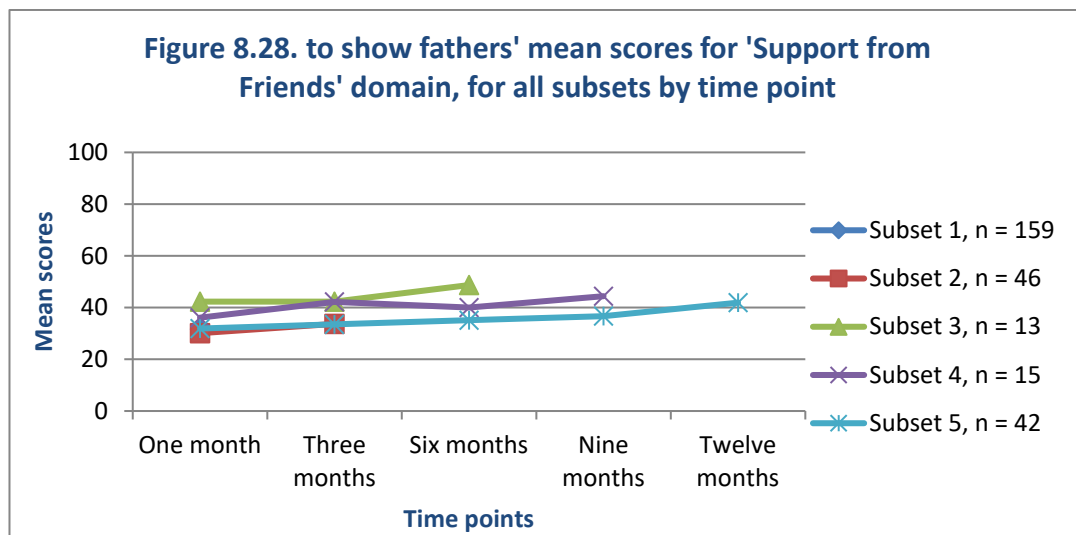


The mean scores at baseline ranged from 6.8 (subset 3) to 15.0 (subset 4). The results for all subsets, except subset 1, showed an increase in mean score values with time, suggesting a worsening in this domain for the fathers.

8.14.5. Support from Friends domain

Table 8.24. Summary statistics for fathers' 'Support from Friends' domain for all subsets by time point

Support from Friends	One Month			Three Months			Six Months			Nine Months			Twelve Months		
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD
Subset 1 n= 162	159	31.7	(25.5)	-	-	-	-	-	-	-	-	-	-	-	-
Subset 2 n= 47	46	30.1	(19.1)	46	33.7	(22.2)	-	-	-	-	-	-	-	-	-
Subset 3 n= 13	13	42.3	(22.9)	13	42.3	(28.6)	13	48.7	(25.4)	-	-	-	-	-	-
Subset 4 n=15	15	36.1	(19.3)	15	42.2	(26.6)	15	40.0	(27.8)	15	44.4	(28.1)	-	-	-
Subset 5 n=46	42	31.9	(25.7)	42	33.5	(23.6)	40	35.1	(23.2)	40	36.7	(21.2)	40	41.9	(21.2)



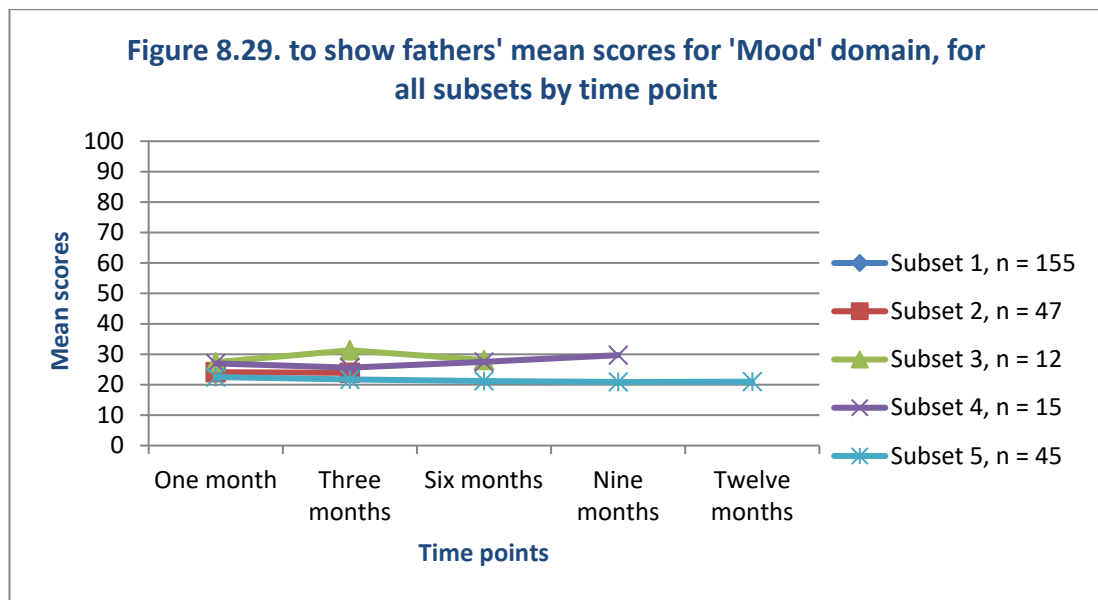
The mean scores at baseline ranged from 31.0 (subset 2) to 42.3 (subset 3). Over time all the means scores for all the subsets (except subset 1) had increased, suggesting a worsening of fathers support from friends. The results for subset 5 showed a gradual increase in the mean

score from 31.9 at baseline to 41.9 at the twelve month time point, this suggests a gradual worsening for this domain.

8.14.6. Mood Domain

Table 8.25. Summary statistics for fathers' 'Mood' domain for all subsets by time point

Mood	One Month	Three Months	Six Months	Nine Months	Twelve Months
	n Mean SD	n Mean SD	n Mean SD	n Mean SD	n Mean SD
Subset 1 n= 162	155 24.8 (18.6)	-	-	-	-
Subset 2 n= 47	47 24.1 (15.1)	47 23.9 (17.9)	-	-	-
Subset 3 n= 13	12 27.4 (21.1)	12 31.3 (21.2)	12 28.1 (15.6)	-	-
Subset 4 n=15	15 27.0 (17.7)	15 25.6 (17.2)	15 27.5 (18.2)	15 29.7 (23.2)	-
Subset 5 n=46	45 22.5 (15.3)	45 21.7 (15.6)	45 21.2 (16.8)	45 20.9 (14.9)	45 21.0 (15.9)



The mean scores at baseline ranged from 22.5 (subset 5) to 27.4 (subset 3). There was a slight increase in mean score for both subset 3 and 4, whereas the mean score for subset 5 changed little over time.

8.15. Summary of F-PHI Domains

The results for the ‘relationship with baby’ domain suggested a positive outcome with all of the mean scores recorded below 16. The mean scores for ‘support from partner’ were all below 21, with subset 5 recording a mean score of 16.4 at twelve months time point. The ‘relationship with partner’ domain however produced different results. Here the mean score at baseline ranged from 50.4 (subset 2) to 63.1 (subset 3). The mean scores for subset 5 ranged from 55 at baseline to 53.6 at twelve months time point. The ‘support from friends’ domain also produced higher mean scores than recorded for ‘support from partner’ domain. At baseline the mean score here was 31.8 (subset 5) to 42.3 (subset 3). The mean score for subset 3 at six months was 48.7. Subset 5 mean scores ranged from 31.8 at baseline to 42.6 at twelve months. The mean scores for ‘mood’ domain changed little over time, the mean scores ranged from 20.7 (subset 5 at nine months) to 29.7 (subset 4 at nine months).

8.16. Paired sample t-tests for F-PHI Domains

Paired sample t-tests were also performed to calculate the mean difference between the baseline score and the average follow up score for the six domains within the F-PHI, to evaluate any changes in the well-being of fathers over time. The results are illustrated in Table 8.26.

Table 8.26. Paired sample t-test results for F-PHI domains

F-PHI Domains	Baseline			Average Follow Up			Mean Difference	95% Confidence Intervals		Significance (2-tailed)
	n	Mean	SD	n	Mean	SD		Lower	Upper	p-value
Role as Father	43	17.4	13.0	43	13.9	8.4	-3.5	-6.3	-0.8	0.014
Relationship with Baby	46	13.2	13.3	46	11.5	9.3	-1.7	-5.2	1.9	0.344
Relationship with Partner	43	32.4	25.6	43	51.9	13.4	19.5	11.6	27.4	< 0.001
Support from Partner	45	8.6	11.4	45	14.0	12.0	5.4	2.1	8.7	0.002
Support from Friends	42	31.9	25.7	42	36.8	15.4	4.9	-0.4	10.1	0.071
Mood	45	22.5	15.3	45	21.2	11.8	-1.3	-3.9	1.3	0.318

Significance: p = 0.05

Scoring: PHI domains; Range 0-100, 0= best possible health outcome and 100 = worse possible health outcome

8.16.1. Role as Father Domain

There was a statistically significant decrease in the mean score between baseline (mean = 17.4, SD = 13.0) and the average mean follow up score (mean = 13.9, SD = 8.4) of -3.5, $p = 0.014$. The 95% confidence interval ranged from -6.3 to -0.8.

8.16.2. Relationship with Baby Domain

There was a non-statistically significant decrease in the mean score between baseline (mean= 13.2, SD = 13.3) and the average mean follow up score (mean= 11.5, SD = 9.3) of 1.7, $p = 0.344$. The 95% confidence interval ranged from -5.2 to 1.9.

8.16.3. Relationship with Partner Domain

There was a statistically significant increase in the mean score between baseline (mean= 32.4, SD = 25.6) and the average mean follow up score (mean= 51.9, SD = 13.4) of 19.5, $p < 0.001$. The 95% confidence interval ranged from 11.6 to 27.4.

8.16.4. Support from Partner Domain

There was a statistically significant increase in the mean score between baseline (mean= 8.6, SD = 11.4) and the average mean follow up score (mean = 14.0, SD = 12.0) of 5.4, $p = 0.002$. The 95% confidence interval ranged from 2.1 to 8.7.

8.16.5. Support from Friends Domain

There was a non-statistically significant increase in the mean score between baseline (mean=31.9, SD = 25.7) and the average mean follow up score (mean= 36.8, SD = 15.4), $p = 0.071$. The mean difference in scores was 4.6, with a 95% confidence interval ranging from -0.4 to 10.1.

8.16.6. Mood Domain

There was a non-statistically significant decrease in the mean score between baseline (mean= 22.5, SD = 15.3) and the average mean follow up score (mean= 21.2, SD = 11.8), p

= 0.318. The p value is therefore greater than 0.05. There was a slight decrease in mean scores of -1.3, with a 95% confidence interval ranging from -3.9 to 1.3.

8.17. Summary of paired sample t-tests results F-PHI Domains

The results of the paired sample t-tests suggests that there was a statistically significant difference between the baseline score and the average mean follow up score in three out of the six F-PHI domains. In terms of these three domains; 'relationship with partner' and 'support from partner' domains, the results of the paired t-test suggested that there was a worsening of the experience for fathers. In particular the 'relationship with partner' showed an increase of 19.5 between baseline and the average follow up mean scores. Only for the 'role of father' domain was there a significant decrease in the mean scores. For 'relationship with baby', 'mood' and 'support from friends' domains the analysis suggests that there was no statistical significance between the mean baseline and average follow up scores.

8.18. Results for SF-12

Both parents were offered the Short Form 12 (SF-12) questionnaire at all five time points. The SF-12 is a measure of quality of life outcomes. It comprises two components; Physical and Mental Component Scale. For both components the score ranges from 0 to 100 with 100 being indicative of a positive outcome.

8.18.1. Mothers' SF- 12 results

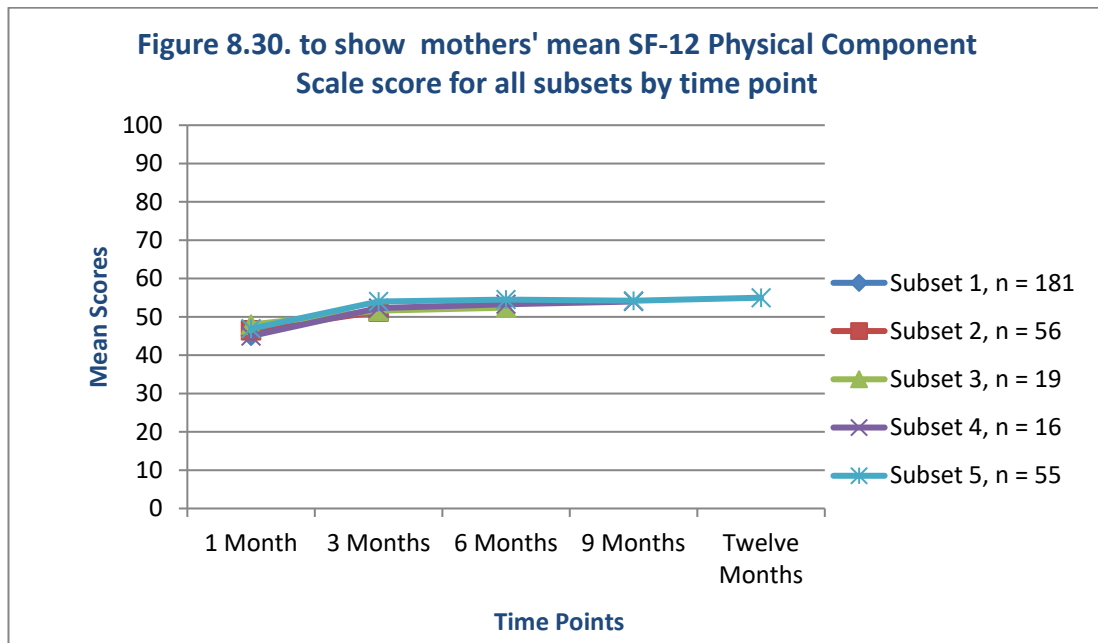
For both the SF-12 Physical Component and the SF-12 Mental Component, the results are presented as five subsets as follows:

- Subset 1: mothers who returned the SF-12 at baseline (one month) only, n = 181.
- Subset 2: mothers who returned the SF-12 at one and three months postpartum, n = 56.
- Subset 3: mothers who returned the SF-12 at one, three and six months postpartum, n = 19.
- Subset 4: mothers who returned the SF-12 at one, three, six and nine months postpartum, n = 16.
- Subset 5: mothers who returned the SF-12 at one, three, six, nine and twelve months postpartum, n = 55.

8.18.1.1. Mothers' SF-12 Physical Component Scale results

Table 8.27. Summary statistics for mothers' SF-12 Physical Component Scale for all subsets by time point

Short Form 12 Physical Component Scale	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Subset 1 <i>n</i> = 181	45.1	(10.2)	-		-		-		-	
Subset 2 <i>n</i> = 56	46.4	(9.3)	51.8	(7.9)	-		-		-	
Subset 3 <i>n</i> = 19	46.3	(10.4)	53.0	(6.4)	52.9	(5.5)	-		-	
Subset 4 <i>n</i> = 16	46.2	(8.8)	52.0	(6.1)	53.3	(7.7)	53.9	(4.8)	-	
Subset 5 <i>n</i> = 55	47.4	(8.8)	53.1	(6.6)	53.8	(5.4)	54.2	(5.3)	55.4	(5.4)

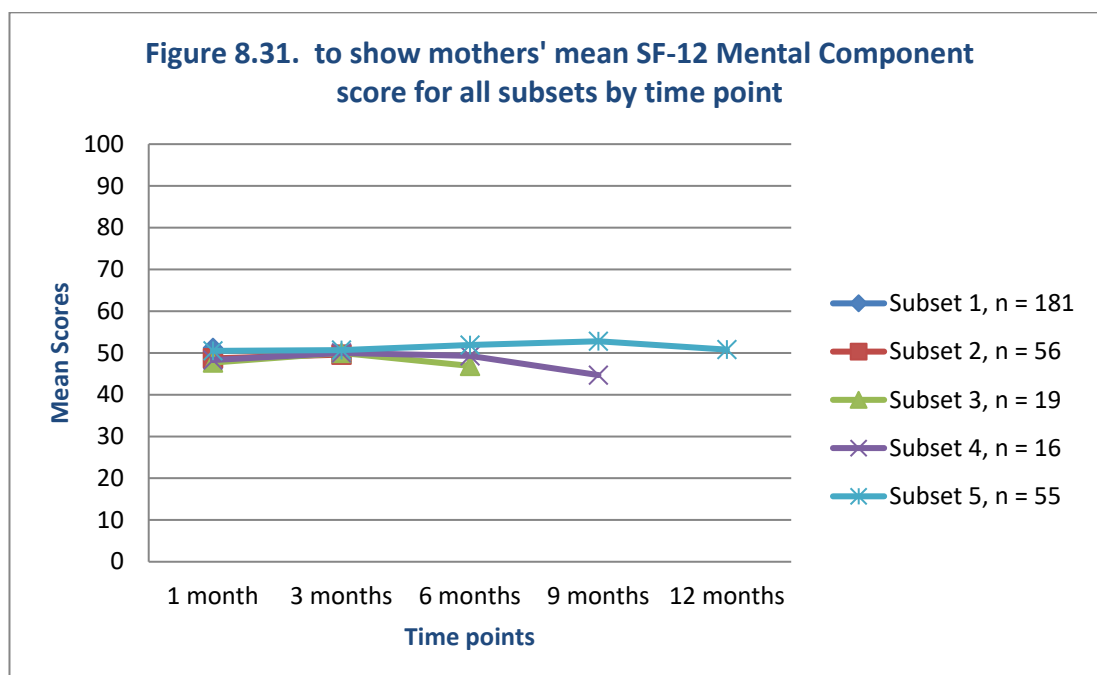


The mean scores for mothers' Physical Component Scale ranged from 45.1 (subset 1) at baseline to 55.4 at twelve months time point (subset 5). The mean scores increased over time for all subsets (excluding subset 1).

8.18.1.2. Mothers' SF-12 Mental Component Scale

Table 8.28. Summary statistics for mothers' SF-12 Mental Component Scale for all subsets by time point

Short Form 12 Mental Component scale	One Month Mean (SD)	Three Months Mean (SD)	Six Months Mean (SD)	Nine Months Mean (SD)	Twelve Months Mean (SD)
Subset 1 n= 181	51.2 (8.6)	-	-	-	-
Subset 2 n= 56	48.7 (10.9)	49.6 (10.1)	-	-	-
Subset 3 n=19	47.7 (11.1)	50.0 (9.2)	46.9 (11.9)	-	-
Subset 4 n=16	48.3 (8.4)	50.0 (7.9)	49.3 (12.5)	44.7 (13.3)	-
Subset 5 n=55	50.5 (6.8)	50.7 (9.8)	51.9 (8.1)	52.8 (8.3)	50.8 (10.5)



The mean scores for mothers' Mental Component Scale produced similar results ranging from 44.7 (subset 4) to 52.8 (subset 5) both at nine month time point. The mean scores for subset 5 ranged from 50.5 to 52.8. The scale for Short Form-12 is measured from zero to 100, with a mean score of greater than 50 indicating better mental health this result suggests that the mother's mental state as for their physical state was neither poor nor very good.

8.18.2. Fathers' SF- 12 results

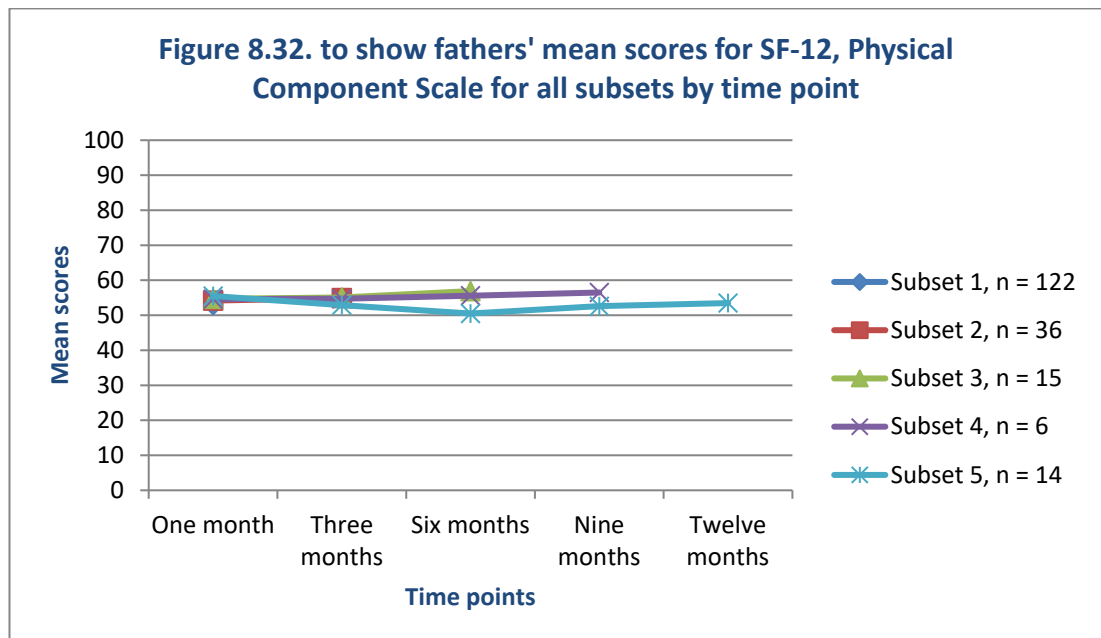
For both the SF-12 Physical Component and the SF-12 Mental Component, the results are presented as five subsets as follows:

- Subset 1: fathers who returned the SF-12 at baseline (one month) only, n = 122.
- Subset 2: fathers who returned the SF-12 at one and three months postpartum, n = 36.
- Subset 3: fathers who returned the SF-12 at one, three and six months postpartum, n = 15.
- Subset 4: fathers who returned the SF-12 at one, three, six and nine months postpartum, n = 6.
- Subset 5: fathers who returned the SF-12 at one, three, six, nine and twelve months postpartum, n = 14.

8.18.2.1. Fathers' SF-12 Physical Component Scale results

Table 8.29. Summary statistics for fathers' SF-12 Physical Component Scale for all subsets by time point

Short Form 12 Physical Component scale	One Month Mean (SD)	Three Months Mean (SD)	Six Months Mean (SD)	Nine Months Mean (SD)	Twelve Months Mean (SD)
Subset 1 n= 122	52.9 (6.7)	-	-	-	-
Subset 2 n= 36	54.2 (3.5)	54.9 (3.9)	-	-	-
Subset 3 n=15	54.7 (5.9)	55.1 (3.3)	56.9 (3.5)	-	-
Subset 4 n=6	54.6 (2.0)	54.7 (1.9)	55.6 (1.4)	56.5 (0.8)	-
Subset 5 n=14	55.5 (2.6)	52.9 (5.0)	50.5 (11.1)	52.6 (8.0)	53.5 (5.9)

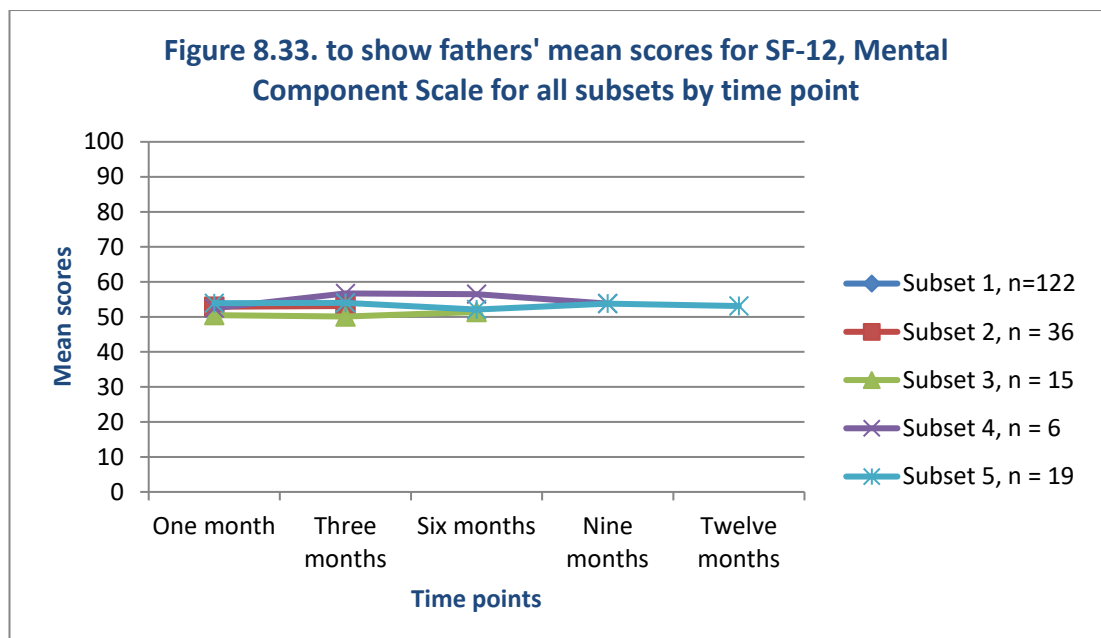


At baseline the mean scores for the SF-12 Physical Component Scale ranged from 52.9 (subset 1) to 55.5 (subset 5). The mean score for subset 5 varies little over the twelve months time period ranging from 50.5 at six months to 55.5 at baseline. As the scale for Short Form-12 is measured from zero to 100 this result suggests that the father's physical state was neither poor nor very good.

8.18.2.2. Fathers' SF-12 Mental Component Scale results

Table 8.30. Summary statistics for fathers' SF-12 Mental Component Scale for all subsets by time point

Short Form 12 Mental Component scale	One Month		Three Months		Six Months		Nine Months		Twelve Months	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Subset 1 n= 122	52.0	(8.3)	-		-		-		-	
Subset 2 n=36	52.9	(6.3)	53.1	(6.7)	-		-		-	
Subset 3 n=15	50.5	(9.7)	50.1	(11.2)	51.4	(10.6)	-		-	
Subset 4 n=6	52.5	(7.3)	56.7	(3.0)	56.5	(2.4)	53.8	(6.1)	-	
Subset 5 n=19	53.9	(5.4)	54.0	(4.5)	52.1	(8.0)	53.8	(9.2)	53.1	(6.4)



At baseline the mean scores for Mental Component Scale ranged from 50.5 (subset 3) to 53.9 (subset 5). As a cohort there was little variation in the fathers' score over time, ranging from 50.1 (subset 3) to 56.7 (subset 4), both recorded at three months time point.

As for the results of the physical component scale of the SF-12, the mean scores for the mental component for subset 5 varied slightly over the twelve months, ranging from 52.1 at six months to 54.0 at three months postpartum. As the scale for Short Form-12 is measured from zero to 100 this result suggests that again the father's mental state was neither poor nor particularly good.

8.19. Summary of mothers and fathers SF-12 results

In terms of the Physical Component Scale, as a cohort, the mothers' mean scores ranged from 45.1 to 55.4. Mothers in subset 5 showed slight improvement with their mean scores increasing from 47.4 to 55.4 over time. The fathers' mean scores were only slightly higher than the mothers' mean scores ranging from 50.5 to 56.9.

As with the Physical Component Scale, there was little difference between mothers and fathers mean scores for the Mental Component Scale. The mothers' mean scores ranged from 44.7 to 52.8, whereas the fathers' mean score ranged from 50.1 to 56.7.

8.20. Mothers' SF-12 paired sample t-tests results

A Paired sample t-test was performed for both the physical and mental component, comparing baseline mean scores with average follow-up scores.

Table 8.31. Mothers' SF-12 paired sample t-test results

Questionnaires	Baseline			Average Follow Up			Mean Difference	95% Confidence Intervals		Significance (2-tailed)
	n	Mean	SD	n	Mean	SD		Lower	Upper	p-value
SF-12 Physical Component Scale	55	47.4	8.8	55	54.1	3.7	6.7	4.3	9.2	<0.001
SF-12 Mental Component Scale	55	50.5	6.8	55	51.6	7.1	1.1	-1.6	3.9	0.416

Significance: p = 0.05

Scoring: PHI domains; Range 0-100, 0= best possible health outcome and 100 = worse possible health outcome

8.20.1. Mothers' SF-12 Physical Component Scale results

There was a statistically significant increase in the mean score between baseline (mean = 47.4, SD = 8.8) and the average mean follow up score (mean = 54.1, SD = 3.7) of 6.7, $p < 0.001$. The 95% confidence interval ranged from 4.3 to 9.2.

8.20.2. Mothers' SF-12 Mental Component Scale results

There was a non-statistically significant increase in the mean score between baseline (mean = 50.5, SD = 6.8) and the average mean follow up score (mean = 51.6, SD = 7.1), $p = 0.416$. The p value is therefore greater than 0.05. The mean difference in scores was 1.1 with a 95% confidence interval ranging from -1.6 to 3.9.

The results for the Short Form 12 therefore suggests that there was a statistically significant increase between the baseline and average follow up scores for mothers' SF-12 Physical Component but that there was no statistically significant difference between the baseline mean and the average mean follow up scores for the mothers' SF-12 Mental Component.

8.21. Fathers' SF-12 Paired sample t-tests results

Sample t-tests were also performed on the fathers' results for both the physical and mental component, comparing baseline mean scores with average follow-up scores.

Table 8.32. Fathers' SF-12 paired sample t-test results

Questionnaires	Baseline			Average Follow Up			Mean Difference	95% Confidence Intervals		Significance (2-tailed)
	n	Mean	SD	n	Mean	SD		Lower	Upper	p-value
SF-12 Physical Component Scale	14	55.5	2.6	14	52.4	4.3	-3.1	-6.1	-0.1	0.043
SF-12 Mental Component Scale	14	53.9	5.4	14	53.3	5.0	-0.7	-3.2	1.9	0.598

Significance: $p = 0.05$

Scoring: PHI domains; Range 0-100, 0= best possible health outcome and 100 = worse possible health outcome

8.21.1. Fathers' SF-12 Physical Component Scale results

There was a statistically significant decrease in the mean score between baseline (mean = 55.5, SD = 2.6) and the average mean follow up score (mean = 52.4, SD = 4.3) of 3.1, $p = 0.043$. The 95% confidence interval ranged from -6.1 to -0.1.

8.21.2. Fathers' SF-12 Mental Component Scale results

There was no statistically significant difference in the mean score between baseline (mean = 53.9, SD = 5.4) and the average mean follow up score (mean = 53.3, SD = 5.0), $p = 0.541$. The p value is therefore greater than 0.05. The mean difference in scores was 0.7 with a 95% confidence interval ranging from -3.2 to 1.9.

The results for the fathers' Short Form 12 therefore suggests that there was a statistically significant decrease between the baseline and average follow up scores for the SF-12 Physical Component but that there was no statistically significant difference between the baseline mean and the average mean follow up scores for the SF-12 Mental Component.

8.22. Results of Pearson's Correlation test for SF-12

To investigate if there was a relationship in the scores at one month and twelve months Pearson's Correlation analysis were performed for mothers and fathers in subset 5. This data is then displayed as a scatterplot to see if there is any correlation between the mothers' scores and the fathers' scores.

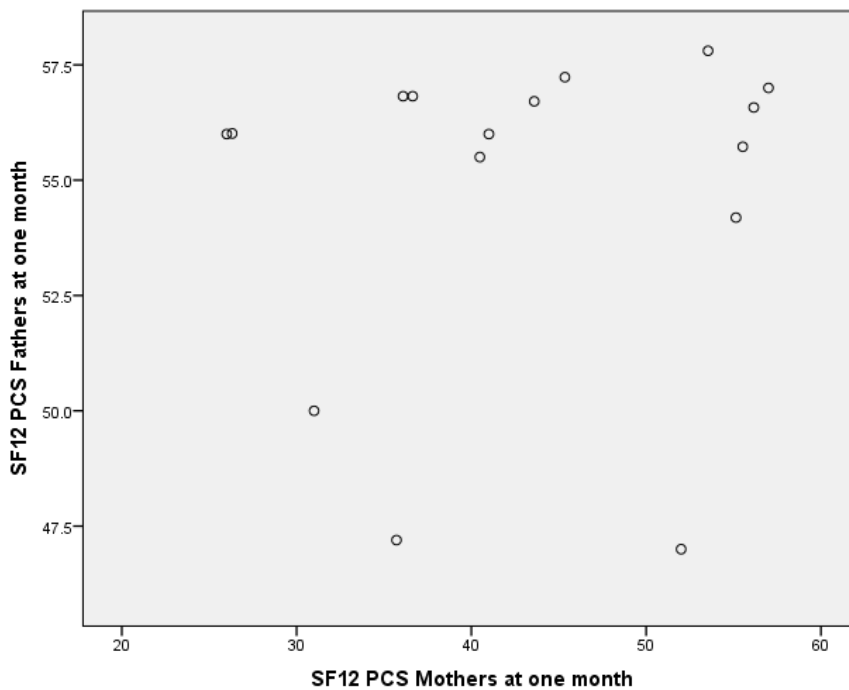
8.22.1. SF-12 Physical Component Scale results for Pearson's Correlation

Table 8.33. Pearson's Correlation results for SF-12 Physical Component Scale for Mothers and fathers in subset 5 at one month and twelve months time points

SF-12	n	Correlation coefficient	95% CI		p-value
			lower	upper	
Physical Component Scale at baseline	16	0.12	-0.40	0.58	0.655
Physical Component Scale at 12 months	16	0.12	-0.40	0.58	0.652

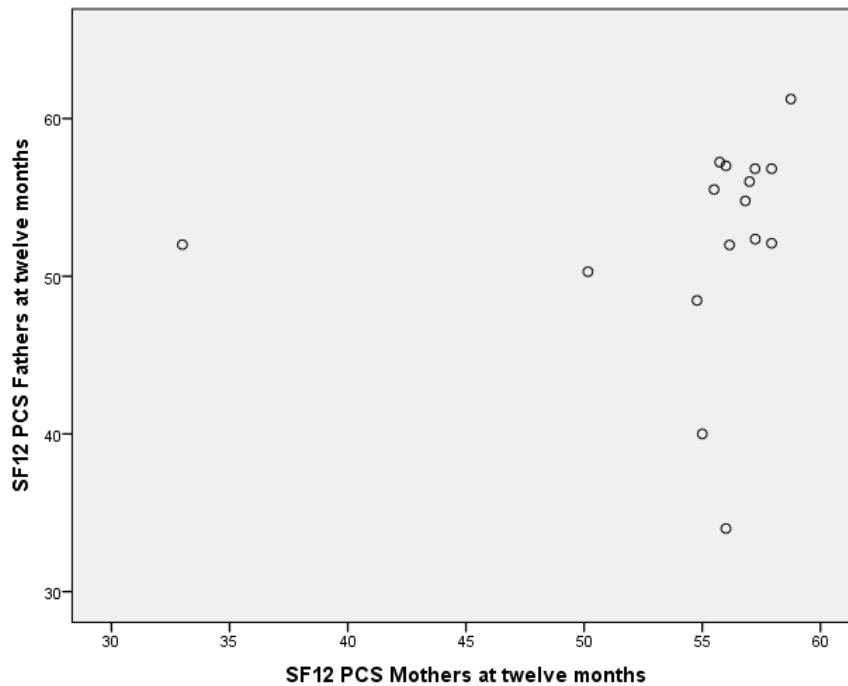
The results suggest that there was no correlation between mothers and fathers SF-12 Physical Component Scale scores either at baseline or at twelve months postpartum as the p-value is greater than 0.05.

Figure 8.34. Scatterplot to show results for Pearson's Correlation for SF-12 Physical Component Scale between parents at one month time point



The scatter plot looking at the SF-12 Physical Component Scale at one month shows no association between mothers and fathers SF-12 Physical Component Scale results. The Pearson correlation coefficient shows that this is not statistically significant ($p=0.655$).

Figure 8.35. Scatterplot to show results for Pearson's Correlation for SF-12 Physical Component Scale between parents at twelve months time point.



The scatter plot looking at the SF-12 PCS at twelve months shows that there may be a relationship between mothers and fathers scores. However the Pearson correlation coefficient shows that this is not statistically significant ($p=0.652$). The outlying mother with a low PCS score is influencing these results.

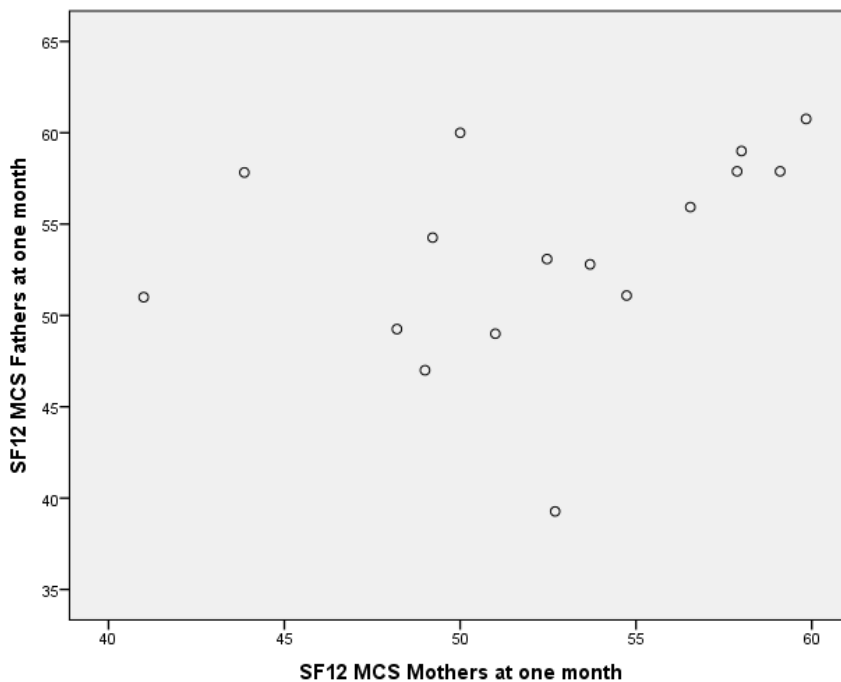
8.22.2. SF-12 Mental Component Scale results for Pearson's Correlation

Table 8.34. Pearson's Correlation results for SF-12 Mental Component Scale for parents in subset 5 at one month and twelve months time points

SF-12	n	Correlation coefficient	95% CI	p-value
Mental Component Scale at baseline	16	0.34	-0.19 to 0.72	0.195
Mental Component Scale at 12 months	16	0.65	0.22 to 0.86	0.007

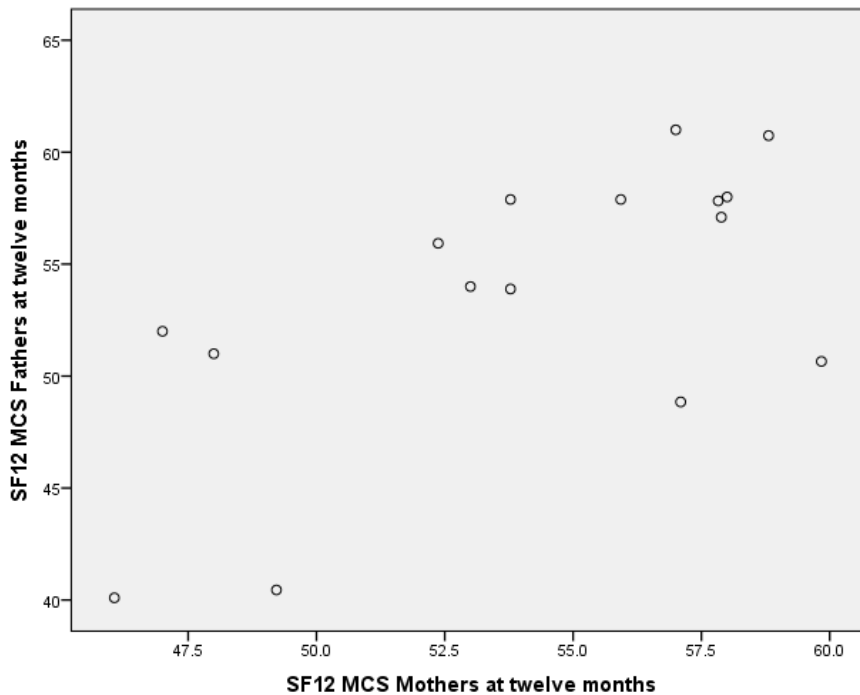
The results suggest that there is not a statistically significant correlation between mothers and fathers SF-12 Mental Component Scale scores either at baseline ($p=0.195$). However at twelve months postpartum there is a statistically significant positive association between score (0.65, 95%CI: 0.22 to 0.86, $p= 0.007$).

Figure 8.36. Scatterplot to show results for Pearson's Correlation for SF-12 Mental Component Scale at one month time point



The scatter plot looking at the SF-12 Mental Component Scale at one month suggests a weak positive association between mothers and fathers scores at one month. However, this association is not statistically significant ($p=0.195$).

Figure 8.37. Scatterplot to show results for Pearson's Correlation for SF-12 Mental Component Scale between parents at twelve months time point



The scatter plot looking at the SF-12 Mental Component Scale at twelve months suggests that there may be a relationship between mothers and fathers scores. The Pearson correlation coefficient shows that there is a statistically significant positive association between the scores (0.65 95% CI: 0.22 to 0.86, $p=0.007$)

8.23. Summary

In this chapter the results for the domains within the S-PHI and the SF-12 have been presented. The use of quality of life measures generated subjective evaluations of the experiences of parents during the first twelve months of their children's lives. The use of the S-PHI questionnaire allowed examination of aspects of life specifically pertinent to parents; their relationships, support from others as well as their mood and mothers' emotional-well-being. The physical well-being of mothers is also examined within the M-PHI.

The results for the S-PHI domains were firstly described using summary statistics. The results showed that in term of the mothers' results that the mean scores for all domains were less than 50, indicating a more positive sense of well-being. The 'relationship with baby' and the 'emotional well-being' domains in particular indicated positive health outcomes, with the mean scores in these domains being less than 20. For subset 5, the 'physical health' domain results showed particular improvement in mothers' health over time with a mean score at baseline of 21.5 to a mean score of 4.6 at twelve months postpartum.

However whilst in nine of the eleven domains of the M-PHI the results generally showed improvement, be it slight, the results for 'relationship with partner' and 'relationship with extended family' domains did appear to worsen over time.

The questions about mothers' health experiences (pain, infection, use of antibiotics and experience of incontinence), show an improvement in mothers' health status over time. It must be noted, however, that mothers in subset 5 were still complaining of both urinary and faecal incontinence at twelve months postpartum.

The fathers PHI domain results showed that for all but the 'relationship with partner' domain the mean scores were below 50, suggesting a more positive outcome. In this domain, at baseline, the fathers in subset 3 produced a mean score of 63.1. When looking at the results for subset 5, the mean score at baseline was 55 and 53.6 at twelve months time point.

Further to the summary statistics, paired sample t-tests were performed for all the PHI domains as well as for the SF-12 data. The results for the mothers showed that in ten out of eleven domains there was a statistically significant difference between the baseline score and the average follow up score. There was a statistically significant increase in the mean scores between the baseline mean score and the average follow up score for 'relationship with baby', 'sexual relationships' and 'relationship with extended family' domains. The results for 'relationship with partner' domain suggested that there was no statistical significance between the two scores.

The results for the fathers showed that in three of the six domains there was a statistically significant difference between the baseline and the average follow up score. For the 'role as father' domain there was a statistically significant decrease between the baseline mean score and the average follow up score. In terms of the 'relationship with partner' and 'support from partner' domains there was a statistically significant increase between the baseline mean score and the average follow up score.

The results from the SF-12 showed little difference between mothers and fathers. Scores above 50 indicate better mental or physical health, this therefore suggests that whilst there was slight improvement that the mothers were not in the very best of physical health. When examining the mean scores for fathers the results are surprisingly similar. As fathers have not undergone the potential trauma of childbirth the expectation perhaps would be that the fathers' score would be much higher. The mean scores for the Mental Component sScale for both mothers and fathers also was around 50, again suggesting that the parents had neither good nor bad mental health.

The results for the t test performed on the mothers' and fathers' SF-12 Mental Component Scale data both showed that there was no statistical significance between baseline and average follow up mean scores. Whereas there was statistical significant increase between the baseline and average follow up scores for the mothers' Physical Component Scale and a

statistically significant decrease between the baseline and average follow up scores for the fathers' Physical Component Scale.

Overall the results highlighted both the positive and negative facets of mothers and fathers experience of being parents during the first year of their child's life.

In the following, final, chapter the results presented in chapters 6, 7, and 8 will be discussed.

Chapter 9: Discussion

9.0. Chapter overview

In this chapter the results of the study will be discussed within the context of the body of knowledge that exists, which describes the experiences of mothers and fathers in the first year after the birth of their baby. The study hypothesis stated that the mental well-being of parents would change over the twelve months period and this appeared to be the case for the majority of parents. Overall the results suggest that there has been movement towards improvement in positive mental health outcomes and physical well-being. However there were areas where the results suggested that the experience was not entirely positive. A discussion of statistical methods will be followed by an evaluation of the result. The results of the instruments concerned with mental health will be considered first followed by a discussion about the results of instruments examining parents' physical well-being. The strengths and limitations of the study design will also be discussed as well as possible modifications which might improve future research.

9.1. Main aims and objectives of the present study

The main aim of the thesis was to measure the postnatal health outcomes for mothers and their partners after having a baby. In doing so the objective was to explore the impact that having a baby had upon the parents' mental health status and physical well-being, looking both at the negative sequelae and positive outcomes over the first twelve months postpartum. The hypothesis suggested that the health of parents would change after they had a baby; the null hypothesis suggested that there would be no change to the mental health and well-being of parents over time.

The link has been established between physical health and mental health as well as social health (WHO, 2001). It must be understood that mental and physical health are not separate entities but interconnect with one another and may influence the other state either positively

or negatively. A further aim of the study therefore was to capture the physical changes that occur to mothers and fathers during the postnatal period and to examine social aspects of both parents' lives, particularly in terms of social support and relationships.

9.2. Discussion of statistical methods.

Before discussing the findings of the study it would seem appropriate to discuss how the data was analysed. The aim of the study was to investigate changes in outcome measures for the five instruments, for both mothers and fathers at five time points. Summary measures for the demographic data was presented in chapter 6. In chapters 7 and 8 the analysis of the data was presented which included using paired sample t-tests to compare the mean scores at baseline (one month) with the average of the follow up scores. This method of summarising the follow-up measurements is appropriate when after an initial change from baseline the response profile is horizontal, that is, there is no continued increase or decrease or peaks at any time. In chapters 7 and 8 this was assessed by plotting the mean scores at every time point for each outcome measure. In most cases these graphs showed evidence of an approximate horizontal response profile for the 3, 6 and 12 months time points. However for some outcome measures there was more variability in the mean scores at the follow-up assessment points.

A main concern when collecting data was that it became apparent that there was substantial attrition over time at each of the four post-baseline assessment points. Discussion of the possible ways of practically dealing with attrition will be discussed further in the chapter. The other issue was that parents would randomly miss out completing a set of questionnaires, producing data non-sequentially. It was therefore difficult to produce a true picture of changes to parents' experiences over time. For this reason the main statistical analysis to investigate changes in the outcome measures, presented in chapters 7 and 8, was conducted only on those parents who had completed all five of the assessments. Although this approach means that the sample of mothers and fathers is consistent over time it also

means that the sample size is reduced. Further parents were allocated to a subset determined by the number of sequential assessment points they had completed. Patterns of missing data and the response profiles were investigated by plotting the mean responses at each time point for these five subsets (separate subsets for mothers and fathers). The aim of conducting this analysis was to identify if the response profiles were the same for the different subsets and be assured that those who didn't complete all five assessment points were not different for those who did. In most cases these graphs showed evidence of similar response profiles for each subset of mothers and fathers.

The methods of using a summary measure to compare the baseline to follow-up measurements and only analysing the participants who completed all five assessments are simple approaches to the analysis of longitudinal data and handling missing data. Alternative approaches could have been used that are more sophisticated. For example, linear mixed effects models could have been used to analyse the longitudinal data without the need for calculating summary measures for the follow-up time points. This method of analysis allows for there being multiple measurements for each participant and can also allow for different patterns of correlation between measurements. With respect to attrition over time, methods of imputation could have been investigated from simple methods such as last observation carried forward and mean imputation, through to more complicated methods such as multiple imputation (Walters, 2009). Alternatively, using a linear mixed model does not require participants to have completed data at each assessment point and gives consistent estimates if the data are missing at random (Verbeke and Molenberghs, 2000).

9.3. Main study findings

The mental and emotional well-being of both parents appeared to generally improve over the twelve months. However, mothers were more likely than fathers to experience dysphoria or depression particularly during the first few months postpartum. The physical health of mothers also improved over time, whereas the outcome measures for fathers' physical health

remained unchanged with time. The results of the instruments will be discussed further within this chapter, examining firstly the results of the instruments, or parts of instruments concerned with mental health outcomes and then the instruments or part instruments concerned with physical health outcomes.

9.4. Mental and emotional well-being

The instruments concerned with measuring the mental health outcomes are EPDS, PANAS and WEMWEBS, domains within the S-PHI that are concerned with mental health outcomes and the Mental Component of SF-12. The results from these instruments will be discussed here.

The literature concerning parents and particularly mothers in the postnatal period tends to emphasize the incidence of, and problems associated with, postnatal depression. As described previously depression in mothers in the postnatal period can range from what is termed 'baby blues', a transient event, through to puerperal psychosis which is a serious psychiatric disorder requiring emergency medical treatment. However, what studies are generally concerned with is postpartum or postnatal depression. This is described by Edhborg et al (2005) as a non-psychotic depressive illness of moderate severity with symptoms, which they suggest, are the same as depression experienced at any other time. The difference, they propose, is that there is a threefold risk for the development of depression during the first three months after childbirth. Fathers too are not immune to suffering from depression or feelings of sadness during this time (Escribà-Agüir and Artazcoz, 2011). The intention of this study was not to explore the risk factors associated with developing postnatal depression, as this has been discussed elsewhere (for example Areias et al, 1996), instead the aim was to look at the mental health status in terms of positive and negative outcomes experienced by the parents.

As the S-PHI is a recently developed instrument there were no studies in the 37 identified in the systematic literature review that utilized this instrument and therefore the results from

the S-PHI generated in this study have no other studies to be compared with. In the systematic literature review, there were 14 studies that employed the EPDS and two studies that used PANAS; the results from these studies can be compared with the present study. Unfortunately none of the studies in the systematic literature review employed WEMWBS.

9.4.1. EPDS results

The EPDS was administered to both mothers and fathers at all five postpartum time points. For the present study an operationalized cut-off figure of 13 and above was used to indicate the possible presence of maternal postnatal depression and a score of 10 and above for fathers. The cut-off figure of 13 and above was used for mothers as Cox and Holden (2003) suggest that a cut-off score of 9/10 may be over-inclusive and a cut-off figure of 12/13 is usually recommended in community settings. Edmondson et al (2010) suggested that a cut-off score of 10 and above would detect cases of major depressive illness in fathers. Both studies related to mothers and fathers in the UK and therefore these cut-off figures seemed appropriate to this present study. Unfortunately as there was variation in the cut-off scores employed by the studies included in the literature review and as the parents were surveyed at differing time points, it is difficult to make direct comparisons it is still possible to look at these results constructing forest plots. The I^2 results for both mothers' and the fathers' studies suggested high heterogeneity, it therefore did not seem appropriate to combine these studies. The difference in the operationalized score employed in part reflects the conclusion of validation studies conducted in particular countries where the EPDS has been translated.

In the present study, when considering mothers' mean scores at baseline, these ranged from 6.3 to 7.4 for the sample as a whole. The mean scores for subset 5 ranged from 4.6 to 6.6. The range of mean scores for the cohort overall was 4.6 to 8.1. Castle et al. (2008) reported similar scores at six weeks postpartum. The means scores for fathers ranged from 3.1 to 4.9 at baseline. The mean scores for fathers in subset 5 ranged from 3.0 to 3.7 over time. The study by Iles et al. (2011) reported mean scores of 5.3 for mothers and 3.4 for fathers at three

months postpartum. Edhborg et al. (2005) reported mean scores of 4.4 for mothers and 2.5 for fathers at one month postpartum.

Rather than reporting the mean score for parents, many studies included in the systematic literature review reported the percentage of parents who scored above the cut-off figure. In the present study the percentage of mothers who scored above the cut-off figure, at baseline, ranged from 8.7 to 22.2%. Overall, by subset, the percentage of mothers who scored above the operationalized cut-off figure ranged from 6.7 to 27.8%. For subset 5 this figure ranged from 7.5 to 14.9% over time.

The incidence of postnatal depression in the UK is reported by Robertson et al (2003) as 10-15%. When the data was analysed looking at all the mothers in the study over time, this percentage ranged from 10.5 to 14.9%. This, therefore, is comparable to the figure of 13.9% for mothers reported by Morse et al. (2000). At twelve months postpartum the study by Escribà-Agüir and Artazcoz (2011) results reported similar percentages of parents scoring above the cut-off score than in the present study; 4.4% of mothers compared with 7.6% in present study. The study by Abbasi et al (2014) reported a higher percentage of mothers scoring greater than 13, the percentage of mothers who scored above the cut-off figure was 34%. This higher figure may reflect that the study was conducted in Iran using translated EPDS.

The percentage of fathers who scored above the operationalized cut-off figure ranged from zero to 18.2% at baseline. The fathers in subset 5 scored from zero to 7.6%. Over the study the percentage of fathers scoring above the cut-off figure ranged from zero to 27.3%. Morse et al. (2000) reported a figure of 4.8% at the four months. However the study by Abbasi et al (2014) reported a higher percentage of fathers scoring greater than a cut-off figure of 13; this percentage was 20.5% which may reflect the higher cut-off score. Escribà-Agüir and Artazcoz (2011) in their study, recorded a figure of 4% of fathers who scored above the cut-off score, this compares with 7.6% of fathers in the present study at the same time point

(subset 5 at twelve months). They also used an operationalized score of 11 and above, rather than 10, so the difference between the scores might be greater when using the same cut-off score.

For fathers looking at the sample as a whole, 7.6 to 12.5% scored above to cut-off figure of 10. As indicated previously, as fathers are not routinely screened for depression after the birth of their child there is not a universally accepted figure available to indicate the prevalence of depression in fathers after the birth of their baby in the UK. Further when the mean scores for mothers and fathers as a household were analysed it was found that there was no statistically significant difference between their scores. Whilst the mean scores for parents in this study show that the range is below the operationalized cut-off figure, when examining the percentage of parents who score above this figure a different picture emerges.

A possible explanation for any differences between the EPDS results in the present study and the results from the studies in the literature review may be because the EPDS would have been translated from English into the language appropriate to the country in which the study was carried out and there may be a danger that the meanings of the questions lose some of their clarity in the translation. It has also been suggested that there may also be differences in the characteristics of the populations who are surveyed using translations of instruments and therefore how people interpret the questions, thinking particularly about cultural meanings given to depression (Thompson et al, 2002). There may be cultural or religious issues surrounding admitting to mental health problems, particularly disclosing thoughts of suicide.

When applying McNemar's test to the results for mothers' and fathers' in subset 5 at both baseline and at twelve months postpartum, it was found that there was not an association between depression and being either a mother or a father. Similarly when looking at mothers in subset 5 data at baseline and twelve months there was no statistically significant change in depression from one month to twelve months postpartum. Examining the data for the fathers

in subset 5 at both baseline and twelve months also suggested that there was no statistically significant change in depression from one month to twelve months postpartum. The results of Pearson's Correlation and the presentation of a scatterplot also suggested that there was not a statistically significant association between mothers' and fathers' scores.

9.4.2. PANAS results

Only two of the studies included in the literature review employed PANAS and unfortunately neither provided data. The results in this study showed that for the mothers in subset 5, the PANAS Positive Affect mean score showed a slight improvement over the twelve months ranging from 35.5 at baseline to 39.6 at twelve months. The mean score for the PANAS Negative Affect mothers in subset 5 was 14.3 to 17.1. These figures suggest a slight improvement over time. The PANAS Positive Affect mean score for fathers in subset 5 was relatively unchanged over time (37.6 to 38.8) and the PANAS Negative Affect scores ranged from 12.2 to 14.6. The PANAS Positive Affect results for parents in subset 5 were relatively high and the PANAS Negative Affect mean scores were fairly low. As high PA and low NA score reflect higher levels of positive health these results support other S-PHI findings. The results of the Pearson's Correlation looking at mothers and fathers in subset 5 at both baseline and at twelve months for PANAS Positive Affect suggested that there was a weak relationship which was statistically significant at baseline but not at twelve months. The Pearson's Correlation results for PANAS Negative Affect at one month and at twelve months suggested that there was no association between mothers and fathers results.

9.4.3. WEMWBS results

WEMWBS measures positive mental health and was not used by any of the studies in the literature review. In this study the WEMWBS results showed that the mean scores for mothers in subset 5 ranged from 50.2 to 55.8. The fathers' results however showed a marked decrease in the mean scores for both subset 4 and 5 at the nine months assessment point dipping to 35.9 and 38.3 respectively. The mean scores for subset 5 recovered to 53.5

at twelve months assessment point. The instrument range is 14 to 70, with 70 indicating a sense of optimum positive mental health; it would therefore suggest that both parents experienced positive mental health status, except for fathers at nine month assessment point. The results of Pearson's Correlation suggest that there may be a weak relationship between the mothers' and fathers' scores.

It would appear then that at nine months fathers are not feeling at all positive. This may be as a consequence of their partners returning to work at this time. It is difficult to speculate and needs to be investigated further.

9.4.4. SF-12 results for Mental Component Scale

The mothers' results for the Mental Component Scale of the SF-12 showed little variation in scores over time, with the mean scores for subset 5 ranging from 47.4 (at baseline) to 55.4 at twelve months postpartum. This mean score in the region of 50, that is the mid position of the range, suggests neither extremes of mental health status. Perhaps this reflects the natural order of fairly constant emotional well-being of few highs or lows. The results for fathers were very similar with the fathers in subset 5 producing a mean score of 52.1 to 54.0.

The only study that employed SF-12, Ngai and Ngu (2013) reported that the mental health status for mothers, although declined from pregnancy to six weeks postpartum then improved gradually by six months postpartum. They also suggested that fathers' mental health was better than mothers.

9.4.5. S-PHI: mental health outcome results

There were three domains within the M-PHI that specifically examined the mental health outcomes; 'control and powerlessness', 'emotional well-being' and 'mood'. The summary statistics for all three domains showed an improvement in mean scores. In particular the results for subset 5 showed a reduction in the mean score from 30.0 at baseline to 20.0 at the twelve months assessment point. The mean values for these three domains were closer to

zero suggesting a positive state of mental health. The t-test results for these three domains showed a statistically significant decrease between the scores.

The fathers were asked different questions within the F-PHI relating to their experiences which were constructed into six domains. Whilst the fathers completed a domain also called 'mood' these questions were different to the mothers' domain questions. The summary statistics for the 'mood' domain produced relatively low mean scores suggesting a more positive outlook (mean scores for subset 5 ranged from 20.7 to 23.0), the t-test results suggested a non-statistically significant decrease between baseline and average follow up scores.

9.5. S-PHI: relationships and social support results

Within the M-PHI, there were domains which looked at the mothers' relationship with their baby, their relationship with their potential support networks and their relationship with their extended family. Mothers were also asked about their relationship with their partners and also about their sexual relationship with their partner. The summary statistics for their relationship with the baby and with social support domain showed an improvement in the mean scores. For both of these two domains there was a statistically significant decrease also suggesting an improvement in mothers' relationship with their baby and their perception of social support.

The summary statistics for the other three domains suggested a slight worsening for 'relationship with partner' and 'relationship with extended family' domains and little change in the results for the 'sexual relationship' domain. In terms of the t-test results, there was a statistically significant increase in the 'sexual relationships' and 'relationship with extended family' domains and a non-statistically significant increase in the 'relationship with partner' domain between baseline and average follow-up scores.

The perceived worsening of the relationship with partner and extended family may be for several reasons; firstly as mothers become more proficient in childcare, family and friends may no longer feel that the mother needs their support and so withdraw and secondly when the 'honeymoon' period of a new baby is over, family and friends may go back to their own lives and are involved less with the new mother. Monk et al (1996) propose that for the initial postpartum period the decrease in time that mothers spend with non-family members has actually no effect upon mothers' well-being as she is able to focus upon her baby. Whether it is mothers focusing upon their infants that result in potential problems between the parents, it is difficult to say. Monk et al, (1996) suggest, however that over time the lack of contact with other adults may have a detrimental effect on mothers. It may be, they suggest, that while mothers are on maternity leave that they miss the support that they derived from the companionship of their fellow workers.

The fathers' summary statistics results for both 'relationship with baby' and 'role of father' domains showed a slight decrease in mean scores over time, with figures closer to zero than 100, suggesting an improvement in these domains. The t-test results suggested that there was a statistically significant decrease between the baseline scores and the average follow-up scores for 'role as father' but a non-statistical decrease in mean scores between baseline and follow-up scores for 'relationship with baby' domain.

Perhaps the areas of concern however, are the results for fathers for the 'relationship with partner', 'support from partner' and 'support from friends' domains. In terms of the fathers' 'relationship with their partner' domain, the mean scores for subset 5 ranged from 46.1 to 55.0. The t-test results suggested a statistically significant increase between baseline and average follow-up scores.

The results for fathers generated by the F-PHI, also indicated a perceived worsening of support that they received from friends. Whether this is because friends assume that fathers don't need support it is difficult to say. As fathers work routine usually returns to normal

soon after the baby's birth, this may give an outward appearance of everything returning to normal and so friends may not be aware of the father's needs. Escribà-Agüir and Artazcoz (2011) suggest that in contrast to mothers who are more likely to seek out friends to share their problems with, fathers are more dependent upon their partners for emotional support. What may exist is an element of gendered roles and with it a difficulty for men to communicate their concerns or problems with other men and perhaps their partners.

The results from S-PHI therefore suggest that there may be potential problems for parents in terms of their own relationship with each other, but also in terms of support from others. This is an area of concern and would warrant further investigation. Unfortunately the fathers were not asked within the F-PHI about their sexual relationship with their partner.

9.6. S-PHI and SF-12 results: Parents' physical health

The main aim of the thesis was to consider the mental health of the parents; however the physical health of mothers and fathers should not be excluded from the discussion particularly as both physical and social well-being can impact upon an individual's mental health status (WHO, 2001). In this section therefore the findings from the M-PHI and the physical component of SF-12 will briefly be discussed. Within the F-PHI fathers are not asked directly about their physical health, their physical health status is derived from the results of the physical component of the SF-12.

The mean scores for the 'Physical Health' domain within the M-PHI suggest that mothers' health improved with time. When looking at the paired sample t-tests for mothers in subset 5, the results for the 'Physical Health' domain show a statistically significant decrease, indicating improvement to physical health. That the majority of mothers did not seek medical advice during the study perhaps supports this. There was a minority of mothers who had suffered from an infection necessitating in antibiotic therapy. The only caveat to that though is that there were mothers who even at twelve months postpartum were experiencing incontinence.

Whilst mothers were not asked directly about medical conditions within the M-PHI, they were asked to identify, if appropriate, where they had pain or infection. From these responses backache, perineal pain, wound pain, headaches and breast/ nipple pain were identified as common problems. All though these problems are often regarded as transient the study found that the incidence of backache, shoulder pain and joint problems did not appear to resolve during the twelve month time period. MacArthur et al (1991) also found that backache was a common problem and for some mothers this became a chronic condition and this is reflected in the results of the present study. Brown and Lumley (1998) reported that backache affected almost half the mothers in their study at six to seven months postpartum as did Thompson et al (2002). The problem of backache was also illustrated in the study by Woolhouse et al (2014) where nearly half of the mothers reported upper or lower back pain. Glazener and MacArthur (2001) quote a figure for postnatal backache as between 17% and 46% therefore suggesting that this is a significant problem.

Another aspect of mothers' health relates to infant feeding. Concerns about technique and problems with sore nipples are usually resolved by six to eight weeks (Nyberg et al, 2000). The mothers who continue to breastfeed over the twelve months are therefore unlikely to have any real problems and are by the end of the study confident and experienced at breastfeeding. The present study findings suggest that overall at one month postpartum 73.3% of mothers were breastfeeding, by subset this ranged from 70.1 to 85% at baseline. Data for 2010, issued by the Health and Social Care Information Centre (2012), showed that although the initial rate for breastfeeding was as high as 81% in the UK and that this figure fell to 69% at one week and to 55% at six weeks. At three months postpartum 63.3% of the present sample was breastfeeding, which would appear higher than the national figure at the same time. This may be because the sample was self-selected or may merely reflect that Sheffield has a good record of breastfeeding compared to other regions in the UK (Public Health Analysis Team, 2007).

The mothers' results for the 'sleep' domain saw an improvement over time. The paired sample t-test for the sleep domain for mean score at baseline compared with average follow-up score showed a statistically significant decrease. Unfortunately the fathers were not asked about their sleep patterns or possible problems. It would have been interesting to compare mothers' experiences with their partners.

In terms of the SF-12 Physical Component Scale, the results for mothers in subset 5 showed a slight improvement in the mean scores from 47.4 at baseline to 55.4 at twelve months. A score of 100 is the optimum for this instrument. The mean scores for fathers in subset 5 ranged from 50.5 to 55.5. The mothers' mean scores showed some improvement and the fathers' mean scores were fairly stable. Surprisingly perhaps there was therefore, little variation between the parents' scores. The Pearson's Correlation results for SF-12 Mental Component, showed a statistically significant correlation at baseline but not at twelve months assessment point between mothers' and fathers' results.

9.7. Summary of the study findings

The information about the characteristics of the sample was generated from questions within the S-PHI. The age of the mothers was found to be comparable with the ONS statistics for the UK. The majority of parents described themselves as 'white' British. Unfortunately there were ethnic groups who were unrepresented in the sample. This may be due to parents' inability to read English; unfortunately the study could not provide translations of the instruments. As expected the majority of parents were living with the child's other parent during the study. It was difficult to present a true picture of the number of other children that the parents had as many left this part blank. Providing no information here may have equated to the parents having no other children. The majority of parents had degrees or higher degrees which was reflected in their formal occupations, which were mainly found in professional or managerial positions. There was no association between participation in the study and the mode of birth or the incidence of multiple births.

When examining the results from the M-PHI, there appears to be some improvement in mother's physical health over the first twelve months. This was perhaps reflected in the decline in the need for mothers to seek medical advice about their health particularly by twelve month time point. Problems with their physical health are apparently an issue for many mothers, the problems being varied and of differing duration. Thompson et al. (2002) also noted, as with this study, that mothers continue to experience problems with for example backache, sexual problems and incontinence following pregnancy and childbirth which can persist beyond six months postpartum.

Whilst the fathers were not asked specific questions about their physical health within the PHI, they were asked to complete the Physical Component Scale of the SF12. The range of mean scores for subset 5 was 50.5 to 55.5, suggesting that their perception of their physical health was fairly constant over the twelve month time period. It was perhaps not surprising that the fathers mean scores did not fluctuate over time and that the mother's mean score showed an improvement, be it slight. These figures are not dissimilar to the mean scores reported by Ngai and Ngu (2013). Here the mother's mental and emotional health appeared to improve particularly by the six month time point. This was reflected in the SF12 Physical Component where improvement in physical health status was also seen.

The mental health and physical well-being of parents during the first twelve months of their infants' lives was examined utilizing five instruments. The results suggest that overall the mental health and well-being of parents did change over the twelve months. In the most part the parents' health did improve however there were some areas to highlight. In terms of mental health, the results for the PANAS suggested that both mothers and fathers were moving towards a feeling of serenity and calm. This is also apparent when looking at the mothers' results for the WEMWEBS questionnaire where there was little variation in the mean scores over time. The mean score for subset 5 was above 50 over the duration of the study. The fathers' results for WEMWBS however, showed a dip in the mean scores at nine months for both subset 4 and 5. The mean score for subset 5 recovered by twelve months.

The EPDS results for mothers in this study showed that the percentage of mothers in subset 5 who scored equal to or above the operationalized cut-off score of 13 had, after an initial decline at three months, begun to increase and by twelve months postpartum this figure of 14.9 was higher than the baseline figure of 10.4. The paired sample t-test comparing the baseline mean score with the average follow –up score however suggested that there was a statistically significant decrease in the scores. For fathers their mean EPDS score was lower than for the mothers and this is what would be expected.

The results of SF-12 Mental Component Scale for both mothers and fathers in subset 5 showed little variation in the mean scores over time. Perhaps the expectation would have been to see more variation results between baseline and twelve months postpartum. It is also perhaps surprising that there was very little difference between the parents' scores. The results for the mothers Physical Component Scale for mothers in subset 5 did show slight improvement over time. That mothers are more likely than fathers to suffer from dysphoria postnatally and suffer from physical problems associated with childbirth does not appear to be evident here. Pearson's Correlation results for SF-12 Physical Component suggested that there was no relationship between the mothers' and fathers' results at either baseline or at twelve months postpartum.

In comparison to the EPDS, the aim of the S-PHI domains was to capture the experiences of parents rather than identifying the incidence of postnatal depression. Domains such as 'relationship with baby' and 'role as a father' attempt to identify the positive aspects of parenting; what it is that makes parents happy. These domains, in particular, highlight parents' perceived purpose in life and what is rewarding about being a parent. For these domains the parents' scores reflected the positive aspect of being a parent. Irrespective of other results, this alone indicated that the parents who participated in the study enjoyed being parents. What perhaps was of concern was how the parents felt about each other and the potential lack of support that they experienced from each other and from others. For mothers, the results of the t-test looking at 'relationship with partner' domain showed a non-

statistically significant increase between the baseline and the average follow up scores. The fathers' responses to 'relationship with partner' and 'support from partner', when examined using paired sample t-test, found that there was a significantly significant increase in the mean score between baseline and average follow-up scores for both domains.

9.8. Strengths of the present study

The study utilized a prospective longitudinal design following a cohort of parents during twelve months of having a baby. During the transition to parenthood, parents may experience changes to their mental and physical health status, their social networks and relationships and as a consequence their lives may have to adapt to this. A strength of this longitudinal design was that in surveying the parents at five time points and employing the same instruments at each time point, the differences or changes in a variable could be measured across the time points (Ruspinin, 2000). The results from these repeated measures allowed changes in the health and well-being of parents to be identified (Matthews et al.1990).

In conducting a postal survey a large number of potential participants were contacted (Bryman, 2001). The involvement of both mothers and fathers in the study allowed comparisons to be made between their results. The study generated a large amount of data by utilizing five instruments. These instruments included parent-specific and generic tools that measured both positive and negative mental health outcomes. The inclusion of the EPDS in particular in the study allowed comparisons to be made with other pieces of research carried out in the same field.

9.9. Limitations of the present study

On completing the study there is an opportunity to reflect on the process of conducting the research and the generation of data. In this section the study limitations will be considered.

In terms of modifications there are aspects which are important to consider in light of the present study and for further research.

9.9.1. Recruitment

What became apparent soon after the study was embarked upon was that recruiting parents was slow and time consuming. The initial recruitment involved presenting the study to parents in the antenatal period. The benefit of this allowed me to talk to parents, explain the study in more detail and respond to questions. However, it became apparent that to generate the required study sample size with this method would have taken a very long time; in addition to that the study would then not be completed until a year after the final participants enrolled onto the study, much more time than available to a PhD study. With hindsight this method of enrolment with the time constraints in place was perhaps ill-chosen in this case. However the alternate method then proposed proved to be also time consuming and expensive for what then resulted in limited returns. As a single student to recruit participants, the logistics of preparing and sending out questionnaires, as well as database entry and analysis was very time consuming.

9.9.2. Attrition

The study also suffered from higher attrition rates than had been anticipated. The initial response to involvement in the study dissipated over time, there was only a finite amount of time available to keep recruiting in the hope that there would be sufficient participants at the end of the study. A solution to this would have perhaps been to have shortened the duration of the study to six months. That way it would have become apparent more quickly that more participants had to be recruited. Only 10 of the 37 studies in the systematic literature review, had study duration time of up to twelve months. With consideration, twelve months is a long time for parents to commit their time to and it was perhaps an unrealistic expectation.

Edwards et al. (2002) concluded from a systematic literature review that there were various methods which could be employed to enhance recruitment and retention of participants and therefore reduce attrition rates. Several methods proposed would have been financially impractical, for example sending the questionnaires out by recorded delivery or sending out reminders or further questionnaires to promote further involvement. Unfortunately financial support to cover postage was not secured until near the end of the data collection process. Edwards et al. (2002) also report that the response can be increased by contacting the participants before the questionnaires are sent out. Unfortunately this method would have increase expenditure and may have proved difficult with the first questionnaire being sent out to arrive four weeks after their baby's birth.

To find out the reason for parents leaving the study would have also been invaluable, particularly if it was because of the design of the study. If this were the case then modification could have perhaps been made to improve recruitment and retention of parents. When looking at the demographics of the mothers in particular, those mothers with degrees or higher and those mothers with more than 2 children had left the study by nine months postpartum. This suggests that it was more likely to be due to personal circumstances which resulted in parents having less time to complete the questionnaire which led to parents withdrawing. Unfortunately the tendency was that both parents dropped out together. Perhaps fathers felt that the study was primarily about mothers, as the literature review suggests there are few studies which look at father's postnatal health, so perhaps fathers still feel that their experiences were not as valid as the mothers. Whilst it would have been feasible for fathers to participate in the study without their partners, in reality only two or three fathers actually did.

This study therefore was unable to ascertain from the non-respondents the reasons why they did not take part or from those who subsequently dropped out during the study. It was reported by Edhborg et al (2005) that the reasons for non-participation in their similar study was that having a baby was more stressful and time consuming than parents had imagined

and that either the mother or baby had been ill. When considering the mode of delivery they found no difference between the non-participants and the participants, however when the mode of delivery was examined in the present study it was found that although there was little difference between the groups, there was a slightly higher percentage of mothers who had undergone a Caesarean section in the participating group than the non-participating group. This is perhaps unexpected, particularly as this group are recovering from a major operation as well as the added stress of looking after a baby and possibly other children. When looking at multiple births, there were no triplets in the sample only twin births, this was not a factor in whether mothers participated in the study.

9.9.3. Number of time points

The number of times that the parents were surveyed may have also influenced the parents continued participation; this being the case the data collection could have been reduced from five times to perhaps three. Several parents commented that the study was too long; one mother at nine months postpartum remarked that the questionnaires should be kept to a minimum. Asking the parents to complete five questionnaires at five time points was not only asking a lot of them, it was also ambitious for a single student to process and analyse, although it did generate a rich amount of data. It may have also been advisable to send out the first questionnaires slightly later, perhaps at six weeks postpartum. A suggestion was made by a parent that they wanted to take part but having been unable to complete the questionnaire at one month postpartum and then they thought it would then be too late to take part.

9.9.4. Timing of the questionnaires

The timing of the questionnaires may also have improved the response rate. Several studies sent prospective parents questionnaires during the antenatal period. There were 20 studies in the systematic literature review who surveyed parents in the antenatal period. Having the baseline data collection in the antenatal period would have allowed for comparisons to be

made with data collected postnatally. It also means that parents are better able to commit to a study when perhaps they have more time. Gibson et al (2000) also argue that recruiting in the antenatal period adds considerable strength to the study's design; in that recruitment is before self-selection for potential parenting problems has occurred. This may produce a broad baseline sample, having taken part in the antenatal period; parents may have been more inclined to complete the next set of questionnaires after their baby was born, though it does not guarantee continued participation in the study. There would still remain the issues of recruitment; recruiting parents in the antenatal period proved difficult for this study with a postpartum baseline. For this study too, as the S-PHI is designed to look specifically at postnatal health it would have been inappropriate to utilize it in the antenatal period. Data collection at three points, for example six weeks, six and twelve months postpartum may have provided enough data to highlight changes over time.

9.9.5. Number of questionnaires

On reflection the number of questionnaires that the parents were asked to complete may have been off-putting, particularly initially when they would be very busy with their baby and possibly with other children too. With all research tools there is only a finite amount of questions that individuals are prepared to complete. Edwards et al. (2002) suggest that response is more likely if the questionnaire was short. Making the questionnaire too long or asking to complete too many questionnaires is counter-productive if it is abandoned halfway through and this may have been the issue here. So it is a fine balance between attempting to explore every aspect of an individual's experience and alienating them by asking too many questions.

Of those sets of questionnaires that were returned, it became apparent that whilst the S-PHI was attempted by all the participants that many parents were selective about even attempting any of the other four questionnaires. Even though the Sheffield PHI appeared to favourably accepted by parents (particularly Section A of the M-PHI producing a non-response of less

than 5% to the questions across the twelve months, appendix, 15) there were a couple of sections where both parents had left questions blank. For example, when asked about the number of other children they had some left this question blank. This may have meant 'zero' to the parents but unfortunately this equated with 'missing' in the analysis. Simple adjustments to the PHI will improve the clarity of the responses.

There was also some confusion over which questionnaires fathers were meant to complete, even though the introductory front sheet asked them to fill in all the enclosed questionnaires. The fathers seemed to appreciate that the Sheffield instrument was designed specifically for them, but unfortunately several fathers objected to completing the EPDS as they felt that it was designed for mothers. One reason for this is the example of the EPDS, where several men did not complete this instrument saying that it was designed for mothers not fathers. This issue could now be resolved as there is now an EPDS specifically for men.

The number of questionnaires perhaps could also have been reduced to three; for example S-PHI, EPDS and WEMWBS. This would have provided data from two parent-specific instruments and also generated data about both positive and negative health status, as well as physical health data generated from the S-PHI.

9.9.6. Self-selection

With studies of this kind there is always the problem that participants are self-selected and that as Figueiredo and Conde (2011) describes, may lead to selection bias. They suggest that parents who are less anxious or depressed are more likely to take part. However when comparing the results of this study, particularly the EPDS scores, with the literature (for example Pope et al, 2000) the percentage of mothers whose scores were above the operational score for postnatal depression were comparable with global estimates for postnatal depression. Whilst a couple of parents disclosed that they had mental health problems, parents were not asked directly whether they had previously suffered from

postnatal depression. However as it was not the intention of the study to examine the possible causes of postnatal depression then it probably is not vital to know.

Another concern for studies of this kind, where parents are expected to complete the questionnaires without supervision, is that they may compare their answers with their partners. This is unfortunate, however parents were asked to complete their questionnaires independently and it must be assumed that they did. However a positive aspect to both parents completing the questionnaires might be that it encourages them to talk to one another and find ways of supporting each other during this time. This was stressed by one father, who noted that all parents should be given the questionnaires to complete as it provides a forum for couples to discuss their feelings.

9.10. Modifications or additions to the study

The physical health of both parents is important as poor physical health can impact upon mental health and parent's ability to cope with everyday life. Whilst it is important to avoid treating parenthood as a pathological disorder, more detail of the mother's experience may have been valuable. For example, as the mothers were asked open ended questions about whether they had pain or an infection their responses were at times vague, for example 'stitches' as a response for both 'pain' and 'infection', with no indication of whether these stitches might have been. As a way of clarifying the location of pain or infection, the mothers could be offered a list of common areas for pain and infection for them to tick as appropriate. They could also be offered a list of medical conditions common in the postpartum period, and incorporated in a table with an acknowledgement of whether they sought medical treatment for the particular conditions, and whether they were given any treatment or required hospitalization. Medical conditions for example anaemia, hypertension and symphysis pubis pain may take time to resolve and have a detrimental effect upon their well-being. There may be a danger that mothers overlook chronic or pre-existing conditions when completing questionnaires if they feel that they are not pregnancy/childbirth acquired

conditions. However pregnancy/ childbirth may exacerbate these conditions impacting upon the mothers' sense of well-being. A check list would therefore be useful.

The results of the study highlighted that there were mothers who continued to suffer from faecal incontinence during the postpartum. Chiarelli et al (2003) describe the problems of comparing the results of studies describing the incidence of faecal incontinence. They use the term 'definitional differences' to illustrate the problem of studies effectively asking the same question but using different terminology. For example, in the present study mothers were asked about 'incontinence of bowel motion' whereas other studies also included incontinence of flatus and faecal urgency in their definition. With the inclusion of these terms in the definition may have produced a large number of positive responses. In the future the M-PHI could include these other definitions. In respect of both types of incontinence it would also be valuable to find out from mothers the type of delivery they had and whether the problem was associated exclusively with this pregnancy or whether the mother had had problems following a previous childbirth.

The emphasis in practice is upon the mother's physical health but perhaps it may be pertinent to look more closely at the father's physical health in light of their SF-12 Physical Component results. The parent's mean scores are very similar, do mothers recover quickly or do fathers also have physical health problems? The assumption may be that as fathers do not give birth that their physical health will be unchanged. However looking at an individual holistically it must be understood that the emotional, social and mental well-being can also have an effect upon their physical well-being. Perhaps an open ended question within the PHI questionnaire may shed light upon the father's perception of their physical health and whether or not this has improved or declined since the birth of their baby. It may also be interesting to ask fathers if they have any specific health complaint and whether they feel that this has been exacerbated by becoming a father or adding to their existing family.

Whereas mothers were asked about tiredness and lack of sleep in the M-PHI, fathers were not. As fathers often share the care of their baby during the night it may be interesting to explore their experiences. As Elk et al. (2002) describe, fathers may have more problems with night time fatigue than mothers who may be able to supplement their sleep with naps during the day. They also describe that at the end of pregnancy mothers may already have become accustomed to fatigue, whereas disturbed sleep for fathers may be a new problem.

As there appeared to be a discrepancy between the parents perception of their overall relationship it would be interesting to find out why this might be, and whether their physical relationship influenced their perception of their emotional relationship. Unfortunately only mothers were asked about their sexual relationship, the mean scores were between 36.8 to 43.9, for subset 5 across the twelve months. However, with no data pertaining to mothers' experiences prior to being pregnant or antenatally, it may be that this actually reflects their normal experience. The topic of sexual relationship is very broad and within the confines on the M-PHI is perhaps difficult to explore all aspects of mothers' emotional or physical relationship.

Fathers could also be asked about their experience of their sexual relationship with their partners. Are parents, particularly fathers anxious about resuming sexual intercourse? There may be factors which specifically affect the fathers, for example anxiety about causing their partners pain or causing damage to perineal sutures. Perhaps the parents could be asked when they resumed sexual intercourse. Other studies described previously have suggested a link between sexual relationship and breastfeeding. This relationship was not explored in this study, but could be incorporated into the questionnaire.

Returning to work after maternity leave could present mothers with new challenges. When the mother returns to work they will have to organize informal or formal childcare. The notion of leaving a young baby with other carers may be expensive and may be emotionally difficult for some parents. However there may be financial benefits for mothers returning to

work and also emotional benefits from the companionship of other employees. It would be therefore be interesting to ask mothers when they returned to work and how this impacted upon their well-being. The data from the EPDS suggested that there may be something happening after six months postpartum which affects some parent's mental health. There was also the loss of mothers with degrees or higher at twelve month time point. Whilst those mothers with higher educational attainment dropped out of the study by twelve months, interestingly the majority of mothers were classified by the occupation as being in professional occupations. The second largest group described themselves as 'mothers', this may have been because they had no intention of returning to work. However it would have been useful to have actually found out what they did prior to the birth of this current baby. With that in mind a slight modification could be made to the question so that mothers could give a fuller answer.

Whilst mothers with babies who had been admitted to the Neonatal Unit were excluded from the study; there is always the danger that their infant might have become ill or die during the study. Having an ill child, even with a relatively minor complaint can be a frightening experience particularly for parents. If both parents are working, having a sick child may also cause problems with childcare. Having a child with a chronic health problem may put additional strain upon parents and so it may therefore be pertinent to include a question asking the parents if their child has been ill during the study. This may help to understand if either the child's illness or perhaps even a parent's illness has an impact upon the parent's scores for mental and emotional status.

With this in mind the following might be incorporated into the S-PHI:

Since completing the last questionnaire has your baby been unwell?

If no, please move onto the next question.

If yes, what action did you take?

- a) Discussed with Community Midwife*
- b) Discussed with Health Visitor*
- c) Discussed with NHS Helpline*
- d) Discussed with General Practitioner*
- e) Infant taken to Accident and Emergency*
- f) Infant admitted to hospital*

Please specify the nature of the illness.

Please specify the length of time that your infant has been unwell.

As described, parents were asked about the number of other children they had and the response to this was often left blank, perhaps implying that they had no other children. To clarify the number of other children parents had the parents could be provided with option boxes to tick (yes/no) as well being provided with a space to put the number of children in.

Other than to respond to questions about the use of antibiotics, the presence of pain or infection and to complete demographic questions, there was no designated area for parents to elaborate on their experiences. This is a limitation of close-ended questions that require only a response from a choice of a few options. Using a Likert Scale or questions with a pre-coded response allows for the collection of a large amount of quantitative data but does not allow for collection of qualitative data. There were particular areas where more data would have been valuable. For example, when mothers were answering questions about their sexual relationship and their experiences of infant feeding, but there may have been other domains, particularly in the SPHI where clarification of their responses would have been useful to the understanding of their responses and experience.

9.11. Implications for practice

Whilst the results of the study suggest improvements in the mental health of parents, the incidence of dysphoria and depression in parents must not be understated. Much emphasis is placed upon screening for and being vigilant in recognizing and identifying mothers who are at risk of developing postnatal depression by health practitioners, in particular midwives and Health Visitors. Educating both mothers and partners to not only recognize potential dysphoria but also provide access to the appropriate services is essential. The stigma attached to mental illness may still be a barrier to parents, both mothers and fathers, from admitting that there may be a problem. That mothers are more likely to develop depression than fathers at this time is then well understood by health practitioners, however as there is an assumption that postnatal depression is driven by hormonal imbalance perhaps then it may not be as well recognized that fathers also have the propensity to also develop depression at this time.

This study has therefore highlighted that fathers may too have mental health problems. This was particularly evident in the percentage of fathers scoring above the EPDS cut-off figure. For both parents there was the issue of worsening of support from their social networks; fathers particularly saw a worsening of support from their friends. Fathers also perceived a less than optimum relationship with their partners. Whereas mothers may continue to access social networks, for example, other mothers, parent and toddler group, Sure Start or the equivalent or health clinics, fathers normally return to work where they may not have other people that they can debrief with. Fathers may therefore benefit from more support during the first year after having a baby. Health professionals should also recognize that fathers too are at risk of developing dysphoria or depression and may also benefit from screening for depression.

In terms of mothers' physical health, the results from the M-PHI showed that the incidence of incontinence in mothers in the study is a concern. The importance of bladder care and

improving the integrity of the pelvic floor are key factors in reducing the incidence of what is a potentially debilitating condition, not just for new mothers but also one that may pose problems to women in their later life (Kapoor et al., 2005). Further research into looking at the incidence of incontinence and mode of delivery might identify any practice implications.

The results of the F-PHI suggest that fathers might benefit from more social support. Midwives and obstetricians have for a long time included fathers in antenatal care and have involved them in the labour and birth of their child, but what of the afterwards? The fathers' WEMWEBS results suggest that there is something that happens at about nine months after the birth of their infant. This may be associated with the time that mothers would be going back to work. Fathers in the UK may be entitled to up to two weeks paid paternity leave after the birth of their infant. Currently this has to be taken within 56 days of the infant's birth. Being able to be flexible with this time and being able to take time off when their partner returns to work might be more beneficial. The positive benefits on infant mortality rates by paying mothers maternity leave has been recognized (Tanaka, 2005). Changes in policy which recognizes that there may be times of added stress for parents, acknowledges that parents may need extra help beyond the first few months after the birth of a baby. Perhaps following the Swedish model of parental welfare might be considered where leave appears to be more generous.

Rather than looking at mental health status as an illness the emphasis now is upon looking at positive mental health and adopting a mental health promotion approach (Barry, 2009). Barry (2009) suggests that to deliver a health promotion which improves the mental health status requires the creation of health and social policies that look beyond the focus on the treatment of mental illness and broaden the policies to recognize the influence of social and environmental factors upon health. This means identifying the social and environmental factors that influence postnatal health. An example of this perhaps is the Baby Friendly Initiative, whereby to promote breast feeding amongst other things the policy looked to

changing the environment to make it more practical and socially acceptable to feed infants in public places. There may be other ways of improving parents' lives.

9.12. Conclusion

Having started out trying to look at aspects of positive health I was drawn to looking at negative health. In part this was due to the choice of instruments, particularly using the EPDS which measures the incidence of mental illness experienced by parents. It seemed important to use this instrument as it was favoured by the majority of studies in the systematic literature review. Employing the EPDS quantified the incidence of depression in the sample and therefore allowed comparisons to be made with other studies. Employing the S-PHI, PANAS and WEWBS provided data which considered the positive aspects of parents' experiences.

The S-PHI, in examining the mental health and well-being of both mothers and fathers in the first twelve months after their baby's birth, would appear to suggest that the health and well-being of the parents did change and overall improved over time. This is generally reflected in the results from the other four questionnaires. The results for the PANAS suggested that both mothers and fathers were moving towards a feeling of serenity and calm, this is also apparent when looking at the results for the WEMWEBS questionnaire. Here the mother's mental and emotional health appeared to improve particularly by the six month time point. In terms of the mothers physical health, with the exception of mothers complaining of backache and continuing problems with incontinence, in general mother's health appeared to improve with time. This was reflected in the SF12 Physical Component where improvement in physical health status was also seen. The fathers physical health was not examined within the PHI, however the results of the SF12 Physical Component suggested that the father's physical health was unchanged over the year. This is perhaps not surprising, what is perhaps surprising is that the fathers mean score here was consistently 50 out of 100 suggesting that father' health was neither that good or that bad.

The importance then of identifying and treating both physical and mental problem is important in an attempt to restore parents back to health. However studies that concentrate upon this medical model, pay less attention upon what actually make parents happy at this time. This study has attempted to embrace both the negative and positive sequelae of parenting during the first year; not only identifying the problems associated with parenting but also the positive aspects of being parents. Perhaps the positive aspects of parenting do outweigh the potential problems and in understanding what it is that makes people flourish can be used in health promoting strategies to improve the lives of parents in the future.

Therefore in conclusion, this research supports the hypothesis that the mental health and well-being of mothers and fathers changes over the first twelve months of their infant's life.

9.12.1. Presentation to RCOG World Congress.

I was privileged to be allowed to present my study and findings at the RCOG World Congress in Birmingham in 2016. Attending the conference was stimulating and inspiring. The abstract that I submitted was judged to be in the top 500 presented to conference and was printed in the BJOG World Congress special issue. The abstract and presentation are in the appendix.

9.12.2. Afterword

The following is taken from a questionnaire from a mother who had just had her third child. It captures much of the experience described by mothers in the first month after the birth of their infant.

'Exhaustion and sleep deprivation have dominated the last three weeks, after an initial first week of energy and euphoria when our latest child arrived & her father & I had a wonderful week of his paternity leave, when I laughed so much it was painful. Once the sleep deprivation sets in it colours so much of the parenting & living experience & while it is self-limited (hopefully- as it was with the others) at times it seems unending and can make the world seem bleak for that period.

Excellent family support makes a huge difference. Most negativity felt in this month has been frustration at having so little energy, time and fun with my older children- who have been coping well-but not getting the fun time and attention they usually would. Thankfully very helpful parents have been trying to fill that gap & reassuring regarding their (the children's) resilience and ability to deal with this short lived change'

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Appendix 1. Data Extraction Form (Based on Centre for Reviews and Dissemination, 2009)

Type of information		Description
General Information	Date of data extraction	
	Author/s	
	Article title	
	Citation	
	Type of publication	
	Country of origin	
	Source of funding	
Study characteristics	Aims and objectives	
	Study design	
	Instruments used	
	Inclusion and exclusion criteria	
	Recruitment procedures	
	Duration of study	
	Baseline	
	Follow-up points: antenatal : postnatal	
Participants characteristics	Sample size: number of mothers : number of fathers	
	Mothers age range	
	Fathers age range	
	Mothers parity	
Statistical Analysis	Outcomes measured	
	Numbers included in analysis: Mothers	
	Fathers	
	Summary of outcome data, reporting of statistical significance and support for hypothesis.	

Appendix 2: Summary of studies in systematic literature review

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Abbasi, M., van der Akker, O. and Bewley, C. (2014)	Short Form-36 (Persian Version) Edinburgh Postnatal Depression Scale (Iranian version) Cut off score of ≥ 13 .	Pre-pregnancy, first trimester (11-13 weeks), second trimester (20-24 weeks), third trimester (32-38 weeks) and 3 months postpartum.	Negative	Mothers and their partners experience similar changes in perceived health-related functioning and depressive symptoms. Both experienced a marked decline in the physical component of the health – related quality of life during and after pregnancy, while the prevalence of depressive symptoms decreased over the course of the pregnancy. Higher levels of depression amongst women during third trimester compared with levels during first and second trimester and postnatally.	416 couples	Iran
Areias, M.E.G., Kumar, R., Barros, H. and Figueiredo, E. (1996)	Edinburgh Postnatal Depression Scale (Portuguese version). Eysenck Personality Inventory. Social Support Network Inventory. Attributional Style Questionnaire. Schedule for Affective Disorders and Schizophrenia. Interview Schedule for Life Events. Social Adjustment Scale. Obstetric Complications List	6 months antenatally, 12 months postnatally and sub samples of mothers and fathers were interviewed at 3 months postpartum	Negative	Stressful life events were associated with occurrence of maternal depression during pregnancy and the whole postnatal year, but not associated with ‘depression’ in fathers. Women with previous history of depression more likely to develop postnatal depression. Marked differences in rates of clinically significant depressive order during pregnancy and postnatally between men and women. Links between postnatal depression and reduced social support. Fathers have a greater likelihood of experiencing depression if their partner was depressed during pregnancy or during the first three months postpartum.	54 mothers and 42 partners	Portugal

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Biehle, S. and Mickelson, K. (2012)	<p>Socio-demographic data collected.</p> <p>Interviews</p> <p>Self-Efficacy for Parenting Tasks.</p> <p>Symptoms Checklist 90-R</p> <p>The Center for Epidemiological Studies - Depression Scale.</p> <p>Questions regarding emotional support from family and emotional support from co-parent.</p> <p>Participation in baby care activities (measure devised by authors).</p>	Third trimester, 1 and 4 months postpartum.	Negative	<p>Mothers were more involved than fathers in childcare and play and they were more involved than they expected to be. That is mothers' experienced unmet expectations. This was related to more depression and less relationship satisfaction.</p> <p>Fathers felt that mothers did more than they expected them to do. Fathers' overmet expectations for childcare were related to more relationship satisfaction</p> <p>Paid</p>	104 couples	USA
Castle, H., Slade, P., Barranco-Wadlow and Rogers, M. (2008)	<p>DUKE-UNC Functional Social Support Questionnaire.</p> <p>Attitudes Towards Emotional Expression.</p> <p>Hospital Anxiety and Depression Scale.</p> <p>Well-Being Questionnaire.</p> <p>Edinburgh Postnatal Depression Scale.</p>	Third trimester and 6 weeks postpartum	Positive and negative	<p>No significant difference between pre and postnatal depression scores for mothers.</p> <p>Mothers and fathers who reported higher perceived social support in pregnancy reported significantly lower levels of distress 6 weeks postpartum.</p> <p>Breastfeeding significantly affects sexual expression; parents may benefit from understanding the hormonal effects of breastfeeding and not conclude that there are problems with their relationship.</p> <p>'Stress-buffer model', if fathers the primary social supporter (i.e. the mother) becomes less accessible because she is busy with the baby then fatherhood may be difficult leading to increased psychological distress.</p>	86 mothers and 66 men.	England

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Crockenberg, S. and Leerkes, E. (2003)	Parenting Bonding Instrument. Marital Conflict Questionnaire. Global Self-Esteem Scale. The Center for Epidemiological Studies - Depression Scale. Infant Behavior Questionnaire. Conflict and Problem-Solving Scales. Maternal Sensitivity assessed through videotaped lab work. Demographic data collection.	Third trimester, 5 and 6 months postpartum.	Negative	Mothers' memories of parental acceptance-rejection may predict and influence the development of depressive symptoms. Those mothers had memories of their parents as being highly accepting of them reported fewer depressive symptoms. During marital conflicts, mothers whose memories of their parents as rejecting were more avoidant and more aggressive with their partners	92 mothers and 84 fathers	USA
D'Anna-Hernandez, K., Zerbe, G., Hunter, S. and Ross, R. (2013)	Psychiatric interview Edinburgh Postnatal Depression Scale (mothers only). Cut off score ≥ 13 Structured Clinical Interview for DSM-IV (fathers only)	1,6 and 12 months postpartum	Negative	There was not a significant difference in the trajectory of maternal depressive symptoms between mothers with partners with either a history of or a current psychiatric condition or those without a psychiatric condition. Mothers (regardless of their own depressive history) with partners with substance abuse symptoms had higher levels of depressive symptoms relative to those affected by mood/anxiety disorders or those without a disorder.	64 couples	USA

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Edhborg, M., Matthiesen, A.-S., Lundh, W. and Widström, A.-M. (2005)	Blues Questionnaire. Postpartum Bonding Questionnaire. Edinburgh Postnatal Depression Scale (Cut off score 9/10). Questions about breastfeeding. Infant Characteristics Questionnaire. Questions about breastfeeding. Demographic and obstetric/child data collection.	Day 1-5 and 2 months postpartum.	Negative	At 2 months postpartum, fathers had more difficulties than mothers with the emotional relationship with their child. Risk for couple morbidity.	106 couples	Sweden

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Edhborg, M., Seimyr, L., Lundh, W. and Widström, A.-M. (2000)	<p>Edinburgh Postnatal Depression Scale, mothers only (Cut off score 12/13).</p> <p>Infant Characteristics Questionnaire.</p> <p>Experience of Motherhood/Fatherhood Questionnaire.</p>	2 and 12 months postpartum	Positive and negative	<p>Children of 'depressed' mothers appeared to be more 'difficult' to care for.</p> <p>Parents' perception of a child as having a 'difficult' temperament at 2 months was associated with experiences of stress in parenthood at 1 year postpartum.</p> <p>Postnatally 'depressed' mothers experienced stress in parenthood at 1 year postpartum. EPDS: 7% of mothers at 2 months postpartum and 4% at 12 months postpartum scored $\geq 12/13$. Fathers in families with a postnatally 'depressed' mother did not experience more stress in parenthood than did fathers in families with a non-depressed mother, unless their child was perceived as 'difficult'.</p> <p>A 'difficult' child seemed to influence a father's life more than maternal postnatal 'depression'.</p>	326 mothers and 304 fathers.	Sweden

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Elek, S., Brage Hudson, D. and Fleck, S.M. (2002)	<p>Lee Visual Analog Fatigue Scale.</p> <p>The Center for Epidemiological Studies - Depression Scale.</p> <p>Dyadic Adjustment Scale.</p> <p>Demographic Questionnaire.</p> <p>Activity Diary.</p>	9 month of pregnancy and 4, 8, 12 and 16 weeks postpartum	Negative	<p>Fatigue significantly increased from 9 months of pregnancy to 4 weeks postpartum for both parents. From 4 to 16 weeks the levels of fatigue remained relatively stable.</p> <p>Fathers experienced a greater change in their reports of night time fatigue after the birth than the mothers. Mothers may be able to nap during the day to reduce their night time fatigue.</p> <p>Mother's fatigue was sometimes related to marital satisfaction. Fatigue and marital satisfaction never significantly related for fathers.</p>	44 couples	USA
Escribà-Agüir, V. And Artazcoz, L. (2011)	<p>ENRICH Marital Satisfaction Scale.</p> <p>The Duke-UNC Functional Social Support Questionnaire.</p> <p>Edinburgh Postnatal Depression Scale (Cut off score 12/13 for mothers and ≥ 11 for fathers).</p>	Third trimester, 3 and 12 months postpartum	Negative	<p>The strongest predictor of postnatal depression in both parents is depression during pregnancy.</p> <p>The incidence of depression was higher among mothers than fathers at three months, but similar at 12 months postpartum.</p> <p>Low marital satisfaction, partner's depression and depression during pregnancy increased the probability of depression during the first 12 months postpartum in mothers and fathers.</p> <p>Negative life events increased the risk of depression only among mothers.</p> <p>A strong predictor of postnatal depression for both mothers and fathers is depression during pregnancy.</p>	769 couples	Spain

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Figueiredo, B. and Conde, A.(2010)	<p>Spielberger State-Trait Anxiety Inventory.</p> <p>Edinburgh Postnatal Depression Scale (Cut off score ≥ 10).</p> <p>Socio-Democratic Questionnaire.</p>	First, second and third trimester, first week postpartum and at 3 months postpartum	Negative	<p>Women are more likely than men to show high anxiety at the third trimester and at birth, but not during early pregnancy or 3 months postpartum.</p> <p>Improvement was observed in the mental status of both women and men after childbirth.</p> <p>EPDS: At birth 17.6% of mothers and 7.5 % of fathers scored ≥ 10. At 3 months postpartum 11.1% of mothers and 7.2% of fathers.</p>	260 couples	Portugal
Figueiredo, B., Field, T., Diego. M., Henandez-Reif, M. Deeds, O and Ascencio, A. (2008)	<p>Relationship Questionnaire.</p> <p>The Center for Epidemiological Studies - Depression Scale.</p> <p>Spielberger State-Trait Anxiety Inventory.</p> <p>Demographic data collection.</p>	20 and 30 weeks gestation and 14 days postpartum	Positive and negative	<p>Participants happy with their pregnancy or were co-habiting had better relationship scores than those not co-habiting or not happy about their pregnancy.</p> <p>Increased irritability reported from antenatal through to postpartum period.</p> <p>The quality of the partner relationship impacts on levels of anxiety and depression experienced by both partners.</p>	43 couples	USA

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Gjerdingen, D. and Center, B. (2003)	<p>Short Form-36 (5 items).</p> <p>'Days ill' adapted from National Health Interview.</p> <p>Quality of life measure created by Hyland and Sodergren.</p> <p>Kansas Marital Satisfaction Scale.</p> <p>Cohen's Dimension of Social Support Scale (1 item).</p> <p>Work measures.</p> <p>Demographics</p>	Second or third trimester and 6 months postpartum.	Negative	<p>Both mothers and fathers experienced declines in mental and physical health that persisted at least 6 months after the birth of their first child.</p> <p>By 6 months postpartum mothers and fathers were quite similar in their health measures, suggesting that other factors other than the physical process contribute to longer range postpartum health deficits observed in this study.</p> <p>Mothers' partner satisfaction was significantly related to both mothers' and fathers' mental health.</p> <p>Findings relate to young well educated two –career couples.</p>	128 couples	USA
Goodman, S.H., Lusby, C.M., Thompson, K., Newport, D.J. and Stowe, Z.N. (2014)	<p>Beck Depression Inventory.</p> <p>The Structure Clinical Interview of the Diagnostic and Statistical Manual of Mental Disorders.</p> <p>The Parental Responsibility Scale.</p> <p>Child Care Activity Questionnaire.</p> <p>Child Development Supplement to the Panel Study of Income Dynamics Time Diary.</p> <p>Semi-structured interviews (fathers at 12 months postpartum)</p>	3, 6 and 12 months postpartum.	Negative	<p>Findings supported the compensatory/buffering model which suggests that mothers' higher levels of depressive symptoms are positively associated with fathers' greater involvement with their infant. However during the second half of the first year the findings did support the spill-over model where higher maternal depressive symptoms were associated with lower fathers' involvement.</p> <p>They suggest that fathers' are able to compensate for the mothers' depressive symptoms but only up to a point and then withdraw when they think that the mothers' symptoms are stable or when they feel that maternal depression has become a long term issue.</p>	255 mothers and 114 fathers	USA

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Guedes, M. and Canavaro, M.C. (2014)	Socio-demographic and clinical data. Brief Symptom Inventory- 18. EUROHIS-QoL-8. Dyadic Adjustment Scale-Revised	Third trimester, one month and six months postpartum	Negative	Transition to parenthood is more similar than different between mothers of 'advanced maternal age' and younger mothers. Independent of age couples findings showed over time a decrease in anxiety and increase in parenting competence. Regardless of age, the transition to parenthood is more distressing for mothers than for fathers.	58 couples in the Advanced Maternal Age (AMA) group and 41 couples in comparison group	Portugal
Hildingsson, I. and Thomas, J.(2014)	Prenatal feelings (questions) The Swedish Parental Stress Questionnaire	Third trimester, 2 and 12 months	Negative	Women, in general, reported higher levels of parental stress than men but there was not a statistically significant difference in their total SPSQ. The strongest associations with parental stress were found in feelings related to pregnancy, the upcoming birth and the first weeks with the new born baby.	783 mothers and 671 fathers	Sweden
Hock, E., Schirtzinger, M.B., Lutz, W. and Widaman, K. (1995)	The Center for Epidemiological Studies- Depression Scale. Male-Female Relations Questionnaire. Marital Comparison Level Index.	During pregnancy, 6 weeks and 9 months postpartum.	Negative	First-time parents. Decline in marital satisfaction over time was significant for both mothers and fathers. For mothers this may be due to their partners not meeting their expectations in terms of empathy, communication and support. This may have contributed to the levels of depressive symptomology experienced at 9 months postpartum. For mothers whose partners have highly traditional sex role attitudes they are placed in greater risk of depressive symptom postpartum particularly if she experienced heightened symptom levels during pregnancy.	142 couples	USA

AUTHORS	INSTRUMENTS USED	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Iles, J., Slade, P. and Spigby, H. (2011)	<p>Impact of Events Scale.</p> <p>Posttraumatic Stress Disorder Questionnaire.</p> <p>Edinburgh Postnatal Depression Scale (Cut off score 12/13).</p> <p>Spielberger State- Trait Anxiety Inventory.</p> <p>Significant Others Scale.</p> <p>Experiences in Close Relationships Scale.</p> <p>Demographic data collection.</p>	During first week, six weeks and 3 months postpartum.	Negative	<p>Mothers and fathers with less secure attachment and greater dissatisfaction with support reported significantly higher levels of posttraumatic stress and postpartum depression.</p> <p>Younger age emerged as a significant predictor of psychological symptoms.</p> <p>Symptoms of posttraumatic distress and postpartum depression were positively related within couples.</p>	372 couples	England
Kaitz, M. and Katzir, D. (2004)	<p>Edinburgh Postnatal Depression Scale (Hebrew version). Cut off score 12/13 for mothers and 9/10 for fathers.</p> <p>Interview with 42 questions focusing upon three content areas: self, baby and spouse/marriage.</p> <p>Beck Depression Inventory.</p>	During pregnancy, 3, 6 and 12 months postpartum.	Negative	<p>Father's heightened emotionality was due to an increase in positive feelings, particularly towards their infant.</p> <p>Mother and fathers feelings tended to be synchronized through first year postpartum.</p> <p>Satisfying marital relationship provides new parents with a secure base from which to deal with the challenges of parenthood with confidence.</p>	55 couples	Israel

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Keeton, C.P. and Perry-Jenkins and Sayer, A.G. (2008)	<p>Demographic form.</p> <p>Sense of control measured by index of responses (Mirowsky and Ross, 1990)</p> <p>The Center for Epidemiological Studies- Depression Scale.</p> <p>Spielberger State Anxiety Inventory (State Anxiety subscale)</p>	Third trimester, 1, 4, 6 and 12 months postpartum.	Negative	<p>The individuals' sense of control was a significant predictor of mental health outcomes. Having sense of control predicted lower levels of self-reported depression and anxiety symptoms at six months postpartum.</p> <p>Paid</p>	153 couples	USA
Lane, A., Keville, R., Morris. M, Kinsella, A., Turner, M. and Barry, S. (1997)	<p>Edinburgh Postnatal Depression Scale (cut off ≥ 13)</p> <p>Highs Scale.</p> <p>Socio-demographic, clinical and obstetric data collection.</p>	3 days and 6 weeks postpartum	Negative	<p>Mood disturbance is common amongst mothers after childbirth, with depression and elation being interrelated.</p> <p>Mothers' mood state at 3 days postpartum was the best indicator of psychopathology at 6 weeks postpartum.</p> <p>Factors associated with or predictive of postnatal depression were single status, unplanned pregnancy, unemployment and fewer years in formal education.</p> <p>Mood disturbance amongst partners was not prominent and when present elation rather than depression was noted.</p> <p>EPDS: Mother's mean score was 6.8 at 3 days and 6.9 at 6 weeks postpartum.</p> <p>Fathers mean score was 4.1 at 3 days and 3.2 at 6 weeks postpartum</p>	308 mothers and 181 partners	Republic of Ireland

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Leathers, S. and Kelley, M. (2000)	<p>Pregnancy intendedness: Modified item from the National Survey of Family Growth.</p> <p>The Center for Epidemiological Studies- Depression Scale.</p> <p>Measures of relationship distress.</p> <p>Measures of social support.</p>	Third trimester and 3 to 4.5 months postpartum.	Negative.	<p>Study found that 32% of the pregnancies were unintended. Whether mistimed rather than unwanted might influence mother's risk of developing postnatal depression. Women's postpartum depressive symptoms were significantly associated with their partner's perception that a pregnancy was unintended.</p> <p>Women at greatest risk for depressive symptoms may be those who had intended pregnancy when their partners had not.</p> <p>Unintended pregnancy was marginally associated with men's depressive symptoms.</p>	124 couples	USA
Lu, L. (2006)	<p>The Perceived Stress Scale.</p> <p>Symptom Checklist 90-R.(three subscales, depression, anxiety and somatic symptoms)</p> <p>The Inventory of Socially Supportive Behaviors.</p> <p>Marital Adjustment Scale (8 items).</p> <p>Marital satisfaction (questions).</p>	6 weeks and 6 months postnatally.	Negative	<p>Parental stress had negative effects on mental health and marital satisfaction at six months.</p> <p>Marital congruence and social support had direct as well as mediation effects on adjustment.</p> <p>Marital congruence also had stress buffering effects on the stress/ mental health relationship.</p> <p>Whilst marital congruence and social support declined over the study period, there were no significant changes in stress and adjustment outcomes for either sex.</p> <p>Mothers reported higher levels of stress, more psychological symptoms and lower marital satisfaction than partners even though partners and mothers did not differ in social support and marital congruence.</p>	253 mothers and 230 partners	Taiwan

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Matthey, S., Barnett, B., Ungerer, J. and Waters, B. (2000)	Intimate Bond Measure. Parental Bonding Instrument. Interpersonal Sensitivity Measure. Eysenck Personality Inventory. Beck Depression Inventory. General Health Questionnaire -28 Edinburgh Postnatal Depression Scale. Cut off score >12. Observation	Antenatally and 6 weeks, 4 months and 12 months postnatally	Negative	In mothers, the factor most strongly associated with postnatal depression was the presence of depression antenatally. Fathers have lower rates of clinically significant distress or depression than mothers in first year postpartum. However evidence of underreporting of distress in fathers.	157 couples	Australia
Mayes, L. and Leckman, J. (2007)	Beck Depression Inventory. The Structure Clinical Interview of the Diagnostic and Statistical Manual of Mental Disorders. Parental Bonding Instrument. Yale Inventory of Parental Thoughts and Actions.	8 months gestation, 2 weeks and 3 months postpartum.	Negative	The perceived non-caring attitude of their own mothers was significantly predictive of dysphoria in mothers and fathers.	41 mothers and 36 fathers.	USA

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
McDaniel, B.T. and Teti, D.M.(2012)	Coparenting Relationship Scale Infant Sleep Diary. Phone interview adapted from the 24 hour Sleep Patterns Interview. Symptom Checklist-90-R. (depression subscale) Infant Behaviour Questionnaire (mothers only)	1 and 3 months postpartum	Negative	Mothers reported more night waking, poorer sleep quality, more depressive symptoms and worse perceptions of co-parenting than fathers. Over time the frequency of infant waking decreased which coincided with a decrease in parent night waking and a decrease in depressive symptoms.	148 mothers and 132 fathers	USA
Monk, T., Essex, M., Smider, N., Klein, M., Lowe, K. and Kupfer, D. (1996)	Social Rhythm Metric Diary. Barnett's Scale. Spielberger State Anger Inventory The Center for Epidemiological Studies- Depression Scale. Interviews.	Second trimester, 1, 4 and 12 months postpartum.	Negative	Depressive feelings and anger during postpartum period. Birth of infant associated particularly with reduction in marital quality for both parents. For mothers reduced time spent as a couple associated with decreased depressive symptoms. For fathers however there was some degree of resentment and anger and increased symptoms of depression at this 'loss'. Decrease in time with non-family members had little effect on well-being of parents.	37 couples	USA

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Morse, C.A., Buist, A. and Durkin, S. (2000)	<p>Demographic Interview.</p> <p>Edinburgh Postnatal Depression Scale (cut off score of 10 for both mothers and fathers).</p> <p>Positive and Negative Affect Scale.</p> <p>State Anger and Anxiety Scales (subscales of Spielberger's State-Trait Personality Inventory).</p> <p>Spanier Dyadic Adjustment Scales-Short Form.</p> <p>The Intimate Bonds Questionnaire.</p> <p>Social Support Questionnaire.</p> <p>The Masculine and Feminine Gender Role Stress Scale.</p> <p>Beck Depression Inventory.</p>	24- 26 weeks gestation, 36 weeks gestation, 1 month and 4 months postpartum.	Positive and Negative	<p>The incidence of distress/ dysphoria in women and men during mid- and late pregnancy may be significant.</p> <p>Patterns of distress, incidence and onset, differ between women and men. Men may worry about work disruption after baby's birth and /or loss of sexual relations due to reluctance and discomfort of mothers.</p> <p>Variables underpinning vulnerability to stress in mid pregnancy include young age, low social support from friends (particularly in part time employment) and poor quality of relationship with partner.</p> <p>Age significant in women; women in age group 20-24 indicate greatest likelihood of postnatal distress/ dysphoria. The higher levels of distress found in the oldest age group during pregnancy may indicate anxieties around becoming a middle aged mother, changes to work status and anticipated disruption to their 'child-free' relationship.</p> <p>EPDS: At one month postnatally 21.6% of mothers and 6% of fathers scored ≥ 10. At 4 months postpartum 13.9% of mothers and 5.8% of fathers scored ≥ 10.</p>	327 couples	Australia

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Muscat, T., Thorpe, K. and Obst, P. (2012)	Edinburgh Postnatal Depression Scale (Cut off score ≥ 10). 32-item antenatal questionnaire and 40-item postnatal questionnaire (range of demographics and psychosocial factors, feeding and sleeping behaviours)	Antenatally and 4 months postnatally.	Negative	There was no effect of parity on discrepancy scores between parent's antenatal expectations and their postnatal experiences of infant behaviours. There was no significant association between disconfirmed expectations and experience of postnatal depressive symptoms. EPDS: 4 months postpartum 23% of mothers and 12% of fathers scored ≥ 10	35 mothers and 24 fathers	Australia
Ngai, F.-W., Ngu, S.-F. (2013)	Short Form 12	Antenatally, 6 weeks and 6 months postpartum	Positive and Negative	Transition to parenthood leads to major changes in mother's quality of life. More so than for fathers. The physical functioning of the mothers was lowest during pregnancy and improved gradually over time. The mental health status of mothers decreased significantly at six weeks postnatally with a gradually improvement by 6 months postpartum. Father's physical health was constant and although there was no significant changes in the mental component fathers reported an increase in mental health at 6 weeks postnatally. The mental health component of a couple's quality of life was positively associated.	203 couples	Hong Kong

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/ NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Perry-Jenkins, M., Smith, J., Goldberg, A. and Logan, J. (2011)	<p>Demographic data collected.</p> <p>Information on work schedule and hours.</p> <p>Job autonomy and job urgency assessed using a scale developed by Greenberger, O'Neil and Nagel.</p> <p>Supervisor and co-worker support assessed using a scale developed by Caplan, Cobb and French.</p> <p>The Center for Epidemiological Studies- Depression Scale.</p> <p>Subscale from Personal Relationships Scale.</p> <p>Infant Behaviour Questionnaire.</p>	Third trimester of pregnancy, 1 month postpartum, 1 month after mother's return to full-time employment (average 15 weeks postpartum), 6 months and 12 months postpartum.	Negative	<p>Parents in 'working- class' jobs:</p> <p>For mothers, supportive co-workers served as a protective factor for wellbeing across the first year postpartum. High job urgency coupled with low supervisor support reported significantly higher depressive symptoms as well as less decline in depressive symptoms over the year.</p> <p>For fathers, increases in job autonomy, supervisor and co-worker support over the first year predicted fewer depressive symptoms. However increases in job urgency coupled with low co-worker support was related to higher depressive symptoms at one year postpartum for fathers. High urgency coupled with high co-worker support predicted a decline in symptoms.</p>	113 couples	USA
Reece, S.M. and Harkless, G. (1998)	<p>Demographic data collection.</p> <p>Parent Expectations Survey.</p> <p>Perceived Stress Scale.</p> <p>Postpartum Self-Evaluation Questionnaire.</p>	Third trimester and 4 months postpartum.	Negative	<p>Mothers had higher self-efficacy scores than fathers.</p> <p>Mothers exceeded fathers in confidence in parenting, satisfaction with the infant/ infant care tasks and in the support for parenting from relatives and friends.</p> <p>For mothers self-efficacy postpartum was positively associated with satisfaction, support, confidence and partner relationship.</p>	50 couples	USA

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Skari, H., Skreden, M., Malt, U., Dalholt, M., Ostensen, B., Egeland, T. and Emblem, R. (2002)	<p>General Health Questionnaire.</p> <p>Spielberger State-Trait Anxiety Inventory.</p> <p>Impact of Event Scale.</p>	<p>0-4 days,6 weeks, 6 months postpartum</p>	<p>Negative</p>	<p>Psychological distress was reported by 37 % of the mothers and by 13% of the fathers a few days after childbirth. Severe intrusive stress symptoms were reported by 9% of mothers and by 2% of fathers.</p> <p>After 6 weeks and 6 months postpartum the level of psychological distress fell to levels found in the general population.</p> <p>Childbirth does not seem to trigger long term psychological distress in most partners.</p> <p>Acute maternal psychological distress predicted by being a single parent, being multiparous and having previous traumatic birth.</p>	<p>127 mothers and 122 fathers</p>	<p>Norway</p>
Soliday, E., McCluskey- Fawcett, K. and O'Brien, M. (1999)	<p>Family demographics</p> <p>Center for Epidemiological Studies Depression Scale</p> <p>Positive and Negative Affect Schedule.</p> <p>Dyadic Adjustment Scale-Short Form</p> <p>Parenting Stress Index- Short Form</p> <p>COPE</p>	<p>Antenatally and during first few weeks postpartum</p>	<p>Positive and Negative</p>	<p>25-39% reported elevated depressive symptoms.</p> <p>In nearly half the couples at least one parent reported elevated depressive symptoms and in nearly 20% both parents did so.</p> <p>Parenting stress not only predicted depressive symptoms in mothers and fathers individually, but had implications for couples functioning as well.</p>	<p>51 couples</p>	<p>USA</p>

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Terry, D. (1991)	<p>Problem solving and emotion-focused coping measures (Billing and Moos, 1981)</p> <p>Self-esteem scale (author's own construct)</p> <p>Marital support (author's own construct)</p> <p>Family support scale (author's own construct)</p> <p>Social support from non-family members scale (author's own construct)</p> <p>General Health Questionnaire (12 items pertaining to psychological well-being)</p> <p>Spielberger State-Trait Anxiety Inventory.</p> <p>Questions relating to subjective view of own and partner's coping effectiveness and partner's view of subject's coping effectiveness.</p>	Third trimester, 4 and 18 weeks postpartum	Negative	<p>Mothers experienced lower levels of psychological well-being than fathers in the immediate postnatal period.</p> <p>Fathers less likely than mothers to rate positively their partner's coping effectiveness.</p>	123 couples	Australia

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/NEGATIVE	KEY POINTS	SAMPLE SIZE	COUNTRY OF RESEARCH
Wallace, P. and Gotlib, I. (1990)	Parental Bonding Instrument. Spanier Dyadic Adjustment Scale. Parenting Stress Index. Infant Characteristic Questionnaire.	Fourth month of pregnancy, 1 month and 6 months postpartum	Negative	Couples who report relatively high marital adjustment prior to the birth will tend to maintain these feelings after the birth. Feelings about inadequacy about parenting competencies appear to add additional strain and to contribute to increased feelings of dissatisfaction with their marriage at 6 months postpartum. Infant characteristics not important. Lower marital adjustments during pregnancy will not be improved by the birth of the child. 'Honeymoon' phase in first month postpartum then decline in marital adjustment to 6 months postpartum.	97 couples	USA
Wright, P.J., Henggeler, S.W. and Craig, L. (1986)	Psychological Screening Inventory. Spanier Dyadic Adjustment Scale. Social Readjustment Rating Scale. Infant Characteristic Questionnaire. Demographic Questionnaire	Third trimester and 3-4 months postpartum	Negative	Quality of marriage antenatally best predictor of a successful transition to parenthood. Mothers were more likely to report high levels of post-birth marital adjustment when fathers highly satisfied with their marriage. Planned pregnancies may predict higher levels of marital adjustment. Infant characteristics may influence marital adjustment. Calm infants may allow parents more time for one another. A fussy or difficult child can lead to low marital adjustment	42 couples	USA

Appendix 3: Application for ethical approval



National Research Ethics Service

North Sheffield Local Research Ethics Committee

1st Floor Vickers Corridor
Northern General Hospital
Herries Road
Sheffield
S5 7AU

Telephone: 0114 271 4011
Facsimile: 0114 256 2469

05 December 2007

Mrs Kay L Bowen
Post Graduate Doctoral Student
UNIVERSITY OF SHEFFIELD
S cHARR
Regent Court
30 Regent Street
S1 4DA

Dear Mrs Bowen

Full title of study: A longitudinal quantitative study to measure the postnatal health of women and their partners in the first year.
REC reference number: 07/H1308/147

The Research Ethics Committee reviewed the above application at the meeting held on 03 December 2007. Thank you for attending to discuss the study.

Documents reviewed

The documents reviewed at the meeting were:

Document	Version	Date
Application	1	14 November 2007
Investigator CV	1	16 November 2007
Protocol	1	14 November 2007
Covering Letter	1	16 November 2007
Summary/Synopsis	1	14 November 2007
Letter of invitation to participant	1	14 November 2007
Participant Information Sheet	1	14 November 2007
Participant Consent Form	1	14 November 2007
Demographic information	1	14 November 2007
Covering letter to GP	1	14 November 2007

Provisional opinion

The Committee would be content to give a favourable ethical opinion of the research, subject to receiving a complete response to the request for further information set out below.

This Research Ethics Committee is an advisory committee to Yorkshire and The Humber Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England

Appendix 4: Response to Ethics Committee

University of Sheffield,
ScHARR,
30, Regent Court,
SHEFFIELD,
S10 4DA

5th March 2008

Full title of the study:

A longitudinal quantitative study to measure the postnatal health of women and their partners in the first year.

REC reference number: 07/H1308/147

Dear Dr. Moore

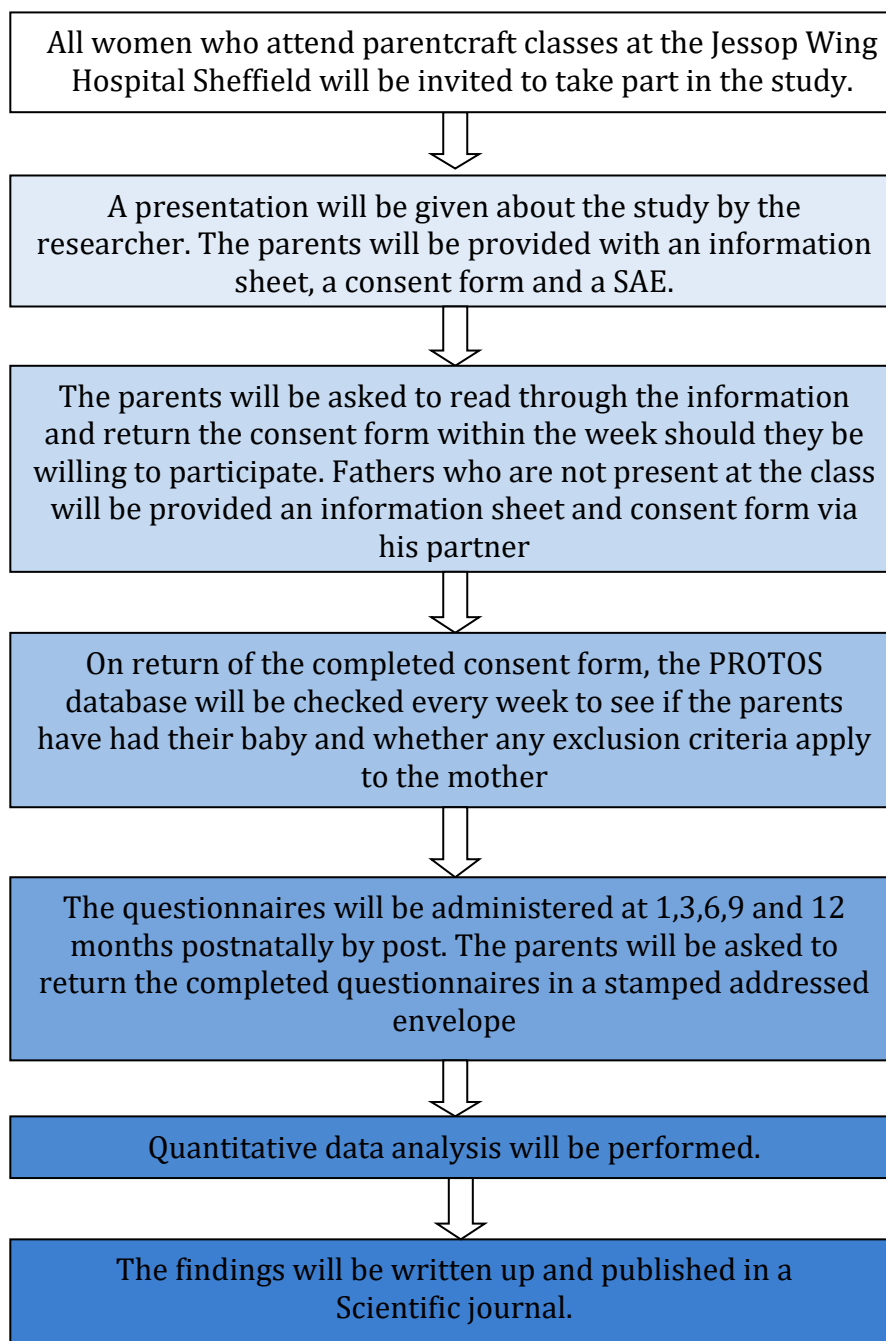
Thank you for your recent comments regarding the above study. In respect to your comments concerning point 7 (A30 -1) I appreciate your concerns if a participant is unable to consent to retention of data through mental incapacity and I see this as a valid point. I will therefore alter the protocol and any other documentation to state that I will withdraw the data relating to any participant in the unfortunate event that they are unable to give their consent to the retention of data through mental incapacity.

I hope that this meets with your approval and I am very grateful to your attention to this matter.

Kay L. Bowen (Mrs.)

North Sheffield Research Ethics Committee,
Ethics Office,
Up Stairs Vickers Corridor,
Northern General Hospital,
Herries Road
SHEFFIELD
S5 7AU

Appendix 5: Flow chart of initial recruitment of women and their partners



Appendix 6: Patient Information Sheet (1)



Patient Information Sheet

Re: A study to evaluate the health and wellbeing of women and their partners during the first year of their infant's life.

Dear parents

My name is Kay Bowen and I was a practicing midwife based at Kings Mill Hospital in Mansfield. I am particularly interested in understanding how having a baby affects the health of mums and dads during the first year of their baby's life. As part of my academic studies I have been offered the opportunity to find out from parents, who have had their baby at the Jessop Wing Hospital in Sheffield, what having a baby has had on their health and wellbeing. To find out from parents what their experiences are I am asking mums and dads to fill in questionnaires during the first year of their baby's life. I should like to invite you to take part in this study. Please would you read the information below and consider whether you would be prepared to be involved? Thank you.

An invitation to take part

I would like to invite you to take part in the study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information and, if you wish, discuss it with friends, relatives or your GP. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. If you would like further information please contact my supervisors: Dr Georgina Jones on 0114 2268515, Mr. Dilly Anumba on 0114 2261075 or myself Kay L. Bowen on 0114 2220

What is the purpose of the study?

Becoming a parent for the first time or adding to a family can be a potentially life changing event. This can affect the health and wellbeing of both mothers and their partners. Whilst we understand something of how motherhood affects women's health both physically and psychologically we know little about what affect fatherhood has on men's health and wellbeing. This study is the first to collect information from both women and their partners

to evaluate not only the negative aspects of postnatal health but also the positive ones. It is anticipated that the information collected will help health professionals to understand health issues that concern parents during the first year of their infant's life.

What will I have to do if I take part?

You will be asked to complete a questionnaire which aims to measure self-perceived health during the first year. You will be asked to complete questionnaires at 1, 3, 6, 9 and 12 months after your infant was born. The questionnaire will take about 30 minutes to complete and once completed can be returned in the pre-paid envelope provided. It is important that individuals complete the questionnaires independently.

You **do not** have to attend hospital as the questionnaires can be completed at home and posted back to the Jessop Wing Hospital in a pre-paid envelope.

Why Have I Been Chosen?

You have not been singled out. I am asking everyone who has a baby at the Jessop Wing Hospital, Sheffield if they would like to take part.

What about confidentiality?

All reasonable steps will be taken to ensure confidentiality. All the information which is collected about you during the course of the research will be kept strictly confidential. When the results are published it will not be possible to identify anyone as no names will be used. There may however be the instances when there may be concern about the risk of harm to yourself or a child and in these cases the researcher may be obliged to break this confidentiality for the protection of the individuals concerned.

Would I be examined?

No. Taking part **would not** include any type of physical examination or any investigation such as blood tests or X-rays, or any consumption of tablets or medicines.

What are the possible risks of taking part?

There should be no risks of taking part in this study.

Do I have to take part?

No. Taking part is voluntary. If you would prefer not to take part, you do not have to give a reason. Your doctor would not be upset and your clinical care would not be affected in any way. You can take part without your partner also being involved in the study.

If you agree to take part, but later change your mind, you may withdraw at any time. This would not affect your care in any way. Any information collected will also be withdrawn unless the participant expresses otherwise. I would be grateful if you would inform me if you no longer wish to be involved in the study so that I do not offend you by sending out further questionnaires.

What will happen to the results of the research study?

The results will help us better understand how being a parent affects health and wellbeing of both women and their partners. We will write a report for the local health service managers, doctors and midwives to help them plan services for postnatal women and their partners in Sheffield in the future. We also hope that the results of the study will be published to inform a broader audience.

We would like to emphasize that it will not be possible to identify you from any report of this study.

If you would like a copy of the research report we will send this to you.

Who is organizing and funding the research?

The research is being carried out by Kay L. Bowen as part of her postgraduate doctoral studies. The questionnaires have been developed and validated in Sheffield by Dr Georgina Jones, who will be supervising the research with Mr. Dilly Anumba. The research is not being funded.

What if I wish to complain about the way in which this study has been conducted?

If you have any cause to complain about any aspect of the way in which you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms are available to you and are not compromised in any way because you have taken part in a research study.

If you have any complaints or concerns please contact either the project co-ordinator

Dr. Georgina Jones Tel: 0114 2268515 Sheffield University

Otherwise you can use the normal University complaints procedure and contact the following person:

Dr. D. Fletcher

Tel: 0114 2221100 Research Consultative Unit, Sheffield University

Otherwise you can use the normal hospitals complaints procedure and contact the following person:

Professor C. Welsh

Tel: 0114 2712923 Royal Hallamshire Hospital, Sheffield

What do I do now?

Now that you have read the information sheet, if you are happy to participate in the study, I would like you to return the completed questionnaire within the week in the pre-paid envelope provided. However, if you would like to discuss this information with your family, friends, GP or you would like to contact me to discuss this study further, please do. My contact details are at the top of the sheet. Please leave your details and I will get back to you.

If you do not wish to take part, your clinical care will not be affected in any way.

Thank you.

Kay L. Bowen

Appendix 7: Patient Consent Form



Patient Consent Form

Re: A study to evaluate the health and wellbeing of women and their partners during the first year of their infant’s life.

PLEASE READ THE FOLLOWING. IF YOU ARE HAPPY TO TAKE PART IN THIS RESEARCH WOULD YOU PLEASE COMPLETE YOUR NAME AND ADDRESS AT THE BOTTOM OF THE PAGE AND RETURN THE FORM IN THE PRE-PAID ENVELOPE PROVIDED. THANK YOU.

I have read and understood the patient information sheet and am happy to participate in the study

I understand that I am under no obligation to take part in this research.

I understand that I am free to withdraw from the study at anytime, without giving reason and without my future care being affected.

I understand that if I withdraw from the study that the information collected will be retained for the study unless directed otherwise by the participant.

I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals involved in the research, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

I understand that all the information that is collected will be kept strictly confidential.

Name.....

Address.....

.....

Postcode.....

Telephone Number.....

Appendix 8: Notice of substantial amendment (1)

NOTICE OF SUBSTANTIAL AMENDMENT



**Central Office for Research Ethics Committees
(COREC)**

For use in the case of all research other than clinical trials of investigational medicinal products (CTIMPs). For substantial amendments to CTIMPs, please use the EU-approved notice of amendment form (Annex 2 to ENTR/CT1) at <http://eudract.emea.eu.int/document.html#guidance>.

To be completed in typescript by the Chief Investigator and submitted to the Research Ethics Committee that gave a favourable opinion of the research ("the main REC"). In the case of multi-site studies, there is no need to send copies to other RECs unless specifically required by the main REC.

Further guidance is available in section 5 of our Standard Operating Procedures available at www.corec.org.uk/applicants/help/docs/SOPs.doc.

Details of Chief Investigator:	
<i>Name:</i>	Mrs Kay L. Bowen
<i>Address:</i>	SchARR, Regent Court, 30 Regent Street, Sheffield, S1 4DA
<i>Telephone:</i>	0114 2220806
<i>E-mail:</i>	k.bowen@Sheffield.ac.uk
<i>Fax:</i>	

Full title of study:	A Quantitative Longitudinal Study of Women and their Partners Postnatal Health
Name of main REC:	North Sheffield Ethics Committee.
REC reference number:	07/H1308/147
Date study commenced:	July 2008
Protocol reference (if applicable), current version and date:	Version 3 10/03/08
Amendment number and date:	Number 1:23 rd October 2008.

Type of amendment (indicate all that apply in bold)	
<i>(a) Amendment to information previously given on the REC application form</i>	
No	
<i>If yes, please refer to relevant sections of the REC application in the "summary of changes" below.</i>	
<i>(b) Amendment to the protocol</i>	
Yes	
<i>If yes, please submit either the revised protocol with a new version number and date,</i>	

highlighting changes in bold, or a document listing the changes and giving both the previous and revised text

(c) Amendment to the information sheet(s) and consent form(s) for participants, or to any other supporting documentation for the study

No

If yes, please submit all revised documents with new version numbers and dates, highlighting new text in bold

Summary of changes

Briefly summarise the main changes proposed in this amendment. Explain the purpose of the changes and their significance for the study.

Supporting scientific information should be given (or enclosed separately) where the amendment significantly alters the research design or methodology, or could otherwise affect the scientific value of the study.

Within the research protocol (version 3, 10/03/08) it was stipulated that women and their partners would be recruited during the antenatal period. However recruitment at this time yielded a poor response rate of less than 10% of those approached in this way. The Substantial Amendment no.1 (October 2008) proposed that mothers would be contacted by post one month after the birth of their infant and invited to take part in the study. Following approval a postal survey has been carried out. From a potential 4042 participants (mothers and their partners) 616 people have completed the first set of questionnaires. This equates to a 15% recruitment rate. At 3 months this figure has dropped to 300 participants i.e. 7%. At this stage data is still being collected at the 6, 9 and 12 month periods so I am unable to give figures for participation for these time points. However it seems apparent that if there is further loss of participants that by the 12 month point that there will not be enough participants still taking part to ensure statistical significance.

Due to the time constraints placed upon a PhD study it would not be appropriate to attempt a further postal survey from one month postnatal. It is for that reason that it is proposed that a further postal survey be carried out approaching mothers at 12 months following the birth of their infants.

It is acknowledged that by approaching mothers at 12 months following the birth of their infant that the outcome for mother and infant is unknown to the researchers. This is obviously a concern and when this event has occurred in previous studies a letter of apology and condolences has been provided by the lead Obstetric Consultant. It would not be the intention of the researchers to distress or offend any of the mothers by this approach.

Any other relevant information

Applicants may indicate any specific ethical issues relating to the amendment, on which the opinion of the REC is sought.

It is not anticipated that there will be any new ethical issues that would arise as a result of this amendment.

List of enclosed documents

1. Revised protocol (Version 4: 23rd October 2008).
2. Invitation letter (Version 1: 23rd October 2008).

Declaration

- I confirm that the information in this form is accurate to the best of my knowledge and I take full responsibility for it.
- I consider that it would be reasonable for the proposed amendment to be implemented.

Signature of Chief Investigator:Kay L. Bowen

Print name: Kay L. Bowen

Date of submission: 10th November 2008



National Research Ethics Service

Sheffield Local Research Ethics Committee

1st Floor Vickers Corridor
Northern General Hospital
Herries Road
Sheffield
S5 7AU

Tel: 0114 271 4011
Fax: 0114 256 2469

03 December 2008

Mrs Kay Bowen
Post Graduate Doctoral Student
School of Health and Related Research
Regent Court
30 Regent Street
Sheffield
S1 4DA

Dear Mrs Bowen

Study title: A longitudinal quantitative study to measure the postnatal health of women and their partners in the first year.
REC reference: 07/H1308/147
Amendment number: 1
Amendment date: 05 November 2008

The above amendment was reviewed at the meeting of the Sub-Committee of the REC held on 01 December 2008.

Ethical opinion

The Committee members noted the response (letter dated 24th November) to their initial concerns about this amendment. They accept the reply of the investigator that the initial approach to mothers and partners (post natal) will be by introductory letter from Mr Anumba. The reply to the concerns about measures to be taken to ensure the women are not approached inappropriately are also accepted.

The Committee wish to point out that they do not accept the change to page 7 of the protocol, which states that the researcher will approach the women at antenatal clinic. Researchers should adhere to the approach approved by the Committee originally, i.e. that the Clinician in charge of care will approach these women. This change was not highlighted, the Committee members also wish to point out that all changes to the protocol should be highlighted and requested in any future amendment.

The members of the Committee present gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation and taking into account the comments above.

This Research Ethics Committee is an advisory committee to Yorkshire and The Humber Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Questionnaire	4 (demographics)	23 October 2008
Protocol	4	23 October 2008
Participant Information Sheet	4	23 October 2008
Participant Consent Form: Partner	4	23 October 2008
Participant Consent Form: Patient	4	23 October 2008
Covering letter to patient	1	23 October 2008
Covering letter to partners	4	23 October 2008
Letter to Chair outlining approach to patients and measures taken to minimise risk of inappropriate approach		24 November 2008
Notice of Substantial Amendment (non-CTIMPs)		05 November 2008

Membership of the Committee

The members of the Committee who were present at the meeting are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

07/H1308/147: Please quote this number on all correspondence

Yours sincerely



Dr C Moore
Chair

E-mail: april.dagnall@sth.nhs.uk

Enclosures

List of names and professions of members who were present at the meeting and those who submitted written comments

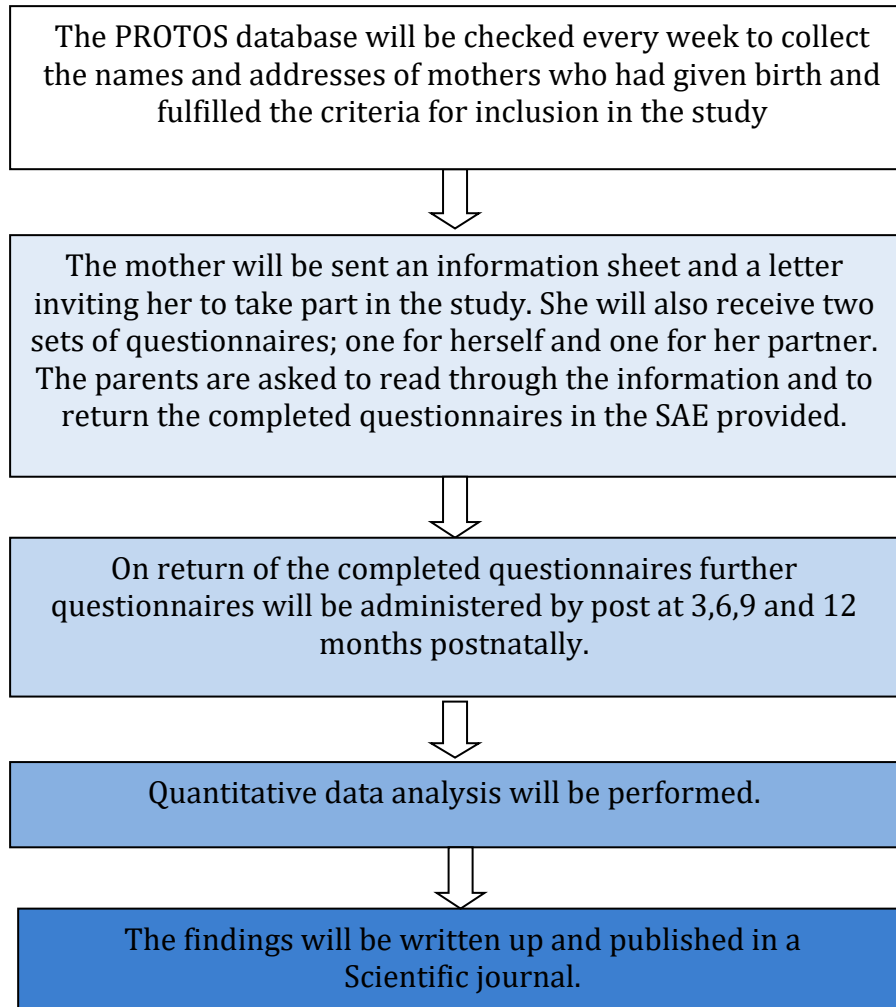
Copy to:

Sheffield Teaching Hospitals Foundation Trust R & D Department

This Research Ethics Committee is an advisory committee to Yorkshire and The Humber Strategic Health Authority

The National Research Ethics Service (NRES) represents the NRES directorate within The National Patient Safety Agency and Research Ethics Committees in England

Appendix 9 Flow chart for recruitment of parents by postal survey



Appendix 10: Introductory letter for postal survey

Version 1: 23rd October 2008

Mr D O C Anumba FWACS, MRCOG, MD, LL.M (Medical Law)
Senior Clinical Lecturer in Obstetrics & Gynaecology
Honorary Consultant in Obstetrics & Fetomaternal Medicine

☎ (0114) 2711900 Sec. (0114) 2268172
Fax (0114) 2268134
e-mail: Nicola.McKenna@sth.nhs.uk (NHS Secretary)

JESSOP WING
Tree Root Walk
Sheffield
S10 2SF

Dear Ms

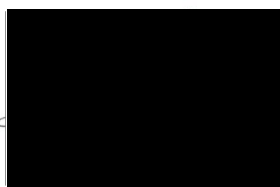
We are writing to you because you have recently had a baby at the Jessop Wing Hospital in Sheffield. I am therefore writing to request your assistance with a research study being carried out looking at the health of women and their partners during the first year after childbirth. Please find enclosed a research information leaflet which explains this study in some detail.

The research will involve completing a set of questionnaires that we have enclosed along with a stamped addressed envelope. These questionnaires have all been designed to measure your quality of life. We have also enclosed another set of these questionnaires that we would wish your partner to complete. If you and your partner are happy to participate by completing the questionnaires, we would be grateful if you would complete and return them to us in the pre-paid envelopes provided. If you do not have a partner, but would still like to help us with this research, please complete the set of 'For Mothers' questionnaires only and return it to us in the pre-paid envelope provided.

Please do not hesitate to contact me should you require any further information.

Kind Regards

Yours sincerely



Appendix 11: Patient information 2

Version 3: April 2010



Patient Information Sheet (2)

Re: A study to evaluate the health and wellbeing of women and their partners during the first year of their infant's life.

Dear parents

My name is Kay Bowen and I was a practicing midwife based at Kings Mill Hospital in Mansfield. I am particularly interested in understanding how having a baby affects the health of mums and dads during the first year of their baby's life. As part of my academic studies I have been offered the opportunity to find out from parents, who have had their baby at the Jessop Wing Hospital in Sheffield, what having a baby has had on their health and wellbeing. As part of the study I am asking mums and dads to complete a set of questionnaires when their infant is a year old to find out about the experiences of parents at this time. I should like to invite you to take part in this study. Please would you read the information below and consider whether you would be prepared to be involved? Thank you.

An invitation to take part

I would like to invite you to take part in the study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information and, if you wish, discuss it with friends, relatives or your GP. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. If you would like further information please contact my supervisors: Dr Georgina Jones on 0114 2268515, Mr. Dilly Anumba on 0114 2261075 or myself Kay L. Bowen on 0114 2220806.

What is the purpose of the study?

Becoming a parent for the first time or adding to a family can be a potentially life changing event. This can affect the health and wellbeing of both mothers and their partners. Whilst we understand something of how motherhood affects women's health both physically and psychologically we know little about what affect fatherhood has on men's health and wellbeing. This study is the first to collect information from both women and their partners to evaluate not only the negative aspects of postnatal health but also the positive ones. It is anticipated that the information collected will help health professionals to understand health issues that concern parents during the first year of their infant's life.

What will I have to do if I take part?

You will be asked to complete a questionnaire which aims to measure self-perceived health. You will be asked to complete the enclosed set of questionnaires. The questionnaire will take about 30 minutes to complete and once completed can be returned in the pre-paid envelope provided. It is important that individuals complete the questionnaires independently.

You **do not** have to attend hospital as the questionnaires can be completed at home and posted back to the Jessop Wing Hospital in a pre-paid envelope.

Why Have I Been Chosen?

You have not been singled out. I am asking everyone who has a baby at the Jessop Wing Hospital, Sheffield if they would like to take part.

What about confidentiality?

All reasonable steps will be taken to ensure confidentiality. All the information which is collected about you during the course of the research will be kept strictly confidential. When the results are published it will not be possible to identify anyone as no names will be used. There may however be the instances when there may be concern about the risk of harm to yourself or a child and in these cases the researcher may be obliged to break this confidentiality for the protection of the individuals concerned.

Would I be examined?

No. Taking part **would not** include any type of physical examination or any investigation such as blood tests or X-rays, or any consumption of tablets or medicines.

What are the possible risks of taking part?

There should be no risks of taking part in this study.

Do I have to take part?

No. Taking part is voluntary. If you would prefer not to take part, you do not have to give a reason. Your doctor would not be upset and your clinical care would not be affected in any way. You can take part without your partner also being involved in the study. If you agree to take part, but later change your mind, you may withdraw at any time. This would not affect your care in any way. Any information collected will also be withdrawn unless the participant expresses otherwise. I would be grateful if you would inform me if you no longer wish to be involved in the study so that I do not offend you by sending out further questionnaires.

What will happen to the results of the research study?

The results will help us better understand how being a parent affects health and wellbeing of both women and their partners. We will write a report for the local health service managers, doctors and midwives to help them plan services for postnatal women and their partners in Sheffield in the future. We also hope that the results of the study will be published to inform a broader audience. We would like to

emphasize that it will not be possible to identify you from any report of this study. If you would like a copy of the research report we will send this to you.

Who is organizing and funding the research?

The research is being carried out by Kay L. Bowen as part of her postgraduate doctoral studies. The questionnaires have been developed and validated in Sheffield by Dr Georgina Jones, who will be supervising the research with Mr. Dilly Anumba. The research is not being funded.

What if I wish to complain about the way in which this study has been conducted?

If you have any cause to complain about any aspect of the way in which you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms are available to you and are not compromised in any way because you have taken part in a research study.

If you have any complaints or concerns please contact the project co-ordinator Dr. Georgina Jones, Tel: 0114 2268515

Or you can use the normal University complaints procedure and contact the following person:

Dr. D. Fletcher, Research Consultative Unit, Sheffield University. Tel: 0114 2221100

Otherwise you can use the normal hospitals complaints procedure and contact the Patient Services Team: Tel: 0114 2712400

What do I do now?

Now that you have read the information sheet, if you are happy to participate in the study, I would like you to return the completed questionnaire within the week in the pre-paid envelope provided. However, if you would like to discuss this information with your family, friends, GP or you would like to contact me to discuss this study further, please do. My contact details are at the top of the sheet. Please leave your details and I will get back to you.

If you do not wish to take part, your clinical care will not be affected in any way.

Thank you.

Kay L. Bowen

University of Sheffield,
School of Health and Related Research,
Regent Court,
30, Regent Street,
Sheffield.
S1 4DA
Tel. no. 0114 2220806


Central Office for Research Ethics Committees
(COREC)

NOTICE OF SUBSTANTIAL AMENDMENT

For use in the case of all research other than clinical trials of investigational medicinal products (CTIMPs). For substantial amendments to CTIMPs, please use the EU-approved notice of amendment form (Annex 2 to ENTR/CT1) at <http://eudract.emea.eu.int/document.html#guidance>.

To be completed in typescript by the Chief Investigator and submitted to the Research Ethics Committee that gave a favourable opinion of the research (“the main REC”). In the case of multi-site studies, there is no need to send copies to other RECs unless specifically required by the main REC.

Further guidance is available in section 5 of our Standard Operating Procedures available at www.corec.org.uk/applicants/help/docs/SOPs.doc.

Details of Chief Investigator:	
<i>Name:</i>	Mrs Kay L. Bowen
<i>Address:</i>	ScHARR, Regent Court, 30 Regent Street, Sheffield, S1 4DA
<i>Telephone:</i>	0114 2220806
<i>E-mail:</i>	k.bowen@Sheffield.ac.uk
<i>Fax:</i>	

Full title of study:	A Quantitative Longitudinal Study of Women and their Partners Postnatal Health
Name of main REC:	North Sheffield Ethics Committee.
REC reference number:	07/H1308/147

Date study commenced:	July 2008
Protocol reference (if applicable), current version and date:	Version 4: 12 th JULY 2010
Amendment number and date:	Number 2 :12th JULY 2010

Type of amendment (indicate all that apply in bold)

(a) Amendment to information previously given on the REC application form

No

If yes, please refer to relevant sections of the REC application in the “summary of changes” below.

(b) Amendment to the protocol

Yes

If yes, please submit either the revised protocol with a new version number and date, highlighting changes in bold, or a document listing the changes and giving both the previous and revised text

(c) Amendment to the information sheet(s) and consent form(s) for participants, or to any other supporting documentation for the study

Yes

If yes, please submit all revised documents with new version numbers and dates, highlighting new text in bold

Summary of changes

Briefly summarise the main changes proposed in this amendment. Explain the purpose of the changes and their significance for the study.

Supporting scientific information should be given (or enclosed separately) where the amendment significantly alters the research design or methodology, or could otherwise affect the scientific value of the study.

1) Within the research protocol (version 3, 10/03/08) it was stipulated that women and their partners would be recruited during the antenatal period. However recruitment at this time yielded a poor response rate of 10-15 % of those approached in this way. The Substantial Amendment no.1 (October 2008) proposed that mothers would be contacted by post one month after the birth of their infant and invited to take part in the study. Following approval, a postal survey has been carried out. From a potential 4042 participants (mothers and their partners) 616 people have completed the first set of questionnaires. This equates to a 15% recruitment rate. At 3 months this figure has dropped to 300 participants. At this stage data is still being collected at the 6, 9 and 12 month periods so I am unable to give figures for participation for these time points. However it seems apparent that if there is further loss of participants that by the 12 month point that there will not be enough participants still taking part to ensure sufficient statistical power.

Due to the time constraints placed upon a PhD study it would not be appropriate to attempt a further postal survey from one month postnatal. It is for that reason that it is proposed that a further 'one-off' postal survey be carried out approaching mothers and their partners at 12 months following the birth of their infants to capture their experiences at this time point. These are mothers and their partners who have not previously been approached to take part in this study.

It is acknowledged that by approaching mothers at 12 months following the birth of their infant that the outcome for mother and infant is unknown to the researchers. This is obviously a concern and when this event has occurred in previous studies a letter of apology and condolences has been provided by the lead Obstetric Consultant. It would not be the intention of the researchers to distress or offend any of the mothers by this approach.

2) It is acknowledged that if their infant has been unwell then this may impact on the health and wellbeing of the parents. It is therefore proposed that a question been included in the Sheffield Postnatal Health Instrument to ask parents if their infant has been unwell since completing the last set of questionnaires, what action they took and to specify the nature of their infant's condition. For parents who complete the questionnaire at 12 months only they will be asked the number and duration of any episodes of illness experienced by their infant during their first year.

3) Dr. C. Jane Morrell to be allowed to be named supervisor for study.



National Research Ethics Service

Sheffield Research Ethics Committee

Yorkshire and Humber REC Office
First Floor, Millside
Mill Pond Lane
Meanwood
Leeds
LS6 4RA

Tel: 0113 3050122
Fax:

09 September 2010

MRS KAY L. BOWEN
POST GRADUATE DOCTORAL STUDENT
UNIVERSITY OF SHEFFIELD
POST GRADUATE DOCTORAL STUDENT
SCHOOL OF HEALTH AND RELATED RESEARCH
REGENT COURT, 30, REGENT STREET
SHEFFIELD
S1 4DA

Dear MRS BOWEN

Study title: A longitudinal quantitative study to measure the postnatal health of women and their partners in the first year.
REC reference: 07/H1308/147
Protocol number: STH14953
Amendment number: 2
Amendment date: 12 July 2010

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

Favourable Opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Letter of invitation to participant	2	01 July 2010
Participant Information Sheet	3	12 July 2010
Protocol	4	12 July 2010
Notice of Substantial Amendment (non-CTIMPs)		12 July 2010

Membership of the Committee

This Research Ethics Committee is an advisory committee to Yorkshire and The Humber Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

07/H1308/147:

Please quote this number on all correspondence

Yours sincerely



Mrs Elaine Hazell
Committee Co-ordinator

E-mail: Elaine.hazell@leedsth.nhs.uk

Enclosures: List of names and professions of members who took part in the review

Copy to: Professor C Welsh, Sheffield Teaching Hospitals

Appendix 13: Application to OGN Small grants Scheme

Academic Unit of Reproductive and Developmental Medicine,

Level 4, Jessop Wing,

Tree Root Walk,

SHEFFIELD S10 2SF

March 2010

Dear Mr Radley,

OGN SGS Application: ‘A quantitative study of women and their partners’ postnatal health’

Thank very much for considering my above application to the OG & N Small Grants Scheme 2010 and for your provisional approval for funds. I note the comments made by the Committee particularly with regard to the problems of poor recruitment and also high dropout rate.

It became evident at the beginning of the study that recruitment was poor and the concern then was that this was producing very small numbers of potential participants. The initial recruitment was in the antenatal period at parent craft classes and in antenatal clinic. The very nature of parent craft classes means that there are only 10 to 13 pairs of parents attending over a 4 to 5 week period to be potentially recruited to the study, and of those parents there was approximately a 10% recruitment rate. It was recognized that to recruit the desired figure of 200 participants by this method would necessitate more time than available to a PhD study. It was also acknowledged that this initial population derived from parent craft classes tended to be first time parents and therefore potentially creating a bias.

Recruiting during antenatal appointments also was problematic. At clinic appointments women are often more concerned about the outcome of their visit to be interested in talking about taking part in a study. These women too may have been at any stage of their pregnancy and so may have changed their mind by the time they have had their baby. There was support from particularly the lead midwife in antenatal clinic and the lead parent craft class midwives, but also from other midwives who kindly facilitated access to potential participants. Their support for the study gave the study a professional credibility.

Table to show recruitment and returns from Antenatal recruitment from 9/08 to 4/09

In total 98 participants were sent first questionnaire (representing about 10% of women and their partners who were approached to take part)

	1 Month	3 months	6 months	9 months	12 months
Number of Participants	42	55	42	24	24
Percentage of sample returned questionnaire	43%	56%	43%	24%	24%

It was therefore proposed to attempt to recruit women and their partners during the postnatal period one month after the birth of their baby. An advantage of a postal survey is that a larger number of parents can be contacted, thereby increasing the number of potential participants. This method also had the advantage that there was no time delay in that the women now have had their babies, and therefore their response is immediate. It was also hoped that this approach was more likely to capture the experiences of parents adding to their existing family unit rather than first time only parents. The main disadvantage of this method however is it is labour intensive in terms of preparing the questionnaires and data bases and also the financial implications of sending out questionnaires to a large number of potential participants.

It is also acknowledged that an inherent problem of longitudinal studies is the retaining the participant to the end of the study. The study has sustained a dropout rate which exceeds our anticipated figure (please see breakdown of recruitment/ participation figures below). In an effort to optimize the returns the mother is sent a letter of introduction from Mr Anumba in a personally addressed envelope, with a pre-paid return envelope and an information sheet explaining the study. With each subsequent set of questionnaires the participants receives a hand written note of thanks in anticipation for their continued support for the study. It is however difficult to assess the reasons for non-participation; it may be simply that this group are too busy following the birth to have the time to complete the questionnaire. This is a population who have other commitments and responsibilities and time may be at a premium. At one month postpartum these women may be too tired or unwell to consider taking part at that time but may have wished to take part at a later date. However as consent is assumed by the return of the first set of questionnaires, if there is no return it is then considered that the woman does not wish to take part and there is no further approach made. Several women got in touch with the study who would have liked to take part but were unable to do so as English was not their first language. The sensitive nature of some of the questionnaires may also be off putting to some potential participants. The study has also had problems with the rates of attrition. It is difficult to account for this and it can only be assumed that as many of these women and their partners will feel mentally and physically well during the first year that they do not consider that their experiences can make a further contribution to the study. There may be also the problem of time and lack of incentive. The study suffered diminished returns for the questionnaires which were sent out around Christmas time, so other factors also appear to have an impact.

On reflection it may have been pertinent to have proposed in the ethics procedure that non-respondents be followed up by a reminder letter or postcard to try to further enhance the response rate. A second copy of the questionnaire to non-respondents may have also improved response rates but again difficult due to the scale of the postal survey. Other studies have offered financial incentives to completing a study but this was not financially practical. There is also the issue of whether a financial incentive affects the data in that completion of the study does not necessarily equate to the participant accurately completing the questionnaire. It has been suggested that women and their partners be able to complete the questionnaire on line. This method would have not been suitable initially (when women's names are drawn from PROTOS) but may have been a consideration for the further questionnaires that they received. This may be a consideration for further studies though security of the data would have to be established. Several participants have commented that it would have been easier for them to have completed the questionnaire by phone, again a good suggestion but difficult in terms of time and financial considerations. A change to the format of the questionnaires has been suggested to enhance the response rate. Whilst unable to change the appearance of the questionnaires themselves as this is covered by copyright, using different coloured paper or the sequence of the questionnaires within the set may have had an impact upon response. Within the confines of a PhD study there are probably too many variables to ascertain whether this would enhance response rates or not.

In conducting a postal survey it was anticipated that in approaching a large sample that even with non-participation that this would produce enough data for analysis even with a lower response rate than hoped for. The postal survey will come to completion in October 2010. As the table below shows the initial participation rate was 15% of a potential 4042 participants. It is important to compare the demographic characteristics of the respondents and the non-respondents in an effort to identify the differences and to try and assess whether it was these differences that had an impact upon recruitment rates. Here particularly considering factors such as whether singleton or multiple births, number of children already in the family, lone or two parent family. Other factors such as socio-economic group and employment status of each parent may have some bearing upon response rates. The age of the parents may also have an impact as well as their educational attainment.

Table to show recruitment from postal survey

Postal survey from 1/09 to 10/09.

In total 2021 women have been approached to take part by this method. This therefore equates to a possible 4042 participants (i.e. women and their partners)

	1 Month	3 months	6 months	9 months	12 months
Number of Participants	616	300	100	46	11
Percentage of sample returned questionnaire	15%	7%	Still collecting	Still collecting	Still collecting

It is proposed that a substantial amendment to the protocol be submitted to the Ethics Committee suggesting that a postal survey be conducted to capture the experiences of 1000 women and their partners at the 12 month point to enhance the study's findings.

The issue of self-selection bias obviously will remain a concern, and the subsequent data analysis must acknowledge that the findings are a sub group of the original sample. In considering the demographics of those who did not participate compared with those who take part in the study may provide some form of comparison which may enrich the final analysis.

I hope that the above further supports my application for funding.

Thank you again for considering my application.

Yours sincerely

Kay L. Bowen, MSc, MA by Research and Thesis, BA (Hons), Dip M, RM, SRN.

ScHARR

University of Sheffield

30, Regent Court

Regent Street

Sheffield S10

Appendix 14: Response to Sheffield Postnatal Health Instrument

Whilst in all cases the Sheffield-PHI had been attempted, it was noted that respondents were at times selective about the questions within the Sheffield PHI that were completed. In examining the non-response by question may highlight particular questions which the respondents found unable or unwilling to answer. It may suggest questions that could be removed or be improved upon. Therefore what is described below is identifying particular areas within the Sheffield Postnatal Questionnaire which were not attempted.

Mothers' non-response to questions by time point

Mothers' non-response to questions at one month postpartum

The M-PHI is composed of two parts, part one is composed of 29 core questions asking about how mothers have felt about various aspects of their lives in the last four weeks. Part two consists of five sections exploring the mother's physical health, relationship with extended family, the effect of having a baby has had on their sexual relationship, effects of infant feeding on their lives and the effect of having a baby has had on their relationship with their fathers. Finally the mothers are asked general details about themselves. There was a good response to the first 29 questions with an overall non-response rate of zero to 1.8%. However in section A there was a non-response of 19.6% to the question '*I have had to take antibiotics*' (question A4) and a 19.1% non-response rate to the question '*I have had to seek medical advice about my health*' (question A5). Section E produced non-response rates of 5.3 to 5.5%; the questions in this section related to the effect of having a baby may have on relationship with their partner. However the greatest non-response was to the question '*If you have any other children, how many do you have?*' producing a non-response of 32.9%. The non-response may have been due to women who have no other children simply ignoring the question.

Mothers' non-response to questions at three months postpartum

At this time point the overall non-response to the first part of the M-PHI was zero to 2.7%. The non-response to question A4 and A5 (described above) was 16.4 and 16.9% respectively. Section E again produced higher non-response than the first section of 8.7 to 9.1%. As at one month there was also a high non-response to the question asking about other children, this time of 32.4%.

Mothers' non-response to questions at six months postpartum

The non-response to the questions in part one of the M-PHI was zero to 1.5%. Again the non-response to question A4 and A5 was 13.2 and 14% respectively. The questions in Section E produced a non-response rate of 6.6 to 7.4%. Again there was a high non-response of 20.6% to the question asking about the number of other children.

Mothers' non-response to questions at nine months postpartum

Section A of the PHI produced an overall non-response of zero to 3.7%. Notably again questions A4 and A5 were not completed by 13.1% of respondents. Section E, questions concerning relationship with partner after birth, produced a non-response of 9.3 to 11.2%. The question about the number of other children resulted in 30.8% non-response.

Mothers' non-response to questions at twelve months postpartum

The majority of questions in Section A of the M-PHI questionnaire produced a 100% response. For those questions in Section A that were not completed there was a non-response of 0.9 to 2.7%. As before question A4 and A5 produced a significant non-response of 20.7%. Section E had a non-response of 12.6% across the questions.

Summary of mothers' non-response to M-PHI questions

At each time point Section A of the M-PHI produced a non-response of less than 5%. However the areas of more significant non-response were to questions A4, A5, and the

question asking for the number of other children. Section E also evoked a non-response of up to 12.6% over the twelve months.

Question A4 asks if the respondent has had to take antibiotics, this follows a question asking about if the respondent has had an infection. It is possible that those women who have not had an infection have merely ignored these questions as being superfluous. This may also be the reason for the high non-response to the question asking about other children. The first-time mothers may have assumed that it is already known, or can be assumed by the researcher that they have no other children and have therefore left the response blank. Section E concerns the effect that having a baby has on their relationship with their partner. The high non-response may be those women who do not have a partner simply ignoring this section or it may be that some women just prefer not to describe their relationship.

Fathers' non-response to questions by time point

The fathers were offered the partner's version of the Sheffield Postnatal Health Questionnaire (F-PHI). Below describes the non-response as a percentage at each time point.

Fathers' non-response to questionnaires at one month time point

The first section of the F-PHI questionnaire poses questions designed to measure both positive and negative health of fathers in the first year of their baby's life. These first 27 questions produced an overall non-response of zero to 4.8%. The partner is then asked general questions about their personal circumstances. Within this section there is a question asking '*If you have any other children, how many do you have?*'; this question was left blank by 29.8% of the respondents.

Fathers' non-response to questionnaires at three month time point

To the F-PHI questionnaire at three months there was an overall non-response of zero to 1.8% overall, with the exception of the question asking about how many other children the partner had; this question produced a non-response of 25.5%.

Fathers' non-response to questionnaires at six month time point

The overall non-response to the F-PHI questions, again with the exception of asking about other children, was zero to 2%. The question about the number of other children the father resulted in a non-response of 21% of the sample at the three month time point.

Fathers' non-response to questionnaires at nine month time point

As before there was an overall low non-response to the F-PHI questions (zero to 2.6%), with the exception of the 'number of other children' that was left blank by 20.8% of the respondents.

Fathers' non-response to questionnaires at twelve month time point

The F-PHI questionnaire had an overall non-response of zero to 2.7%, except for asking about number of other children which resulted in 20.3% of participants not responding to the question.

Summary of fathers' non-response to F-PHI questions

Over the five time points the overall non-response to the F-PHI questionnaire was not greater than 4.8%. This count of 4.8% was at the one month time point to question 16, '*My partner has not wanted sex*'. After the one month time point, the non-response for the other four time points was not greater than 2.6%. The exception to this low figure was, as noted at each time point, the question asking how many other children the partner had; this evoked a non-response of 20.3 to 29.8% across the five time points. The reason for this may be simply that for some participants leaving the response blank equates with zero. Whilst the number of other children a mother has is documented in her medical notes, fathers may have children from other relationships which will not be accounted for.

Appendix 15: Instruments used in the study



The Sheffield Postnatal Health Questionnaire:

For Mothers

© 2006 Institute of General Practice & Primary Care, SCHARR

University of Sheffield

In collaboration with the Sheffield Health & Social Care Research Consortium &

University of Warwick

-
- *We are a team from Sheffield University, conducting research on the health and well-being of women in the first year after they have a baby. This questionnaire has been developed to measure the aspects of health that may be important to mothers during this year.*

 - *To complete the questionnaire please would you answer:*

***Part 1:** All 29 questions*
***Part 2:** All questions that apply to you*

 - *We are aware that how you feel now may be different to how you have felt over the previous months. However, please would you answer the questions only in relation to **the last 4 weeks***

 - *There are no right or wrong answers, so please tick the answers which best represent your feelings and experiences.*

 - *Due to the personal nature of some of the questions please understand that you do not have to answer any questions if you would prefer not to.*

 - *The information and answers you give will be treated with the utmost confidentiality.*

 - *If you have any problems or would like any help or assistance with the completion of this questionnaire please contact Kay Bowen on 0114 2220806 or Dr Georgina Jones*

on 0114 2268515 who will be happy to help you.

- *Once you have completed the questionnaire please could you return it in the pre-paid envelope provided.*

 - *We would like to thank you very much in anticipation for taking the time to help us with this important research and we look forward to receiving your answers.*

 - *This research was funded by the Sheffield Health and Social Care Research Consortium*
-

PART 1: CORE QUESTIONNAIRE	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
DURING THE LAST 4 WEEKS I HAVE FELT THAT.....					
1. I really love being a mother	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 It is really interesting to watch my baby develop	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I am having fun with my baby	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I have developed a close bond with my baby	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Looking after my baby has been hard work and no pleasure	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I am trapped because getting out of the house is such a hassle	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I am not in control because my baby's needs take over	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I am frustrated because what I do is now structured around my baby	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. My life before my baby was born has been taken from me	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I am tired because I'm not getting enough sleep	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I can't cope with the tiredness	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I am drained of energy	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Getting to know my baby has been difficult	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I am unsure of who I am	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I am worthless	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I am daunted by the future	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I am numb towards my baby	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I am on a 'roller coaster ride' as my moods have been up and down	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I am angry	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PART 1: CORE QUESTIONNAIRE	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
DURING THE LAST 4 WEEKS I HAVE FELT THAT.....					
20. I am irritable	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. I am downhearted and low	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. I am weepy and tearful	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. I am unhappy about myself	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Spending time with other mums and babies has made me happy	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Going out and seeing other people makes me feel happy	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. I have received good support from my circle of friends	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I get support from other mothers with babies	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. I have become closer to my friends	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. I am developing new friendships	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 2: MODULAR QUESTIONNAIRE

Section A: Physical Health

These questions concern the effect that having your baby may have had on your physical health **during the last 4 weeks**.

DURING THE LAST 4 WEEKS I HAVE FOUND THAT.....

Never Rarely Sometimes Often Always

A1. I have experienced pain

If you have experienced pain, where has the pain been?

.....

A2a. I have had problems with incontinence
 (involuntary leakage of urine)

A2b. I have had problems with incontinence of bowel motions

A3. I have had an infection

If you have had an infection, what sort of infection has it been?

.....

A4. I have had to take antibiotics

A5. I have had to seek medical advice about my health

Section B: These questions concern the effect having a baby may have had on your **relationship with your extended family during the last 4 weeks**.

DURING THE LAST 4 WEEKS I HAVE FELT.....

Never Rarely Sometimes Often Always

B1. Closer to my parent/s

If not relevant please tick here

B2. That I get the support I need from my parent/s

B3. That I see our family more often now

B4. That my family are supportive

Section C: These questions concern the effect that having a baby may have had on your **sexual relationship during the last 4 weeks**. If any of the questions are not relevant to you, please tick the 'Not Relevant box' below each question.

DURING THE LAST 4 WEEKS I HAVE FOUND THAT.....

	Never	Rarely	Sometimes	Often	Always				
C1. I would like to have sex but I am too tired			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>If not relevant please tick here</i> <input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C2. I am not having sex because I don't feel attractive			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>If not relevant please tick here</i> <input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C3. I am worried that my sex life will not return to how it was before the baby was born			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>If not relevant please tick here</i> <input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D: These questions concern the effect **feeding your baby** may have had on your life **during the last 4 weeks**. If you are NOT breastfeeding, please tick here and move onto Part 3

DURING THE LAST 4 WEEKS I HAVE.....

	Never	Rarely	Sometimes	Often	Always				
D1. Felt frustrated because breastfeeding prevents me from going out as much as I would have done			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D2. Felt that because of breastfeeding my body has not felt like my own			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D3. Felt that breastfeeding makes my partner see me as nothing Other than a Mum			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D4. Had cracked and painful nipples and dreaded every single feed			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section E: These questions concern the effect that having your baby may have had on your **relationship with your partner during the last 4 weeks**. If you do not have a partner, please tick here and move onto Section E.

DURING THE LAST 4 WEEKS I HAVE FOUND THAT.....

	Never	Rarely	Sometimes	Often	Always
E1. The relationship has suffered because my partner has struggled to adapt to the life change			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E2. My partner and I argue			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E3. The different views my partner and I have about our baby has caused problems between us			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E4. I have wanted to push my partner away			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 3: GENERAL DETAILS

Finally, please could you tell us some general details about yourself.....

	Day	Month	Year
1a. What is your date of birth?	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
1b. What is today's date?		<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
1c. When was your baby born?	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

2a. If you have any other children, how many do you have? 2b. How old are they?.....

3. *How would you describe your ethnic origin? (please circle one)*

- | | | | | | |
|---------------|-------------|---------------|-----------------|-------------|--------|
| White British | White Irish | Black African | Black Caribbean | Pakistani | Indian |
| Chinese | Bangladeshi | Black other* | White Other* | Mixed Race* | Other* |

*Please specify.....

4. Please indicate your highest level of educational qualifications: (please circle one)

None CSE/'O' level/GCSE 'A' level/GCE/further qualification Degree/higher degree

5. What is your current living situation? (please circle one)

Living alone Living with parents Living with child's father Living with new partner
Living with another woman Other, please specify.....

6a. What is your main occupation?.....

6b. If you are married or cohabiting, what is your partner's main occupation?.....

Now that you have completed the questionnaire, please could you return it to us in the pre-paid envelope provided. Once again we would like to thank you for taking the time to help us with this research.



The Sheffield Postnatal Health Questionnaire: For Partners

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University of Sheffield

In collaboration with the Sheffield Health & Social Care Research Consortium &

University of Warwick

-
- *We are a team from Sheffield University, conducting research on the health and well-being of the partners of women in the first year after they have a baby. This questionnaire has been developed to measure the aspects of health that may be important to partners during this year.*

 - *To complete the questionnaire please would you answer:*

***Part 1:** All 27 questions*
***Part 2:** All questions that apply to you*

 - *We are aware that how you feel now may be different to how you have felt over the previous months. However, please would you answer the questions only in relation to **the last 4 weeks***

 - *There are no right or wrong answers, so please tick the answers which best represent your feelings and experiences.*

 - *Due to the personal nature of some of the questions please understand that you do not have to answer any questions if you would prefer not to.*

- *The information and answers you give will be treated with the utmost confidentiality.*

 - *If you have any problems or would like any help or assistance with the completion of this questionnaire please contact Kay Bowen on 0114 2220806 or Dr Georgina Jones on 0114 2268515 who will be happy to help you.*

 - *Once you have completed the questionnaire please could you return it in the pre-paid envelope provided.*

 - *We would like to thank you very much in anticipation for taking the time to help us with this important research and we look forward to receiving your answers.*

 - *This research was funded by the Sheffield Health and Social Care Research Consortium*
-

PART 1: CORE QUESTIONNAIRE	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
DURING THE LAST 4 WEEKS I HAVE FOUND THAT.....					
1. Parenting is a wonderful experience	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I'm managing well	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I want to be with the baby all the time	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I love being a family man	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I have a purpose in life	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. My baby makes me feel full of great joy		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I am confident with my baby		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I can talk things through with my partner if things are bothering me	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I have as much support as I need from my partner	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. My partner includes me in everything to do with our baby	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I am close to my partner	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Friends are really helpful	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I realise what good friends I have	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Supported by my friends	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. My partner and I have not had much time for each other	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. My partner has not wanted sex	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I miss being intimate with my partner	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I don't have sex as often with my partner as I did and this disappoints me	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I am downhearted and low	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I am irritable	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. I am tearful	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. I am stressed	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 1: CORE QUESTIONNAIRE DURING THE LAST 4 WEEKS I HAVE FOUND THAT.....	NEVER	Rarely	Sometimes	OFTEN	ALWAYS
23. I am short-tempered	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. I am angry	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I am fascinated seeing my baby grow and do different things each day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. I have immense pride and enjoyment in what my baby does	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I am careful now because I know I am needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 2: GENERAL DETAILS

Finally, please could you tell us some general details about yourself.....

	Day	Month	Year
1a. What is your date of birth?	<input type="text"/>	<input type="text"/>	<input type="text"/>
1b. What is today's date?		<input type="text"/>	<input type="text"/>
1c. When was your baby born?	<input type="text"/>	<input type="text"/>	<input type="text"/>

2a. If you have any other children, how many do you have? 2b. How old are they?.....

3. How would you describe your ethnic origin? (please circle one)

- | | | | | | |
|---------------|-------------|---------------|-----------------|-------------|--------|
| White British | White Irish | Black African | Black Caribbean | Pakistani | Indian |
| Chinese | Bangladeshi | Black other* | White Other* | Mixed Race* | Other* |

*Please specify.....

4. Please indicate your highest level of educational qualifications: (please circle one)

- None* *CSE/'O' level/GCSE* *'A' level/GCE/further qualification* *Degree/higher degree*

5. What is your current living situation? (please circle one)

- Living alone* *Living with parents* *Living with child's mother* *Living with new partner*
Other, please specify.....

6a. What is your main occupation?.....

6b. If you are married or cohabiting, what is your partner's main occupation?.....

**The Warwick-Edinburgh Mental Well-being Scale
(WEMWBS)**

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

SF-12 (Short Form)

Question 1	In general, would you say your health is excellent, very good, good, fair, or poor?	Excellent ...	<input type="radio"/>	0
		Very Good ...	<input type="radio"/>	0
		Good ...	<input type="radio"/>	0
		Fair ...	<input type="radio"/>	0
		Poor ...	<input type="radio"/>	- 2
<hr/>				
Question 2	The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? First, moderate activities such as moving a table, pushing a vacuum cleaner, bowling or playing golf. Does your health now limit you a lot, limit you a little, or not limit you at all.	Limited a lot ...	<input type="radio"/>	4
		Limited a little ...	<input type="radio"/>	2
		Not limited at all ...	<input type="radio"/>	0
<hr/>				
Question 3	Climbing several flights of stairs. Does your health now limit you a lot, limit you a little, or not limit you at all?	Limited a lot ...	<input type="radio"/>	3
		Limited a little ...	<input type="radio"/>	1
		Not limited at all ...	<input type="radio"/>	0
<hr/>				
Question 4	During the past four weeks, have you accomplished less than you would like as a result of your physical health?	No ...	<input type="radio"/>	0
		Yes ...	<input type="radio"/>	1
<hr/>				
Question 5	During the past four weeks, were you limited in the kind of work or other regular activities you do as a result of your physical health?	No ...	<input type="radio"/>	0
		Yes ...	<input type="radio"/>	2
<hr/>				
Question 6	During the past four weeks, have you accomplished less than you would like to as a result of any emotional problems, such as feeling depressed or anxious?	No ...	<input type="radio"/>	0
		Yes ...	<input type="radio"/>	- 7
<hr/>				
Question 7	During the past four weeks, did you not do work or other regular activities as carefully as usual as a result of any emotional problems such as feeling depressed or anxious?	No ...	<input type="radio"/>	0
		Yes ...	<input type="radio"/>	- 6
<hr/>				
Question 8	During the past four weeks, how much did pain interfere with your normal work, including both work outside the home and housework? Did it interfere not at all, slightly, moderately, quite a bit, or extremely?	Not at all ...	<input type="radio"/>	0
		Slightly ...	<input type="radio"/>	1
		Moderately ...	<input type="radio"/>	1

		Quite a bit ...	<input type="radio"/>	2
		Extremely ...	<input type="radio"/>	1
Question 9	These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much time during the past 4 weeks have you felt calm and peaceful? All of the time, most of the time, a good bit of the time, some of the time, a little of the time, or none of the time?	All of the time ...	<input type="radio"/>	0
		Most of the time ...	<input type="radio"/>	-2
		A good bit of the time ...	<input type="radio"/>	-4
		Some of the time ...	<input type="radio"/>	-6
		A little of the time ...	<input type="radio"/>	-8
		None of the time ...	<input type="radio"/>	-10
Question 10	How much of the time during the past 4 weeks did you have a lot of energy? All of the time, most of the time, a good bit of the time, some of the time, a little of the time, or none of the time?	All of the time ...	<input type="radio"/>	0
		Most of the time ...	<input type="radio"/>	-1
		A good bit of the time ...	<input type="radio"/>	-2
		Some of the time ...	<input type="radio"/>	-3
		A little of the time ...	<input type="radio"/>	-5
		None of the time ...	<input type="radio"/>	-6
Question 11	How much time during the past 4 weeks have you felt down? All of the time, most of the time, a good bit of the time, some of the time, a little of the time, or none of the time?	All of the time ...	<input type="radio"/>	-16
		Most of the time ...	<input type="radio"/>	-11
		A good bit of the time ...	<input type="radio"/>	-8
		Some of the time ...	<input type="radio"/>	-5
		A little of the time ...	<input type="radio"/>	-2
		None of the time ...	<input type="radio"/>	0
Question 12	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities like visiting with friends, relatives etc? All of the time, most of the time, some of the time, a little of the time, or none of the time?	All of the time ...	<input type="radio"/>	-6
		Most of the time ...	<input type="radio"/>	-8
		Some of the time ...	<input type="radio"/>	-6
		A little of the time ...	<input type="radio"/>	-3
		None of the time ...	<input type="radio"/>	0

Edited by Gavin Andrews MD, UNSW, Jan 03

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Edinburgh Postnatal Depression Scale¹ (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that 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:

- Yes, all the time
- Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.
- No, not very often Please complete the other questions in the same way.
- No, not at all

In the past 7 days:

- | | |
|--|--|
| <p>1. I have been able to laugh and see the funny side of things</p> <ul style="list-style-type: none"><input type="checkbox"/> As much as I always could<input type="checkbox"/> Not quite so much now<input type="checkbox"/> Definitely not so much now<input type="checkbox"/> Not at all <p>2. I have looked forward with enjoyment to things</p> <ul style="list-style-type: none"><input type="checkbox"/> As much as I ever did<input type="checkbox"/> Rather less than I used to<input type="checkbox"/> Definitely less than I used to<input type="checkbox"/> Hardly at all <p>*3. I have blamed myself unnecessarily when things went wrong</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, some of the time<input type="checkbox"/> Not very often<input type="checkbox"/> No, never <p>4. I have been anxious or worried for no good reason</p> <ul style="list-style-type: none"><input type="checkbox"/> No, not at all<input type="checkbox"/> Hardly ever<input type="checkbox"/> Yes, sometimes<input type="checkbox"/> Yes, very often <p>*5. I have felt scared or panicky for no very good reason</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, quite a lot<input type="checkbox"/> Yes, sometimes<input type="checkbox"/> No, not much<input type="checkbox"/> No, not at all | <p>*6. Things have been getting on top of me</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time I haven't been able to cope at all<input type="checkbox"/> Yes, sometimes I haven't been coping as well as usual<input type="checkbox"/> No, most of the time I have coped quite well<input type="checkbox"/> No, I have been coping as well as ever <p>*7. I have been so unhappy that I have had difficulty sleeping</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, sometimes<input type="checkbox"/> Not very often<input type="checkbox"/> No, not at all <p>*8. I have felt sad or miserable</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, quite often<input type="checkbox"/> Not very often<input type="checkbox"/> No, not at all <p>*9. I have been so unhappy that I have been crying</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, quite often<input type="checkbox"/> Only occasionally<input type="checkbox"/> No, never <p>*10. The thought of harming myself has occurred to me</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, quite often<input type="checkbox"/> Sometimes<input type="checkbox"/> Hardly ever<input type="checkbox"/> Never |
|--|--|

Administered/Reviewed by _____ Date _____

¹Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

²Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

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Stream 7 – Psychological aspects of obstetrics and gynaecology

FC7.009

A quantitative longitudinal cohort study of mothers' and their partners' health and well-being in the first year postpartum

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Objectives The transition to parenthood is a major event in an adult's life which may influence their health and well being. Most literature focuses upon the negative sequelae of parenthood, particularly concentrating upon mental health problems. There is also a paucity of research examining men's experiences of parenting within the first year. The aim of this study was to measure both positive and negative health outcomes for mothers and fathers during the first 12 months of having a baby.

Methods A longitudinal cohort study was carried out. Couples who were planning to have their baby in a hospital in South Yorkshire were recruited antenatally and postnatally. The outcome measures administered included the EPDS, WEMWBS, PANAS, SF-12 and the Sheffield Postnatal Health Instrument for Mothers and Fathers (M-PHI and F-PHI), which were administered at 1 month postpartum and then at 3, 6, 9 and 12 months follow-up.

Results From the 2136 couples approached, 712 parents (33.3%) responded at baseline (403 mothers and 309 fathers). At

12 months 179 parents (106 mothers and 73 fathers) completed the study. The mean age of mothers was 29 years (range 16–48 years). The mean age of the fathers was 32 years (range 18–59 years). The results for the M-PHI suggested overall that mothers experienced a positive sense of wellbeing. Both the mothers' physical health and mental health improved over time. This was also reflected in the results of both PANAS and Short Form-12 and WEMWBS, which suggested improvement in both physical and mental health. Using the EPDS, mothers' mean score showed a decline from 6.6 to 4.9 over time (-1.7 , 95% CI: -2.4 to -1.0 , $P < 0.001$). However, the percentage of mothers scoring above the cut off figure of 12 peaked at 9 months (13.5%).

The fathers F-PHI results also suggested that fathers' experienced a positive sense of well being over time particularly in terms of their role as a father and the relationship with their baby. The results did however suggest that fathers perceived less support from their partner, family and friends over time. The results for PANAS, Short Form-12, WEMWB and EPDS suggested improvement or little change to health status over time. However, the percentage of fathers scoring above the cut off figure of 10 for EPDS also peaked at 9 months (12.8%).

Conclusion Overall, the mental health of parents improved over the 12 months.

A qualitative longitudinal cohort study of mothers' and their partners' health and well-being in the first year postpartum

Kay Louise Bowen, BA (Hons), MA, MSc, SRN, RM, DipM
Postgraduate Doctoral Student



Background

- Transition to parenthood major life event
- Relationship between mental and physical health and well-being
- Mental health problems for mothers in postpartum well documented. Less understood about fathers mental health
- Impact of parents' mental health status upon infants cognitive and psychosocial development



Introduction

- Longitudinal prospective cohort study examining health and well-being of mothers and fathers
- Particular reference to positive and negative mental health outcomes
- Study duration; first 12 months after birth of infant
- Employed five self-reported quality of life instruments administered at five time points



Systematic Literature Review

- Identified 37 studies that examined the mental health of both mothers and fathers
 - 27 measured negative mental health outcomes
 - Only 4 measured both negative and positive mental health outcomes
- Edinburgh Postnatal Depression Scale most commonly employed instrument
- Only 17 of the 37 studies employed a parent specific instrument




Methods

- Recruitment of mothers and fathers in the antenatal period poor
- Therefore subsequently parents were recruited by post in the postnatal period
- Five self-reported instruments were employed: Sheffield-Postnatal Health Instrument, WEMWBS, PANAS, SF-12 and EPDS
- Administered at 5 time points: 1,3,6,9, and 12 months postpartum



Results

- 712 parents participated at 1 month and 179 parents at 12 months postpartum
- Data analysed using summary statistics and paired t test
- Overall improvement in both mental and physical health status for both mothers and fathers over time
- Mothers more likely to experience depression or dysphoria than fathers



Results

- Relationship with infant regarded positively by mothers and fathers
- Mothers perceived their relationship with their partner more positively than the partners did
- Fathers -worsening of support from friends
- EPDS - 13.5% of mothers and 12.8% of fathers scored above their respective cut-off figure, peaking at 9 months postpartum



Strength and weaknesses

Strengths

- Longitudinal design following cohort over 12 months
- Data from five self-reported instruments at 5 time points
- Parent specific and generic instruments looked at both positive and negative health outcomes

Weaknesses

- High attrition
- Self selection



Conclusion

- Study identified positive aspects of parenting
- Depression and dysphoria may still be a concern for parents at nine months postpartum
- Consider increased support for parents postnatally, particularly for fathers
- Consider routine screening of fathers for depression during postnatal period
- Increase parents understanding of possible mental health problems



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Addendum

NICE Guidelines and implications for practice.

Since this study was carried out NICE have published guidelines on antenatal and postnatal mental health (2014 and update, 2018). The guidance sets out the aim for health professionals to recognize, assess and treat mental health problems in women. Health professionals are tasked with not only being vigilant for mental health problems in those women who are pregnant or who have given birth within the last twelve months, but also to give advice and care to those women who are contemplating pregnancy who already have a diagnosed mental health problem. It is suggested that talking about possible mental health problems should be part of the general discussion that health professionals have with pregnant women. The onus is therefore upon improving the quality of life for women with early detection and good management of their mental health.

Whilst the guidance covers the needs of women who have pre-existing mental health issues, it also recognizes the importance of the detection of, in particular, mental health problems associated with pregnancy and childbirth in women and mothers who have previously not been diagnose as having a mental health problem. Health professionals are directed to carry out risk assessment with the women alongside her family, partner or care if acceptable to the woman. Following on from this the guidelines emphasize the importance of care plans, reassessment of the woman at each meeting with a health care provider and good communication between health professionals. The aim is to provide co-ordinated care with the sharing of information between health professionals involved in care provision.

The guidance also suggests the importance of mothers' involvement in their treatment and the importance of giving them a central role in decision making about their possible treatment. Health professionals are also responsible for talking to women about the potential

risks surrounding stopping, starting or restarting medication. This also extends to giving mothers information about the use of medication whilst breast feeding. Mother, it is suggested, should be encouraged to engage in social activities, to derive support from others, exercise and rest.

The NICE Guidelines cited various studies that may also provide future direction for the provision of care for mothers, in an attempt to reduce symptoms of depression or anxiety. Many of the studies included involved a form of intervention either in the antenatal or postnatal period. Elliott et al. (2000), Milgrom et al. (2010) and Ortiz-Collado et al. (2014) described interventions for the antenatal period. Elliott et al. (2000) examined the effectiveness of a psychosocial intervention which could be incorporate into routine antenatal care. They suggested that postnatal depressive symptoms might be prevented by this brief intervention. Milgrom et al. (2010) described an intervention based upon using a work book and telephone support which they suggested produced significantly fewer cases of mothers scoring above the threshold for moderate to severe depression compared to a control group who experienced routine postnatal care. The experimental programme of intervention described by Ortiz-Collado et al. (2014) did not produce conclusive results when considering depressive symptoms in mothers. However they did find in the intervention group there was an increase in the infants' birth weight and the incidence of pre-term birth was lower. These studies emphasize the potential benefits of engaging with mothers (and their partners) during the antenatal period.

Further studies considered the efficacy of interventions delivered during the postnatal period. Howell et al. (2014) developed a behavioural educational intervention targeting factors associated with postnatal depression. They found in some of their sample that there was some reduction in depressive symptoms. Gamble et al. (2005) employed a counselling intervention where mothers were essentially debriefed face to face in a midwife led project. They concluded that this form of intervention was effective in reducing symptoms of stress,

depression and feelings of self-blame. These results were also reflected in the study by Lavender et al. (1998) who found that debriefing of mothers by midwives meant that these mothers were less likely to have high anxiety and depression scores compared with a control group. Small et al. (2000) study also involved debriefing by midwives for mothers, here after an operative birth. However, their results suggested that this intervention was ineffective in reducing psychopathology at six months postpartum. Further they suggested that the debriefing may have even contributed to emotional health problems for some by causing secondary trauma from re-exposure. They did suggest, however, that some mothers found debriefing helpful. Perhaps the important message here is that debriefing maybe beneficial to some mothers and therefore provision should be made for mothers to engage in conversation with their midwife, Health Visitor or GP as and when they feel it is appropriate. The studies by Morrell et al. (2009a 2009b) and Burgha et al. (2011) highlight the benefits of training Health Visitors to assess mothers and identify possible psychopathology. Providing psychologically informed session was also found to be clinically effective (Morrell et al. 2009a).

Several authors also studied the possible benefits of exercise on the mothers' sense of wellbeing. Robledon-Colonia et al. (2012) considered aerobic exercise for mothers during pregnancy and found that exercise does improve the wellbeing and quality of life for mothers. This notion was supported by Norman et al. (2010) who found that by also incorporating an education programme with the exercise programme was effective in improving postnatal wellbeing. Daley et al (2008) considered the feasibility of an exercise intervention for mothers who had postnatal depression as symptoms may be reduced by exercise. Unfortunately they concluded that it is difficult to motivated mothers with postnatal depression to exercise. They did suggest, however, that mothers may benefit from telephone peer support. There may therefore be benefits in the long term in starting an exercise programme antenatally as suggested.

Whilst the NICE guidelines provide a framework within which health professionals can provide care for mothers, there is not an equivalent provision of guidelines for fathers. This present study has highlighted the importance of recognizing that fathers too may have mental health problems associated with being or becoming parents. It is therefore important to consider routine screening for fathers antenatally and postnatally as well as acknowledging that fathers too may need support at this time. It is important to develop social policies which address the needs of both mothers and fathers in terms of support, not just initially, but perhaps for at least the first twelve months after the birth of their infant. There is a need to acknowledge that both parents may have mental health problems associated with parenting, better education about mental health problems and by reducing the stigma attached to mental health problems, parents maybe better informed and more inclined to seek help.

In conclusion the NICE Guidelines are important in improving the mental health and wellbeing of mothers, fathers and their infant. It encourages better communication between women and their care provider, increased education for both women and health professionals and an approach which puts the mother central in discussion and decision making.

Systematic review of the literature

A further systematic review of the literature was carried out from January 2016 to the present day (July 2019).

Methods

The review followed the same procedure as detailed in chapter 4, that is, examining electronic databases particularly concerned with health and social sciences. The same search terms and inclusion/exclusion criteria was employed.

Results

The search produced 20 possible studies, of these only one study was suitable for including in the review. This is detailed in the following table. The purpose of the study by Leung et al (2017) was to identify the predictors of depression. They employed the EPDS which, as noted in Chapter 4, was the most commonly used instrument. The study was carried out in Canada.

Table to show systematic literature review update

AUTHORS	INSTRUMENTS	FOLLOW UP POINTS	POSITIVE/ NEGATIVE	KEY POINTS	SAMPLE SIZE
Leung, B., Letourneau, N., Giesbrecht, G., Ntanda, H., Hart, M. and The APrON Team (2017)	Edinburgh Postnatal Depression Scale Stressful Life Events Questionnaire The Social Support Questionnaire Sociodemographic questions Clinical measurements of Body Mass Index	Second trimester and 3 months postpartum	Negative	Predictors of postnatal depression include low income, high prenatal depressive symptoms, low social support postnatally. Smoking.	846 couples