

School of Public Health

**The development, implementation and evaluation of a father inclusive
perinatal support intervention to increase breastfeeding duration: A
randomised controlled trial**

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**This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University**

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature:

Date:

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ACRONYMS

EBF.....	Exclusive Breastfeeding
CBF.....	Complementary Breastfeeding
FF.....	Fully Formula feeding
RCT.....	Randomised Controlled Trial
SES.....	Socioeconomic Status
HADS.....	Hospital Anxiety and Depression Scale
BFHI.....	Baby Friendly Health/Hospital Initiative
MAIF.....	Marketing in Australia of Infant Formulas
IIFAS.....	IOWA Infant Feeding Attitude Scale
NHMRC.....	National Health and Medical Research Council
WHO.....	World Health Organization
SCT.....	Social Cognitive Theory
HBM.....	Health Belief Model
EPDS.....	Edinburgh Postpartum Depression Scale
CI.....	Confidence Interval
FIFI.....	Father Infant Feeding Initiative

TABLE OF CONTENT

DECLARATION	2
ACKNOWLEDGEMENTS	3
ACRONYMS.....	4
ABSTRACT	14
INTRODUCTION	14
AIM OF STUDY.....	14
OBJECTIVES	14
HYPOTHESES.....	15
TRIAL OUTCOMES.....	15
METHODS.....	15
RESULTS.....	16
CONCLUSION	18
FUNDING:.....	18
CHAPTER ONE: INTRODUCTION.....	21
1.1 INTRODUCTION	21
1.2 STATEMENT OF THE PROBLEM	21
1.3 BACKGROUND	22
1.4 AIM AND PURPOSE.....	23
1.5 OBJECTIVES.....	23
<i>1.5.1 Formative Research.....</i>	<i>23</i>
<i>1.5.2 Randomised controlled trial</i>	<i>23</i>
1.6 HYPOTHESES.....	23
1.7 BENEFITS OF THE STUDY	24
1.8 DEFINITION OF TERMS	24
1.9 SCOPE OF THE PROJECT	24
1.10 ORGANISATION OF THESIS	25
CHAPTER TWO: LITERATURE REVIEW	28
2.0 INTRODUCTION	28
2.1 HISTORICAL CHANGES IN BREASTFEEDING PREVALENCE IN DEVELOPED COUNTRIES.....	28
2.2 IMPORTANCE AND BENEFITS OF BREASTFEEDING TO MOTHER AND INFANT	29
<i>2.2.1. Infant health benefits of breastfeeding.....</i>	<i>29</i>
<i>2.2.2 Benefits and importance of breastfeeding to the mother.....</i>	<i>30</i>
<i>2.2.3 Economic benefits</i>	<i>30</i>
<i>2.2.4 Summary of breastfeeding benefits.....</i>	<i>31</i>

2.3 CONTAMINATION RISKS WITH FORMULA FEEDING.....	31
2.4 HOSPITAL BREACH: BARRIERS TO BREASTFEEDING	32
2.5 FACTORS THAT INFLUENCE THE DECISION TO BREASTFEED.....	32
2.5.1 <i>Demographic factors that influence breastfeeding initiation and duration</i>	32
Culture / Ethnicity	33
Maternal Age	34
Education Status	34
Employment.....	35
2.5.2 <i>Summary of demographic factors that can influence breastfeeding</i>	36
2.6 SOCIAL VARIABLES.....	36
2.6.1 <i>Importance of the father's role</i>	36
2.6.2 <i>Professional /formal support</i>	38
2.6.3 <i>Antenatal education and breastfeeding</i>	39
2.6.4 <i>Summary of social variables influencing breastfeeding</i>	40
2.7 BARRIERS TO BREASTFEEDING	41
2.7.1 <i>Physiological variables</i>	41
Infant health problems	41
Insufficient milk supply	42
Physical breast problems	42
Method of delivery	42
Summary of physiological barriers to breastfeeding	43
2.7.2 <i>Psychological variables</i>	43
Postnatal depression and anxiety	44
Inadequate /conflicting information about breastfeeding	44
Lack of confidence in breastfeeding	45
Summary of psychological factors associated with breastfeeding	45
2.8 POLICY DECISIONS AND BREASTFEEDING PROMOTION CAMPAIGNS.....	45
2.8.1 <i>Baby Friendly Health Initiative</i>	46
Research associated with BFHI	46
2.8.2 <i>International Code of Marketing of Breast Milk Substitutes</i>	47
2.8.3 <i>The Innocenti Declaration</i>	48
2.9 CONCLUSION	49
CHAPTER THREE: METHODS.....	51
3.1 INTRODUCTION	51
3.2 THE AIM OF THE STUDY.....	51
3.2.1 <i>Formative research</i>	51
3.2.2 <i>Randomised controlled trial</i>	51
3.3 SETTING	52
3.3.1 <i>Total Births in 2007 in Perth, Western Australia</i>	52

3.4 STAKEHOLDER INTERACTION	53
3.5 ETHICAL APPROVAL	53
3.6 THEORETICAL PERSPECTIVE	54
3.6.1 <i>Social Cognitive Theory</i>	54
Uses within the project	55
3.6.2. <i>Health Belief Model</i>	55
Uses within the project	55
3.6.3 <i>Hegemonic Masculinity</i>	56
Uses in the project	56
3.7 METHODS: FORMATIVE RESEARCH	57
3.7.1 <i>Focus Group preparation</i>	58
3.7.2 <i>Recruitment</i>	59
3.7.3 <i>Focus group procedures</i>	59
3.7.4 <i>Data analysis</i>	60
3.8 PREPARATION FOR RCT	60
3.8.1 <i>Environmental audit</i>	61
3.8.2 <i>Development of measuring instruments</i>	61
Baseline questionnaire	61
Test-retest parenting section of baseline questionnaire	62
Questionnaire at six weeks postnatal	62
3.9 METHOD: RANDOMISED CONTROLLED TRIAL.....	63
3.9.1 <i>Pilot testing intervention</i>	64
3.9.2 <i>Recruitment and training of facilitators for the antenatal session</i>	64
3.9.3 <i>Recruitment of fathers for the antenatal session</i>	65
3.10 DELIVERY OF THE ANTENATAL SESSION	66
3.11 POSTNATAL EDUCATION AND SUPPORT	71
<i>At Birth</i>	72
<i>Week One</i>	72
<i>Week Two</i>	72
<i>Week Three</i>	73
<i>Week Four</i>	73
<i>Week Five</i>	73
<i>Week Six</i>	73
3.12 OUTCOMES MEASURES AND HYPOTHESES.....	74
3.13 POWER CALCULATIONS.....	74
3.14 QUANTITATIVE ANALYSIS METHODS	74
3.15 SUMMARY	75
CHAPTER FOUR: PAPER 1-FORMATIVE RESEARCH	76

DADS MAKE A DIFFERENCE: AN EXPLORATORY STUDY OF PATERNAL SUPPORT FOR BREASTFEEDING IN PERTH, WESTERN AUSTRALIA.....	77
ABSTRACT	78
Background	78
Methods.....	78
Results.....	78
Conclusion	78
<i>Trial Registration</i>	78
4.1 BACKGROUND	78
4.2 METHODS	80
4.2.1 <i>Recruitment</i>	81
4.2.2 <i>Focus group procedures</i>	81
4.2.3 <i>Data analysis</i>	82
4.3 RESULTS.....	82
4.4 MOTHERS' MAJOR THEME: DADS DO MAKE A DIFFERENCE	83
4.4.1 <i>Anticipating needs and getting the job done</i>	83
4.4.2 <i>Encouragement to do your best</i>	84
4.4.3 <i>Paternal commitment to breastfeeding</i>	85
4.5 FATHERS' MAJOR THEME: WANTING TO BE INVOLVED.....	85
4.5.1 <i>Wanting relevant information</i>	86
4.5.2 <i>Learning the role</i>	87
4.5.3 <i>Being a breastfeeding advocate</i>	87
4.6 DISCUSSION	88
4.7 CONCLUSION	90
4.8 COMPETING INTERESTS	91
4.9 AUTHORS' CONTRIBUTIONS	91
4.10 REFERENCES	91

CHAPTER FIVE: PAPER 2 - DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A FATHER INCLUSIVE PERINATAL INTERVENTION TO SUPPORT BREASTFEEDING 95

PRELUDE TO CHAPTER FIVE.....	95
SUPPORTING MOTHERS TO BREASTFEED: THE DEVELOPMENT AND PROCESS EVALUATION OF A FATHER INCLUSIVE PERINATAL EDUCATION SUPPORT PROGRAM IN PERTH, WESTERN AUSTRALIA	96
ABSTRACT	96
KEY WORDS	96
5.1 INTRODUCTION	96
5.1.1 <i>Theoretical frameworks</i>	99
5.2 METHODS.....	99

5.2.1 Formative research.....	99
5.2.2 Recruitment and training of facilitators for the antenatal session.....	100
5.2.3 Recruitment of fathers for the antenatal session.....	101
5.2.4 Delivery of the antenatal package.....	102
5.2.5 Postnatal education and support.....	102
5.3 RESULTS.....	104
5.3.1 Intervention antenatal sessions and evaluation.....	104
5.3.2 Father's 6 week follow-up.....	106
5.4 DISCUSSION.....	107
5.4.1 Limitations.....	109
5.5 CONCLUSION.....	109
5.6 FUNDING.....	110
5.7 ACKNOWLEDGEMENTS.....	110
5.8 REFERENCES.....	111
CHAPTER SIX: PAPER 3 – COMPARING PATERNAL ANXIETY AND DEPRESSION BETWEEN THE INTERVENTION AND CONTROL GROUPS ACROSS THE PERINATAL PERIOD TO SIX WEEKS.	114
PRELUDE TO CHAPTER SIX.....	114
<i>BMC PREGNANCY AND CHILDBIRTH</i> 2012, 12:75 DOI:10.1186/1471-2393-12-75.....	115
CAN FATHER INCLUSIVE PRACTICE REDUCE PATERNAL POSTNATAL ANXIETY? A REPEATED MEASURES COHORT STUDY USING THE HOSPITAL ANXIETY AND DEPRESSION SCALE.....	115
FUNDING.....	115
ACKNOWLEDGEMENTS.....	115
COMPETING INTERESTS.....	115
AUTHORS' CONTRIBUTIONS.....	116
ABSTRACT.....	117
Background.....	117
Methods.....	117
Results.....	117
Conclusions.....	117
6.1 BACKGROUND.....	118
6.2 METHODS.....	121
6.2.1 Study Design.....	121
6.2.1.1 Procedure.....	123
6.2.2. Data collection and analysis.....	123
6.3 RESULTS.....	124
6.4 DISCUSSION.....	126
6.5 CONCLUSION.....	128

6.6 REFERENCES	129
----------------------	-----

CHAPTER SEVEN: INTERVENTION OUTCOMES FROM BASELINE TO SIX WEEKS

POSTNATAL 136

7.1 INTRODUCTION	136
------------------------	-----

7.2. DEMOGRAPHIC VARIABLES OF PARTICIPANTS.....	136
---	-----

7.3 ANTENATAL BASELINE RESULTS: MATERNAL RESPONSES TO BASELINE QUESTIONNAIRE	138
--	-----

7.3.1. <i>Physiological variables</i>	138
---	-----

7.3.2. <i>Social variables</i>	138
--------------------------------------	-----

7.3.3. <i>Psychological variables</i>	138
---	-----

Antenatal IOWA scores.....	139
----------------------------	-----

Antenatal intention to breastfeed	140
---	-----

Antenatal intended duration for breastfeeding.....	140
--	-----

7.4 RESULTS OF RANDOMISED CONTROLLED TRIAL	140
--	-----

7.4.1 <i>Any breastfeeding rates at six weeks</i>	141
---	-----

7.4.2 <i>Socioeconomic status categorised by hospital and outcomes for participants</i>	142
---	-----

7.5 BIRTH OUTCOMES AND BREASTFEEDING SUPPORT	144
--	-----

7.6 BREASTFEEDING DIFFICULTIES	145
--------------------------------------	-----

7.7 PATERNAL SUPPORT OUTCOMES.....	146
------------------------------------	-----

7.8 QUALITATIVE RESULTS: REASONS FOR BREASTFEEDING CESSATION	147
--	-----

7.8.1. <i>Theme One: Unrealistic expectations of the parenting experience and breastfeeding</i>	147
---	-----

7.8.2 <i>Theme Two: Importance of support to successfully breastfeed</i>	149
--	-----

7.8.3 <i>Theme Three: Practical information to successfully breastfeed</i>	150
--	-----

7.9 DISCUSSION	150
----------------------	-----

7.9.1. <i>Breastfeeding intention and intended duration</i>	152
---	-----

7.9.2 <i>Perinatal breastfeeding knowledge, support and concerns</i>	153
--	-----

7.9.3. <i>Facilitators to breastfeeding</i>	155
---	-----

7.9.4. <i>Barriers to breastfeeding and fathers support for breastfeeding</i>	156
---	-----

7.9.5. <i>Baby Friendly Health Initiative</i>	157
---	-----

7.10 CONCLUSION	158
-----------------------	-----

CHAPTER EIGHT: SUMMARY AND IMPLICATIONS FOR CLINICAL PRACTICE 159

8.0 INTRODUCTION	159
------------------------	-----

8.1 OBJECTIVE ONE: TO IDENTIFY FACTORS WHICH ENCOURAGE FATHERS TO SUPPORT THEIR PARTNERS' BREASTFEEDING	160
--	-----

8.2 OBJECTIVE TWO: TO IDENTIFY FACTORS WHICH DISCOURAGE FATHERS FROM SUPPORTING THEIR PARTNERS' BREASTFEEDING	160
---	-----

8.3 OBJECTIVE THREE: TO DESIGN, IMPLEMENT AND EVALUATE A PERINATAL FATHER INCLUSIVE SUPPORT INTERVENTION	161
---	-----

8.4 OBJECTIVE FOUR: TO IDENTIFY ANY CHANGES IN THE ANXIETY AND DEPRESSION SCORES FOR THE MALE PARTICIPANTS IN THE INTERVENTION AND CONTROL GROUPS FROM BASELINE (ANTENATAL) TO SIX WEEKS POSTNATAL.....	162
---	-----

8.5 OBJECTIVE FIVE: TO DOCUMENT THE BREASTFEEDING INITIATION AND DURATION RATES AT SIX WEEKS POSTPARTUM AMONG MOTHERS WHERE FATHERS COMPLETE THE FATHER INCLUSIVE PERINATAL SUPPORT PROGRAM COMPARED TO RATES WHERE FATHERS DO NOT ATTEND AN INTERVENTION	163
8.6 RECOMMENDATIONS FOR THE DEVELOPMENT OF SUSTAINABLE HEALTH PROMOTION PROGRAMS.....	163
8.6.1 Recruitment for health promotion programs	165
8.6.2 Government initiatives	166
8.7 LIMITATIONS OF THE STUDY	167
8.7.1 Randomised Controlled Trial.....	167
8.8 DISCUSSION	168
8.9 CONCLUSION	169
REFERENCES.....	171
APPENDICES	184
APPENDIX A. FORMATIVE RESEARCH	184
A1. FOCUS GROUP QUESTIONS FOR MOTHERS	184
A2. FOCUS GROUP QUESTIONS FOR FATHERS	186
A3. INFORMATION LETTER FOR FOCUS GROUP INTERVIEW	189
A4. FOCUS GROUP CONSENT FORM	191
APPENDIX B. QUESTIONNAIRES	192
B1. BASELINE QUESTIONNAIRE	192
B2. SIX WEEK SURVEY: MOTHERS	199
B3. SIX WEEK SURVEY: FATHER INTERVENTION GROUP	204
APPENDIX C. RANDOMISED CONTROLLED TRIAL (RCT)	208
C1. INFORMATION SHEET FOR RANDOMISED CONTROLLED TRIAL.....	208
C2. CONSENT FORM FOR RESEARCH PROJECT 163/2008-2009	210
APPENDIX D. ANTENATAL RESOURCES	212
D1. NEW FATHERS GUIDE	212
D1.1 New Fathers Guide - Part 1.....	212
D1.2 New Fathers Guide - Part 2.....	213
D2. HOW TO BE A BREASTFEEDING CHAMPION	214
D2.1 How to be a breastfeeding champion – Part 1.....	214
D2.1 How to be a breastfeeding champion – Part 2.....	215
D3. MOTHERS’ INFORMATION BOOKLET	216
D3.1 Why Breastfeed?.....	217
D3.2 Common Breastfeeding Problems.....	218

<i>D3.3 The Role of Fathers</i>	219
<i>D3.4 Good Bonding</i>	220
<i>D3.5 Healthy Babies</i>	221
<i>D3.6 Developmental Stages</i>	222
<i>D3.7 Useful Websites</i>	223

APPENDIX E. SIX WEEK SUPPORT PROGRAM 224

E1. SCHEDULE OF EVENTS	224
E2. RELAXATION EXERCISES	225
<i>E2.1 Coping with Stress</i>	225
<i>E2.2 Muscle Relaxation</i>	226
E3. STUBBY HOLDER.....	227
E4. POSTNATAL DEPRESSION POSTCARD	228

APPENDIX F. PERMISSIONS..... 229

F1. HOSPITAL ANXIETY AND DEPRESSION SCALE	229
---	-----

TABLE OF TABLES

TABLE 1: DEMOGRAPHICS OF PARTICIPANTS IN THE RCT	137
TABLE 2: INTENDED INFANT FEEDING PRACTICE AT BASELINE FOR MOTHERS IN BOTH INTERVENTION AND CONTROL GROUP	140
TABLE 3: COMPARISON OF BREASTFEEDING AND FORMULA FEEDING AT 6 WEEKS BETWEEN INTERVENTION AND CONTROL GROUPS (UNADJUSTED ANALYSES)	141
TABLE 4: COMPARISON OF BREASTFEEDING AND FORMULA FEEDING AT SIX WEEKS BETWEEN INTERVENTION AND CONTROL GROUPS (ADJUSTED FOR PATERNAL AGE AND HOSPITAL. ODDS RATIO AND CI 95%)	142
TABLE 5: COMPARISON OF BREASTFEEDING AND FORMULA FEEDING AT SIX WEEKS BETWEEN INTERVENTION AND CONTROL GROUPS (ADJUSTED FOR PATERNAL AGE AND SES. ODDS RATIO AND CI 95%)	144

TABLE OF FIGURES

FIGURE 1: TOTAL BIRTHS FOR 2007 IN MATERNITY HOSPITALS INVOLVED WITH RCT (222)	52
FIGURE 2: FORMATIVE RESEARCH PROCESS AND TIMELINE	58
FIGURE 3: RCT: FLOW DIAGRAM OF RECRUITMENT AND RETENTION FOR THE FATHER INCLUSIVE PERINATAL SUPPORT INTERVENTION	70
FIGURE 4: SCHEMATIC FOR THE SIX WEEK SUPPORT PROGRAM FOR FATHERS IN THE INTERVENTION	71
FIGURE 5: MEAN VALUES FOR IOWA ATTITUDINAL SCALE FOR PARTICIPANTS OF THE RCT CATEGORISED BY SES	139
FIGURE 6: SOCIOECONOMIC STATUS OF ALL PARTICIPANTS IN THE RCT	143

FIGURE 7: SOCIOECONOMIC STATUS FOR EACH GROUP OF PARTICIPANTS IN THE RCT	143
FIGURE 8: TYPE OF BIRTH FOR MOTHERS IN THE INTERVENTION AND CONTROL GROUPS	145
FIGURE 9: COMPARISON OF SUPPORT STRATEGIES BETWEEN FATHERS IN THE INTERVENTION GROUP AND FATHERS IN THE CONTROL GROUP	146

ABSTRACT

INTRODUCTION

Breastfeeding is the biological norm for infant feeding and the most efficient and cost-effective method of giving the required nutrition to infants. The World Health Organization, the American Academy of Paediatrics and the National Health and Medical Research Council recommend exclusive breastfeeding for six months and the continuation of complementary foods for up to two years. Although most developed countries maintain high initiation rates, the duration rates fail to meet these recommendations. The promotion of breast milk substitutes, changing societal values, urbanization, and the erosion of traditional support systems pose threats to breastfeeding. In Australia the breastfeeding initiation rates are between 85%-95% but fall to 20%-45% by six months. There is some evidence that fathers, the primary support to their partners, influence the initiation and maintenance of breastfeeding by their partners. There has been little research in this area, however, with little known about the nature of a father's support required by the mother and few interventions have specifically targeted fathers.

The present thesis describes the development, implementation and evaluation of a father inclusive perinatal support intervention at six weeks postnatal. The project was conducted over three years as a randomised controlled trial (RCT) across eight public maternity hospitals in Perth, Western Australia.

AIM OF STUDY

To develop, implement and evaluate a father inclusive perinatal support intervention to increase breastfeeding duration.

OBJECTIVES

1. To identify factors which encourage fathers to support their partners' breastfeeding (facilitators) and to identify factors which discourage fathers from supporting their partners' breastfeeding (barriers).
2. To design, develop, implement and evaluate a father inclusive perinatal support intervention.
3. To compare breastfeeding duration at six weeks postnatal between mothers whose partner completed the intervention program compared to those mothers whose partner received no intervention.

4. To identify any changes in the anxiety and depression scores for the male participants in the intervention and control groups from baseline (antenatal) to six weeks postnatal.

HYPOTHESES

The hypothesis for the RCT was: There will be no difference in the rates of breastfeeding duration at six weeks postnatal between the mothers whose partner was in the intervention group compared to those mothers whose partner was in the control group.

A secondary hypothesis was: There will be no difference in the anxiety and depression scores in those fathers who received the father inclusive perinatal support intervention compared to the control fathers at six weeks.

TRIAL OUTCOMES

The primary trial outcome measure was the initiation and duration rates of exclusive and “any” breastfeeding at six weeks postnatal.

The secondary outcome was the measure of anxiety and depression across the perinatal period for male participants.

METHODS

The intervention developed for the RCT included an hour-long antenatal education class for fathers only, delivered by a male facilitator. This was followed by a postnatal educational support package posted weekly to the fathers over six consecutive weeks.

Formative research: An exploratory study was first undertaken to identify parents’ perceptions of what constitutes support for breastfeeding. Mothers and fathers (n=76) of breastfed babies were recruited for the formative research from child health centres and community centres. Utilising qualitative data collection methods, an exploration was made of the nature of fathers’ support and factors that facilitated and inhibited this support, as well as mothers’ perceptions of what they needed to breastfeed. Focus groups, an online survey and telephone interviews were conducted with these mothers and fathers to obtain the information. The data was subjected to thematic analysis for interpretation.

RCT: A RCT was implemented with expectant mothers (n=862) and fathers (n=712) in eight public maternity hospitals in Perth, Western Australia. Male facilitators (n=5) were recruited and trained to present an hour-long antenatal class for fathers in the intervention group. A weekly program posted over six weeks included educational material that was developed and sequenced according to evidenced-based practice and current literature. Analysis of the data was undertaken on an

“intention to treat” basis on the randomisation of the fathers to intervention or control groups. Questionnaires were developed and administered to all participants at the first night of antenatal classes (baseline) and again at six weeks postnatal. Parents in the control group were given ‘routine standardised’ antenatal classes. Quantitative data analysis included the use of Chi square, t-test, survival analysis and multivariate logistical regression.

RESULTS

Participants for the RCT were recruited between February 2008 and July 2009 and randomised with a random number generator with no blinding, to either a control or intervention group in each hospital. The control group included 723 people (fathers =326; mothers =397) and 851 people (fathers =386, mothers =465) were assigned to the intervention group. The demographic variables remained the same for the intervention and control groups.

Increased breastfeeding duration at six weeks postnatal for the mothers whose partner was in the intervention group was the primary objective of the RCT and the null hypothesis was rejected. The breastfeeding rates were statistically significantly higher among mothers whose partner was in the intervention group (81%: n=345) compared to the mothers whose partner was in the control group (75%: n=281) ($p=0.047$).

The results found that of 96% (n=823) of all mothers who intended to breastfeed 92% (n=788) initiated breastfeeding their baby in hospital. Mothers whose partners were in the intervention group intended to exclusively breastfeed (85%; n=392) combination feed (11%; n=50) and fully formula feed (2%; n=8). Mothers whose partners were in the control group intended to exclusively breastfeed (84%; n=332); combination feed (12%; n=49) and fully formula feed (2%; n=8). Only 2% in each group were unsure of infant feeding choice ($p=0.790$). The percentage of mothers who continued to exclusively breastfeed dropped at six weeks postnatal: 43% (n=347) of all mothers were exclusively breastfeeding with 45% (n=193) of intervention mothers and 41% (n=154) of control mothers exclusively breastfeeding. Combination feeding was 35% (n=279) for all mothers with 36% (n=152) in the intervention group and 34% (n=127) in the control group. All mothers who were fully formula feeding accounted for 22% (n=173) with 19% (n=82) in the intervention group and 25% (n=91) in the control group.

Where 95% (n=823) of all mothers intended to offer “any” breastfeed at baseline, at six weeks postnatal only 73% (n= 649) were offering “any” breastfeeding with 22% (n=173) fully formula feeding. Seven percent (n=63) were missing values.

Maternal perception of barriers to breastfeeding included: unrealistic expectations of the parenting and breastfeeding experience, inadequate support and lack of sufficient “practical” information to overcome difficulties.

The intervention group was also more likely than the control group to offer ‘any breastfeeding’ after adjusting for age and hospital (1.58: 1.06–2.35) or socioeconomic status (SES) (1.56: 1.06–2.30). The infants of older fathers were more likely to receive ‘any breastfeeding’ at six weeks compared to younger fathers ($p < 0.01$) and infants from high SES were more likely than those from low SES ($p = 0.013$) to receive ‘any breastfeeding’. There was a statistically significant difference between the intervention and control group participants in the high SES ($p = 0.016$) whose intention was to “exclusively breastfeed”. Intervention group mothers who intended to exclusively breastfeed for longer than six months, were less likely to formula feed at six weeks compared to those mothers whose partner was in the control group ($p = 0.014$). The participants in the intervention group with high SES were more likely to breastfeed at six weeks than the participants in the control group with a high SES. Participants with low SES in the intervention group had statistically higher breastfeeding duration at six weeks compared to those participants with low SES in the control group ($p = 0.012$). Given this demographic has traditionally experienced the lowest breastfeeding outcomes in duration the results of this study are worthy of further investigation and support.

All the men who participated in the intervention gave very positive feedback and enjoyed the opportunity to engage with other fathers in a dedicated forum. The men valued the ongoing educational/social support postnatal and found the resources useful and helpful in the breastfeeding and parenting partner role. The men reported positive outcomes of increased confidence and capacity to give support to their partners’ efforts to breastfeed. Many of the men stated they had been unaware of the benefits of breastfeeding and had little knowledge of potential breastfeeding difficulties.

The secondary outcome measured was paternal anxiety across the perinatal period. Of 712 expectant fathers who were recruited 95% ($n = 680$) completed the Hospital Anxiety and Depression Scale (HADS) at baseline consisting of 315 in the control group and 365 in the intervention group. At six weeks 78% ($n = 556$) of fathers completed the HADS which included control ($n = 253$) and intervention ($n = 303$) fathers. The change towards lower anxiety levels from baseline to six weeks were significant ($p = 0.012$) in the intervention group but were not significant in the control group ($p = 0.410$). There was a small but statistically significant difference ($p = 0.048$)

between the two groups with self-reported anxiety scores lower in the men from the intervention group at six weeks postnatal.

CONCLUSION

The present study suggests that the father inclusive perinatal support intervention increased the “any” breastfeeding rate and reduced the number of babies fully formula feeding at six weeks. The project has identified a need for increased support in the first four weeks postnatal when many mothers start supplementing their breastfeeding with formula. This study increases the knowledge about the possible ways of increasing the duration of breastfeeding in socioeconomic disadvantaged populations. It confirms the need for future research into interventions that could target breastfeeding in the lower SES. It illustrates the importance of father inclusive practice in not only maternity services but across all health services.

Fathers are identified as the most important support for their partner’s breastfeeding success and giving them adequate information, social support and access to resources can help to increase the duration of breastfeeding. Consistent, relevant and timely information for fathers across the perinatal period was identified as important to decrease paternal anxiety.

Breastfeeding difficulties and inconsistent information can jeopardise the intended duration of breastfeeding. The evidence from the present study suggests that more realistic information regarding breastfeeding difficulties needs to be available to both parents. Increased availability of community child health nurses, community midwives and lactation consultants could increase breastfeeding support and ameliorate breastfeeding difficulties, thereby preventing the early cessation of breastfeeding.

Engaging men in the formative stage of this study was challenging and the anonymity and convenience of online surveys worked well to capture male responses. Whilst focus groups have the advantage of increasing the depth of answers by dialogue between participants, in this study fewer men were either available or open to the time challenge of focus groups.

Further research is recommended to develop a comprehensive standardised antenatal program for all expectant parents incorporating a gender specific option.

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Funding for this research was from Healthway

Trial Registration

Australia and New Zealand Clinical Trials Registry: ACTRN12609000667213.

“Imagine that the world had created a new ‘dream product’ to feed and immunize everyone born on Earth. Imagine also that it was available everywhere, required no storage or delivery—and helped mothers to plan their families and reduce the risk of cancer.

Then, imagine that the world refused to use it...”

UNICEF 1991

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

Breastfeeding is the foundation of lifetime nutrition (1), it saves infant lives (2, 3), and reduces chronic disease in developing countries (4). According to the Academy of Breastfeeding Medicine Board of Directors, “Increasing breastfeeding rates is one of the most important behaviours that we can promote to decrease infant death and illness worldwide” (p 267) (5). Children who are breastfed have better mental, social and physical health outcomes (6, 7).

Exclusive breastfeeding is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development, and all other short and long-term outcomes (6, 8). Exclusive breastfeeding for six months reduces infant mortality in developing countries and the incidence of childhood obesity in developed countries (9-12) . Developing healthy policy to support breastfeeding is promoted by the Innocenti Declaration and Baby Friendly Health Initiatives are advocated globally to increase exclusive breastfeeding to six months (13).

It is relevant to study the factors that influence initiation and particularly duration because of the importance of breastfeeding to the health of the infant and mother. Several systematic reviews have been conducted to evaluate the effectiveness of interventions to promote the duration of breastfeeding which have all been directed at mothers (12, 14, 15). There is strong evidence that fathers can influence the initiation of breastfeeding and that without fathers’ support mothers are more likely to breastfeed for a shorter duration (16-20). In Australia the positive effect of mothers receiving health promotion material and education antenatal and/or postnatal on breastfeeding outcomes has been shown in a cohort study, but no similar data is available for fathers (21). Additionally there is also evidence that men may directly impact breastfeeding decisions by providing emotional support to women who have difficulties with breastfeeding, or by offering ongoing encouragement even when their partner is successfully breastfeeding (18).

1.2 STATEMENT OF THE PROBLEM

Breastfeeding initiation is high in Australia with 92% of mothers breastfeeding on discharge from hospital (22). However the duration rates to six months fail to meet the recommendations of the World Health Organization (WHO) which recommends exclusive breastfeeding for the first six months of life and with complementary foods for up to two years thereafter (23). Promoting and

supporting breastfeeding is a public health initiative that can decrease the socioeconomic burden of disease by reducing the risk of diabetes, cardiovascular disease, asthma and cancer (5, 24, 25).

Antenatal education programs have been recommended as an ideal opportunity to also improve fathers' knowledge of breastfeeding (26), although historically fathers have not been included in breastfeeding education programs. Researchers in an Australian qualitative study found that fathers experienced “feeling sidelined” by health professionals in antenatal classes and wanted more involvement to enable them to support their partner (27).

1.3 BACKGROUND

Although breastfeeding initiation rates in Australia are high, with recent studies reporting more than 92% of women breastfeeding on discharge from hospital (28), only 23% of infants receive any breast milk by 12 months postpartum (29). More than 90% of women in developing countries and 50% to 90% of women in industrialised countries now initiate breastfeeding, a marked improvement from 25 years ago (30). The duration of breastfeeding has lengthened, but fewer than 35% of infants worldwide are still exclusively breastfed at four months of age (31). A systematic Cochrane review of breastfeeding support involving 34 studies from 14 countries with 30,000 women found that both professional and lay support were effective in extending the duration of any breastfeeding (32). Further research is needed to identify which aspects of support are the most effective.

Studies of factors affecting breastfeeding initiation and duration have found primary influences to be maternal age, mode of delivery, socioeconomic status and support from the infant's father (33, 34). Evidence regarding effective strategies to assist fathers in their supportive role with their breastfeeding partner is inconclusive (35, 36) and there are no published examples within an Australian context. If fathers' involvement has an important role in breastfeeding, then the development of interventions that enable fathers to support their breastfeeding partner is important (17, 35). Paternal anxiety and depression have been shown to influence maternal anxiety and depression which in turn can affect efficacy of breastfeeding (37). Increased paternal anxiety and distress was also found to impact on infant bonding (38).

Research within an Australian context is necessary to investigate the nature of fathers' support roles and breastfeeding advocacy (39) in order to inform clinical practice and policy development relevant to Australia. Consequently, the present study will target fathers living in the Perth metropolitan area of Western Australia.

1.4 AIM AND PURPOSE

The aim of the research was to develop, implement and evaluate a father inclusive perinatal support intervention to increase breastfeeding duration. Utilising a RCT maintained rigor in determining whether a cause-effect relation existed between the perinatal support intervention and breastfeeding duration at six weeks.

1.5 OBJECTIVES

1.5.1 Formative Research

The objectives for the formative research were to:

1. Identify factors which encourage fathers to support their partners' breastfeeding (facilitators).
2. Identify factors which discourage fathers from supporting their partners' breastfeeding (barriers).
3. Design and develop a father inclusive perinatal support program.

1.5.2 Randomised controlled trial

The objectives for the RCT were to:

1. Implement and evaluate the father inclusive perinatal support program.
2. Compare breastfeeding duration at six weeks in families where fathers complete the intervention program to those who receive no intervention.
3. Identify any changes in the anxiety and depression scores for the male participants in the intervention and control groups from baseline (antenatal) to six weeks postnatal.

1.6 HYPOTHESES

The hypothesis for the RCT was: There will be no difference in the rates of breastfeeding duration at six weeks postnatal between the mothers whose partner was in the intervention group compared to those mothers whose partner was in the control group.

A secondary hypothesis was: Anxiety and depression scores will be decreased in those fathers who received the father inclusive perinatal support intervention compared to the control fathers at six weeks.

1.7 BENEFITS OF THE STUDY

The study will:

1. Improve the knowledge of the facilitators and barriers relating to the initiation and duration of breastfeeding among Western Australian mothers.
2. Provide evidence of the effectiveness of a father inclusive perinatal support program which may have implications for modifying parent education strategies and policies in early parenting.

1.8 DEFINITION OF TERMS

Internationally recommended terms defining breastfeeding practices to guide breastfeeding data collection and reporting (7) can be summarised as:

Exclusive breastfeeding: the infant receives only breast milk (including expressed milk) but no infant formula or non-human milk.

Fully breastfeeding: the infant may receive water, or water-based drinks, tea or fruit juice in addition to breast milk but no non-human milk or formula.

Combination feeding: in addition to breast milk any food or liquid, including non-human milk and formula.

Any breastfeeding includes all of the above definitions.

Fully formula feeding is identified as bottle feeding.

For the purpose of this study, the WHO definitions are used to describe breastfeeding (40).

1.9 SCOPE OF THE PROJECT

This thesis is part of a larger project involving the first RCT of fathers' support of infant feeding in Australia that followed infant feeding up to six months of age and documents the intervention up

to six weeks postnatal. The timeline of six weeks was influenced by several significant occurrences: partner support is reduced if paternal leave has ceased (41); exclusive breastfeeding is either established or complementary feeding or breastfeeding cessation has occurred (42) (43). Contraception is often discussed at the six week postnatal check-up and an oestrogen based prescriptive can affect breastfeeding (44). Postnatal depression and anxiety are mainly identified during the first six weeks postnatal and validates the inclusion of the anxiety and depression scales in all questionnaires. Postnatal depression and anxiety can also adversely affect breastfeeding continuation (45). Finally, mothers who re-enter the workforce without adequate support for breastfeeding can accelerate breastfeeding cessation (46).

The present researcher was the project manager for the RCT, and part of a research team. Project manager/researcher responsibilities included gaining ethics approval from all participating hospitals, recruitment of participants and facilitators, training of facilitators, the development and re-testing of the parenting questions within the baseline questionnaire, the development of all resources and educational materials, distribution and collection of all questionnaires, data analysis and dissemination of results. Further, the present researcher led the development of all peer reviewed publications included in this thesis.

1.10 ORGANISATION OF THESIS

This thesis describes the formative research and the RCT involved with the father inclusive perinatal support program. It details the health promotion strategies executed to implement the intervention and describes the formative, process and impact evaluation of the intervention.

The formative research incorporated the development of the content of the antenatal intervention session and the ongoing six week support package. The recruitment and training of the facilitators occurred during this phase. The RCT commenced with the recruitment of the participants and the implementation of the antenatal education session and ongoing support package to the fathers in the intervention group. This was followed by the evaluation of the intervention including analysis of the data from the baseline (pre-test) and six week (post-test) questionnaires distributed to all participants in both the intervention and control groups.

The formative research, development and implementation of the intervention resources and the perinatal anxiety and depression outcomes at six weeks are reported in peer reviewed papers in collaboration with the research team. The peer reviewed papers are limited by publishing house requirements in terms of word count, figures and tables. The published papers document the

goals, objectives and strategies implemented to support fathers to support their partners to breastfeed. The tables and figures within the published papers have not been numbered and included in the table of contents but remain within the style of the publishing journal. The chapters are briefly described below:

Chapter 2: Literature review: The literature review showcases the importance and benefits of breastfeeding to both mother and baby and the facilitators and barriers to breastfeeding; the role of fathers in breastfeeding support, the legislation that impacts on breastfeeding and the Baby Friendly Health Initiative. The literature review will identify the gaps in knowledge and the importance of the current study.

Chapter 3: Methodology: Methods employed in the research project are described utilising a qualitative approach in the formative research to develop the intervention and intervention resources. Both qualitative and quantitative methods are employed to process and analyse the data from the RCT.

Chapter 4: Paper 1 – Formative evaluation: The results of the formative research are described with identification of the facilitators and barriers to breastfeeding, through a published paper titled: Dads make a difference: An exploratory study of paternal support for breastfeeding in Perth, Western Australia. The conventions and styles required by the publishing journal for referencing, tables and figures are replicated in this chapter.

Tohotoa J, Maycock B, Hauck YL, Howat P, Burns S, & Binns CW. (2009).

Dads make a difference: An exploratory study of paternal support for breastfeeding in Perth, Western Australia. *Int Breastfeeding J.* 4 (15).

Chapter 5: Paper 2 – Process evaluation: The development, implementation and evaluation process of the father inclusive perinatal support intervention is described in a published paper titled: Supporting mothers to breastfeed: The development and process evaluation of a father inclusive perinatal support program in Perth, Western Australia. The conventions and styles required by the publishing journal for referencing, tables and figures are replicated in this chapter.

Tohotoa J, Maycock B, Hauck YL, Howat P, Burns S, & Binns CW. (2010). Supporting mothers to breastfeed: The development and process evaluation of a father inclusive

perinatal education support program in Perth, Western Australia. *Health Promot. Int.* 26 (3): 351-361.

Chapter 6: Paper 3 – Impact evaluation of secondary outcome: This chapter reports the findings of the anxiety and depression scores between the intervention and control groups at baseline and at six weeks postpartum in a paper titled: Can father inclusive practice reduce anxiety? A repeated measures study utilising the HADS. The conventions and styles required by the publishing journal for referencing, tables and figures are replicated in this chapter.

Tohotoa J, Maycock B, Hauck YL, Howat P, Dhaliwal S, Burns S, & Binns CW.(2012)
Can father inclusive practice reduce anxiety? A repeated measures study utilising the HADS.
BMC Pregnancy and Childbirth. 12:75. DOI: 10.1186/1471-2393-12-75

Chapter 7: Impact evaluation of primary outcome: Reports the results of the infant feeding outcomes at six weeks compared to the baseline intention and duration predictions of mothers whose partners were in the intervention group and those mothers whose partners were in the control group. Barriers to breastfeeding at six weeks are explained and outcomes of breastfeeding between hospitals and groups are identified.

Chapter 8: Summary and implications for clinical practice: A summary of the research objectives and their outcomes, with the limitations and recommendations to clinical practice.

References

Appendices

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

The international and national legislation that impacts upon breastfeeding is discussed as well as the historical changes in breastfeeding prevalence globally, and within Australia. The importance of antenatal education for breastfeeding information and the use of social marketing for health promotion are acknowledged. The literature identifies the importance of the fathers' role in supporting breastfeeding initiation and duration, highlights the evidence around the benefits of breast milk and breastfeeding for mother and baby, and explores the factors, facilitators and barriers that influence breastfeeding.

2.1 HISTORICAL CHANGES IN BREASTFEEDING PREVALENCE IN DEVELOPED COUNTRIES

By 1950, infant formula, bottles and teats were sold in most shops and pharmacies resulting in half of all babies in the United States (US) being fed some form of baby formula. Formula feeding symbolised the modern world of progress (47) and manufacturers promoted baby formula as the modern (and better) way to feed babies (48). A worldwide decline in breastfeeding rates in developed nations was the result of rigid hospital infant feeding schedules in combination with the removal of babies from their mother in the immediate postnatal period, coupled with the loss of traditional family networks (47).

In the US an all-time historical low prevalence rate was reached in the 1970's, but by the late 1970's, the pendulum began to swing back (49). Controversially, in China where 80% of mothers breastfed their babies in the 1950's, rising incomes, development of the dairy industry, commercial promotion and urbanisation resulted in up to 70% of women switching to formula feeding in 1975 (50). Infants in developing countries who were fed formula had a much higher death rate than infants who were fed breast milk due to malnutrition and recurrent infectious diseases (51).

Extensive research on breastfeeding in the 20th century clearly promoted the "breast is best" message (52, 53). The World Health Organisation (WHO) (7) and the National Health and Medical Research Council (NHMRC) guidelines recommended exclusive breastfeeding for the first six months. The targets were for 80% of women to be exclusively breastfeeding for six months postpartum and continuing to breastfeed for up to 12 months with the introduction of complementary foods at six months (54). In spite of these guidelines, breastfeeding duration failed to meet the WHO recommendations. The complex nature of the 21st century with dual incomes

and early return to work for many women in developed countries (55) has had a negative impact on breastfeeding prevalence (56, 57). McCann, Bayder and Williams (58) reported that support for breastfeeding in the US may be declining in light of the national HealthStyles survey results. Yet, in Australia, 90% of mothers initiated breastfeeding in 2004 (59) and that increased to 93% in Western Australia in 2010 (28). Whilst the NHMRC guidelines for 90% initiation are being met, the 60% target of exclusive breastfeeding for 3 months is not. Sustained program efforts to increase the duration and prevalence of breastfeeding requires strong national and state-level leadership (60).

2.2 IMPORTANCE AND BENEFITS OF BREASTFEEDING TO MOTHER AND INFANT

Exclusive breastfeeding, the initial and most basic act of health protection for the human infant (13), is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development, and all other short and long-term outcomes (13). Promoting breastfeeding is a public health strategy for improving infant and child health survival, improving maternal morbidity, contributing to the control of health care costs, as well as conserving natural resources (61). Fewer than 35% of infants worldwide are still exclusively breastfed at four months of age, well below the WHO standard of 80% at six months (31) despite consistent research that reinforces the benefits and importance of breastfeeding with evidence of the risks of not breastfeeding (62). “Growing acceptance that measurable improvements in public health, particularly in lower-income groups, could be achieved by increasing the incidence of breastfeeding has focused attention on the current lack of educational provision in breastfeeding issues for many health professionals”pg91 (63).

2.2.1. Infant health benefits of breastfeeding

The importance of breastfeeding in reducing infant morbidity and enhancing growth and development is well documented in the literature (4, 64). During breastfeeding, the gastrointestinal hormones cholecystokinin, gastrin, and insulin are released in both the mother and baby, increasing the surface area of the intestinal villi for the absorption of additional calories with each feeding (65). Short term benefits include a decrease in respiratory morbidity (66-68) and ear infections (69). Research on the long term effect of breastfeeding demonstrate a beneficial effect on blood pressure, lipid profile, insulin resistance/type-2 diabetes and obesity (11, 70) in addition to a protective effect from exclusive breastfeeding on sudden infant death syndrome (71), Crohn's disease and ulcerative colitis, lymphoma and celiac disease (72-74). Further infant benefits

were suggested in the results of a recent Canadian study with 1,841 parents whose children attended day-care. Dubois and Girard found that breastfeeding had a positive protective factor for the child at day-care for up to two years, identified by a reduced antibiotic use for any reason, over time (75). This was supported by an American study with 306 children that found exclusive breastfeeding reduced the onset of otitis media episodes during the first 2 years of life if going to day-care (76). Conversely, a Spanish study with 250 children found breastfeeding was not associated with a lowered incidence of respiratory infections in a day care setting (77).

2.2.2 Benefits and importance of breastfeeding to the mother

Breastfeeding has many important benefits to mothers. It reduces the risk for postpartum blood loss by increasing the rate of uterine contraction associated with increased concentrations of oxytocin (78, 79). A history of lactation was associated with a reduced risk of type 2 diabetes, premenopausal breast and ovarian cancer (79). Decreased risks of both breast and ovarian cancer have been linked to ongoing breastfeeding (11, 57, 80). The hormones of breastfeeding (oxytocin) aid in the adjustment to mothering, in conservation of energy, in subsequent nutrient recovery (79, 81) and lactational amenorrhea, and can aid in family planning (although not a reliable method of contraception) (82). Early cessation of breastfeeding or not breastfeeding has been associated with an increased risk of maternal postpartum depression (83, 84). Breastfeeding plays a role in the development of maternal bonding due to the release of the hormone oxytocin and improves the quality of the mother-infant relationship (85). In a recent Australian study with over 7,000 mother-baby pairs, researchers found that breastfeeding was protective against maternally perpetrated child maltreatment (86).

2.2.3 Economic benefits

Less absenteeism and loss of income has been associated with parents of breastfed babies due to their reduced health risks (87). Conversely, in an Italian study with 842 infants who were followed up to 12 months, a lack of breastfeeding was significantly associated with higher use and cost of health care (88). In a comparative study with more than 1,500 children researchers found that in addition to having more illnesses (especially, lower respiratory tract illness, otitis media, and gastrointestinal illness) formula-fed infants cost the health care system more money than breastfed children (89). The economic costs to parents of buying milk powder, bottles, sterilization units and assorted teats is conservatively estimated in the US at \$855 for the first 6 months of a

child's life (90). Breastfeeding is carbon neutral (91) as there is a decreased environmental burden for disposal of formula cans and bottles (17, 90), and decreased energy demands for production and transport of artificial feeding products (87).

2.2.4 Summary of breastfeeding benefits

Human milk provides the most appropriate nutrition for infant development and contains maternal antibodies that prevent disease (17). Evidence-based research has identified immunological, physiological and economic benefits of exclusive breastfeeding for at least six months for mothers and babies and, by association, their extended families; yet breastfeeding rates in many countries, including Australia, fail to meet this goal. Identifying the facilitators and barriers to breastfeeding is essential for health promotion strategies to be employed to increase breastfeeding duration. Reducing chronic disease and decreasing overweight and obesity starts with exclusive breastfeeding and public policy, legislation and increased advocacy and promotion are needed to ensure a healthy future. Further research needs to focus on promoting exclusive breastfeeding with an emphasis on the recognised benefits for improved health outcomes. More community education and national advocacy action is needed to raise awareness and prioritise breastfeeding as a public health issue.

2.3 CONTAMINATION RISKS WITH FORMULA FEEDING

The risk of contamination with the use of formula feeding was seen in China in 2008 when melamine was discovered in milk powder used in baby formula. Six deaths were attributed to tainted baby milk powder and 294,000 infants were hospitalised (92). In a Japanese study with 49 babies (half fully formula fed, half exclusively breastfed) human milk was found to be safer than commercial formulas because of the lower contamination risk of aflatoxin. Aflatoxins are toxic metabolites produced by certain fungi in/on foods and feeds, and can be carcinogenic (93).

Following the nuclear disaster in 2011 at Fukushima, Japan, authorities advised against using the local water in formula milk for infant feeding due to the level of active radiation (94). In India, it is estimated that 50%-70% of preschool deaths from malnutrition attributed to formula feeding could be prevented with universal exclusive breastfeeding (95) and likewise in sub-Saharan Africa, neonatal deaths could be reduced by 22% if breastfeeding started within the first hour postnatal (3).

2.4 HOSPITAL BREACH: BARRIERS TO BREASTFEEDING

Evidence of US maternity sites being in breach of the International Code of Marketing of Breast-Milk Substitutes was found in a cross-sectional telephone survey of 3,209 maternity sites in 2007. Of those sites, 91% were distributing free infant formula packs to mothers on discharge from hospital following the birth of their baby (96). This practice does not support breastfeeding and it contravenes the proactive Baby Friendly Hospital messages (97). The results of this practice may have influenced the outcome from an American HealthStyles survey. The statement “Infant formula is as good as breast milk” showed a significant increase from 14.3% in 1999 to 25.7% in 2003, highlighting the need for ongoing education and promotion of breastfeeding as the first choice for infant feeding (98).

2.5 FACTORS THAT INFLUENCE THE DECISION TO BREASTFEED

Complex and numerous factors influence the decision to breastfeed (19). They include hospital practices and maternal socio-demographic characteristics, as well as physiological and psychosocial factors (55, 99, 100).

An association was found between breastfeeding and having friends who breastfed, being breastfed or having a partner who was breastfed (101). The timing of the decision to breastfeed or formula feed is relevant for strategies aiming to promote breastfeeding. In an Australian longitudinal study with 300 women, 50%-75% of expectant mothers decided before or very early in pregnancy how they would feed their infants; a strong association was found between their breastfeeding behaviours and the timing of their decision to breastfeed (59). Similarly an American study with 245 mothers found the decision to breastfeed or formula feed was most often made before pregnancy or during the first trimester (55). Effective interventions for extending the duration of breastfeeding are therefore best begun during the antenatal period or during pre-conception planning (102).

2.5.1 Demographic factors that influence breastfeeding initiation and duration

Commonly identified demographics relating to influencing breastfeeding include gender, race, age, income, educational attainment, home ownership and employment status (55, 103). They give context to the information and identify the similarities and differences between parents and their infant feeding decisions. Several studies report that socioeconomic status, maternal age, higher education and global location have emerged as reliable predictors of breastfeeding duration (104-107).

The demographic variables of culture / ethnicity, maternal age, education status and socioeconomic status are explored in greater depth below, to showcase the complexity of factors that affect the initiation and duration of breastfeeding.

Culture / Ethnicity

There are differences in initiation results across and within nations.

In the US, 54% of African-American mothers, 74% of white mothers, and 80% of Hispanic mothers attempted to breastfeed, according to a Centre for Disease Control telephone survey (108). Consistent with previous studies, non-Hispanic black infants were less likely to be breastfed than non-Hispanic white infants (17). Muslim ethnicity in Sri Lanka was significantly associated with bottle and formula feeding (109) whilst breastfeeding rates in the United Kingdom (UK) were one of the lowest in the developed world at 66% and certainly the lowest in Europe (110). The Millennium Cohort Study (2005) in the UK suggested that white women were less likely to breastfeed with the highest breastfeeding rates among black and Asian mothers. The UK results were in stark contrast to patterns in the United States (US), where the lowest rate was seen among non-Hispanic black mothers (99).

Infants who reside in Western USA relative to those who reside in North-Eastern USA have higher breastfeeding rates (17).

The latest available data for Latin American countries indicated that the percentage of children exclusively breastfed up until the sixth month was lower than 40% in Ecuador, Venezuela, and Paraguay, while in Peru and Chile it was slightly more than 60% (111). In Taiwan, exclusive and partial breastfeeding (to any degree) was 18% and 47% during hospitalisation however a decline of more than 50% was noted between one and three months (112).

In a study involving 432 Australian maternity hospitals in 2006, researchers found the breastfeeding rate on discharge was 88% and that the Australia-wide breastfeeding rates at discharge had not changed since 1983 (23). A more recent study in Western Australia with 2,669 women found an increase to 93% of mothers initiating breastfeeding (28). A further West Australian cohort study with 425 Aboriginal women found 89% were exclusively breastfeeding on discharge in 2004 (113). In contrast, a descriptive study with 93,505 babies using data from the NSW Midwives Data Collection 2007, found that 80% of babies were fully breastfed at discharge, with relatively low rates of full breastfeeding in mothers with the following characteristics: Aboriginal mothers (64%); mothers born in South-East Asia (71%), North-East Asia (72%) and Melanesia, Micronesia and Polynesia (74%) (114). In this case the differences in initiation results

may reflect cultural differences and therefore make it difficult to generalise the information. However, it still highlights the need for continuous education and promotion of breastfeeding in hospital.

Maternal Age

Maternal age as a determinant of breastfeeding duration has been researched with contradictory results, although most studies report longer breastfeeding duration with older mothers.

Research has found that younger maternal age is associated with shorter duration of breastfeeding (115) and that breastfeeding duration increases with maternal age (116). In a postal survey with 300,000 mothers in the US, researchers found that regardless of ethnic and racial background, breastfeeding was most common among women who were older and more affluent than among those who were younger and poorer (117).

Adolescent mothers often do not initiate breastfeeding or they prematurely discontinue within the first weeks postpartum due to school, family or possible abuse issues (4). The belief that breastfeeding was better than bottle-feeding was associated with older maternal age at the time of first pregnancy in a study conducted with 226 women in Barbados (118) and supported by similar results from a Brazilian study with 246 mothers (115). In a UK study with 8,207 mothers older maternal age at first pregnancy was an important factor for continued breastfeeding (119). Likewise, an American study with 336 mothers found the likelihood of breastfeeding at six months increased with maternal age (116). African-American adolescent mothers had the lowest breastfeeding rates in the US (120) whilst a Korean study with 1,066 women aged 35 or older, demonstrated longer breastfeeding duration (121). In contrast, a small study with 97 women in the Czech Republic in 2007 found no association with maternal age and breastfeeding initiation or duration (122).

As most of these studies indicate that women aged 27 and older breastfeed longer than younger women, interventions to promote breastfeeding need to be especially targeted at adolescent and younger mothers.

Education Status

The level of education attained by both the mother and the father is associated with increased breastfeeding duration (104, 122-124). The more educated the mother is, the more likely the baby is to be breastfed.

A cross-sectional survey in Poland conducted in 1995 and again in 1997 found that breastfeeding initiation and prevalence were poor when both maternal and paternal education attainment was low (125). In an American study with 117 women, significant associations were found with a higher level of education and continued breastfeeding at eight weeks (126). A Saudi study with 4872 mothers, however, found significantly more university educated mothers introduced bottle-feeding earlier than illiterate mothers (127). Likewise in a Taiwanese study with 251 mothers, the higher the education level the less likely to breastfeed to 4 months (128). Both studies demonstrate that higher education does not necessarily translate into prolonged duration (19)

A population-based prospective cohort study in the Netherlands with 2,914 mothers, found that 96% of the highest-educated mothers and 73% of the lowest-educated mothers started breastfeeding; educationally related differences were only present in initiating breastfeeding and continuing breastfeeding until two months (129). Parents with limited education were less aware of the benefits of breastfeeding for both the mother and their baby and increased nicotine and alcohol use was associated with lower levels of education (130-132).

Employment

The need to return to work is one of the reasons mothers offer for not commencing breastfeeding, or only doing so for a short duration (133). The necessity of returning to work can influence the early cessation of breastfeeding for many women, particularly if there is no workplace advocacy for breastfeeding. Research in the US suggests that mothers who were not employed were more than twice as likely to breastfeed at six months than mothers who worked full time (134). The incidence of exclusive breastfeeding and its duration tends to be longer in countries with long periods of maternity or parental leave, such as the Nordic countries, Hungary and the Czech Republic (135). An American case-control study with 770 mothers found that although a maternity leave of 6 weeks was available the breastfeeding duration was not increased and there was an increased probability of early cessation (136).

Fein et al found that any of three strategies that provided breast milk for the infant during the work day (expressing milk only, breastfeeding directly only, expressing and breastfeeding directly) were equally effective in maintaining breastfeeding compared to the strategies that did not provide milk for the infant (137). A British study involving 46 female employees across four large public sector organisations found little or no support for breastfeeding, nor policies in place to facilitate breastfeeding in the workplace (138). These findings suggest that workplaces could better support

breastfeeding mothers with a designated space for breastfeeding and expressing and storing breast milk.

2.5.2 Summary of demographic factors that can influence breastfeeding

Breastfeeding outcomes differ across cultures, ages, education attainment and socioeconomic status, although the majority of research suggests that older, more educated women with a higher socioeconomic background will breastfeed exclusively, longer. Comparison of study outcomes are difficult when some studies define breastfeeding as exclusive (only breast milk) and others as fully breastfeeding which includes water and supplement feeding in hospital. Even so, the evidence shows that demographics influence breastfeeding initiation and duration. Cultural factors play a significant role in infant feeding practices, and should be considered when developing health promotion strategies to increase breastfeeding.

Promotion and advocacy for exclusive breastfeeding in national campaigns needs to highlight the importance and benefits of breastfeeding to young, disadvantaged women and their families. These women are identified as most “at risk” of early cessation of breastfeeding.

Financial constraints and the shift to two family incomes have increased the early return to work for many women postnatal. Policies such as flexi-hours within the workplace could increase breastfeeding duration for women returning to the workforce because of financial necessity, rather than choice. Continued promotion of breastfeeding and workplace facilities for expressing breast milk have been shown to help working mothers maintain their breastfeeding.

2.6 SOCIAL VARIABLES

Social variables include the informal support from partners, family and friends as well as formal or professional support from child health nurses, doctors, midwives and lactation consultants.

2.6.1 Importance of the father’s role

Two American studies indicated that support during breastfeeding was one of the most important aspects of initiating and continuing to breastfeed, with husbands’ or partners’ support being essential (17, 19). Expectant fathers can be influential advocates for breastfeeding, playing a critical role in encouraging a woman to breastfeed (36). The lack of partner support has been associated

with less emotional well-being and early discontinuation of breastfeeding (139). Scott, Binns and Aroni, in their study with 556 mothers found that fathers participated in and influenced the choice of infant feeding methods and concluded fathers should therefore be included in breastfeeding decisions (140). Likewise in a Canadian study with 100 adolescent mothers, more mothers who initiated breastfeeding reported having a partner who was supportive of their breastfeeding decision, though this was not a significant predictor variable for breastfeeding duration (4). In contrast, a father's support of breastfeeding was not associated with continued breastfeeding at four months in an American study by Wolfberg et al (36) nor in a Brazilian study with 153 families (16). However, fathers' approval of breastfeeding in a Taiwanese study with 251 mother-baby pairs positively influenced the duration of breastfeeding (128).

In a British study with 317 women, the decision to continue breastfeeding was influenced by the sensitivity and support of their partner for their breastfeeding efforts (18). The same study found fathers' relevant breastfeeding knowledge postpartum was associated with increased breastfeeding duration (18). Prenatal education needs to emphasize the ways in which fathers can support their partners' efforts to breastfeed (141). Supporting these outcomes, a survey conducted in Texas with 2,145 men found support for breastfeeding was related to the men's attitudes to breastfeeding and public images of breastfeeding which were in turn related to their ethnicity, educational level and socioeconomic status (142). Whilst these reported studies are across nationalities and cultures, fathers are important and need to be included in breastfeeding advocacy and promotion.

Paternal inclusion has been encouraged in breastfeeding promotion programs to better prepare the father to provide emotional and practical support to his breastfeeding partner (143). Only a few international studies have targeted the father's role in promoting breastfeeding. An Italian randomised control trial provided a breastfeeding training session for 280 fathers resulting in a 10% increase (25% in the intervention group versus 15% in the control group) in breastfeeding prevalence rates six months post-birth. Support and education regarding management of the most common lactation difficulties was the objective of this intervention (144). Susin & Giugliani found in their study in Brazil that most fathers did not know what they could do to help their breastfeeding partner (143). They demonstrated that teaching fathers (n=193) how to prevent and manage lactation problems resulted in increased rates of exclusive breastfeeding, but not "any" breastfeeding at six months (143). A Canadian qualitative study with 21 fathers of breastfed babies undertaken by Rempel & Rempel recommended providing men with the evidence supporting breastfeeding so that they had a solid basis on which to develop pro-breastfeeding beliefs. They found that men were able to provide practical support in the home, cook, do the laundry and create

a supportive environment for breastfeeding (145). A small pilot study with 42 fathers in Britain showed that fathers wanted to be more involved in caring for their child, and felt it was important to obtain information that would help them to do this (146). Making fathers aware of potential breastfeeding difficulties and giving them strategies for risk management of those difficulties could help reduce early cessation (145).

2.6.2 Professional /formal support

Parents place great trust in and seek out the expertise of health professionals on issues related to infant feeding (147).

Negative or neutral attitudes to breastfeeding from health professionals can influence the duration of breastfeeding (148). Such attitudes might be reinforced by breastfeeding information in medical and nursing texts which is often incomplete, inconsistent, and inaccurate (149) . In a American longitudinal mail survey with 1,620 women, the neutral attitude to breastfeeding by health professionals is purported to have influenced early cessation of breastfeeding by six weeks (148). In another American study with 379 women, most respondents received help with breastfeeding from a health professional in the hospital, but only 55% received any help with breastfeeding after hospital discharge (150). A Cochrane review of support for breastfeeding mothers in 34 trials across 14 countries identified all forms of extra professional support had increased the duration of any breastfeeding, but not necessarily the duration of exclusive breastfeeding (32). Another systematic review of 36 articles on professional support interventions for breastfeeding found the best outcomes involved multiple methods of support. These included postpartum phone support, home visits, linking with peer support groups and education over the perinatal period rather than any single method over a shorter time span (151).

Conversely, the United States Preventive Services Task Force (USPSTF) found insufficient evidence to recommend for or against the following interventions to promote breastfeeding: brief education and counselling by primary care providers; peer counselling used alone and initiated in the clinical setting; and written materials, used alone or in combination with other interventions (152).

2.6.3 Antenatal education and breastfeeding

Antenatal education has traditionally focussed on labour, childbirth and subsequent breastfeeding. Research suggests that although men are included, women are the main focus of these classes (153, 154). Schrader et al found that many health professionals in their British study felt unable or ill-equipped to undertake group education, with antenatal education being seen as having low value (155). An Australian study investigating breastfeeding information and support services found that breastfeeding education was only a small part of antenatal education (156) and teaching approaches often promoted dependency (157). In contrast, Su found in a RCT with 450 women in Singapore, that antenatal breast feeding education and postnatal lactation support both significantly improved rates of exclusive breastfeeding up to six months after delivery (158). Again, in Thailand, a RCT with 90 expectant women found a knowledge sharing practice empowerment strategies (KSPES) intervention had significantly higher exclusive breastfeeding rates at six months. A limitation of these results was the very small number of participants (159).

A RCT in Australia with 144 women found a parenting focus was well received and increased mothers' self-confidence (160). Similarly, a Canadian RCT with 200 expectant mothers who attended an extra group workshop on strategies for managing breastfeeding difficulties had greater self-confidence in their breastfeeding capacity (15). The increase in self-confidence reported in the two previous studies may encourage breastfeeding duration (161). A systematic review of breastfeeding interventions in primary care conducted by Chung et al found a combination of pre- and postnatal breastfeeding interventions increased both the rate of intermediate and long-term any breastfeeding (162).

Fathers have expressed a need for more information and preparation for parenthood (154). In response to this need, several studies have found that fathers appear to benefit from participation in antenatal classes that have men-only sessions embedded in the standard antenatal classes. Men reported an increased awareness of the potential difficulties of childbirth and recognised the importance of breastfeeding (155, 163). The benefits of men-only sessions are two-pronged; there is, firstly, the opportunity to discuss their apprehensions and concerns with other men experiencing the same dilemma and, secondly, the opportunity to increase their social network (164).

Two global agencies have launched a forum to support fathers of breastfeeding children: The Global Initiative for Father Support (GIFS) was launched at the Global Forum II, Arusha, Tanzania in 2002, and in October 2006, in Penang, Malaysia, the WABA Men's Initiative was initiated (165).

To increase the incidence of breastfeeding, healthcare professionals need support and training to become first line advocates, and men need to be included in breastfeeding promotion campaigns (166). Wiener and Rogers (167) found in a survey of 144 midwives in UK, that they wanted group facilitation incorporated into their midwifery training to better enable them to teach antenatal classes. Effective interventions to support initiation and continuation of breastfeeding include: peer support schemes, antenatal group work and the combination of multimodal education/social support programs combined with media campaigns (155).

2.6.4 Summary of social variables influencing breastfeeding

Fathers have been shown to influence their partners' breastfeeding practices and factors that impact on that influence include socioeconomic status, employment, education and age. Lack of partner support increases early breastfeeding cessation and increased knowledge about and positive attitudes of partners to breastfeeding increases breastfeeding duration. Fathers should be included in breastfeeding decisions and have information about the benefits and importance of breastfeeding to both their partner and baby. Fathers have been recognised as one of the most important supports for their partner but little research has been conducted on their role in breastfeeding support. Paternal inclusion has been encouraged in breastfeeding promotion programs, to better prepare the father to provide emotional and practical support to his breastfeeding partner. Fathers need evidence-based information about breastfeeding and how to access resources to better support their partners' efforts to breastfeed. Breastfeeding success relies on credible information from appropriate resources about the benefits and importance of breastfeeding to both the mother and baby with both informal and formal support providing encouragement and building confidence.

Negative attitudes and inadequate knowledge of health professionals can lead to decreased breastfeeding duration. Health professionals need ongoing professional development to keep up to date with evidence-based practice associated with extending breastfeeding duration. Educational programs that target not only the mother but also her family and friends support system are more likely to have a greater impact on increasing breastfeeding rates.

Studies have shown that antenatal education can help increase breastfeeding duration where it includes breastfeeding information and strategies for breastfeeding difficulties in combination with postnatal follow up visits from a community nurse. Mothers have been the focus of all the

presented evidence, but fathers play an important role in supporting and influencing the decision to breastfeed. Father inclusive practice is recommended to increase partner support for breastfeeding.

2.7 BARRIERS TO BREASTFEEDING

Breastfeeding initiation rates in Australia range from 85%-93% and decrease to 20%-30% by six months (6). Although initiation rates including receiving ‘any’ breast milk are meeting NHMRC dietary guidelines of 90%, the 60% target of exclusive breastfeeding is not being achieved for three months or in fact at nine weeks (28). Some of the obstacles to initiation and continuation of breastfeeding as reported by mothers include insufficient prenatal education about breastfeeding, non-supportive maternity care practices, and perceived lack of family and broad societal support (168).

2.7.1 Physiological variables

Physical problems associated with either mothers or babies were identified as barriers to successful breastfeeding. The physiology of human lactation is extremely complex, but effective lactation is not determined by the frequency, duration, intervals, and pairing of feedings (147, 169). Instead, it is influenced by interactions among four major elements: (1) the capacity of the mother’s body to make and store the milk that varies by time of day (147); (2) how completely the infant empties the breast at an individual feeding (170); (3) the infant’s variation for breastfeeding across 24 hours (171); and (4) the infant’s choice of breast for feeding—the breast that is the dominant or non-dominant milk-producing breast (172).

Physiological variables include infant health problems, insufficient milk supply, physical breast problems and method of delivery.

Infant health problems

Infant health problems of full term babies that affect their ability to breastfeed include physiological complications of tongue tie and cleft palate. Tongue tie, a condition in which the tongue's mobility is restricted, may reduce the ability of infants to breastfeed successfully (173, 174). This condition can affect 3%-4% of live births (175). Cleft palate has also been identified as a barrier to successful breastfeeding (176). Lactose intolerance, hypoglycaemia and severe jaundice at birth also impact on the baby’s ability or availability to breastfeed (177, 178).

Insufficient milk supply

Multiple studies have identified perceived insufficient milk supply as the primary reason for mothers to supplement with formula or change to fully formula feeding (58, 127, 150, 179, 180). The need to know how much milk the baby is getting is often cited by mothers as contributing to the change from breastfeeding to formula feeding (179, 181). In a longitudinal American study, data showed that mother's concern about milk supply, or wanting someone else to feed the baby were the predominant reasons cited for breastfeeding cessation in the first five months. Similarly, in another American study with 1,323 women, the mother's perception that breast milk alone did not satisfy the baby was among the most frequently reported reasons for weaning regardless of infant age (119). Mothers frequently interpreted an unsettled baby's behaviour following a feed as still being hungry, leading to a spiral of complementary feeding with formula then reduced breast milk production and a subsequent increase in formula feeding.

Physical breast problems

Many women experience sore, cracked or bleeding nipples and are unprepared for the pain and discomfort experienced during the initial stages of breastfeeding (58, 116, 127). Being unprepared for the physical challenges may be one explanation for the high initiation rates of breastfeeding but lower prevalence rates or early cessation (17). Dennis reported that perceived difficulties with lactation were the primary reason for women to stop breastfeeding rather than maternal choice (182). These difficulties included poor attachment leading to poor suckling and perceived insufficient milk supply. Engorgement and sore breasts are often reported in the first weeks postnatal. Inadequate postnatal support can result in women deciding to cease breastfeeding earlier than intended (183). In a British study, women at an infant feeding drop in centre found hands on help from health professionals enabled them to continue to breastfeed when attachment was an issue (184). Mastitis, a painful inflammatory response associated with blocked milk ducts, can occur during breastfeeding and may need medical intervention with antibiotics. Amir and Lumley found an association between nipple damage and mastitis in their Australian case-control design with 94 women (185) which frequently led to early cessation of breastfeeding. Incorrect attachment with breastfeeding is associated with nipple damage and mastitis which can influence the mother's decision to stop breastfeeding (186).

Method of delivery

Hospital policies and practices can influence breastfeeding initiation following birth complications such as an emergency caesarean and postnatal care can influence the duration of breastfeeding (187, 188). A Polish cross sectional study of 11,422 women for example found caesarean birth to

adversely influence breastfeeding duration (125). It was corroborated in a Korean study with over 1,000 women (121). In Britain a study with 393 mothers found that a longer inpatient stay with health professional support may help women with a caesarean birth to initiate breastfeeding (189). Caesarean birth was associated with delayed breastfeeding initiation and a lower rate of successful breastfeeding due to lower prolactin levels in a study of 600 women in China (190). An Australian study with 1,280 women who had undergone epidurals found they were less likely to fully breastfeed their infant in the few days after birth and more likely to stop breastfeeding in the first 24 weeks (191). Similarly, Baumgarder et al found early breastfeeding was more successful in women who did not have epidural anaesthesia (192).

Summary of physiological barriers to breastfeeding

Many women experience breastfeeding difficulties during the initiation process and they should be aware that if they develop a difficulty in breastfeeding they are not “unusual” and should seek support to address the problem. Perceived insufficient milk supply and breast problems are the main reasons given by mothers for early cessation of breastfeeding.

Attachment difficulties are associated with incorrect attachment, engorgement, mastitis and poor suckling and contribute to the decision to cease breastfeeding earlier than planned. Ongoing education and training of health professionals to better facilitate correct positioning for breastfeeding could reduce early cessation of breastfeeding and reduce maternal dissatisfaction with breastfeeding.

Reduction in epidurals and subsequent elective caesarean delivery may reduce the delay and increase the frequency of breastfeeding postnatal. Increased post-operative support is essential for successful breastfeeding duration.

2.7.2 Psychological variables

Some women experience breastfeeding as a connected, harmonious and intimate relationship between themselves and their baby whilst other women struggle with the loss of identity and loss of control over their bodies. Unrealistic expectations of the time, effort and commitment required for many women to successfully breastfeed can lead to the early cessation of breastfeeding seen globally.

Psychological variables include postnatal depression and anxiety, inadequate or conflicting information about breastfeeding, and a lack of confidence in breastfeeding.

Postnatal depression and anxiety

Postnatal depression affects between 5%-15% of women (84) and can compromise breastfeeding outcomes (16). In a study of 125 women in the United Arab Emirates, a higher depression rate was associated with a history of depression during pregnancy and not breastfeeding (193). Postnatal depression was linked to not breastfeeding and smoking in a retrospective American study with 209 women (194). One of the difficulties in treating women with postnatal depression who are also breastfeeding is that anti-depressant medication crosses into the breast milk (195). However, Epperson and colleagues suggest that most infants may continue to breastfeed without experiencing meaningful changes in platelet 5-HT transport while their mothers are treated with low dose selective serotonin reuptake inhibitors (SSRI) daily (196).

In an Australian population survey, 4,366 women answered a questionnaire within six months of giving birth. Researchers found 13% of mothers' experienced postnatal anxiety, 17% postnatal depression and 8% a combination of both (197). Another Australian study found up to 40% of women who experienced a major depressive episode within six months postnatal had a co-morbid anxiety disorder (198). Similarly, in an American systematic review estimates of the prevalence of postnatal maternal anxiety (PMA) ranged from 3% to 43%, suggesting PMA may be an important risk factor for adverse outcomes in children (199).

Inadequate /conflicting information about breastfeeding

One factor contributing to the high rates of breastfeeding cessation may be that health care professionals do not have sufficient knowledge to help mothers overcome breastfeeding problems experienced in the early days (200). Many women report distress and confusion with inconsistent information about breastfeeding practice within the hospital setting and in the community (184). In an Australian study, it was clinically significant that more than 20% of 300 women reported inadequate breastfeeding information (59), whilst in an American study with 379 women, most received help with breastfeeding in the hospital, but only 55% received help with breastfeeding difficulties after hospital discharge (150). Two recent Australian studies investigated conflicting advice around breastfeeding from health professionals and the way information about breastfeeding was delivered by midwives in antenatal classes. Mothers reported having unrealistic expectations about breastfeeding: expecting it to be natural and therefore easy and then experiencing difficulties without simple solutions (201). Researchers found that midwives generally taught in a didactic way, emphasising the "breast is best" message. This often left mothers feeling pressured and without a choice for infant feeding (202). Both findings may influence the outcome of breastfeeding duration. Mothers frequently viewed the various options or

choices offered by midwives for solutions to breastfeeding difficulties as conflicting advice and found they were not given choices for infant feeding.

Lack of confidence in breastfeeding

Confidence and self-efficacy with breastfeeding is essential for success (203, 204). Practices such as allowing infants to cry and prescribed times for weaning work against successful breastfeeding (184), and undermine women's confidence in the process (205). Correct positioning of the baby to enable good attachment, awareness of infant output to affirm sufficient nutrition and consistent weight gain all constitute elements for increased breastfeeding confidence (206). In an Australian prospective study with 300 mothers, high breastfeeding self-efficacy was significantly linked to exclusive breastfeeding at one week and four months postpartum (20). Lack of confidence can also be associated with shortened duration of breastfeeding. In an American study of 64 women a lack of confidence in ability to breastfeed longer than 2 months was associated with stopping breastfeeding before two weeks of age (relative risk of 2.80) and before 2 months of age (relative risk of 11.7) (207). Partners, family members, health professionals and community attitudes can contribute to a lack of confidence.

Summary of psychological factors associated with breastfeeding

In summary, factors that are positively associated with breastfeeding are: both informal and formal support, and self-confidence. Factors negatively associated with breastfeeding are: breastfeeding difficulties of attachment, insufficient milk production, conflicting advice and postnatal depression and anxiety. Studies continue to cite the importance of support, particularly paternal support. Further research is needed to identify the support systems for father-inclusive practices, and to focus on the modifiable factors of formal support, increasing self-efficacy and confidence. Relevant consistent advice and accurate monitoring of the mental state across the perinatal period for both mothers and fathers at risk could decrease perceived barriers to breastfeeding.

2.8 POLICY DECISIONS AND BREASTFEEDING PROMOTION CAMPAIGNS

To enable mothers to establish and sustain exclusive breastfeeding for six months, the World Health Organisation (WHO) and the United Nations International Children's Fund (UNICEF) recommend: initiation of breastfeeding within the first hour of life, exclusive breastfeeding whereby only breast milk with no additional food or drink including water is offered, breastfeeding on demand (as often the infant wants, day and night) and no use of bottles, teats or pacifiers (208).

Strategies and policies aimed at protecting, promoting and increasing breastfeeding globally include the Baby Friendly Hospital Initiative (209), the International Code of Marketing of Breast-milk Substitutes (210) and the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding (211).

2.8.1. Baby Friendly Health Initiative

The Baby Friendly Health Initiative (BFHI), developed jointly by WHO and UNICEF was launched in 1991 (40). Ten steps to successful breastfeeding were developed from evidence-based practice, and adopted to become the cornerstone of the BFHI that sees hospitals achieve accreditation if they follow these advocacy steps (209, 212).

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk unless medically indicated.
7. Practice rooming in: Allow mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers, also called dummies or soothers to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

By March of 2002 more than 15,000 hospitals in 134 countries around the world had been certified as Baby Friendly (209). There were 77 (23% of all maternity hospitals) Baby Friendly hospitals in Australia but only four such hospitals in Western Australia (97).

Research associated with BFHI

In Scotland the results of an observational study with 33 maternity units found those babies born in a BFHI unit were 28% more likely to be exclusively breastfed at seven days postnatal than those babies not born in a BFHI unit (213). Likewise of 1,907 mothers in an American impact study the mothers who did not attend a BFHI hospital for their birth were 13% more likely to cease

breastfeeding before six weeks postnatal (214). Of 2,669 mothers in an Italian study, exclusive breastfeeding rates increased from 23%-73% following BFHI training of staff (215).

A prospective observational study in Brazil compared breastfeeding rates pre-BFHI (n=187) and two years after BFHI (n=250). Researchers found a significant increase in breastfeeding rates, especially exclusive breastfeeding, after BFHI implementation. the frequency of breastfeeding in the first six months of life, especially exclusive breastfeeding, was still low (216).

An Australian multicultural descriptive study that interviewed 300 women (100 Vietnamese born, 100 Turkish born and 100 Australian born) 24 hours post birth, found that breastfeeding outcomes were significantly different, possibly due to cultural influences, in spite of the hospital being an accredited BFHI institution (217). The respective breastfeeding initiation rates of Vietnamese , Turkish and Australian mothers were 75%, 98% and 84% (217).

Research suggests that the BFHI increases breastfeeding initiation but not necessarily duration. Interventions need to be sensitive to cultural differences and cultural practices that play a role in breastfeeding outcomes. Further studies are needed to investigate strategies for increasing exclusive breastfeeding duration to the recommended six months.

2.8.2 International Code of Marketing of Breast Milk Substitutes

In 1981 the WHO and UNICEF developed the International Code of Marketing of Breast Milk Substitutes to protect and promote breastfeeding (210). The code's substance includes the prohibition of advertising or any other form of promotion of breast milk substitutes to the general public. Manufacturers and distributors of breast milk substitutes should not provide samples of their products to pregnant women, mothers or families of infants. There should be no display of breast milk substitutes in health care facilities. Educational materials on infant feeding must include clear information on the benefits and superiority of breastfeeding. Information on formula feeding should include the social, financial, and health hazards of the unnecessary use of breast milk substitutes (210).

Responsibility for monitoring the Code belongs to national governments. In contravention of the code, hospitals in Japan continue to receive free supplies of infant formula and distribute discharge packs to new mothers provided by infant formula companies (218). Adoption of a pro-breastfeeding law by the parliament of the Republic of Georgia in 1999 was responsible for positive change. Designed to stop violations of the International Code, "On Protection and Promotion of

Breastfeeding and Regulation of Artificial Feeding,” resulted in a significant increase in breastfeeding, reduction of advertising for artificial feeding and increased BFHI status (219).

Australia responded to the code with the adoption of the Marketing in Australia of Infant Formulas: Manufacturers and Importers Agreement (MAIF) in May 1992. The International Code applies to all breast milk substitutes including other milk products, foods and beverages marketed to replace breast milk, feeding bottles and teats. In Australia, MAIF only applies to infant formula. Products such as baby cereals, infant meals and drinks are not covered even if marketed for infants below six months of age. MAIF does not cover feeding bottles and teats. Australian doctors in general practice can request samples from the infant formula manufacturers and pass them onto mothers, undermining the breastfeeding advocacy (220).

2.8.3 The Innocenti Declaration

The Innocenti Declaration, a Global Strategy to promote, protect and support breastfeeding, was produced in the 1990s and updated in 2005 (211). It reaffirmed the tenets of the original Innocenti Declaration of 1990 and set Operational targets for further improvement of breastfeeding support. The targets stated that:

All governments by the year 1995 should have:

Appointed a national breastfeeding coordinator of appropriate authority, and established a multisectoral national breastfeeding committee composed of representatives from relevant government departments, non-governmental organizations, and health professional associations.

Ensured that every facility providing maternity services fully practises all 10 of the Ten Steps to Successful Breastfeeding set out in the joint WHO/UNICEF statement "Protecting, promoting and supporting breastfeeding: the special role of maternity services".

Taken action to give effect to the principles and aim of all Articles of the International Code of Marketing of Breast-Milk Substitutes and subsequent relevant World Health Assembly resolutions in their entirety; and enacted imaginative legislation protecting the breastfeeding rights of working women and established means for its enforcement.

2.9 CONCLUSION

In conclusion the literature review has identified the benefits and importance of breastfeeding to mother, baby and wider society. It has highlighted the importance of legislation to promote, protect and support breastfeeding with increases in breastfeeding initiation. The demographic variables reviewed highlighted maternal age, education level of both mother and father and socioeconomic status as relevant factors to breastfeeding success. Both the physiological and psychological variables discussed can be potentially ameliorated with partner support, encouragement and understanding. The modifiable barriers to breastfeeding include more comprehensive antenatal information with opportunities for all-men sessions; increased formal support both in hospital and within the community and more monitoring for postnatal depression and anxiety in both mothers and fathers at risk, during the perinatal period.

Fathers have been recognised as one of the most important supports for their partner but little research has been conducted on their role in breastfeeding support. Paternal inclusion has been encouraged in breastfeeding promotion programs, to better prepare the father to provide emotional and practical support to his breastfeeding partner. Fathers need evidence-based information about breastfeeding and how to access resources to better support their partners' efforts to breastfeed. Antenatal classes are a good opportunity for educators to prepare fathers for this new role. Breastfeeding success relies on credible information from appropriate resources about the benefits and importance of breastfeeding to both the mother and baby with both informal and formal support providing encouragement and building confidence.

With specific reference to fathers, the present literature review highlighted the evidence around the importance of fathers in supporting their breastfeeding partners. It also identified the dearth of studies that have focused upon fathers' influence on breastfeeding and suggested developing and testing interventions specifically targeting men. Gaps in the evidence highlight the lack of RCTs on interventions utilising fathers support for their partners' breastfeeding, especially in an Australian context. Seeking to understand the father's role in breastfeeding support and duration is a recent area of research; it needs to continue with strategies developed to support their role.

The goal for conducting this project was to increase the duration of breastfeeding by targeting fathers and enhancing their ability to support their breastfeeding partner. Addressing the importance of the fathers' role and the importance of fathers support for breastfeeding is incorporated in the RCT for this study. We utilised the antenatal classes to implement the father inclusive practice and identified ways fathers can be supported to support their partners

breastfeeding practice. Monitoring paternal anxiety and depression across the perinatal period will identify if there is a need for routine monitoring across all maternity hospitals.

The following chapter describes the methodology used to develop the father inclusive perinatal support intervention and the implementation and evaluation processes.

CHAPTER THREE: METHODS

3.1 INTRODUCTION

The purpose of this chapter is to describe the methodology employed for the formative research and the RCT. The ethical considerations, theoretical underpinnings, recruitment and training of facilitators and the recruitment of participants will be discussed. The aim and objectives of the study are explained and the rationale for a RCT is reviewed. The intervention developed for the RCT included an hour-long antenatal education class for fathers only, delivered by a male facilitator. This was followed by a postnatal educational support package posted weekly to the fathers over six consecutive weeks. The context and setting of the research and the process involved in developing the educational resources are described and the recruitment and training of facilitators are discussed.

3.2 THE AIM OF THE STUDY

The aim of this research was to develop, implement and evaluate a father inclusive perinatal support intervention designed to increase breastfeeding duration. The specific objectives of the study were:

3.2.1 Formative research

- Identify factors which encourage fathers to support their partners' breastfeeding (facilitators)
- Identify factors which discourage fathers from supporting their partners' breastfeeding (barriers)
- Design and develop a father inclusive perinatal support program.

3.2.2 Randomised controlled trial

- Implement and evaluate the father inclusive perinatal support program.
- Compare breastfeeding duration at six weeks in families who complete the intervention program to those who receive no intervention
- Identify any changes in the anxiety and depression scores for the male participants in the intervention and control groups from baseline (antenatal) to six weeks postnatal.

3.3 SETTING

Perth is the capital of Western Australia (WA) with a multicultural population of 1.5 million living in an area covering 5,386 km² and in 2008 had a total of 31, 850 birth (221). There were eight public maternity hospitals within the Perth metropolitan area, of which two had Baby Friendly Health Initiative accreditation at the time of the present study. All provide antenatal education for expectant parents. This study, based at the Western Australian Centre for Health Promotion Research in Curtin University in Perth, recruited the sample of fathers and mothers for the intervention from the eight public maternity hospitals in the Perth metropolitan area which allowed for a mix of socioeconomic diversity.

3.3.1 Total Births in 2007 in Perth, Western Australia

In 2007, 30,066 babies were born in Western Australia (222). Most of the public maternity hospitals experience 1000 births or more a year, with the Family Birthing Centre at King Edward Memorial Hospital experiencing the least number of births. Figure 1 shows the births in 2007 for each of the participating hospitals coded A (Armadale), B (Bentley), C (Family Birthing Centre), D (Osborne Park), E (Kaleeya), F (Joondalup), G (Rockingham), H (Swan Districts).

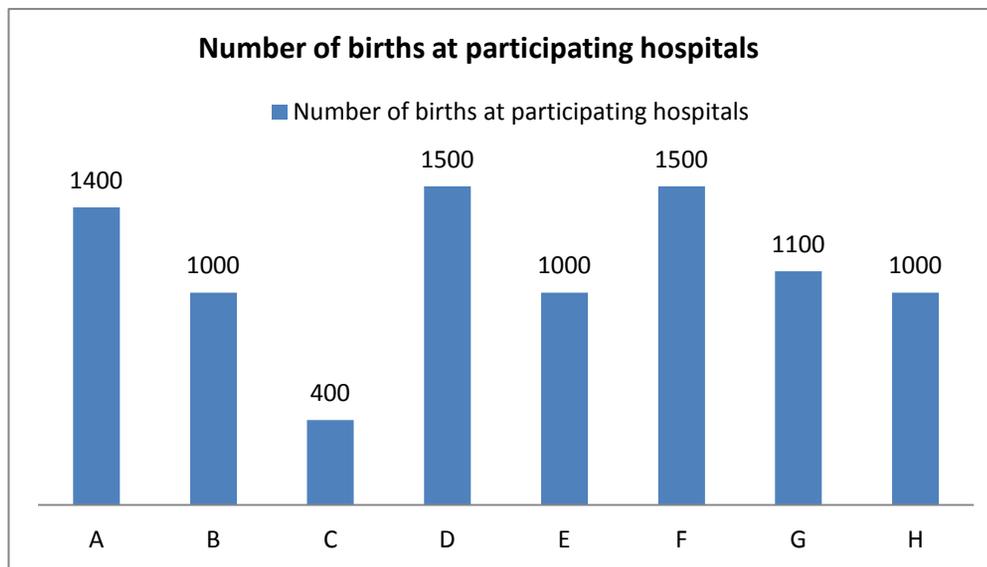


Figure 1: Total births for 2007 in maternity hospitals involved with RCT (222)

3.4 STAKEHOLDER INTERACTION

Following ethics approval from Curtin University, negotiations occurred between the researcher and the Medical Directors and Directors of Nursing and Midwifery at each of the health facilities targeted for the intervention. The researcher attended the ethics committee meetings at the North Metropolitan, South Metropolitan Health Services and the Joondalup Health Campus respectively, to present the intervention proposal. Each health service gave approval for the intervention to be conducted at their site.

3.5 ETHICAL APPROVAL

Ethics approval was granted by Curtin University for the father inclusive perinatal support intervention (Fifi project) and met the conditions of the Helsinki Declaration. The ethical considerations for the intervention included informed consent, the right to withdraw at any time without penalty and the assurance of confidentiality.

All records pertaining to the formative research were coded so that no details were available to personally identify respondents. All other records such as raw data, tapes, and transcribed data were kept in a separate locked cabinet. Once the tapes had been transcribed they were erased. Participants were not identified by name in any raw data, tape, transcribed data, publication or reports. Due sensitivity was taken in the reporting of all research findings in that data was de-identified for individual hospitals and all findings are combined. Material analysed by computer was protected by a password known only to the researcher, and the computer was located in a lockable office. A unique ID number was allocated to all participants in the RCT, with a linking baby ID generated at birth. When agreeing to participate in the study all participants were assured of confidentiality and that no staff other than the researchers would view their completed questionnaires. Participants were asked to provide their name, address, email and home and mobile phone numbers which allowed for multiple avenues of follow-up.

Designated and labelled files for each hospital and intervention and control group allowed for ease of handling and security. All files remained in a locked room accessible by the research team only. Individual unique coding was allocated to each participant and recorded in a master schedule within a Microsoft Excel 2007 program (password locked) to maintain confidentiality.

3.6 THEORETICAL PERSPECTIVE

Psychosocial theories have been developed and used by researchers to predict, explain, and change health behaviours. They include but are not limited to: the Health Belief Model (223), Protection Motivation Theory (224), Social Cognitive Theory (225), the Theory of Reasoned Action (226), and the Theory of Planned Behaviour (227). Theory guides practice and research; practice enables testing of theory and generates questions for research; research contributes to theory-building, and selecting practice guidelines (228). This thesis used theory and models to inform the design, the gathering and analysis of formative data, and to guide the content and delivery of the intervention.

The framework for the formative research incorporated aspects of the Social Cognitive Theory and Health Belief Model with the results documented in Chapter Four. There is significant overlap between the Health Belief Model and Social Cognitive Theory in relation to the elements that impact upon the cognitive processes used in decision making. The questions that were asked during the formative research phase were initially shaped by the Health Belief Model; in particular questions regarding the participant's perceptions about benefits and barriers to breastfeeding, cues to action to breastfeed and self efficacy. Social Cognitive Theory presented additional impetus to ask questions related to capacity to adopt new behaviours, new role expectations and changes to self, observational learning opportunities and ways to enhance individual's capacity to continue breastfeeding. Social Cognitive Theory helped understand the potential interaction between overestimation of capacity and underestimation of potential problems. Another theoretical perspective involved with the development of the intervention was Gender Theory, specifically hegemonic masculinity. Each of these theories will be discussed briefly.

3.6.1 Social Cognitive Theory

Social Cognitive Theory (SCT) provides a framework for understanding, predicting, and changing human behaviour. The theory identifies human behaviour as an interaction of personal factors, behaviour, and the environment and there is an interrelationship between self-efficacy, observational learning and reciprocal determinism (225). Social Cognitive Theory is helpful for understanding and predicting both individual and group behaviour and identifying methods in which behaviour can be modified or changed (225). Social Cognitive Theory was predominately used in shaping the intervention and in facilitating understanding of the potential interaction between new parents' overestimation of their capacity to cope and their underestimation of potential problems. It was also utilised in the observational learning parents recalled as being

relevant to their breastfeeding efforts including mothers groups, internet, health professionals and relatives (225).

Uses within the project

Social Cognitive Theory underpinned the questions within the focus groups, and included the following topics: The environmental supports used to assist breastfeeding and the types and benefits of each were explored during the focus groups. Identifying the skills needed to breastfeed and the expectations of that effort were discussed and compared to the reality of the actual breastfeeding experience. Mothers and fathers were asked about the support they accessed and questions about reinforcement of breastfeeding included “how have you been supported to breastfeed?” What changes to their sense of self efficacy occurred and how they adapted to the breastfeeding process were all explored along with discussion about the problems they experienced and how they coped when problems happened.

3.6.2. Health Belief Model

The Health Belief Model was originally developed in response to people not participating in prevention initiatives (229, 230). The decision to act is influenced by the person’s perceptions of the benefits and barriers to adopting the suggested behaviour and their capacity to implement the suggested action (230, 231). The Health Belief Model (HBM) attempts to explain and predict health behaviours and has been applied to a broad range of health behaviours (230). The concepts of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers were proposed as accounting for people's readiness to act which is also influenced by the concept of self-efficacy, or one's confidence in their ability to successfully perform an action (231, 232).

Uses within the project

The Health Belief Model was initially utilised in the formative research to explore the knowledge base of the participants. It was applied to the development of the antenatal intervention for fathers which aimed to increase their knowledge about breastfeeding and the benefits of breastfeeding to both mother and baby. It was also incorporated into questions identifying the barriers to breastfeeding, self-efficacy and cues to action to breastfeed. The Health Belief Model underpins the intention to breastfeed and the limitations to breastfeeding. It identifies intervention strategies for both content and process and assists in determining the knowledge related to not breastfeeding and the knowledge of the benefits of breastfeeding. It can be useful in identifying the barriers to

breastfeeding, initiators of action and motivators to continue, identify ways of providing support and skills and actions required to continue breastfeeding

3.6.3 Hegemonic Masculinity

Hegemonic masculinity refers to the cultural dynamic between genders by which men sustain a leading social position. The expression of this is not constant and the elements within it and the ways in which they are expressed between genders are open to social construction (233). From the formative research results, the men indicated a strong preference to receive male specific information delivered by a male educator who was also a father. The move to fatherhood was a new role for most men which created new expectations. During this transition period men appeared to be open to reflecting upon themselves as fathers and it was important to build rapport with the participants and possibly challenge some of the existing hegemonic masculine expectations they may have held (233). Changing expectations among women and an increased desire amongst men to become more involved fathers is meeting resistance from traditional dominant patriarchal structures that identify women as the primary care givers and men as the providers (234). An emergent theme from the formative research resulted in the identification of an additional theoretical framework that of the role and the importance of learning the role of being a father. This required the researcher to review theory around hegemonic masculinity and the social construction of masculinity (233). In hegemonic masculinity, fathers do not have the capacity or the skill or the need to care for children, especially for babies and infants; actively involved fathers challenge hegemonic masculinity (235).

Uses in the project

Masculinities change over time and the changing role of men within gender relationships was included in the discussion around perceived father roles. Fathers involved in the formative research discussed the changing role of men within gender relationships. They themselves identified the key roles of planner, protector, provider and persister. The male role in the theme of gentle persistence manifested in several ways, including encouraging their partner to continue breastfeeding in face of adversity and persistence in relation to breastfeeding even when faced with conflicting advice from others and/or lack of support from health professionals. Successful support was predicated upon communication and in many cases a temporary realignment of household activity and changes to interpersonal interaction. It was identified that stoicism was not an appropriate first response, and that help seeking and initiation of aid were activities men needed to undertake after meaningful communication with their partner. The participants in the formative

research gave numerous examples of practical activities men could undertake to assist their partners. These practical activities were seen to be useful to enhance self control and self efficacy.

The antenatal class content utilised these perceptions of father roles to engage fathers as motivators, to support mothers within a culturally appropriate framework. The antenatal classes for fathers were constructed to provide the opportunity for discussion between the men and the facilitator about fathering and stereotypic gender roles. Fathers, whose role was highlighted as the most important support role for their partners' breastfeeding, were encouraged to become "breastfeeding champions".

3.7 METHODS: FORMATIVE RESEARCH

A qualitative exploratory design was employed to identify the paternal support women needed to assist them with their breastfeeding. Focus groups aimed to establish the social context and perceptions of breastfeeding support. Eight focus groups were conducted with postnatal mothers from a range of socioeconomic backgrounds, with groups comprising four to 10 mothers who were breastfeeding or who had breastfed in the previous six months. Interactive discussions to generate descriptions of the perceived nature of fathers' positive support explored effective support strategies fathers can use to be breastfeeding advocates.

Several attempts were made to recruit fathers from both higher and lower socioeconomic backgrounds for focus groups, but with limited success. Only five men were recruited for a focus group. When men indicated they would respond to a range of flexible data collection processes a combination of data collection techniques including a focus group, an online survey and telephone interviews were used.

Survey Monkey, a web-based survey collector with encrypted responses for confidentiality, was used to develop and implement the online survey for fathers (236). The questions in the online survey were identical to those asked in the focus group and in the telephone interviews. Two telephone interviews were conducted with fathers who did not have access to the internet and could not attend a focus group.

The objectives of these data collection methods were to identify fathers' perceptions about breastfeeding, the factors that encourage fathers to support their partner's breastfeeding (facilitators), and the factors that discourage fathers from supporting their partners' breastfeeding (barriers). Figure 2 demonstrates the process and timeline of the formative research.

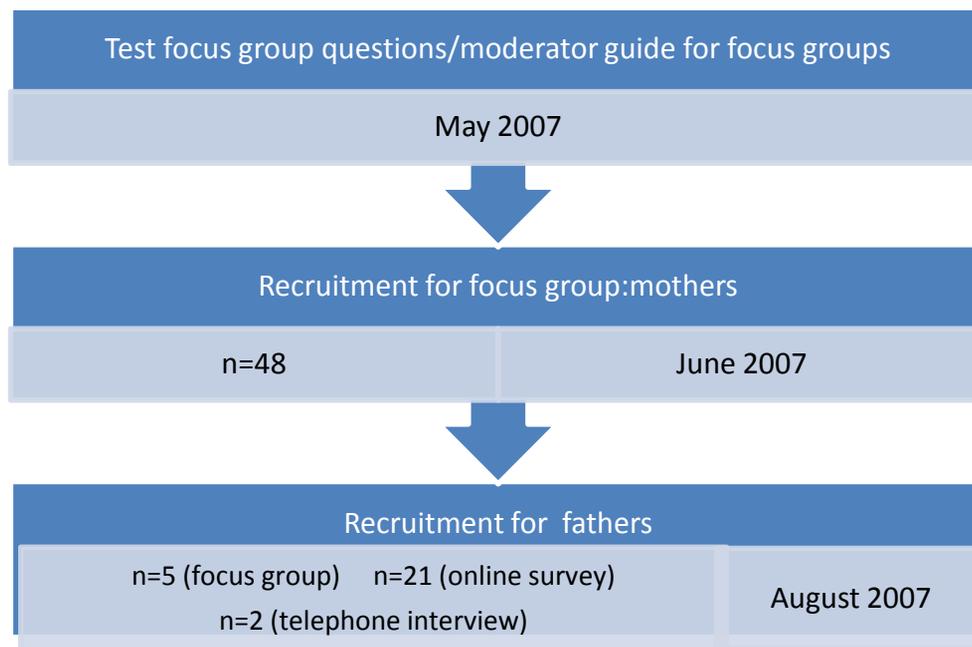


Figure 2: Formative research process and timeline

3.7.1 Focus Group preparation

Focus group questions were constructed from a review of literature that suggested that support, encouragement and sufficient information were important in maintaining breastfeeding. The questions for the mothers' focus groups were pilot tested with 10 randomly selected mothers who had breastfed their children to ensure they were eliciting the appropriate information. The mothers were from a diverse range of socioeconomic and educational levels. Face validity was confirmed by both the testing and feedback which indicated the questions were deemed appropriate, relevant and easily understood by the participants (237). The five fathers who attended a focus group gave feedback on the relevance and appropriateness of the focus group questions and these were then duplicated into an online survey and answered by fathers unable to attend a focus group. The questions were also used for the telephone interviews.

A moderator guide was then developed that contained the template for the focus group questions, the aim and purpose of the focus groups and included the introduction of the researcher to the groups. The focus group questions were based on relevant components of two theoretical models: Social Cognitive Theory and the Health Belief Model (225, 230). Examples of questions from the mothers' interview guide included: What influenced your decision to breastfeed? What support from your partner have you found helpful during your breastfeeding experience? What support

would you have liked to receive from your partner? (Appendix A.1). Issues discussed with the fathers included questions such as: How important do you think breastfeeding is for a baby? How did you support your partner during her breastfeeding? (Appendix A.2).

3.7.2 Recruitment

Purposive sampling of mothers and fathers with breastfeeding infants was conducted over six months from May 2007 to September 2007 across the Perth metropolitan area. Criteria for inclusion were that participants had to be English-speaking, and a mother or father of a breastfed infant. A total 76 confirmed their willingness to participate. Focus group participants were recruited via posters inviting participation in the study placed at child health clinics, child care centres and early learning centres, to recruit women with a range of experience, socioeconomic levels and occupations. Information sheets about the research were given to all participants prior to the focus groups (Appendix A.3). Participants who responded to the advertising strategies were contacted via email or telephone and given information outlining the nature of the study, a choice of times for the focus groups, and the location, along with details about ethical issues such as confidentiality and storage of data. Mothers (n=48) were keen to participate in focus groups and were easily recruited across the Perth metropolitan area. Conversely, only five fathers were recruited for the focus groups but 21 fathers responded to an online survey. Two fathers unable to attend a focus group and without email access answered a telephone interview from identical questions utilised in both the focus group and the online survey. The males within the focus group were all pro breastfeeding and valued the opportunity to express the difficulties they had encountered with their partners' breastfeeding efforts and were not afraid to ask for and seek help for these difficulties. The fathers responding to the online survey were primarily partners of the mothers attending the focus groups and hailed from diverse cultural, educational and financial backgrounds.

3.7.3 Focus group procedures

The focus groups were conducted at private homes and community centres as nominated by the participants. Each focus group with mothers lasted from 60 to 90 minutes. To minimise interviewer bias and ensure consistency one of the female research team experienced in focus group research facilitated all of the sessions. All focus group discussions were recorded using two digital recorders and a research assistant recorded summary notes during the interviews. Each

participant signed a consent form prior to commencement of the focus groups or gave verbal consent for a telephone interview (Appendix A.4). Refreshments were provided to all participants attending the focus groups and a gift card was given to every participant to acknowledge their time.

The online survey, developed through Survey Monkey, incorporated all the questions from the fathers' focus group and allowed for open-ended questions. Two telephone interviews with identical questions to the online survey were conducted by a male researcher. This type of questioning facilitated the collection of rich qualitative data.

3.7.4 Data analysis

Qualitative data analysis consisted of two processes. The first involved identifying, coding, and categorising themes found in the data (238). Data from the audio-tapes was transcribed by the present researcher for consistency. Analysis was conducted using a constant comparison method modified from the grounded theory approach (239). In this process, all transcribed data were coded manually and common themes and categories created to identify additional understanding of the interactions and perceptions of the participants. The participants' reflections, conveyed in their own words, strengthen the validity and credibility of the research (240). Transcripts were cross-checked by four members of the research team who were familiar with qualitative research methods and categories and themes corroborated to ensure credibility and conformability of the data analysis. The second process of analysis used Social Cognitive Theory and the Health Belief Model as analytical frameworks from which identified themes were considered.

3.8 PREPARATION FOR RCT

The preparation for the RCT involved the reviewing of current antenatal class content at each of the participating hospitals, the development of questionnaires and the development of the educational materials for weekly delivery to fathers over six weeks postnatal. All education materials had to conform to the broader purposes of health literacy, described by Nutbeam as: "Health literacy means more than being able to read pamphlets. By improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment" (p 264) (241).

3.8.1 Environmental audit

An environmental audit was conducted to review current antenatal class format and curriculum. Meetings were arranged with 12 antenatal educators from the study hospitals.

The content for antenatal classes was found to be generally consistent across the eight hospitals, although delivery and scheduling varied. The present researcher attended more than 80 antenatal sessions and found the delivery of information to be inconsistent. Some hospitals had antenatal-specific educators whilst other hospitals had ward staff drafted to run the classes. Each site had a different schedule. Sessions were conducted weekly or bi-weekly over four weeks in two hour blocks for the full antenatal program, or a total of eight hours of education. Several hospitals also ran a full Saturday program for those parents unable to attend on week nights. Birth videos and postnatal care were included in some hospitals but not others. Some hospitals had extra breastfeeding sessions during the day in addition to the antenatal class, which precluded most fathers from attending.

3.8.2 Development of measuring instruments

Questionnaires were modified for baseline information based on previously validated questionnaires used in the Perth Infant Feeding Study 11 (242). A questionnaire to be answered at six weeks postnatal was developed to record method of birth delivery, infant feeding practice at six weeks postnatal, and support practices.

Baseline questionnaire

The baseline questionnaire was developed to collect demographic information including age, educational status, suburb of residence, marital status, income, nationality, and employment status (Appendix B.1). The baseline questionnaire contained open-ended questions such as “who else influenced your feeding decision?” (respondents could formulate their own answers) and closed ended questions such as “parenting will be enjoyable” (respondents were provided with a number of alternative answers). In addition further data was collected on attitudes to and knowledge of breastfeeding.

The IOWA Infant Feeding Attitude Scale (IIFAS) was included to assess the participants’ attitude to and knowledge of breastfeeding. Questions included the costs of infant feeding (e.g., “Formula feeding is more expensive than breastfeeding”), nutrition (e.g., “Breast milk is the ideal food for

babies"), convenience (e.g., "Breastfeeding interferes with a couple's sexual relationship"), and infant bonding (e.g., "Breastfeeding increases mother-infant bonding") (243). Respondents were asked to indicate the extent to which they agreed with each statement, on a five-point Likert scale ranging from "strongly disagree" to "strongly agree". The scale consisted of 17 items, with items worded so that approximately half of the questions were favourable toward breastfeeding and the remaining questions favourable toward formula-feeding. These scores were then computed so that a high score reflected a preference for breastfeeding. The IIFAS has favourable reliability scores with Cronbach's alpha ranging from 0.85 to 0.86 (243).

The Hospital Anxiety and Depression Scale (HADS) was included to identify any changes in anxiety and depression of the participants across the perinatal period. It consisted of 14 questions: seven questions about anxiety (eg "I feel tense or wound up") and seven questions about depression (eg "I still enjoy the things I used to enjoy") with participants asked to choose one response from the four given for each question (244). Questions alternated with either an anxiety or depression focus. The correlations between the two subscales varied from 0.40 to 0.74 (mean=0.56). Cronbach's alpha for HADS-A varied from 0.68 to 0.93 (mean=0.83) and for HADS-D from 0.67 to 0.90 (mean=0.82) (245).

Test-retest parenting section of baseline questionnaire

A test-retest was used for confirmation of the reliability of the questionnaire. Twenty three new parenting questions were included in the baseline questionnaire to increase the breadth of information from only breastfeeding to parenting and feeding. Questions included attitudes to parenting: "parenting will be enjoyable", lifestyle changes: "baby will just fit in with our life" and support needs: "I will get the support I need". The questionnaires were given to a convenient sample of 24 mothers and were repeated three weeks later. Answers were compared for validity and reliability using the Kappa (Kappa of 0.82, average for all questions tested). A Kappa of 1 is a perfect score, so 0.82 confirmed reliability (246).

Questionnaire at six weeks postnatal

The questionnaire to be answered at six weeks postnatal was developed to capture the current feeding practice of the mothers, the method of birth and any complications associated with the birth or breastfeeding (Appendix B.2). It also asked mothers about support and encouragement for breastfeeding, whether they enjoyed breastfeeding and why they stopped (if they had). Fathers

were asked how they supported their partner to breastfeed and what difficulties their partner encountered with breastfeeding.

For the fathers in the intervention group, the evaluation of the six week support package included questions like “was the postnatal depression information useful/helpful?” The questionnaire also included the HADS to monitor any trend with anxiety and depression over time. The questionnaire was posted, emailed or completed by telephone depending on the father’s preference. The participants were asked in the baseline questionnaire their preferred method of contact for future questionnaires; those who did not have internet facilities opted for either phone contact or a postal questionnaire with a reply paid envelope.

3.9 METHOD: RANDOMISED CONTROLLED TRIAL

A RCT that involved the implementation and evaluation of the father inclusive perinatal support program was conducted across eight public maternity hospitals between May 2008 and June 2009. The program contained two interconnected elements designed to complement one another. The first element consisted of a one hour antenatal class for fathers facilitated by a male educator. Fathers allocated to the intervention group were asked to attend a one hour education session on reducing negative attitudes and building skills and knowledge about breastfeeding. The educational intervention focussed on the importance of breastfeeding for both mother and baby and reducing fathers’ reservations about breastfeeding. It emphasised the important, varied role of the father and provided a venue for open discussion with peers to problem-solve and provide social support strategies.

Randomisation for the antenatal classes was computer generated but without blinding and both the researcher and the participants were aware they had been allocated to either the intervention or control group. The fathers’ classes were held in conjunction with the routine antenatal classes at the participating hospitals. The antenatal classes differed across the various sites in both number of nights/days available per week or month and required flexibility and planning. The second element was an educational/social support package for fathers delivered over six weeks after the birth of their baby. The package aimed to enhance fathers’ involvement and support of their partner with timely information about developmental milestones of baby, postnatal depression and problem-solving techniques to reduce anxiety.

Information from the formative phase was incorporated into the development of the antenatal education session. Three major content areas were identified as the most important issues to be discussed: ‘the role of the father’, ‘the benefits and importance of breastfeeding to both mother and baby’ and ‘what to expect in the first four weeks at home’. Other topics included baby bonding, sleep deprivation and stress. A logo was created to reflect the philosophy of the project, “Smarter stronger, breastfeed longer” and was used on all education materials and correspondence with participants and stakeholders. Handouts developed to complement the education session contained general information about parenting and the role of the father, the importance and benefits of breastfeeding for both mother and baby, and activities on how to bond with a baby.

3.9.1 Pilot testing intervention

The antenatal session and weekly education/support materials for the postnatal support package was initially piloted with a group of six fathers. These fathers completed the baseline questionnaire, gave feedback on the antenatal presentation delivered by one of the trained facilitators and the resources available on the night. From this feedback, the recommendation that the session had too much information within the allocated time frame was taken into account. As the length of time for the session could not be increased due to time constraints within the hospitals, a solution was devised. Content was decreased in order to focus on just three areas the fathers found most useful: (1) role of the father (2) importance and benefits of breastfeeding to both mother and baby, and (3) lifestyle changes and what to expect in the first four weeks. The importance of prioritizing information was essential to assist the men to gain confidence in problem-solving regarding lifestyle and relationship changes.

The products and resources planned for the six week postnatal period received positive feedback and were considered appropriate and relevant, therefore required no changes. A second pilot with five different men was then conducted with very positive feedback on the revised antenatal class format that required no further refinement of the session or resources. The pilot information was not used in the final data set.

3.9.2 Recruitment and training of facilitators for the antenatal session

During the formative research men indicated preference for a male facilitator who understood the parenting role and was able to communicate effectively. Three criteria were essential to be a

facilitator: (1) have been a father of a breastfed baby; (2) have an understanding of adult learning principles; and (3) have a commitment to promoting the importance of the father's role in early parenting. Seven male facilitators were initially recruited from hospital, education and community backgrounds; three were registered midwives and four were teachers. Two facilitators subsequently withdrew due to time constraints. The remaining five male facilitators were given standardised training that provided an overview of the research project, the content of the antenatal class and delivery processes.

To enable the facilitators to have consistency and reliability in content and format, training manual was developed based on adult learning principles. These included the opportunity for fathers to identify their concerns around "parenting" and to engage in the different experiences of other fathers in the group. It incorporated the aims and objectives of the project, icebreaker activities and learning activities including a presentation for the expectant fathers. Each facilitator was given a compendium containing a USB storage device and CD with the Microsoft PowerPoint (2007) presentation of the antenatal session. As a backup and for use in those hospitals without audio-visual capacity, a set of overhead transparencies of the Microsoft PowerPoint presentation was included. Stationery was provided along with work sheets, evaluation sheets, pens, a marble and a golf ball (for visual representation of baby's stomach) and name labels. The facilitators were given the opportunity to personalise the Microsoft PowerPoint material by including pictures of their own children. Findings from the formative phase indicated this strategy was important for credibility.

3.9.3 Recruitment of fathers for the antenatal session

The recruitment of fathers and delivery of the program by the male facilitators occurred over a 13 month period from May 2008 to June 2009 at eight metropolitan public maternity hospitals. Inclusion criteria included being 18 years or older, able to understand, read and write English and that the father intended being involved with childcare. When the participants were less than 18 years written consent from their parent or guardian for their participation was obtained. Those participants who did not speak or read English but had an English speaking partner who was able and willing to translate, were also invited to participate.

The researcher attended most first nights of antenatal classes and gave a short overview of the project with an open invitation to participate. Research assistants covered the evenings that occurred on the same night in a different hospital. Initially, participants were recruited on the first

night of the antenatal class they attended and were given an information sheet and an accompanying consent form (Appendix C1 and C2). This took some time for participants to read and understand the project they were agreeing to be part of before they answered the baseline questionnaire. This process was not timely and interfered with the midwives presentation too much. We then decided to post out the information sheet prior to participants attending their first antenatal class and needed the hospital staff to facilitate that process. The information sheets were either sent to the parents by the clerical staff from the antenatal clinics along with information about their antenatal classes, or a list of potential parents was faxed through to the researcher and an information sheet about the project sent to them from Curtin University. The participants were also asked to come 15 minutes early to complete the baseline questionnaire. This worked much better and allowed time for any questions about the project to be answered and increased the time available for questionnaire responses prior to classes commencing. Cross-contamination of participants at antenatal classes was avoided as classes were conducted for expectant parents in their 33rd-34th week of pregnancy, capped in numbers (which reduced the chance of expectant mothers enrolling too early in their pregnancy) and ran for a further 4-5 weeks. Chances of overlap between a control and intervention class was therefore remote and did not occur at any of the hospitals.

Fathers and mothers agreeing to participate in the study were asked to sign a consent form prior to completing the baseline questionnaire (Appendix C.2). The questionnaire contained demographic information that included age, marital status, occupation, educational level and nationality. Data were also collected on breastfeeding knowledge and attitudes, well-being over the past week and intention to breastfeed.

The antenatal session for intervention fathers was delivered as a supplement to the existing antenatal sessions offered by the hospitals and was normally delivered on the third or fourth week of their antenatal programs (total program=4 weekly sessions). This was to benefit the prior opportunity for social networking within the group. Most participants were recruited from hospitals located in areas identified as low socioeconomic (247).

3.10 DELIVERY OF THE ANTENATAL SESSION

Active learning defined by Meyers and Jones is “a learning environment that allows participants to talk and listen, read, write, and reflect through problem-solving exercises, informal small groups, role playing and other activities”(p 6) (248). The male facilitators delivered a standardized

Microsoft PowerPoint presentation in combination with a problem-based collaborative approach with discussion questions and experiential learning activities incorporated throughout the presentation (249). Discussion groups within the antenatal class included the impact of breastfeeding upon intimacy, dealing with feelings of being left out and capitalising on opportunities to be involved in infant care. Interactive sessions included role plays on how to manage breastfeeding in public, dealing with unsupportive in-laws, or an uncertain partner and were included to give a comprehensive overview of their new role.

Active learning in small group work offered the opportunity for the men to interact and share their apprehensions about the new parenting experience (250). Misunderstandings such as “babies feed four hourly and sleep through the night” were addressed by the facilitators and lifestyle changes explored. Work sheets developed for the men to use in small group work included spaces for their own notes. Information about the benefits of breastfeeding for both mother and baby were presented as activities and small group work in line with adult learning principles of problem-solving, relevance and active participation (251).

Handouts of the Microsoft PowerPoint presentation allowed fathers in the intervention to review the information from the antenatal class at home. During the delivery of the intervention antenatal education session, all male participants were given materials developed to support and complement the session. These included: a New Father’s Guide identifying possible scenarios and potential problems for parents and infant in the first four weeks at home. It identified sleeplessness as one of the greatest hurdles to overcome with a new baby and a new mother, and how to access resources if help was needed (Appendix D.1). The inclusion of the New Fathers Guide at the antenatal class follows O’Brien’s recommendation that antenatal information about infant development and anticipatory guidelines to follow can decrease negative behaviour by fathers (252). The opportunity for fathers to engage with others, to start identifying potential problems and generate solutions to those problems was seen as important in the RCT and was a skill set that the postnatal material would build upon.

A “How To Be A Breastfeeding Champion” brochure contained simple ideas for fathers on how to best support their partner in her breastfeeding efforts and to make a difference (Appendix D.2). The brochures offered helpful tips, a list of essential resources and websites and telephone numbers to assist with problems associated with breastfeeding difficulties or infant health. Their purpose was to enhance the provision of support the fathers offered their partners, to improve their problem solving abilities in relation to breastfeeding and associated issues, and to assist them

to identify possible signs of postnatal anxiety and depression. Participants were able to articulate problems that they might encounter and through completion of a worksheet and identify potential solutions through group questions and discussion. Men were invited to complete an evaluation sheet at the end of the antenatal education session with questions on the content of the class, the facilitator, and presentation strategies.

Each pregnant partner was given a 'Mother's Information Booklet' that incorporated similar information to the men's resources to maintain transparency of information. It included pages on: how to bond with your baby, breastfeeding importance for both mother and baby and possible emergency contact numbers (Appendix D.3). At hospitals where the breastfeeding class ran at a different time to the father inclusive class, mothers were given an opportunity to engage with each other and the researcher in a general question and answer forum.

Process evaluation of the education package included feedback from the evaluation sheet as well as a second post or online survey six weeks postbirth seeking feedback about the usefulness and relevance of the antenatal session and the information contained in the postnatal support package.

Routine standard hospital antenatal classes incorporate the NHMRC infant feeding guidelines that include discussion of the benefits of breastfeeding, milk production, the concept of supply and demand-feeding, frequency of feeds, the milk ejection reflex (formerly known as the let-down reflex), attachment and positioning. Maternal diet, medications, alcohol intake and available community support resources are also recommended (6). The control group of fathers and mothers received the standard breastfeeding information provided by each hospital antenatal education program.

Figure 3 shows the recruitment and retention for the RCT. Mothers in both the control and intervention nominated groups were all given baseline questionnaires, whether they had a partner or not at the antenatal classes, in order to avoid discrimination or alienation. Owing to work commitments or other reasons 44 fathers who answered the baseline questionnaire were unable to attend the intervention antenatal class, but with an intention to treat underpinning the intervention, they were still included in the six week support intervention.

The variation in question response rates was 72%-92% depending on the question answered and was consistent across both the participants in the intervention and control groups. Responses for the baseline demographics and attitude and knowledge questions demonstrated a higher response rate compared to those questions in the survey delivered at six weeks. This could be attributed to

time management issues with a newborn, breastfeeding regimes and possible lack of interest in the survey postnatal. Figure 3 includes the attrition rates for the breastfeeding outcome measures only. Respondent burden accounted for a variable response to the six week questionnaire, but the researcher approached all participants on multiple occasions (if necessary) to obtain the infant feeding practice at six weeks as a priority for analysis.

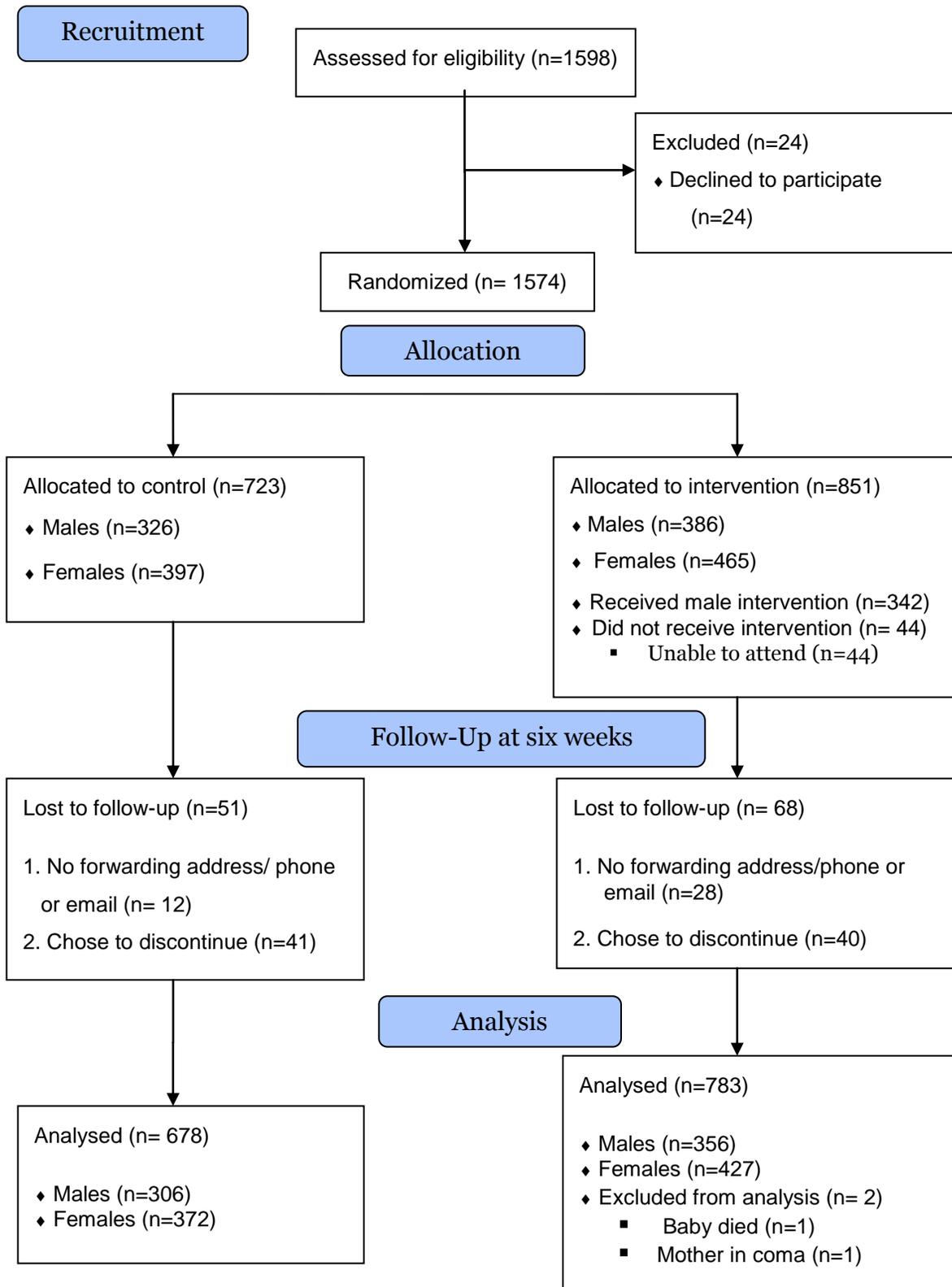


Figure 3: RCT: Flow diagram of recruitment and retention for the father inclusive perinatal support intervention

3.11 POSTNATAL EDUCATION AND SUPPORT

After the successful birth of the baby the second component of the intervention was initiated. A sequence of information, resources and motivational material was sent to the parents via the father. Recent research suggested that health promotion messages were more effective when given at both antenatal and postnatal stages (21). Each educational resource was developed on health promotion principles of increasing health literacy, and health communication with the goal of increasing health behaviour, i.e. increased breastfeeding (253). The weekly education/support package was designed to complement and reinforce the antenatal session content, maintain contact and reinforce the breastfeeding support by fathers. It included information about postnatal issues: importance of good nutrition for breastfeeding success, the need for adequate rest, and decreasing stress and postnatal depression. The scientific literature provided the evidence for the sequencing of this support (254, 255). It coincided with the known stressors (sleeplessness, fatigue and lack of self-confidence) and inhibitors to breastfeeding (breastfeeding difficulties include sore nipples and perceived insufficient milk supply). The material complemented the information received during the antenatal session, acknowledged the stressors affecting new parents and sought to provide information and social support to assist them gain confidence in their parenting role. Figure 4 illustrates the flow of the six week support program.

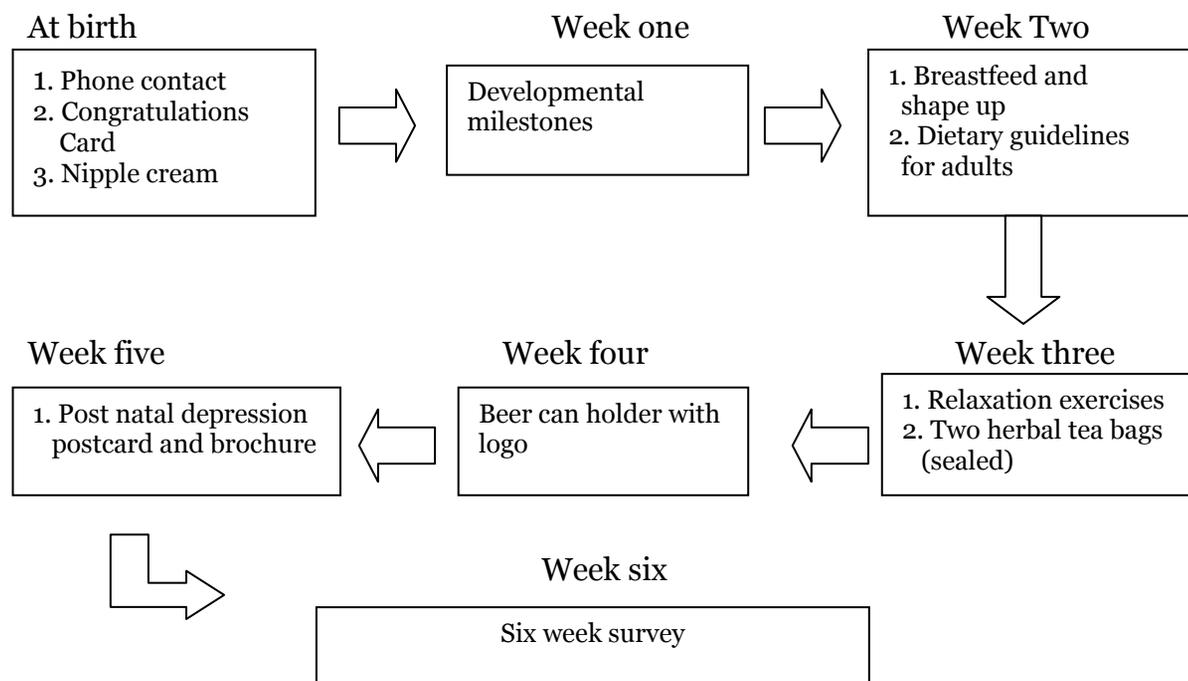


Figure 4: Schematic for the six week support program for fathers in the intervention

At Birth

A live birth was confirmed by phoning the father on the expected birth date identified on the baseline questionnaire, and following up until the baby was born. A congratulations card with several sachets of Lanosin[®] nipple cream was sent to the new parents. The message inside the card, created by the present researcher read:

“The joys of a newborn are hard to describe
They bring tears to your eyes with their plaintive cries
And you wonder how you will ever survive
Then they fall asleep and your world is complete”

The card facilitated a deeper connection with the fathers and gave them an opportunity to talk about their birthing experience and their feelings about being a “new Dad”. The samples of nipple cream were included for mothers to help reduce sore nipples, a known inhibitor to breastfeeding at this stage (256). As nipple pain is frequently experienced by new mothers in the first week (254) nipple cream was an appropriate inclusion at this stage.

Week One

Information about the developmental milestones for baby was identified in the formative research (257) as important in the first week at home, to inform fathers and include them in monitoring their baby’s progress for age-appropriate abilities. The developmental milestones pamphlet was a way for fathers to track their baby’s progress and growth to increase their self- confidence and understanding of normal infant behaviour and development (Appendix E.1).

Week Two

Good nutrition is vital for everyone, and more so for new parents who are battling with extreme fatigue and lack of energy (6). The dietary guidelines for adults and for breastfeeding mothers was planned for week two in an effort to highlight the importance of regular meals and increased fluids to maintain a good milk supply.

Week Three

Week three is often the time of a growth spurt for baby with an accompanying increase in feeding leading to increased stress and fatigue (256). A “how to relax” relaxation exercise brochure combined with two individually packed herbal teabags at this stage acknowledged the need for “time out” and encouraged parents to practice the simple, easy exercises to reduce stress and fatigue (Appendix E.2).

Week Four

Week four was determined to be ideal for reciprocity to encourage the return of the six week questionnaire. A logo crested beer can holder with the logo for the project “Smarter, stronger breastfeed longer” was created. The stubby holder, (Appendix E.3) was designed to attract attention and to reinforce breastfeeding advocacy in a culturally appropriate way, guided by the Health Belief Model and a need to challenge hegemonic masculinity concepts. It was a conversation piece that promoted breastfeeding benefits.

Week Five

A recognised risk period for postnatal depression is between four and six weeks postbirth (258) and a postcard highlighting the signs and symptoms of postnatal depression along with a comprehensive brochure about postnatal depression with associated help resources were sent as part of an anticipatory guidance approach (Appendix E.4)

Week Six

All participants had identified on their baseline questionnaire responses their preferred method of responding to future questionnaires. At six weeks postbirth, a questionnaire was administered by telephone, email or post to all participants, according to their stated preference. Data was collected on type of birth, birth or breastfeeding complications and perceptions of support received for breastfeeding.

3.12 OUTCOMES MEASURES AND HYPOTHESES

The primary outcome measures for the RCT were duration of both exclusive breastfeeding and “any” breastfeeding at six weeks postnatal. The secondary outcome measures were changes in anxiety and depression for fathers in both the intervention and control groups from baseline to six weeks post natal.

The main hypothesis for this RCT was: there will be no difference in breastfeeding rates at six weeks postnatal between the mothers whose partner was in the intervention group compared to the mothers whose partner was in the control group.

The secondary hypothesis was: there will be no difference in anxiety and depression scores across the perinatal period between fathers in the intervention group compared to fathers in the control group.

3.13 POWER CALCULATIONS

Sample size for the RCT was determined by performing power analysis and sample size estimation. Although there are no formal standards for power, most researchers assess the power of their tests using 0.80 as a standard for adequacy. This convention implies a four-to-one trade-off between β -risk and α -risk. β is the probability of a Type II error; α is the probability of a Type I error – $0.2 = 1 - 0.8$ and 0.05 are conventional values for β and α) (259).

Assuming a loss to follow-up of 25% in each group, 300 subjects were required in each group to be able to detect a difference at 80% power and 5% level of significance using a Log-rank survival test (260). As the present thesis is only reporting on the six week outcomes, the key outcome for statistical significance was considered to be a 10% increase in breastfeeding duration for the mothers whose partner was in the intervention group compared to those mothers whose partner was in the control group.

3.14 QUANTITATIVE ANALYSIS METHODS

The key outcome variable for statistical analysis for the RCT was duration of breastfeeding at six weeks. It was analysed using Survival Analysis techniques. Data was cleaned to identify incomplete, incorrect, inaccurate, irrelevant data (261). Variables reported in the literature to have an effect on the duration of overall breastfeeding were investigated in a regression model and

covariates that included age, income, employment, marital status, nationality and level of education attained. Categorical data was expressed by percentage and comparison was made by the Chi square test. Chi square analysis was used for cross-tabulation with the dependent and independent variables, e.g. any breastfeeding at six weeks/age of mother, or marital status or group. Continuous variables were expressed as mean and standard deviations or median and compared by Student t-test. Repeated measures were used to determine the shift across time for anxiety and depression scores for the fathers in both the intervention group and control group. Intra-group comparison of continuous variables was carried out using paired t-test i.e. anxiety and depression scores. A p-value <0.05 was considered statistically significant.

3.15 SUMMARY

This chapter has identified the methods utilised in the RCT with details of the formative research methodology. The setting, context and development of the intervention for the RCT to increase the duration of breastfeeding were discussed.

The following chapters will report on the outcomes of the formative research (Chapter Four), the antenatal session and six week support package (Chapter Five), and the comparison of anxiety and depression across the perinatal period between men in the intervention group and those in the control group (Chapter Six).

CHAPTER FOUR: PAPER 1-FORMATIVE RESEARCH

PRELUDE TO CHAPTER FOUR

Chapter Four is a published peer reviewed journal article and addresses objective one and two of the thesis:

Objective 1: identified the facilitators to breastfeeding that included “anticipating needs” and “encouragement to do your best”. This allowed fathers to give effective support for their partners’ breastfeeding.

Objective 2: explored the barriers to breastfeeding that included pain, attachment difficulties and lifestyle choices.

The formative research process focussed on intervention development unique to the target population. The process took six months to complete and utilised the theoretical frameworks of health promotion and behaviour including Social Cognitive Theory, Health Belief Model and Gender Theory. Semi structured interview schedules were used for focus groups and an online survey was developed to collect data in this process.

The researcher was involved with developing the moderator guide used to maintain consistency in the focus groups, recruiting and organising the focus groups and conducting the interviews. The researcher also developed the fathers’ online survey through “Survey Monkey” and recruited fathers to answer the survey.

DADS MAKE A DIFFERENCE: AN EXPLORATORY STUDY OF PATERNAL SUPPORT FOR BREASTFEEDING IN PERTH, WESTERN AUSTRALIA

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ABSTRACT

Background

The ability to breastfeed and continue the practice requires dedication, commitment, persistence and support. Mothers often need to overcome many obstacles to successfully breastfeed their babies and maintain their balance of home, family and work commitments. Evidence suggests that fathers want to be involved and be part of the parenthood process, including infant feeding. The role transition from couple to family poses challenges to both parents. Sharing the experience of childbirth and supporting each other in the subsequent infant feeding practices is one of those challenges.

Methods

A qualitative exploratory design was chosen to identify parents' perceptions of what constitutes support for breastfeeding, particularly focusing upon paternal support. Focus groups were conducted with mothers and a focus group, interviews and an online survey were developed for fathers. Thematic analysis was used to identify the main themes.

Results

From a total of 76 participants, the major theme emerging from mothers' data identified that "Dads do make a difference". Three sub-themes included: Anticipating needs and getting the job done; Encouragement to do your best; and Paternal determination and commitment, associated with effective partner support. "Wanting to be involved" was identified from fathers' data as the major theme around their needs. Three sub-themes included: Wanting more information; Learning the role; and Being an advocate.

Conclusion

Sharing the experience of childbirth and supporting each other in the subsequent infant feeding practices was perceived as the best outcome for the majority of new mothers and fathers. Paternal emotional, practical and physical supports were identified as important factors to promote successful breastfeeding and to enrich the experience for the mother and subsequently the father.

Trial Registration

Australia and New Zealand Clinical Trials Registry: ACTRN12609000667213.

4.1 BACKGROUND

Breastfeeding is an important strategy in the promotion of child health [1]. Support from others, especially from fathers, is a major factor affecting breastfeeding success [2]. Although breastfeeding initiation rates in Australia are high, with more than 83% of women leaving the hospital breastfeeding, only 23% of infants receive any breast milk by 12 months postpartum [3],

which falls short of the international guidelines for infant nutrition [4,5]. Challenges that influence the duration of breastfeeding include community attitudes to breastfeeding [6]. The World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF) both recommend exclusive breastfeeding until six months of age. It is recommended that breastfeeding continue for at least 12 months, and thereafter for as long as mutually desired [5,7]. Breastfeeding trends in Australia have remained largely unchanged over the past decade, but a greater disparity in prevalence rates between lower socioeconomic and higher socioeconomic has been found [8].

Human milk is a bodily fluid which, apart from being an excellent nutritional source for the growing infant, also contains a variety of immune components such as antibodies, growth factors, cytokines, antimicrobial compounds, and specific immune cells [9]. These help to support the immature immune system of the newborn baby, and offer protection from infectious risks during the postnatal period while the immune system matures [9]. Infant formula does not provide protection against viruses or pathogenic bacterial organisms [9]. Despite current scientific evidence that artificial feeding can be a harmful practice, acceptance of breastfeeding as the normal or "default" method of infant feeding remains elusive in the industrialised world [10]. Two global strategies to address the issues of infant formula include the International Code of Marketing of Breast milk Substitutes proposed by WHO in 1981 [11] and the Global Strategy for Infant and Young Child Feeding [12,13] which underpins the Baby-Friendly Hospital Initiative. In Western Australia there are only three Baby-Friendly hospitals amongst a total of 12 maternity hospitals [14]. This lack of proactive breastfeeding infrastructure may contribute to lower breastfeeding duration [15], although Bartington et al. found there was no increase in duration of breastfeeding in a baby friendly hospital setting [16].

Mothers who breastfeed have reduced risk of ovarian cancer, breast cancer and better weight regulation [17-19]. Breastfeeding can assist in emotional development and increase maternal sensitivity [20], and understanding the importance of breastfeeding and the benefits it affords to both the baby and the mother can increase the opportunity for fathers to support their partners in their effort to breastfeed. Sherriff et al. suggest that the father of the baby is one of the most influential persons to the mother, and that they can act as either key supporters or deterrents to breastfeeding [21]. There is strong evidence that fathers can influence the initiation and maintenance of breastfeeding [22,23], contribute to maternal breastfeeding confidence [24-27], influence decisions regarding duration and weaning [28], and that without fathers' support mothers are more likely to breastfeed for a shorter duration [29,30]. Bar-Yam and Darby found that fathers influenced the breastfeeding decision, assistance at first feeding, duration of breastfeeding, and risk factors for bottle feeding [31]. They suggested that more research is needed

to identify the methods and means of support that fathers can give their partners to ensure breastfeeding continues for the recommended six months. In addition, when fathers are not able to be supportive, breastfeeding rates were lower [32].

Fathers' involvement in parenting is associated with positive cognitive, developmental, and socio-behavioural child outcomes such as improved weight gain in preterm infants, improved breastfeeding rates, higher receptive language skills, and higher academic achievement [33]. However, Giugliani et al. suggest that fathers need to be better prepared to assume their new role as breastfeeding supporters [34].

Research with mothers identifies fathers as a primary source of support, yet little is known about the nature of this support [35]. This paper identifies what women and men perceive as essential paternal support to facilitate successful breastfeeding. In addition, it ascertains what men believe they need to assist them to be an effective breastfeeding advocate.

4.2 METHODS

A qualitative exploratory design was employed to identify the paternal support women wanted to assist them with their breastfeeding. Focus groups were used to identify trends and patterns in perceptions of breastfeeding support. The focus groups aimed to establish the social context about breastfeeding support and enabled interactive discussions to take place among participants. Eight focus groups were conducted with postnatal mothers from a range of socioeconomic backgrounds, with groups comprising four to ten mothers who were breastfeeding or who had breastfed in the past six months. The objectives of these focus groups was to obtain descriptions of the perceived nature of fathers' positive support and to explore the effective support strategies fathers can use to be breastfeeding advocates.

Several attempts were made to recruit fathers from both higher and lower socioeconomic backgrounds for focus groups, but with limited success. Accessing these men proved to be much more challenging than anticipated, although they identified they would respond to a range of flexible data collection processes. A combination of data collection techniques including a focus group, an online survey and telephone interviews were used. Survey Monkey is a web-based survey collector with encrypted responses for confidentiality, and was used to develop and implement the online survey for fathers [36]. The questions in the online survey were identical to those asked in the focus group and in the phone interviews. Two telephone interviews were conducted with fathers who did not have access to the internet and were not available to attend a focus group. The objectives of these data collection methods were to identify fathers' perceptions about breastfeeding; identify factors that encourage fathers to support their partner's breastfeeding

(facilitators), and the factors that discourage fathers from supporting their partners' breastfeeding (barriers).

Ethics approval was obtained from Curtin University of Technology and met the conditions of the Helsinki Declaration. This paper is reporting on the formative research conducted in preparation for a randomized controlled trial. Informed consent was obtained from all participants through the provision of an information letter and signed consent forms.

4.2.1 Recruitment

Purposive sampling of mothers and fathers with breastfeeding infants was conducted over six months from June 2007 to December 2007 across the Perth metropolitan area. Perth is the capital of Western Australia with a population of around 1.2 million people, and has a diverse cultural and ethnic population. Criteria for inclusion were that participants had to be English-speaking, and a mother or father of a breastfed infant. A total of 48 women and 28 men (n = 76) confirmed their willingness to participate. Focus group participants were recruited across several settings via posters inviting participation in the study, at child health clinics, child care centres and early learning centres, to obtain women with a range of experience, socioeconomic levels and occupations. Participants who enquired in response to the advertising strategies were contacted via email or telephone outlining the nature of the study, a choice of times for the focus groups, and the location, along with details about ethical issues such as confidentiality and storage of data. Fathers were primarily recruited by their partners via "wanted" notices placed in early learning centres and child health centres.

4.2.2 Focus group procedures

The focus groups were conducted at private homes and community centres as nominated by the participants. The focus group questions were based on relevant components of two theoretical models: Social Cognitive Theory and the Health Belief Model [37,38]. Examples of questions from the mothers' interview guide included: What influenced your decision to breastfeed? What support from your partner have you found helpful during your breastfeeding experience? What support would you have liked to receive from your partner? Issues discussed with the fathers included questions such as: How important do you think breastfeeding is for a baby? How did you support your partner during her breastfeeding? Each focus group lasted from 60 to 90 minutes, and to minimise interviewer bias and ensure consistency, one of the research team experienced in focus group research facilitated all of the sessions.

All focus group discussions were recorded using two digital recorders, plus a research assistant wrote summary notes. Each participant signed a consent form prior to commencement of the focus

groups or gave verbal consent for a telephone interview. Refreshments were provided to all participants attending the focus groups and a gift card incentive was given to every participant to acknowledge their time.

The online survey, developed through Survey Monkey, incorporated all the questions from the fathers' focus group and allowed for open-ended questions. This type of questioning facilitated the collection of rich qualitative data.

4.2.3 Data analysis

Qualitative data analysis consisted of two processes. The first involved identifying, coding, and categorising themes found in the data [39]. Data from the audio-tapes were transcribed by the first author and analysed using a constant comparison method modified from the grounded theory approach [40]. In this process, all transcribed data were coded manually and common themes and categories created. This created additional understanding of the interactions and perceptions of the participants. The participants' reflections, conveyed in their own words, strengthen the validity and credibility of the research [41]. Transcripts were cross-checked by four of the researchers and categories and themes corroborated to ensure credibility and conformability of the data analysis. The second process of analysis used the element of Social Cognitive Theory and the Health Belief Model as an analytical framework from which identified themes were considered.

4.3 RESULTS

The participants were mainly first time parents who were geographically located across the Perth metropolitan area. These locations included western (high income), eastern (average income), southern (lower income) and northern (average income) suburbs [42]. The age of mothers ranged from 18 to 37 years and fathers from 26 to 48 years. The majority of participants were married (70%, n = 53) or living in a defacto relationship (29%, n = 21), with two participants being single.

A number of practical support strategies were suggested by the mothers and included: assistance with meal preparation, housework such as washing dishes and/or clothes, shopping, bathing the baby, bringing the baby to the mother for a night-time feed and measures to assist the mother to relax, such as a neck massage. As far as providing emotional support, women suggested that their partner could give praise or compliments, plus boost her confidence with encouraging comments acknowledging her breastfeeding efforts.

Analysis of the data revealed two major themes, "Dads do make a difference" and "Wanting to be involved", relating to paternal support with sub-themes describing the perceptions of effective paternal support from both mothers and fathers. Mothers' responses identified three common sub-

themes relating to fathers making a difference, which were: "Anticipating needs and getting the job done", giving "Encouragement to do your best" and having a "Paternal commitment to breastfeeding". Fathers' responses identified three common sub-themes related to being involved, which were: "Wanting relevant information", "Learning the role" and "Being an advocate".

Pseudonyms and participants age have been used to illustrate the participants' comments to support the themes developed.

4.4 MOTHERS' MAJOR THEME: DADS DO MAKE A DIFFERENCE

The theme "Dads do make a difference" emerged from all focus groups with a wide range of situations presented where fathers made a difference and numerous examples of practical ways in which they helped, including assistance with expressing breast milk:

"Without him I couldn't have done it [breastfeed], I couldn't have expressed for the two weeks that I did." (Melissa, age 27)

Similar thoughts were expressed by Camilla who acknowledged how much her partner supported her efforts when her family was pro formula feeding:

"None of my family has breastfed and they thought it was a step backwards. Only poor people breastfeed. They didn't understand what the urgency and importance of breastfeeding was for me. Without him [partner] I couldn't have done it [breastfed] really." (Camilla, age 22)

4.4.1 Anticipating needs and getting the job done

Just being there to offer support as needed and sharing the new parenting burden was identified by many of the mothers as an important role. One mother spoke about how useful it was that her partner was able to remember the attachment and positioning skills for breastfeeding;

"He was sort of assisting me when the lactation consultant was around and he would remind me later, because I would forget things like that. He would actually observe and try to make suggestions about positioning and attachment, which was good for both practical and moral support." (Jane, age 28)

Mothers reflected on some of the ways their partners anticipated their needs and assisted them with their newborn babies:

"He just knew that that's what I needed; I didn't have to say the baby's awake, get up. He just got up straight away and brought her to me." (Sarah, age 33)

Carol offered examples of how her partner allowed her to take some time out:

"He'd come up and just hold the baby, so I could have a shower or grab something to eat." (Carol, age 32)

On occasions when mothers felt overwhelmed they relied on their partners to continue running the house:

"I was getting no sleep at that time; you know feeding her was taking two hours. Then there was an hour gap and I would have to start feeding her again, so he pretty much did everything; cooked, cleaned, went to work." (Pamela, age 29)

Another mother recognised the importance of her partner being home in the first few weeks post birth to help her.

"It was great to have him there during the day. I think it's really important that husbands need to be home each day for the first month to help, because that's when the problems tend to happen." (Marg, age 26)

4.4.2 Encouragement to do your best

Offering the mother acknowledgement for the effort being put into breastfeeding and giving emotional support was seen to be especially important. Mothers talked about the difficulties in the first few weeks at home with a newborn, and how important it was that their partner was encouraging and accepted the time commitment to breastfeeding. As the following mother related:

"Just that encouragement, you know when your partner says you're doing a good job in those early days when you're feeding for 40 minutes or an hour, I found that really helpful." (Juanita, age 34)

One mother talked about her increased sense of confidence knowing her partner trusted her to do the best for their baby:

"It's like he trusts that I will do what is best for the baby." (Robin, age 23)

Acts of affection and kindness were greatly appreciated and acknowledged as this mother described:

"He got up during the night and gave me cuddles when I was in tears, and my nipples were cracked and sore and bleeding, that was really helpful." (Dina, age 21)

Another mother talked about the importance of her partner just being there, accepting of her commitment to breastfeed:

"He was fully aware that my job at that time was to feed the baby, and for him to just be there." (Rhani, age 30)

Anticipating needs, emotional support and a commitment from the father to support and promote breastfeeding, led to the third sub-theme.

4.4.3 Paternal commitment to breastfeeding

Believing that breast milk was best for their child and willing to do what was necessary to assist his partner to breastfeed, saw one father go "head to head" with the hospital staff following his partner's emergency caesarean birth.

"Normally, he doesn't engage in discussions like this. But he'd taken it in and when it was necessary, he's stepped up and pushed back the medical staff and said to them 'breast milk is best. It's on tap. It's here, it's available, and that's what my baby's having.' And that meant the world to me. It's one of those situations where I could easily have come out of the general anaesthetic and gone. 'Crap, my baby's had formula for its first feed,' but it hadn't because Dad was on the ball, to say 'No'." (Julie, age 26)

Another mother spoke of the commitment and support from her husband to express breast milk to ensure their baby didn't have formula:

"She just wasn't a strong feeder, and I needed a lot of support; there was never any mention of formula or anything like that. He just knew to get the pump, and we pumped for six weeks." (Anna, age 32)

Using computer technology assisted the next father in his commitment to breastfeeding and reduced the attachment difficulties for his partner:

"Getting the attachment right was a bit challenging and I remember one night he went to our laptop computer, brought it into the bed and we watched a little demonstration on breastfeeding. He set that up for me, helping me get the attachment right." (Jacqui, age 22)

The mothers' experiences reflected how "Dads make a difference". However, when the fathers' data were analysed the major theme "Wanting to be involved" emerged. Three sub-themes also emerged: "Wanting relevant information"; "Learning the role" and "Being an advocate".

4.5 FATHERS' MAJOR THEME: WANTING TO BE INVOLVED

Fathers participating in the study all wanted to be involved with parenting and parenthood, but many of them felt they were unprepared and lacked the relevant information to be effective in their parenting role. One father spoke about feeling left out and neglected because he didn't understand what his partner was going through:

"I felt like I was missing out on intellectual stimulation, missing out on emotional stimulation and physical. I think a lot of those things; the feeling of neglect could have been avoided by having someone explain to me what the women really go through and how to make things easier or better." (Imran, age 29)

Responses from fathers indicated there was a need for ready access to support specific to father's needs.

"Give some advice on how to be supportive to the mother when she is struggling with breastfeeding/baby blues." (Jason, age 22)

Fathers indicated they believed men may be reluctant to ask for help or not know who to ask or where to ask:

"Let fathers know why mothers need assistance and what they can do to help once the child comes along. Encourage them to get involved in day to day stuff." (Michael, age 32)

4.5.1 Wanting relevant information

The men were consistent in identifying their need for "warts and all information".

"Information on relationship changes, hormonal changes of the partner and how best to support and handle those changes. Supporting your partner when she has problems like postnatal depression, no sex drive, changing hormones, crying/yelling/angry outbursts - learning to understand and support rather than chastise and think there is something wrong with your partner." (John, age 32)

Many of the fathers felt inadequate in their lack of knowledge about this new role in their lives and some felt resentful that they were not as informed as their partners. Even though fathers had often attended antenatal education classes they still felt inadequately prepared:

"You want similar information that mother's are given in mother's group on how to feed, nurture, and bond. Antenatal classes give the impression that fathers have nothing to do with their child." (Peter, age 38)

Most fathers believed they needed much more information about pregnancy, childbirth, breastfeeding and parenting. As Mark said:

"Provide information on why breastfeeding is best for baby and mother." (Mark, age 38)

Another father talked about the need for reassurance and support for fathers:

"It is easy to feel that the mother knows what to do and for the dad to stand back because he is a bit scared of doing it wrong. Confirmation that the mother is just as out of her depth as the father, and that it is a team effort." (Julio, age 25)

The following quote illustrates one father's need for information about difficulties associated with breastfeeding. His concern and horror about a piece of his wife's nipple falling off was in no way mediated by any of the information he had received during the antenatal education process:

"Badly cracked nipples, one was so bad a small piece of the nipple fell off and left a hole, I didn't know what to do." (Muhammad, age 23)

Without exception, all the participating fathers wanted to be part of the parenting experience, but needed to learn the role.

4.5.2 Learning the role

The requirement for pragmatic information and realistic solutions being incorporated into learning the role were identified by participants who talked with pride about their babies and what it meant to be a father. As one dad said:

"Watching him develop, having cuddles, anticipating of our future together. Seeing part of yourself in your little boy. Showing him off to family, friends and everyone else. Seeing him smile. Watching him interact with his beautiful mother." (Rick, age 37)

Many of the fathers had ideas about what would have been useful for them to know before they had the baby. As the following father related:

"How to support your partner, things you can do to be involved. How to comfort your partner, the kind words you can say to support her. Hints on helping and understanding new mothers. Some advice on caring for the new baby." (John, age 27)

One father talked about having a realistic view of what to expect: and just being there as a comfort for his partner: "A no bullshit idea of what to expect and how to help even if that means doing nothing but being there with her and the baby." (Pete, age 28)

4.5.3 Being a breastfeeding advocate

Fathers discussed the need to advocate to family members and health professionals on the importance of their baby being breastfed.

"It is actually a sacrifice but at the same time, people should realize that if you feed baby properly [breastfeed] you will have your life more comfortable than if you don't. When baby's happy then everything is good." (Andre, age 37)

To be there and protect and defend parenting decisions against negative or unhelpful interference such as extended family who encouraged formula or undermined the mother's efforts was very important for fathers. As this father explained to his extended family:

"This is our parenting journey. Please be respectful, we feel it's best to do it this way [breastfeed]. Thank you for understanding." (Aaron, age 36)

Another father spoke about the advocacy role he played when the midwives at the hospital wanted to give his baby formula, knowing his partner wanted to breastfeed:

"I know you want to breastfeed, so stick to your guns." (Jarrad, age 40)

Supporting the decision to breastfeed in public without feeling shame was highlighted by the following father's comments. He also describes the shift from a sexual to functional use of the breast:

"When you're out and about sometimes it can be little bit concerning for a new mum to you know, just hang it all out. I guess there's still that well, it's like shame, and you don't want everyone looking at things [breasts] that have been private. And suddenly you've gone from being a sexual thing to a kitchen utensil." (Eric, age 38)

4.6 DISCUSSION

Acknowledging the inherent limitations of this research (non-representative self-selected sample, small sample size), the researchers were still able to access 76 parents from a range of socioeconomic settings, and were able to identify several consistent themes. While it was difficult to recruit fathers for focus groups due to time constraints associated with work commitments, fathers responded to an online survey that they could do in their own time. This data collection process enabled fathers to express their fears and concerns about the whole process of parenting and their lack of adequate information and preparation.

There was a consistency between the themes that emerged from both the mothers and the fathers, with both believing that breastfeeding was a team effort and that father's support was essential to the mother being able to breastfeed successfully. The tasks and activities fathers provided, as identified by the mothers, such as encouragement and problem solving were consistent with the requirements that fathers identified; for example the need for real information. In support of these themes, Wolfberg et al. found that breastfeeding initiation rates were higher (74%) when fathers attended a two hour prenatal intervention than in a control group (41%) [43].

In acknowledging the importance of paternal support for successful breastfeeding, Susin and Giugliani found that mothers would like more help from their partners, but were sometimes

unclear what type of help they wished to receive [44]. They also found most fathers wanted to help mothers but did not know what they could do to help, which again reflects the fathers' views in the sub-theme "Learning the role". The sub-themes of "Encouragement to do your best" and "Being an advocate" were supported in the literature by Scott et al [45] and Scott and Binns [46], who identified the father as the most important support person to give encouragement and advocacy.

Barriers to effective breastfeeding identified by the participants included physical problems (such as poor attachment and cracked or bleeding nipples) contributing to challenges with breastfeeding, inadequate knowledge about how to manage potential breastfeeding problems, and exclusion of the male partner during the antenatal classes. Disturbingly, fathers identified a lack of "real information", a lack of recognition for their role, lack of engagement during the antenatal education process, and lack of commitment to breastfeeding by hospital staff as barriers they needed to overcome in their role as advocates and supporters of breastfeeding. This finding is supported by two recent studies: Pisacane et al. [47] found that supporting fathers with information about the breastfeeding process increased the duration of breastfeeding, and Rempel and Rempel [48] found it was important to provide men with the evidence supporting breastfeeding so that they had a solid basis on which to develop pro-breastfeeding beliefs. The need for clear concise information is essential if fathers are to be advocates for breastfeeding.

The findings from this study highlight the importance of practical, emotional and physical support for mothers. Research suggests many women have difficulty breastfeeding and need the support of their partner to be successful. The importance of breastfeeding was identified by the fathers in this study. Giving fathers more information about the breastfeeding benefits for both mother and baby [47], and possible problems associated with breastfeeding can give them the confidence to support their partners and become breastfeeding advocates [49,50]. Similarly, Sheehan et al. suggest fathers not only influence the decision to breastfeed, but they also play an instrumental role in whether mothers continue breastfeeding or stop prematurely [51]. Ingram and Johnson worked with fathers to increase breastfeeding support for mothers and found that fathers' attitudes to breastfeeding in public and knowing how much milk the baby was getting had the most influence on whether they supported their partner to continue to breastfeed [52].

The men participating in this study clearly wanted information about how they could support their partners in the postnatal period including support of breastfeeding, and were motivated and ready to learn. Teaching fathers how to prevent and to manage the most common lactation difficulties is associated with higher rates of breastfeeding at six months [47]. Breastfeeding cannot be promoted without it also being supported socially, economically, and politically [53], and women should be

encouraged to breastfeed, while institutions and communities are challenged to remove the barriers to breastfeeding continuation [54]. Identifying the different methods of support can assist antenatal educators to promote the skills necessary to successfully breastfeed.

There was disparity between the advice and support some health professionals provided and the needs of the fathers as breastfeeding champions in this study. This was also found by Hauck et al., who found conflicting advice from health professionals gave reduced support for mothers to breastfeed [24]. This study strongly supports policy changes within the maternity units that reflect a commitment to breastfeeding and that reduce conflicting advice. Recommendations that health professionals should educate all key family members, both during pregnancy and in the postnatal period, on the benefits of breast milk, and on how to encourage and support mothers in the early weeks of breastfeeding have already been made [55,56]. A move towards Baby Friendly hospitals across the state would greatly increase the opportunity for greater education and support for ongoing breastfeeding as the natural choice for infant feeding. Increasing Baby Friendly hospitals globally could increase both breastfeeding initiation and duration, and this study promotes the continuance of these recommendations.

4.7 CONCLUSION

Men want to be part of the parenting role and need information and knowledge. This would give them the opportunity to synthesise the information and apply the knowledge to feel confident and competent in their new role as an involved parent.

The role of practical and emotional support from fathers is an essential ingredient to successful breastfeeding, increasing the mother's confidence and enabling her to maintain an adequate milk supply. Whilst breastfeeding remains the sole domain of women, the essential support of their partners can be a lost opportunity. Empowering both parents to make and sustain a commitment to breastfeeding requires the infrastructure and human resources to make this possible. The fact that some participants in this study experienced a lack of commitment to breastfeeding by some hospital staff may indicate that additional training is required in hospitals. Baby Friendly hospitals Australia-wide and globally could be the first step to educating maternity staff and health professionals to the importance and benefits of breastfeeding, though if Bartington et al.'s findings are correct, perhaps an alternative to hospital-based education needs to be found, one that engages fathers as well as mothers [16]. However, recognition that breastfeeding is a family issue benefits everyone. When difficulties encountered by mothers are shared with their partners, babies will have a better chance of receiving breast milk exclusively for the recommended six months, and with complementary food could continue to breastfeed for two years or more.

4.8 COMPETING INTERESTS

The authors declare that they have no competing interests.

4.9 AUTHORS' CONTRIBUTIONS

JT participated in the data collection and analysis and drafted the manuscript. BM has made substantial contributions to conception and design and in revising the manuscript for intellectual content and given final approval. YLH has made substantial contributions to conception and design, acquisition of data and analysis and interpretation of data; involved in manuscript revision. PH has made substantial contributions to conception and design, acquisition of data and analysis and interpretation of data; involved in manuscript revision. SB has made substantial contributions to conception and design and participated in manuscript revision. CWB has made substantial contributions to conception and design. All authors read and approved the final manuscript.

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CHAPTER FIVE: PAPER 2 - DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A FATHER INCLUSIVE PERINATAL INTERVENTION TO SUPPORT BREASTFEEDING

PRELUDE TO CHAPTER FIVE

Chapter Five is a published peer reviewed journal article that describes the development, implementation and evaluation of a father inclusive perinatal support intervention. The intervention for fathers was a two-staged process involving an hour long antenatal class for fathers with a male educator followed by a strategically sequenced weekly educational/support package over six weeks postnatal. Chapter Five addresses the third objective for the study:

Objective 3: To design, implement and evaluate a father inclusive perinatal support intervention.

The researcher was involved with all aspects of the intervention from development and testing of questionnaires and resources to recruitment of participants, distribution of questionnaires, data collection and input and data analysis. The researcher wrote the manuscript and worked with the research team to finesse the article.

Health Promot. Int. (2011) 26 (3): 351-361. doi: 10.1093/heapro/daq077 **SUPPORTING MOTHERS TO BREASTFEED: THE DEVELOPMENT AND PROCESS EVALUATION OF A FATHER INCLUSIVE PERINATAL EDUCATION SUPPORT PROGRAM IN PERTH, WESTERN AUSTRALIA**

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ABSTRACT

Entry into fatherhood is a challenging period with new responsibilities and changes in family dynamics. Hegemonic imagery of men portray them as capable, confident and able which can disadvantage expectant fathers who often struggle to make sense of the changes occurring around and within their own parenting journey. Although fathers historically have not been included in breastfeeding classes, antenatal education programs can be an opportunity to inform and support them in their new role. Forty-five antenatal sessions for fathers (n = 342) of 1h duration were conducted by five male educators between May 2008 and June 2009 in Perth, Western Australia. A theoretical framework from health promotion literature was used as a guide in the program's development. Fathers in the intervention group gained information about their role, the importance of communication and the benefits of breastfeeding to both mother and baby. An evaluation was obtained from fathers immediately after the session and again at 6 week post-birth, whilst mothers reported on the perception of their partners' support for breastfeeding in the 6 week survey. The aim of this paper is to describe the development and process evaluation of a perinatal education and support program for fathers to assist their partners to breastfeed.

KEY WORDS

breastfeeding; fathers; perinatal education

5.1 INTRODUCTION

Breastfeeding is the most natural, efficient and cost-effective method of providing infants the best start in life. Breastfeeding benefits include optimal infant nutrition (Allen, 2005), psychological,

developmental and physical health benefits for both mother and infant (McFadden and Toole, 2006), economic benefits for the family (Cattaneo and Quintero-Romero, 2006) and environmental benefits for the community (Leon-Cava et al., 2002; Mettner, 2006; Oddy et al., 2006). The protective effect of breastfeeding against obesity is consistent and appears to increase with the duration of breastfeeding (Arenz et al., 2004). The World Health Organization (WHO) (World Health Organisation, 2001) and the American Academy of Paediatrics (AAP) (American Academy of Pediatrics, 1997) recommend exclusive breastfeeding for 6 months, plus the continuation of offering breast milk until age two, with appropriate complementary foods. Although most developed countries maintain high initiation rates, prevalence rates fail to meet these recommendations.

Fathers are recognized as providing support which can influence breastfeeding duration (Scott and Binns, 1999; Tohotoa et al., 2009); therefore efforts to support fathers assume this parenting role is strongly advocated (Wolfberg et al., 2004). Antenatal education programs have been recommended as an ideal opportunity to also improve fathers' knowledge of breastfeeding (Giugliani et al., 1994), although historically fathers have not been included in breastfeeding education programs. Antenatal education has traditionally targeted women to provide childbirth information with the goal of increasing confidence (Hibbard et al., 1979) and reducing maternal and infant morbidity and mortality (Gagnon and Sandall, 2000). Such education has traditionally used didactic presentations to deliver information deemed important by health professionals (Myors and Mabbutt, 1997). Whilst the majority of mothers are provided with some form of breastfeeding information in Australian hospitals, in antenatal classes and breastfeeding clinics, the content and delivery is not uniform (Zareai et al., 2007). More recently, antenatal education focus has changed from women only, to include partners and family members (Schmied et al., 2002).

Previous studies have reported that fathers often perceive that current information provided is not always appropriate to their needs (Barclay et al., 1996; Tohotoa et al., 2009), is maternally biased (Singh and Newburn, 2001; Tohotoa et al., 2009) and reinforces a feeling of being on the sideline rather than central to the pregnancy and birth experience (Moriarty, 2002). Boyce et al (Boyce et al., 2007) in a survey of 312 Australian men found that fathers who had insufficient information about pregnancy and childbirth were (18.6%) more at risk of increased psychological stress both before and after the birth of their baby (Boyce et al., 2007). A literature review of 33 programs from a range of countries examining fathers' experiences of parenthood in the first year found that

two of the main concerns for fathers were being confident as a father and as a partner and living up to the new demands (Nyström and Ohrling, 2004)

Findings from Australian and US studies suggest focusing on men's needs can reduce paternal stress, improve maternal and paternal satisfaction, enhance interpersonal skills and paternal involvement with household tasks (Diemer, 1997; Dellmann, 2004), whilst a study from the UK found that fathers wanted more information given in the antenatal period on parenting, baby care and relationships (Deave and Johnson, 2008). Men wanted reassurance that everything in their relationship would return to normal once the baby was born; however, this topic was seldom discussed because men's needs were rarely acknowledged or supported (Donovan, 1995; Pastore et al., 2007).

Evidence about the impact of antenatal education on fathers is mixed. Some research found that antenatal education for fathers increases their knowledge about pregnancy, the birth process and also enhances parenting skills (Barclay et al., 1996; Schott and Priest, 2002). However, others found that antenatal classes did not meet the needs of the male partner in relation to the emotional and psychological aspects of parenthood (Donovan, 1995). Australian researchers reported that participants in a men's only discussion group felt more comfortable making contact with other fathers than in a mixed gender group (Schmied et al., 2002). Mc Elligott's (McElligott, 2001) Scottish study (n= 54) found fathers wanted information about their role and the care of their baby following delivery whilst Fletcher et al. (Fletcher et al., 2004) in an Australian study of 212 fathers, suggested that fathers were prepared for childbirth, but not for lifestyle and relationship changes (Fletcher et al., 2004). Fletcher et al. (Fletcher et al., 2004) proposed that health services could support new fathers by providing information on parenting from a father's perspective, or running father-specific sessions as part of routine antenatal care programs.

Fathers plus and Fatherhood Institute in the UK along with Father Involvement Research Alliance in Canada provide resources to increase father inclusive practice for health professionals working with fathers.

This paper describes the development and process evaluation of a perinatal education and support program for fathers to support their partners to breastfeed. The program was developed as part of a randomized controlled trial with the aim of increasing breastfeeding prevalence up to 6 months post-birth. The results of this paper are describing the baseline and 6 week data only, the 6 month data will be presented elsewhere.

5.1.1 Theoretical frameworks

Social Cognitive Theory (Bandura, 1986), the Health Belief Model (Strecher and Rosenstock, 1997) and Gender theory (Connell and Messerschmidt, 2005) were used to inform the development and implementation of the perinatal education and support program. The Health Belief Model guided the formative research and supported information delivery, while Social Cognitive Theory was predominately used in shaping the intervention and in facilitating understanding of the potential interaction between overestimation of new parents capacity to cope and underestimation of potential problems. Emergent data from formative research (Tohotoa et al., 2009) identified the utility of Gender theory to inform the content and the program delivery process (Connell and Messerschmidt, 2005). The social construction of masculinity, role expectations and elements of hegemonic masculinity were both challenged and utilized as motivational elements by the male facilitators during the antenatal session. The formative data from the fathers identified the themes of protector, provider and planner as being male roles that could be used as motivators to enhance support for mothers and that the theme of stoicism could be challenged to increase support. Masculinities change over time and the changing role of men within gender relationships was included in the discussion around perceived father roles.

5.2 METHODS

The perinatal education and support program consisted of two elements: an antenatal education session in addition to postnatal education and support. This section will outline how the formative research was conducted and informed development of a perinatal education and support program. It will focus on the recruitment, training and delivery of the antenatal package and the sequencing of postnatal support package.

The objectives of the perinatal program were:

- i. To promote the unique role of being a father and the associated implications on lifestyle and relationships;
- ii. discuss ways to support partners to breastfeed;
- iii. to provide information about resources available to parents; and
- iv. to provide relevant ongoing postnatal education and social support.

5.2.1 Formative research

To understand the needs of expectant Western Australian fathers, a qualitative design was employed using focus groups, interviews and an on-line questionnaire with fathers of breastfed babies between May 2007 and October 2007 in Perth, Western Australia. Each data collection approach included the same questions to ensure consistency. In addition, focus groups were held

with mothers who were breastfeeding to gain their perceptions about how fathers could best support their breastfeeding partner. Findings from this formative phase have been reported elsewhere (Tohotoa et al., 2009).

Information from the formative phase was used to develop the content for the antenatal education session. Additional data were obtained from reviewing the current antenatal class format and curriculum at each of the participating hospitals in addition to meeting with a total of 12 antenatal educators from the study hospitals. Feedback from other health professionals (an obstetrician who was conducting parent education in a private capacity and an educator with a non-government agency) was also included. Data from the focus groups interviews, questionnaires and all feedback were then incorporated into the development of an antenatal education session. Both the Health Belief Model and Social Cognitive Theory were used to provide a theoretical foundation and process support for the design of the intervention material. Three major content areas were identified as the most important issues to be discussed; 'the role of the father', 'the benefits and importance of breastfeeding to both mother and baby' and 'what to expect in the first 4 weeks at home'. The antenatal session was then piloted with a group of six fathers. All participants offered constructive feedback in relation to the session content that resulted in changes to the timing and flow of information. The 6 week support package was showcased and minor changes made to the sequencing of products sent. A second pilot session was then conducted with five different fathers 1 month later, with no further changes required.

A logo was created to reflect the philosophy of the project, 'Smarter stronger, breastfeed longer' and was used on all education materials and correspondence with participants and stakeholders. Handouts for the intervention were developed to complement the education session and contained general information about parenting and the role of the father, the importance and benefits of breastfeeding for both mother and baby, and activities on how to bond with your baby.

5.2.2 Recruitment and training of facilitators for the antenatal session

During the formative research men indicated preference for a male facilitator who understood the parenting role and was able to communicate effectively. Three criteria were essential to be a facilitator: (i) have been a father of a breastfed baby; (ii) have an understanding of adult learning principles; and (iii) have a commitment to promoting the importance of the father's role in early parenting. Seven male facilitators were initially recruited from hospital, education and community backgrounds; three were registered midwives and four were teachers. Two facilitators subsequently withdrew due to time constraints. The remaining five male facilitators were given

standardized training that provided an overview of the research project, the content of the antenatal class and delivery processes. Each facilitator was given a compendium containing a USB and CD with the PowerPoint presentation of the antenatal session. As a backup and for use in those hospitals without PowerPoint facilities, a set of overhead transparencies of the PowerPoint presentation was included. Stationery was provided along with work sheets, evaluation sheets, pens, a marble and a golf ball (for visual representation of baby's stomach) and name labels. The facilitators were given the opportunity to personalize the PowerPoint material by including pictures of their own children. Findings from the formative phase indicated this strategy was important for credibility.

The recruitment of fathers and delivery of the program by the male facilitators occurred over a 13 month period from May 2008 to June 2009 at eight metropolitan public maternity hospitals. Three of the hospitals serviced low socioeconomic areas and increased the number of low socioeconomic participants (Australian Bureau of Statistics, 2006). The male facilitators delivered a standardized PowerPoint presentation, utilizing adult learning principles. This involved using a problem-based collaborative approach with discussion questions and experiential learning activities incorporated throughout the presentation (Knowles et al., 2005).

5.2.3 Recruitment of fathers for the antenatal session

An information sheet which explained the aim of the project was posted to all expectant parents who registered for antenatal education prior to their first class. Inclusion criteria required the participants to understand written English in order to complete the questionnaires, to be over 18 years of age (unless accompanied by an adult who could give consent for the minor to participate) and intention to attend the antenatal program. At the time of recruitment, all participants were invited to complete a baseline questionnaire that contained demographic information that included age, marital status, occupation, educational level and nationality. Data were also collected on breastfeeding knowledge and attitudes, well-being over the past week and intention to breastfeed. Consent forms were completed on that first night by all expectant parents who chose to participate, prior to administration and completion of the baseline questionnaire.

The antenatal session for intervention fathers was delivered as a supplement to the existing antenatal sessions offered by the hospitals and was normally delivered on the third or fourth week of their antenatal programs (total program = 4 weekly sessions). This was to benefit from the prior opportunity for social networking within the group.

5.2.4 Delivery of the antenatal package

During the delivery of the intervention antenatal education session, all male participants were given materials developed to support and complement the session. These included; a 'new father's guide' identifying the potential problems for parents and infant in the first 4 weeks at home and a pamphlet/brochure 'how to be a breastfeeding champion' that described strategies to support their partner to breastfeed. The brochures offered helpful tips, a list of essential resources and websites and telephone numbers to assist with problems associated with breastfeeding difficulties or infant health. Their purpose was to enhance the provision of support the fathers offered their partners, to improve their problem-solving abilities in relation to breastfeeding and associated issues and to assist them to identify possible signs of postnatal anxiety and depression. Roles of the father were explored, for example, the protector role was used in discussions around restricting visitors post-birth to enable the mother adequate rest and breastfeeding time: the planner role was used in problem-solving activities in small groups, and the role of provider was acknowledged and ways to continue support following a return to work were explored. Participants were able to articulate problems that they might encounter and through completion of a worksheet and via group questions and discussion, identify potential solutions.

Each pregnant partner was given a 'mother's information' booklet that incorporated similar information to the men's resources to maintain transparency of information. Men were invited to complete an evaluation sheet at the end of the antenatal education session with questions on the content of the class, the facilitator and presentation strategies. Process evaluation of the education package included feedback from the evaluation sheet as well as a second post or online survey 6 weeks post-birth seeking feedback about the usefulness/relevance of the antenatal session and the information contained in the postnatal support package.

5.2.5 Postnatal education and support

After the successful birth of the baby the second component of the intervention was initiated. This involved sending a sequence of information, resources and motivational material to the parents via the father. The scientific literature provided the evidence for the sequencing of this support (Schwartz et al., 2002; DiGirolamo et al., 2005). It coincided with the known stressors (sleeplessness, fatigue and lack of self-confidence) and inhibitors (breastfeeding difficulties including sore nipples and perceived insufficient milk supply) to breastfeeding. The material complemented the information received during the antenatal session, acknowledged the stressors

affecting new parents and sought to provide information and social support to assist them gain confidence in their parenting role.

Complementary products and educational materials relevant to their baby's developmental needs were posted according to the timeline outlined in Figure 1. A congratulatory birth card was sent to the parents acknowledging their new baby and commencing the postnatal support package. A sample size of nipple cream was included for mothers to help reduce sore nipples, a known inhibitor to breastfeeding at this stage (Schwartz et al., 2002). At Week 1 the developmental milestones pamphlet was presented as a way for fathers to track their baby's progress and growth to increase their self-confidence and understanding of normal infant behaviour and development. The recognition of good nutrition for breastfeeding mothers and the importance of a healthy diet were reinforced in the dietary guidelines posted during the second week for both the fathers and the breastfeeding mothers. Week 3 is often the time of a growth spurt for baby with an accompanying increase in feeding leading to increased stress and fatigue (Schwartz et al., 2002). A 'how to relax' relaxation exercise brochure combined with two individually packed herbal teabags at Week 3 acknowledged the need for 'time out' and encouraged parents to practice the simple, easy exercises to reduce stress and fatigue. At Week 4, a logo printed beer can holder was posted as a motivator and conversation starter with peers, and was timed to assist the response to the 6 week survey.

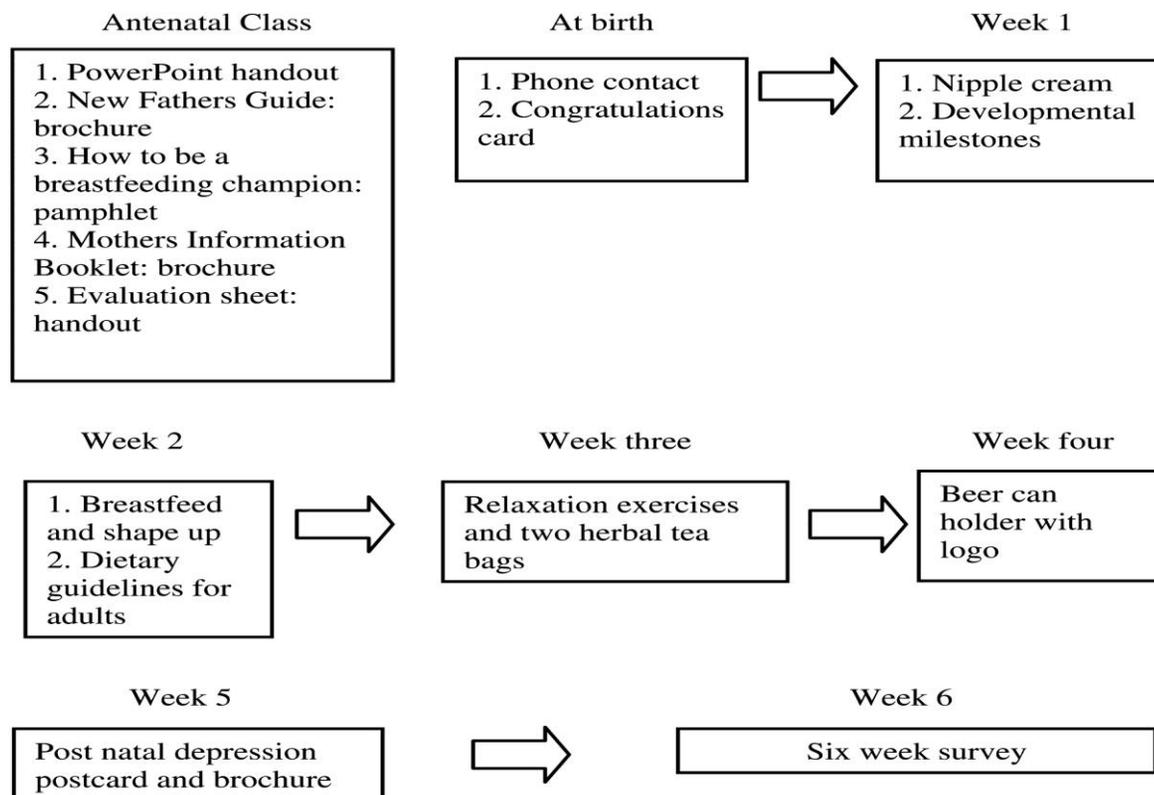


Fig. 1: Outline of support resources offered over the 6 week period.

A recognized risk period for postnatal depression is between 4 and 6 weeks post-birth (Matthey et al., 2000), and a postcard highlighting the signs and symptoms of postnatal depression along with a comprehensive brochure about postnatal depression with associated help resources were sent at Week 5 as part of an anticipatory guidance approach. All participants had identified on their baseline questionnaire responses, their preferred method of responding to future questionnaires with the choices of phone, email or post. At 6 weeks post-birth, a questionnaire was administered by telephone, email or post to all participants, according to their preference of responding. Data were collected on type of birth, birth or breastfeeding complications and perceptions of support received for breastfeeding.

Ethics approval for the study was granted by the Human Research Ethics Committee of Curtin University and from the North Metropolitan Area Health Service, South Metropolitan Area Health Service and the Joondalup Health Campus.

5.3 RESULTS

The results include data from the intervention antenatal session evaluation surveys, and the 6 week postpartum survey.

5.3.1 Intervention antenatal sessions and evaluation

A total of 45 education sessions were conducted by five male educators in eight maternity hospitals. Each session had an average of six participants with a range of 2–14 attendees. Of the 385 men in the intervention group who confirmed their desire to participate in the program, 342 (89%) attended the antenatal sessions and 295 (86%) responded to the 6 week survey. Work commitments including working away was the main reason cited for not attending the class. Table 1 describes participant demographic variables.

Table 1:Demographics male participants attending intervention antenatal session ($n = 342$)

Education	n (%)
>Year 10	71 (21)%
Year 12	78 (23%)
Trade/diploma	129 (38%)
Tertiary	64 (19%)
Marital status	
Married	191 (56%)
<i>De facto</i>	109 (32%)
Single	30 (9%)
Age	29 years (average) (range 16–51)
Nationality	
Australian born	222 (65%)
Income	
In Australian dollars	\$86 000 (average) (range >\$15 000–\$120 000+)

The use of adult learning principles incorporated small group work and offered the opportunity for the men to interact and share their apprehensions about the new parenting experience (Knowles et al., 2005). The importance of prioritizing information was essential to the men gaining confidence in problem-solving regarding lifestyle and relationship changes. Men talked about ‘being informed by a father and sharing with other men’ as being the most important aspect of the class, and the ‘relaxed feel without the partners’. Another participant said ‘issues I thought were silly are actually common and that's a relief’.

One activity that was particularly useful involved a visual representation of a baby's stomach capacity at birth and 1 month compared with a marble and a golf ball, respectively. The men shared how this activity assisted their appreciation of two to three hourly feeding in the first few weeks and the intensity of the mother-baby bond. As one dad explained ‘It makes so much sense when you see it like that’. The benefits of exclusive breastfeeding for the first 6 months for both the mother and the baby was new information to most men and led to interactive discussions to develop supportive strategies. Men talked about ‘learning details for breastfeeding’ and getting ‘information on helping mothers to breastfeed’. Misunderstandings and myths were addressed by the facilitators and lifestyle changes explored. One of the myths dispelled by the facilitators was around the belief that breastfeeding is a natural phenomenon and that all women can breastfeed without major difficulties. The facilitators talked about the difficulties many women experience with engorgement, painful nipples from poor attachment technique and stressed the importance of initial and ongoing help if difficulties arose with breastfeeding. The misunderstanding that ‘Baby will just fit into our lives’ was addressed with a simple activity to identify the 5 ‘S’ words that would

be affected by bringing a new baby/babies home. This proved to be very popular (identified in the evaluation sheet comments section) and enabled discussion around sleep difficulties, sex and when to resume intimate relations, the stress and social life changes and self-identity issues in becoming a father. As one man wrote in the evaluation sheet 'it's ok to think of myself without guilt', and another commented that the importance of the activity for him was 'other men's questions and opinions'.

Feedback from the facilitators indicated that most of the participants actively engaged in the sessions and informally reported that 'everything was relevant'. The evaluation sheet completed at the end of the session by the fathers in the intervention group, concurred and revealed that most men had a positive, informative experience; 99% felt the presentation was relevant and the presenters appropriate. Over 90% responded that the role of father, the importance of breastfeeding to both mother and baby and the facilitators to successful breastfeeding were adequately addressed (Table 2). Feedback regarding improving the session included 'more time, more handouts, role playing and videos'. The overall tenor of the comments can be summed up by one participant's comment: 'I'm glad I'm here, the talk was informative, I learned things I didn't know, particularly about breastfeeding and it was well presented'.

Table 2:

Men's feedback following the 'fathers only' antenatal education session (*n*= 342)

Variable item	Agree, <i>n</i> (%)	Neither, <i>n</i> (%)	Disagree, <i>n</i> (%)
Helped with my expectations	328 (96%)	14 (4%)	
Promoted the unique role of father	321 (94%)	21 (6%)	
Increased awareness and importance of breastfeeding	307 (90%)	31 (9%)	4 (1%)
Identified facilitators to breastfeeding	318 (93%)	21 (6%)	4 (1%)
Identified lifestyle changes	314 (92%)	28 (8%)	
Provided resource materials	321 (94%)	21 (6%)	
Educator effective and appropriate	338 (99%)	4 (1%)	
Presentation allowed for open discussion	324 (95%)	18 (5%)	
Presentation was relevant	338 (99%)	4 (1%)	

5.3.2 Father's 6 week follow-up

All participants were sent a questionnaire at 6 weeks post-birth to provide feedback regarding the antenatal education session and postnatal support package. The questionnaire asked fathers 'how helpful were the educational materials sent to you?' and their responses were recorded on a Likert scale. Whilst the most interest was with the new fathers guide 69% (*n*= 205) and reflected the relevance of an anticipatory guide, the information in the PowerPoint handouts was scored at 63% (*n*= 187) and few men found it unhelpful 2% (*n*= 7). The information about postnatal depression 66% (*n*= 196) was the next most helpful, followed by information and exercises on 'how to relax'.

The total results from returned responses 86% (n= 295) are described in Table 3. The fathers were also asked ‘what other information or materials might have been helpful for you?’ The majority of fathers responded with ‘don't know, or got enough’. The responses from those fathers who did comment varied from wanting a booklet rather than pamphlets or brochures to a DVD of breastfeeding with problem-solving solutions to common breastfeeding problems. More internet websites and email contact were also requested.

Table 3:

Men's feedback at 6 weeks postbirth regarding the antenatal education session and postnatal support package (n= 295)

Resource	Helpful, n (%)	Neutral, n (%)	Not helpful, n (%)
PowerPoint handout (antenatal session)	187 (63%)	101 (34%)	7 (2%)
New fathers guide (antenatal session)	205 (69%)	83 (28%)	7 (2%)
Dietary guidelines (Week 2)	134 (45%)	137 (46%)	24 (8%)
Relaxation pamphlet and teabags (Week 3)	151 (51%)	131 (44%)	13 (4%)
Postnatal depression (Week 5)	196 (66%)	89 (30%)	10 (3%)

Mothers in the intervention group (77%) reported enjoying breastfeeding more than mothers in the control group (69%) whose partner did not receive the antenatal education session intervention. Both the control (78%) and intervention (84%) group mothers identified their partner as the one who gave them most support for their breastfeeding efforts and both groups experienced similar attachment and engorgement difficulties and sought help from their child health nurse, midwife or lactation consultant for these problems.

5.4 DISCUSSION

The results of the perinatal intervention gave fathers timely, relevant information and resources to help reduce anxiety and increase their problem-solving abilities. It helped them develop awareness of potential breastfeeding difficulties, infant developmental milestones and postnatal depression, identified in the evaluation sheets. Feedback from fathers in this study confirms the desirability and value of a father inclusive support package during the perinatal period. The use of a gender-specific group was seen as a positive strategy for the men as highlighted in the evaluation. This outcome is consistent with other studies using adult learning principles and gender-specific group facilitators to increase the positive parenting experience for both mothers and fathers (Diemer, 1997). Supporting the feedback from our study, Friedewald et al. (Friedewald et al., 2005) in a review of 91 all male discussion forums that included 670 expectant fathers, found participants valued a male facilitator, felt the importance of their role as a father was acknowledged, and were able to discuss their fears and concerns without shame or embarrassment.

Although our study aimed to assist fathers to support their breastfeeding partner, topics around lifestyle changes and intimacy issues also featured in discussions where participants were able to reflect upon how they might manage these changes and the expected gender role changes inherent in the transition to fatherhood. The positive use of problem-solving strategies was supported by Petch and Halford who found the changes in relationships post-birth and expectations of new parenthood could compromise relationships (Petch and Halford, 2008).

Study participants expressed interest in information about postnatal depression (n = 66%) and found the resources helpful for identifying and recognizing the signs and symptoms. This contrasts with an Australian study by Fletcher et al. (2008), who offered men a series of educational modules in the antenatal period and found that only 29% took up the postnatal depression module (Fletcher et al., 2008). Given the seriousness of this issue and the fact that postnatal depression affects 13% of women and 3–10% of fathers (Matthey et al., 2000), the value of fathers having this information cannot be underestimated. Providing participants with information on reducing stress and anxiety was not regarded as useful by some men which could reflect the hegemonic masculinity culture of 'strong and capable' (Connell and Messerschmidt, 2005). Likewise in this study, the importance of good nutrition for breastfeeding and for adults in general was not as high a priority for fathers compared with topics such as 'what to expect in the first 4 weeks'. Fatigue and sleeplessness adjustments may have contributed to the lack of enthusiasm for both the relaxation exercises and the dietary guidelines. This was supported by Elek et al. (Elek et al., 2002) in a longitudinal study with 44 couples, who found that both mothers and fathers suffered with fatigue and sleep disturbances in the first 4 weeks postpartum.

Breastfeeding education is different to breastfeeding support. This study found informing men about potential problems (like engorgement and mastitis) and giving them strategies to problem solve, increased the level of support their breastfeeding partner perceived they received at 6 weeks post-birth. Support for a perinatal education and support package was found in a study undertaken in Canada by (Semenic et al., 2008) with 189 mothers. It highlighted the need for establishing exclusive breastfeeding in the early postnatal weeks and suggested the need for a continuum of pre- and postnatal strategies to encourage exclusive breastfeeding (Semenic et al., 2008). Likewise, incorporating an ongoing postnatal support package increased the information and resources available to the new parents over time and were consistent with Hannula et al.'s review (Hannula et al., 2008) that found intervention packages using various methods of education and support were more effective for breastfeeding support than interventions concentrating on a single method.

Fathers in this study wanted more internet and email communication and this reflects the increasing use of internet technology. Further research with breastfeeding support internet education interventions is needed and recommended. Development of a DVD for postpartum use was suggested by several fathers and warrants further research. A review of antenatal education programs could identify current deficiencies and lead to standardization of antenatal programs that incorporated adult learning principles and have gender-specific class options. Further research to explore the efficacy of antenatal education versus postnatal education and support is required to determine the most cost-effective way of enhancing fathers' support.

5.4.1 Limitations

This research has several limitations that need to be considered when reviewing our findings. The participants only included parents enrolled in antenatal education and hence may not be representative of all parents. They represent parents who sought antenatal education from the public sector which may not reflect parents attending comparable education offerings within the private sector. Demographic data revealed participants in both the control and intervention groups came from diverse ethnic backgrounds and geographical localities within the Perth metropolitan area. The 6 week questionnaire gave a brief overview of the fathers' response to the intervention, and the subsequent results were an indication of fathers' feedback rather than a definitive answer. This paper nevertheless adds to the findings of other studies and supports the use of adult learning strategies and gender-specific options for antenatal education programs.

5.5 CONCLUSION

This paper reported on a program that was successful in developing father-specific intervention material that was well received and successfully met its objectives. The intervention targeted fathers and incorporated men from a wide cross section of socioeconomic settings with the majority of participants in low socioeconomic locations. Elements of hegemonic masculinity were utilized to enhance the relevance and acceptability of the interventions material. Utilizing key role expectations expressed by our fathers (planning, protection, provision) we were able secure their engagement by presenting expectations that fit within a culturally appropriate framework. When we challenged some of the male characteristics such as stoicism we were able to demonstrate how it conflicted with the positive expectations (planning, protection, provision). Utilizing hegemonic theory while controversial has provided a positive utility in the context of this intervention. It is likely it could also be used by researchers in other cultures to enhance fatherhood practices.

There are very few gender-specific groups for fathers currently in any public maternity hospital in Western Australia and this study demonstrates their perceived importance to new fathers. Support for breastfeeding requires a commitment by both parents and fathers are instrumental in the decision-making and support of breastfeeding. In order to fulfil this essential role, fathers need to be supported with timely information and problem-solving skills to best support their partner's breastfeeding efforts. Health services need to be responsive to assist fathers prepare for this essential role. Specific consideration needs to be given to recruiting and retaining fathers from lower socioeconomic settings. This research was successful as it used a range of data collection methods to gather the formative data. Further exploration of the potential of the internet to provide both antenatal and postnatal education is needed and could be the future of health promotion campaigns when engaging with fathers. Video and DVD technology was actively supported by the fathers and maybe a better way of information transfer in a time poor society. There is a need for further research into postnatal support for fathers if they are to become a breastfeeding advocate and champion the right of their baby to the best nutritional start in life.

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CHAPTER SIX: PAPER 3 – COMPARING PATERNAL ANXIETY AND DEPRESSION BETWEEN THE INTERVENTION AND CONTROL GROUPS ACROSS THE PERINATAL PERIOD TO SIX WEEKS.

PRELUDE TO CHAPTER SIX

Chapter Six documents the changes across the perinatal period for paternal anxiety and depression using the Hospital Anxiety and Depression Scale. The importance of monitoring paternal anxiety and depression is linked to the effect of depression and increased anxiety on the ability to give adequate paternal support in general and for breastfeeding in particular. Few studies have focussed on paternal depression and anxiety.

The article addresses Objective 4:

To identify any changes in the anxiety and depression scores for the male participants in the intervention and control groups across the perinatal period from baseline (antenatal) to six weeks postnatal.

It also answers the secondary research hypothesis:

Anxiety and depression scores will be decreased at six weeks for those fathers who attended the antenatal intervention compared to the fathers in the control group.

The present researcher was responsible for writing the manuscript, analysing the data and obtaining permission for the use of the Hospital Anxiety and Depression Scales (Appendix F.)

CAN FATHER INCLUSIVE PRACTICE REDUCE PATERNAL POSTNATAL ANXIETY? A REPEATED MEASURES COHORT STUDY USING THE HOSPITAL ANXIETY AND DEPRESSION SCALE.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

JT participated in the data collection and analysis and drafted the manuscript. BM has made substantial contributions to conception and design and in revising the manuscript for intellectual content and given final approval. YLH has made substantial contributions to conception and design, acquisition of data and analysis and interpretation of data; involved in manuscript revision. PH has made substantial contributions to conception and design, acquisition of data and analysis and interpretation of data; involved in manuscript revision. SB has made substantial contributions to conception and design and participated in manuscript revision. CWB has made substantial contributions to conception and design. All authors read and approved the final manuscript.

ABSTRACT

Background

Perinatal research on anxiety and depression has primarily focused on mothers. We have limited knowledge of fathers' anxiety during the perinatal period yet there is evidence that the parenting capacity of a person can be compromised by anxiety and depression. The purpose of this paper is to identify the impact of a father inclusive intervention on perinatal anxiety and depression. The prime focus of the intervention was to provide education and support to fathers of breastfeeding partners with the aim of increasing both initiation and duration of breastfeeding.

Methods

A repeated measures cohort study was conducted during a RCT that was implemented across eight public maternity hospitals in Perth, Western Australia between May 2007 and June 2009. A baseline questionnaire which included the Hospital Anxiety and Depression Scale (HADS) was administered to all participants on the first night of their hospital based antenatal education program and was repeated at six weeks postnatal. SPSS version 17 was used for reporting descriptive results.

Results

The mean anxiety levels at baseline for the fathers in the intervention group (n= 289) and control group (n=244) were 4.58 and 4.22 respectively. At 6 weeks postnatal (only matched pairs), intervention and control group were 3.93 and 3.79. More intervention group fathers self-rated less anxiety compared to the fathers in the control group from baseline to post test (p=0.048). Depression scores for intervention fathers at baseline (mean =1.09) and at six weeks (mean = 1.09) were very similar to fathers in the control group at baseline (mean = 1.11) and at six weeks (mean =1.07) with no significant changes.

Conclusions

Both intervention and control group fathers experienced some anxiety prior to the birth of their baby, but this was rapidly reduced at six weeks. Paternal anxiety is common to new fathers and providing them with information and strategies for problem-solving can increase their knowledge and potentially lower the risk of postnatal anxiety.

(Australian New Zealand Clinical Trials Registry ACTRN12609000667213)

6.1 BACKGROUND

Much research has explored postnatal depression in women [1-5] with less research on anxiety [6-9]. However; there is limited evidence on paternal postnatal anxiety and depression [10]. The changing role of fathers over the past two decades in developed countries has seen a shift from men being primarily breadwinners to fathers being expected to actively participate in nurturing and caring for their children [11]. This shifting role attribution has been associated with reduced self-confidence and increasing anxiety and depression in men already feeling overwhelmed with the transition to parenthood [12-14]. The joy and excitement of becoming a new father is often accompanied by an increase in anxiety and apprehension [15].

Fathers have an important contribution to make to the ongoing emotional, mental and physical development of their children [16] [17]. The importance of reducing parental anxiety and the impact of antenatal distress, depression and anxiety on infant outcome levels have been documented in several studies [18] [19, 20]. A father's anxiety (assessed with the adult ADIS [Anxiety Disorder Interview Schedule]) can influence the anxiety levels of his child [21]. The potential changes in lifestyle and interpersonal relationships, increased financial concerns and embracing a different self-identity can exacerbate anxiety and depression for some new fathers [22, 23]. Condon and colleagues (2004) found the lack of understanding of what is expected of a father might cause anxiety, especially for first-time fathers and lead to a greater risk of paternal depression [22].

Men need information that is relevant to their new role of father [24] and hospital based antenatal programs are one place this information could be delivered. However, antenatal classes can vary in the quality of the content and delivery of information [23]. Most antenatal classes in Australia are coordinated between midwives and physiotherapists and focus on the birth process, pain control and the role of the child health nurse in the community [25].

Anxiety is defined as a psychological and physiological state characterized by cognitive, somatic, emotional, and behavioural components [26]. It can be generalised, episodic: pregnancy or exam time; or specific: phobias and obsessive compulsive disorder. Depression is defined in terms of a specific alteration in mood continued over two weeks or more with a negative self-concept associated with self-reproach and self-blame, anorexia, insomnia and a change in activity level [27].

In a general population depression and anxiety frequently present together in the same individual and diagnosing and treating these conditions is paramount to improved mental health and

functioning [28]. Mild depression has been linked to co-morbid anxiety and over time can convert to major depression [29]. The relationship between parenting stress and postnatal depression appears to be a reciprocal one with each contributing to the other [3]. Several studies have found that first-time fathers reported higher levels of anxiety during the early postnatal period [30, 31], and around 10% reporting a significant elevation of anxiety levels [32]. An American study researching the role of fathers in child anxiety, found that paternal attachment might be an important protective factor in decreasing the development of child anxiety, and that paternal anxiety could decrease attachment [33]. In an Australian study with 356 fathers, Matthey et al, (2003) found that men had a significantly increased chance of getting depressed if they had anxiety problems [10]. In the Avon Longitudinal Study of Parents and Children (ALSPAC) study conducted in Britain, 10,975 fathers and their children were followed up for 7 years. They found that children whose fathers were depressed in both the antenatal and postnatal periods presented with higher risk of early behavioural and emotional development problems [34].

Most studies of parental anxiety and depression use the Edinburgh Postpartum Depression Scale (EPDS), and focus on the mother and the mother-infant dyad with little attention to paternal anxiety and depression [1, 35-37]. In Australia, most pregnant women attending a public health service are routinely screened for depression at their antenatal clinics or with their doctor using the EDPS [38]. Whilst men are not routinely screened for depression or anxiety in Australia, the EDPS has been used successfully with 157 couples by Matthey et al, (2000) to determine mood disturbances for both mothers and fathers in the perinatal period [39]. Another tool for screening depression and anxiety in the primary care setting or community setting is the Hospital Anxiety and Depression Scale (HADS). Both anxiety and depression are identified as independent measures [40]. The HADS has recognised validity [41] and reliability [42] and is easy to administer [39]. The correlations between the two subscales varied from .40 to .74 (mean .56). Cronbach's alpha for HADS-A (anxiety) varied from .68 to .93 (mean .83) and for HADS-D (depression) from .67 to .90 (mean .82) [43]. Robertson et al, (2004) in their critical appraisal of the literature on maternal and paternal depression revealed a number of methodological and knowledge gaps including the use of appropriate instruments assessing postnatal depression for use within different cultural groups [44]. The HADS was chosen for this project as it was found to perform well in assessing the symptom severity of anxiety disorders and depression in both somatic, psychiatric and primary care patients and in the general population [43, 45]. It has the advantage of evaluating both depression and anxiety and has been effectively used as a preliminary screening instrument in an antenatal population [46, 31].

Risk factors for postnatal depression include marital dissatisfaction, antenatal life events, past depression, late antenatal depressive symptoms and lack of social support [47, 48]. Although several studies have explored postnatal depression in fathers few studies have focussed upon the stress and anxiety that many men experience in their transition to parenthood. Maternal antenatal anxiety and depression occur frequently and often together and may lead to postnatal depression and anxiety. Paternal depression shows a moderate positive correlation with maternal depression [9, 49]. Ballard and Davies (1996) found that paternal depression was associated with maternal depression, an unsupportive relationship and unemployment [50]. These findings were supported in a recent Spanish cross sectional study of 669 couples that found men with low social support and a partner with depression had an increased chance of becoming depressed themselves [51]. Depression in fathers during the postnatal period was associated with adverse emotional and behavioural outcomes in children aged 3.5 years (adjusted odds ratio 2.09, 95% CI 1.42-3.08), and an increased risk of conduct problems in boys (2.66, 1.67-4.25) [52]. Parent-child relationship quality appears to be a robust predictor of children's psychological development [53] and paternal postnatal depression is also a risk factor for child maltreatment and infanticide [54]. Interventions to address these risk factors have primarily focussed on the mother, [48, 55] although a study undertaken by Davey et al (2006) found men who attended a treatment program for their partners with postnatal depression, also valued the opportunity to share experiences with peers, hear strategies for engaging in their relationship, and gain factual information about postnatal concerns and apprehensions [56].

In an Australian longitudinal repeated measures study, 225 fathers were assessed for distress using the EPDS in early pregnancy, immediately postbirth and at 4 months postnatal. They found that although the majority of men's anxiety decreased steadily some struggled with their new role and responsibilities [58]. There is a gap in knowledge regarding paternal anxiety and depression and strategies to reduce postnatal anxiety. The purpose of this paper was to discuss the impact of a gender specific antenatal education session with follow up socio-educational support on anxiety and depression levels in the intervention fathers compared with the control group of fathers. This paper compared the paternal anxiety and depression scores (measured by HADS) in and between the intervention and control group of fathers prior to the birth of their child and at six weeks postnatal. Whilst the primary purpose of the intervention was to enhance fathers support for their partners breastfeeding and hence the duration of breastfeeding, we theorised that as the intervention contained many of the elements identified in the anxiety and depression literature as important to male participants (role exploration, anticipation of changes, development of

strategies and the opportunity to discuss with other men their experiences and concerns) it would also reduce paternal anxiety.

6.2 METHODS

6.2.1 Study Design

A RCT to increase the duration of breastfeeding was conducted in eight public maternity hospitals in metropolitan Western Australia between 2008-2009. The intervention utilised father inclusive practice consisting of an antenatal education session led by a male facilitator, followed by a six week postnatal social support/education intervention consisting of education and support materials that were sent to the fathers at predetermined times [58]. As part of that trial a repeated measures cohort study was conducted to identify changes in self reported levels of anxiety and depression between the men in the intervention group and the men in the control group from baseline to six weeks.

A total of 1574 (862 women: 712 men) participants were recruited between May 2008 and July 2009. For fathers to be eligible to participate they had to be contactable by telephone or email at home or in the community; reside within Western Australia; and intend to participate in the rearing of their child. The demographic details of fathers who participated in the study are presented in Table 1. Participants were randomised to either intervention or control groups within each hospital.

Table 1: Demographics of fathers participating in the RCT

Variable	Control N (%)	Intervention N (%)
AGE	29.4 (17-54)	29.5 (16-51)
MARITAL STATUS	N=316	N=365
Single	21 (7%)	30 (8%)
Married	155 (49%)	200 (55%)
Defacto	130 (41%)	117 (32%)
Missing Value	10 (3%)	18 (5%)
EDUCATION	N =321	N =371
≤ year 12	125 (39%)	146 (39%)
Trade/diploma	122 (38%)	140 (38%)
Degree/higher	67 (21%)	70 (19%)
Missing Value	6 (2%)	15 (4%)
INCOME	N =300	N = 350
≤\$30,000	12 (4%)	14 (4%)
\$31,000-\$60,000	60 (20%)	70 (20%)
\$61,000-\$90,000	84 (28%)	105 (30%)
≥ \$91,000	120 (40 %)	130 (37%)
Missing Value	24 (8%)	31 (9%)
AUSTRALIAN BORN	215 (66%)	247 (65%)
RETURN TO WORK	N =298	N = 353
≥ 1 week	125 (42%)	116 (33%)
<1weeks > 4weeks	95 (32%)	148 (42%)
≤ 4 weeks	50 (17%)	56 (16%)
Missing Value	28 (9%)	33 (9%)
EMPLOYMENT	N = 324	N = 371
Full time	275 (85%)	326 (88%)
Unemployed	26 (8%)	15 (4%)
Other	20 (6%)	15 (4%)
Missing Value	3 (1%)	15 (4%)

Formative research data collected from mothers and fathers determined the content of the antenatal session and postnatal education/support package. This involved focus groups and an online survey [24]. The antenatal education session was underpinned by the Social Cognitive Theory, the Health Belief Model and Gender Theory [58]. The use of adult learning principles were used to increase health literacy [50, 60] and problem-solving strategies and resources were incorporated into the antenatal session and follow up support to increase self-efficacy [58].

6.2.1.1 Procedure

All expectant parents were sent an information letter about the RCT when they registered for their antenatal classes. On the first night of antenatal classes, each participant was invited to complete a consent form prior to answering the baseline questionnaire, with the option of withdrawing without penalty at any time. A short overview of the all-male group process and the follow up education/social support package was provided to those couples in the intervention group. The control group participated in the routine antenatal classes held at each of the hospitals incorporating labour, birth, pain relief and breastfeeding. All participants were sent the six week questionnaire by post, email or were contacted by phone for their responses.

The intervention group of fathers attended the routine antenatal classes with an additional one hour session incorporated into the hospital program. These sessions were facilitated by a male educator and addressed three main topics: the role of the father, the importance and benefits of breastfeeding for both mother and baby and what to expect in the first four weeks at home with a new baby. The details of the intervention have been reported elsewhere [58]. This was followed by a six week social and educational support package commencing from the birth of their baby and aimed to enhance the support for their partner's breastfeeding. Information about developmental milestones, stress reduction strategies and postnatal depression were just three of the educational resources sent to the fathers.

6.2.2. Data collection and analysis

Participants involved in the study completed a baseline questionnaire that included demographic data of age, marital status, nationality, income and educational level, plus the Hospital Anxiety and Depression Scale. At six weeks a short questionnaire was sent to all participants that identified the method of birth and any complications, current feeding practice and repeated the Hospital Anxiety and Depression Scale. For those fathers in the intervention, a series of evaluation questions on the six week support package were also asked.

The HADS is a self-report 14 question survey [43] used to identify anxiety and depression. The questionnaire has seven questions reflecting anxiety alternating with seven reflecting depression: HADS-A and HADS-D. Each item is answered on a four point (0–3) response category so the possible scores ranged from 0 to 21 for anxiety and 0 to 21 for depression. Several questions were reversed scored. A score of 0 to 7 for either subscale could be regarded as being in the normal range, a score of 8 to 10 being suggestive of either a mild anxiety or depression, a score of 11–14 a moderate degree of anxiety or depression and 15 and above higher indicating a more severe anxiety or depression. If participants registered scores of anxiety or depression above 14 the clinical nurse specialist at the relevant hospital was contacted and asked to follow up. All participants were aware of this safety net.

The anxiety levels (normal, mild, moderate and severe) data at baseline recorded by the intervention and control groups was compared to the levels recorded at 6 weeks (only matched pairs) using McNemar-Bowker's test. The SPSS version 17 statistical package was used to analyse the data. Pearson's Chi-square test was used with asymmetric 2 tailed tests for within group results and Fischer's exact test was used for between group results.

Ethics approval for the RCT was granted from Curtin University and each of the hospital Health Services involved and informed consent was obtained from each participant prior to them completing any questionnaire. The Helsinki Declaration was upheld.

6.3 RESULTS

A total of 712 expectant fathers were recruited and 680 (95%): 315 (control), 365 (intervention) completed the HADS at baseline. At six weeks 556 (78%) fathers completed the HADS: 253 (control) and 303 (intervention). The change towards lower anxiety levels from baseline to six weeks were significant ($p = 0.012$) in the intervention group but were not significant in the control group ($p = 0.410$). The number of intervention fathers who registered moderate to severe levels of anxiety at baseline was 24 (7%) whilst 13 (4%) control fathers registered moderate to severe anxiety. At six weeks the anxiety levels fell for both groups of fathers with only 8 (2.6%) intervention fathers recording moderate anxiety and 6 (2.4%) control fathers recording moderate anxiety. The attrition rate of 25% from the six week responses of both intervention and control fathers incorporated those participants who did not answer all seven anxiety and depression questions and those who did not complete the questionnaire. All participants were contacted up to three times over six weeks (in an effort to increase response rate) if they did not return the initial six week survey within three weeks.

The results are tabled to show the percentage of those fathers who improved their scores (lowered their self-reported anxiety) from baseline to six weeks. The number of fathers whose anxiety increased at six weeks was also lower in the intervention group and these results are recorded in Table 2.

Table 2: Comparison of perinatal paternal anxiety scores for fathers in the intervention and control group of the RCT.

ANXIETY	Unchanged N (%)	Reduced N (%)	Increased N (%)	Total
Control (p=0.471)	198 (81%)	28 (11.4%)	18 (7%)	244
Intervention (p=0.012)	241 (83%)	36 (12.4 %**)	12 (4%)	289
Total	475 (82%)	64 (11.9%)	30 (5.7%)	533
Missing values				147

** p is significant at 0.015 using McNemar-Bowker test.

In the intervention group 12.4% of the fathers had less anxiety (self-reported) from baseline to six weeks postnatal compared to 11.4% of fathers in the control group. Comparison between the two groups found a marginal statistical difference to a lower anxiety level at six weeks postnatal (p=0.048) using Fischer's exact test.

Although both the intervention and control groups reported lower antenatal anxiety at six weeks postpartum the antenatal and postnatal depression scores remained unchanged at 4% in both groups see Table 3. Depression scores for the intervention fathers at baseline (mean =1.09) and at six weeks (mean = 1.09) were very similar to the fathers in the control group at baseline (1.11) and at six weeks (1.07).

Table 3: Comparison of perinatal paternal depression scores for fathers in the intervention and control group of the RCT.

DEPRESSION	Unchanged N (%)	Reduced N (%)	Increased N (%)	Total
Control (p=0.632)	227 (91%)	11 (4.4%)	11 (4.4%)	249
Intervention (p=0.789)	263 (90.3%)	14 (4.8%)	14 (4.8%)	291
Total	490 (90.7%)	25 (4.6%)	25 (4.6%)	540
Missing values				140

Process evaluation of the father's antenatal education session indicated a positive response to both the content and the facilitators. Positive feedback (96%) from fathers in the intervention group included comments like: "give[s] you a little insight to what you can expect coming out of hospital [and] how much your role changes"; "practical information on what to do as most of us haven't got any idea what's going on"; "very useful presentation even for 2nd time dad ". Increasing awareness and knowledge was deemed important, as these participants stated: "every piece of advice and information you can get helps you prepare and make decisions later on"; "helped me with answers"; "really enjoyed it and glad I attended ". Most of the men (99%) responded positively to the male facilitator and this was reflected in their comments: "great to talk to another father"; "great educator, someone who has actually been there".

Fathers in the intervention group were asked to give feedback on the educational/support materials sent to them over the first six weeks postnatal. The feedback ranged from 45%-69% (depending on the materials sent) identifying that the resources were useful /helpful. There were only 2%-8% who did not find the resources helpful.

6.4 DISCUSSION

Whilst childbirth does not seem to trigger long term psychological distress in most parents [61], the importance of early identification cannot be underestimated. The intervention may have contributed to the lower anxiety scores in the intervention group by providing timely, relevant information to assist the fathers with strategies for problem solving breastfeeding difficulties, sleep deprivation and "fitting" baby into their life. Stress management, lifestyle changes and the recognition of increased relationship strain are not mandatory within the antenatal program and can be completely omitted [62]. Corroborating the experience of the men in our study, a systematic review of antenatal education found that men valued access to experienced fathers and the opportunity to discuss their own concerns and learn strategies for coping with anxiety [63] The importance of information to reduce confusion and giving fathers an opportunity to explore their new roles has been identified in several studies [64, 65] .

The six week support package included a pamphlet on how to reduce stress and subsequent anxiety with guided imagery, muscle relaxation exercises and two herbal teabags (sent at three weeks postnatal), and only 5% of the participants indicated they did not find the relaxation exercises useful/helpful. Supporting the use of relaxation exercises to reduce anxiety, an American study with 39 psychiatric inpatients found a significant reduction in anxiety levels was obtained using relaxation exercises [66].

Process evaluation indicated fathers welcomed the information and increased input from the male facilitators that was directed at their concerns and worries. They commented that the “info was good, more than expected”. Findings from Australian and US studies support focusing on men’s needs to reduce paternal stress, improve maternal and paternal satisfaction, and enhance interpersonal skills and paternal involvement with household tasks [67, 68]. Discussions around the importance of early infant contact, the different roles fathers play in the parenting arena and shared experiences by the facilitators increased the opportunity for the participants to reflect on their own fathering practice. In a similar study utilising gender specific classes with the fathers Svensson et al, (2009) found concentrating on topics such as lifestyle changes, role of the father and the importance of communication were as important as the childbearing experience [69]. Likewise, Fletcher et al, (2006) recommended that health services could better support new fathers by providing them with information on parenting from a father’s perspective, or by running father-specific sessions as part of routine antenatal care programs [11].

The study intervention’s aim was to increase the duration of breastfeeding, did not address any pre-existing conditions of depression and subsequently did not make a difference in the depression scores of the intervention fathers. Most of the fathers in both groups (95%) did not register any depression either ante or postnatal with no real changes from baseline to six weeks post test, suggesting that depression levels (5%) remained constant. In a British study 200 couples were assessed for postnatal depression at six weeks and six months postbirth. Fathers were found to have 9% and 5.4% rates of PND (using the EPDS) over the two time periods [70]. Similar results from an Australian study suggest that 4% -10% of fathers suffer with postnatal depression and that many do not seek help or treatment [11]. The results from our study are consistent with the findings of a systematic review of paternal postnatal depression involving 20 international studies over 20 years to 2002, where the incidence of paternal depression ranged from 1.2% to 25.5% in community samples [71].

A past history of severe depression and high antenatal symptom scores for depression and anxiety are the strongest predictors of paternal depression in the postnatal period [37]. However, in relation to anxiety our results tend to contrast with much of the literature in that anxiety as measured by HADS reduced over time and in both intervention and control groups was approximately 2% by six weeks postnatal. While we concur with vanWidenfelt et al, (2008) that it is important to reduce anxiety and depression in fathers so the parenting capacity will not be compromised and reduced by anxiety and depression [72], it is difficult to advocate for any additional resources to be allocated specifically to reduce paternal anxiety based on our results.

A limitation of this study included sampling from only public hospitals and the moderate attrition rate of 25%. Other studies have also identified moderate attrition rates with men and concluded that studies including both fathers and mothers are challenged with a generalisability problem concerning the role of the father, because there are usually increased missing data on the fathers [33, 73]. Assuming a loss to follow-up of 25% in each group, 300 subjects were required in each group to be able to detect a difference at 80% power and 5% level of significance, using a Log-rank survival test. We recruited 315 fathers in the control group and 365 fathers in the intervention group, but attrition rates depleted these numbers and using only matched pairs further decreased the power of the results. The point prevalence rates at baseline and six weeks do not map anxiety and depression over time so limit the results for generalisability.

Future research needs to focus on the most effective ways to educate and inform expectant parents about the myriad of information required to facilitate a successful birth and recovery. The promising results from this small study are encouraging and further research to identify effective ways to decrease postnatal anxiety and depression are warranted. Gender specific antenatal classes could increase the engagement potential for fathers and subsequently their knowledge and support for their partner. The advances in communication technology could play a vital role in accurate, timely information for new parents: SMS, email and web based applications allow for easy access to current evidenced-based practice.

6.5 CONCLUSION

Providing new fathers with timely, relevant information about breastfeeding, postnatal depression and developmental milestones for their baby may reduce perinatal anxiety and increase coping skills. Protective factors that act to reduce the risk for postnatal depression and anxiety include a parent's possession of confidence in their abilities as a parent, good social support systems, and adequate resources for problem-solving. Improved antenatal education to meet the needs of both mothers and fathers and early awareness and intervention may limit the negative impact of perinatal anxiety and depression on parenting attitudes and behaviour.

Antenatal and postnatal testing for anxiety and depression rather than being universal for all parents needs to be targeted at those parents at risk.

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CHAPTER SEVEN: INTERVENTION OUTCOMES FROM BASELINE TO SIX WEEKS POSTNATAL

7.1 INTRODUCTION

This chapter reports the results of the randomised control trial (RCT) from the baseline questionnaire responses, the intended infant feeding practice and intended duration (antenatal), the difference between intention to breastfeed, and the actual infant feeding practice at six weeks (postnatal). It will explore the reasons mothers gave for early cessation and identify some of the barriers to breastfeeding in the context of current literature.

Mothers and fathers participating in the RCT answered a baseline questionnaire on the first night of their antenatal classes. Questions included demographics of age, marital status, highest education level attained, nationality and income. Key questions within the baseline questionnaire were: intention to breastfeed, intended duration of breastfeeding and when that decision was made.

Quantitative data identifying both the intention to breastfeed and intended duration of breastfeeding were analysed with Pearson's Chi square using SPSS version 18. Chi square was used to determine the relationship between demographic characteristics, socioeconomic status, and type of feeding intention. The odds ratio and confidence intervals were calculated for comparison of breastfeeding variables of age, hospital and socioeconomic status (SES), in the control and intervention groups of fathers.

The qualitative data for mothers collected by email, post and phone at six weeks postnatal consisted of responses to the open-ended questions such as "what were the reasons you stopped breastfeeding?" and "What were the difficulties you experienced?" Data was analysed using content analysis to determine themes around mothers' experiences of breastfeeding at six weeks (262) as the open-ended questions were not answered in depth.

7.2. DEMOGRAPHIC VARIABLES OF PARTICIPANTS

The demographic profile of the participants involved in this study (Table 1) include categories of age, educational status, marital status, employment, income, and nationality. They describe the demographics of both the fathers and the mothers involved in the study and highlight the homogeneity of the sample. The mean age of fathers was 29 years and 27 years for mothers. The

only statistically significant difference was marital status between the mothers whose partner was in the intervention and the mothers whose partner was in the control group (p=0.047). The intervention group participants comprised 54% (n=864) of the study with 46% (n=710) of participants allocated to the control group.

Table 1: Demographics of participants in the RCT

Variable	Male (710)		p value	Female (864)		p value
	Intervention (384)	Control (326)		Intervention (467)	Control (397)	
AGE	29 (16-51)	29 (17-54)	0.994	27 (14-44)	27 (16-42)	0.836
EDUCATION	N (%)		0.733			0.150
Tertiary	73(19%)	72(22%)		126(27%)	123(31%)	
Trade/diploma	150(39%)	145(38)		154(33%)	107(27%)	
Year 12	77(20%)	59(18%)		112(24%)	91(23%)	
Year 10	58(15%)	42(13%)		56(12%)	64(16%)	
>Year10	23(6%)	26(8%)		19(4%)	12(3%)	
MARITAL STATUS			0.069			0.047
Married	57%	50%		55%	48%	
Defacto	34%	42%		37%	43%	
Single	9%	8%		8%	9%	
BORN IN AUST	68%	66%	0.116	69%	69%	0.495
EMPLOYMENT			0.242			
Employed	90%	85%				
Unemployed	4%	8%				
INCOME			0.895			
>15,000	2%	1%				
16,000-45,000	12%	14%				
46,000-75,000	29%	30%				
76,000-105,000	31%	28%				
≤106,000	26%	27%				

7.3 ANTENATAL BASELINE RESULTS: MATERNAL RESPONSES TO BASELINE QUESTIONNAIRE

Maternal responses to the parenting questions measured on a 5 point Likert scale with 1=strongly disagree and 5=strongly agree were similar between mothers whose partner was in the intervention group compared to those responses from mothers whose partner was in the control group. Likewise the responses to breastfeeding knowledge questions were not statistically significantly different between the two groups. There was no statistical difference between the intervention and control group of mothers' responses as to the person who influenced their decision to breastfeed with 52% and 55% respectively identifying their partner as most influential.

7.3.1. Physiological variables

Mothers responded with uncertainty (48%: n=299) to questions about the effect of complementary feeding on breast milk supply and 55% (n=347) were unsure whether to give formula to supplement breastfeeding. More than half of all mothers 55% (n=347) agreed that most women experience difficulties with breastfeeding. On the topic of alcohol consumption and breastfeeding only 28% (n=182) agreed that mothers who breastfeed should not consume alcohol whilst 72% (n=453) of mothers disagreed or were unsure.

7.3.2. Social variables

Social variables included levels of both informal and formal support. The majority of mothers (89%) in both intervention and control groups agreed they would need support and 84% expected to have sufficient support postnatal. Questions relating to return to work revealed only 34% (n=214) did not support formula feeding as the better option whilst 66% (n=415) of mothers either agreed or were unsure whether formula feeding was a better option for infant feeding when returning to work.

7.3.3. Psychological variables

Psychological variables associated with breastfeeding included maternal intention to breastfeed and mothers and fathers attitude to and knowledge of breastfeeding.

Antenatal IOWA scores

The IOWA infant feeding attitude scale (IIFAS) consists of 17 questions. Respondents were asked to indicate the extent to which they agreed with each statement, on a five-point Likert scale ranging from “strongly disagree” to “strongly agree ” (243). The scale was designed to cover various dimensions of infant feeding. Questions related to nutrition (eg “breast milk is the ideal food for babies”), the cost of infant feeding (eg “formula feeding is more expensive than breastfeeding”) and the effect of breastfeeding on fathers (eg “fathers feel left out when baby is breastfed”). The participants’ scores from the IOWA attitudinal scale were collated into the respective low, medium or high SES rating for the birth hospitals (247) (see Figure 5). Participants in the high SES had the highest mean score whilst participants in the low SES had the lowest mean score.

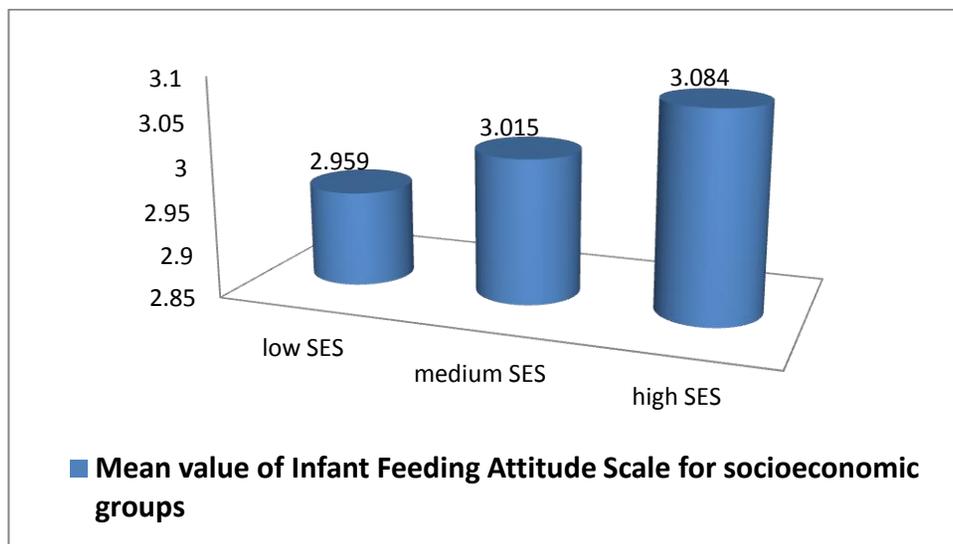


Figure 5: Mean values for IOWA Attitudinal Scale for participants of the RCT categorised by SES

Antenatal intention to breastfeed

More than 90% of women under study had discussed their intention to breastfeed with their partner before the birth of their baby. The majority of mothers proposed to exclusively breastfeed 85 % (n=724) and 12% (n=99) proposed they would combination feed with both breast milk and formula. Table 2 indicates that groups were comparable with 96% of all mothers intending to practice some form of breastfeeding, with only 4% unsure and 4% definitely planning to formula feed only.

Table 2: Intended infant feeding practice at baseline for mothers in both intervention and control group

Intended method of feeding	Intervention N (%)	Control N (%)
Exclusive breastfeeding	392 (85%)	332 (84%)
Breastfeeding and formula	50 (11%)	49 (12%)
Fully formula	8 (2%)	8 (2%)
Undecided	10 (2%)	6 (2%)
Total (p=0.079)	460 (100%)	395 (100%)

Antenatal intended duration for breastfeeding

More than a third of all mothers 34% (n=290) were undecided as to their planned duration of breastfeeding, whilst 34 % (n=290) intended to breastfeed for six months or less and 32% (n=273) reported they intended to breastfeed for more than six months. For all mothers who had intended to exclusively breastfeed for less than six months, there was no statistical difference between the intervention and control groups (p=0.248).

7.4 RESULTS OF RANDOMISED CONTROLLED TRIAL

Breastfeeding rates at six weeks postnatal were the primary objective of the RCT and the null hypothesis was rejected. The breastfeeding rates were statistically significantly higher in the

mothers whose partner was in the intervention group (81%: n=345) compared to the mothers whose partner was in the control group (75%: n=281) (p=0.047).

7.4.1 Any breastfeeding rates at six weeks

In both the intervention and control group of mothers the rate of pre-lacteal feeds (defined as any food item given within the first three days post birth) (263) was 25%. The ‘any breastfeeding’ rates for the intervention group were significantly greater at six weeks. Mothers whose partner was in the intervention group were 1.46 times (95% CI: 1.01–2.13) more likely than the mothers whose partner was in the control group to offer ‘any breastfeeding’ in the unadjusted analyses. The comparison of breastfeeding variables in the control and intervention groups are shown in Table 3 (unadjusted analyses).

Table 3: Comparison of breastfeeding and formula feeding at 6 weeks between intervention and control groups (unadjusted analyses)

	Any breastfeeding	Full breastfeeding	Full formula feeding
Groups			
Intervention n (%)	288 (81.6%)	164 (46.5%)	65 (18.4%)
Control n (%)	224 (75.2%)	133 (44.6%)	74 (24.8%)
Intervention vs Control	1.46 (1.01 - 2.13)	1.08 (0.79 - 1.47)	0.68 (0.47 - 0.99)
odds-ratio (95% CI)	(p=0.047)	(p=0.641)	(p=0.047)

In Table 4 below, the intervention group was also more likely than the control group for ‘any breastfeeding’ after adjusting for age and hospital (1.58: 1.06 – 2.35) or SES (1.56: 1.06 – 2.30).

Table 4: Comparison of breastfeeding and formula feeding at six weeks between intervention and control groups (adjusted for paternal age and hospital. Odds ratio and CI 95%)

	Any breastfeeding	Full breastfeeding	Full formula feeding
Intervention vs Control	1.58 (1.06-2.35) (<i>p</i> =0.024)	1.10 (0.79 - 1.53) (<i>p</i> =0.581)	0.63 (0.43 - 0.94) (<i>p</i> =0.024)
Paternal Age			
21-30 vs ≤ 20 yrs	2.40 (1.07 - 5.38) (<i>p</i> =0.034)	1.73 (0.73 - 4.11) (<i>p</i> =0.216)	0.42 (0.19 - 0.94) (<i>p</i> =0.034)
≥ 31 vs ≤ 20 yrs	3.30 (1.43 - 7.64) (<i>p</i> =0.005)	2.38 (0.99 - 5.72) (<i>p</i> =0.053)	0.30 (0.13 - 0.70) (<i>p</i> =0.005)

At baseline 95% (n=823) of mothers intended to offer “any” breastfeed. At six weeks postnatal 40.5% (n=347) of all mothers were exclusively breastfeeding and 32.5% (n= 279) were breastfeeding and using formula, revealing a total of 73% “offering any” breastfeeding and 20.5% (n=173) were fully formula feeding. Seven percent (n=63) represented missing values.

7.4.2 Socioeconomic status categorised by hospital and outcomes for participants

More than half of the participants involved in the RCT were from hospitals that catered to a low socioeconomic (SES) demographic (Figure 6). Each hospital was categorised by Australian Bureau of Statistics Socioeconomic Indexes for Areas based on postal code (SEIFA) (247).

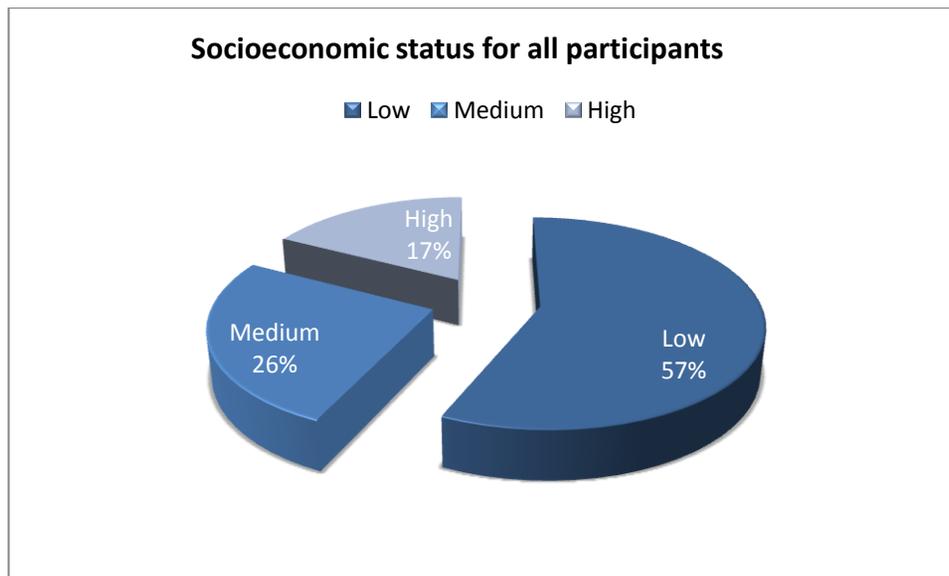


Figure 6: Socioeconomic status of all participants in the RCT

The socioeconomic status of the participants in the intervention and control groups is shown in Figure 7. The infants of older fathers were more likely to receive ‘any breastfeeding’ at 6 weeks compared to infants of younger fathers ($p < 0.01$). Fathers in a high SES were more likely than fathers in a low SES ($p = 0.013$) to have infants receiving ‘any breastfeeding’. Full breastfeeding at six weeks was not significantly different between the intervention and control groups.

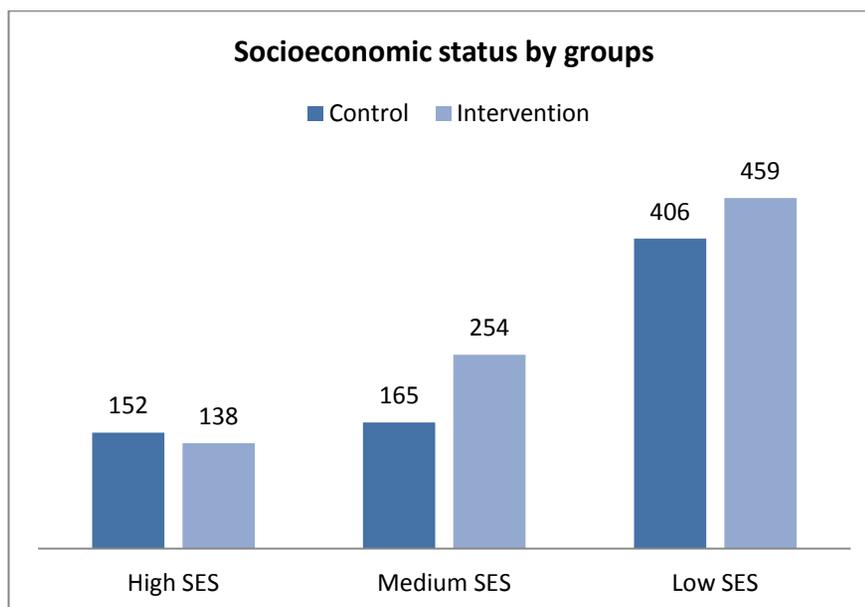


Figure 7: Socioeconomic status for each group of participants in the RCT

Table 5 reveals participants in the intervention group that were in a high SES were more likely to breastfeed at six weeks than the participants in the control group in a high SES. However, there was also a more positive trend for those participants in the intervention group and the low SES to breastfeed longer than for participants in the control group and low SES. Table 5 was adjusted for the covariates age and SES.

Table 5: Comparison of breastfeeding and formula feeding at six weeks between intervention and control groups (adjusted for paternal age and SES. Odds ratio and CI 95%)

	Any breastfeeding	Full breastfeeding	Full formula feeding
Intervention vs Control	1.56 (1.06 - 2.30) (<i>p</i> =0.026)	1.09 (0.79 - 1.51) (<i>p</i> =0.587)	0.64 (0.44 - 0.95) (<i>p</i> =0.026)
Paternal Age			
21-30 vs ≤ 20 yrs	2.54 (1.14 - 5.67) (<i>p</i> =0.022)	1.79 (0.76 - 4.23) (<i>p</i> =0.182)	0.39 (0.18 - 0.88) (<i>p</i> =0.022)
≥ 31 vs ≤ 20 yrs	3.54 (1.54 - 8.13) (<i>p</i> =0.003)	2.46 (1.03 - 5.86) (<i>p</i> =0.042)	0.28 (0.12 - 0.65) (<i>p</i> =0.003)
SES			
Medium vs Low	1.26 (0.80 - 2.00) (<i>p</i> =0.322)	1.16 (0.79 - 1.70) (<i>p</i> =0.455)	0.79 (0.50 - 1.26) (<i>p</i> =0.322)
High vs Low	2.04 (1.16 - 3.58) (<i>p</i> =0.013)	2.61 (1.71 - 3.98) (<i>p</i> <0.001)	0.49 (0.28 - 0.86) (<i>p</i> =0.013)

7.5 BIRTH OUTCOMES AND BREASTFEEDING SUPPORT

The survey at six weeks was sent to participants in the RCT by email or post or administered by telephone. The rate of response by mothers and fathers in both groups to the various questions asked in the six week survey ranged between 76%-92%. Questions for the mothers involved collecting information about the type of birth they experienced and any birth complications, their current infant feeding practice and the reasons for early cessation of breastfeeding (if relevant). Fathers were asked to identify how they supported their partner to breastfeed and fathers in the intervention group were also asked to evaluate the six week support package (reported in Chapter Five).

There were no significant differences between the intervention and control groups when type of birth (*p*=0.326) and birth complications (*p*=0.123) were considered. Figure 8 identifies the

percentage of birth types for mothers in the RCT by groups. Birth complications included breech presentation, cord around the baby's neck, third degree vaginal tearing and postnatal haemorrhage.

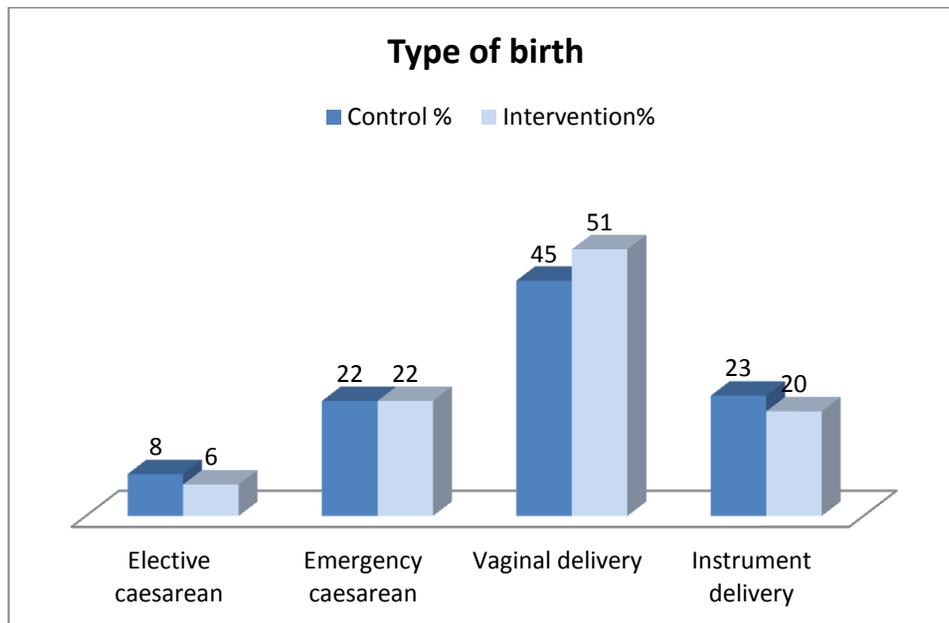


Figure 8: Type of birth for mothers in the Intervention and Control groups

Mothers from both the intervention and control groups had similar answers with no statistical difference to the questions about sufficient support to breastfeed 95% ($p=0.616$), encouragement to breastfeed 96% ($p=0.605$) and intention to breastfeed their next child 98% ($p=0.707$). To the question, "I have enjoyed breastfeeding" 221 (73%) mothers in the control group and 301 (79%) mothers in the intervention group responded positively ($p=0.58$).

7.6 BREASTFEEDING DIFFICULTIES

The antenatal intention of 97% of mothers to exclusively breastfeed, whilst met in the first week, was not extended for 9% ($n=62$) of mothers in the control group and 7% ($n=54$) of the intervention mothers. The stated reasons for the cessation of breastfeeding in this period were perceived insufficient milk, pain or attachment difficulties.

More than 80% of all mothers experienced breastfeeding difficulties regardless of whether their partner was in the intervention or control group. For combined groups the most common breastfeeding difficulties included attachment problems (45%: n=313), followed by perceived insufficient milk supply (35%: n=246) and engorgement (35%: n=243). The mothers in each of the groups identified their general practitioner (GP) as the most common source of help for breastfeeding difficulties.

Barriers to breastfeeding included baby related difficulties associated with tongue tie and lactose intolerance. Mother difficulties related to pain of breastfeeding, attachment problems and perceived insufficient milk supply.

7.7 PATERNAL SUPPORT OUTCOMES

Fathers were asked how they supported their partner to breastfeed (see Figure 9). There was a statistical significance between the fathers' responses in the intervention group compared to the fathers' responses in the control group for getting up at night ($p=0.011$) and laundry support ($p=0.047$) whilst each group of fathers participated similarly in cooking or meal preparation and babysitting ($p=0.065$).

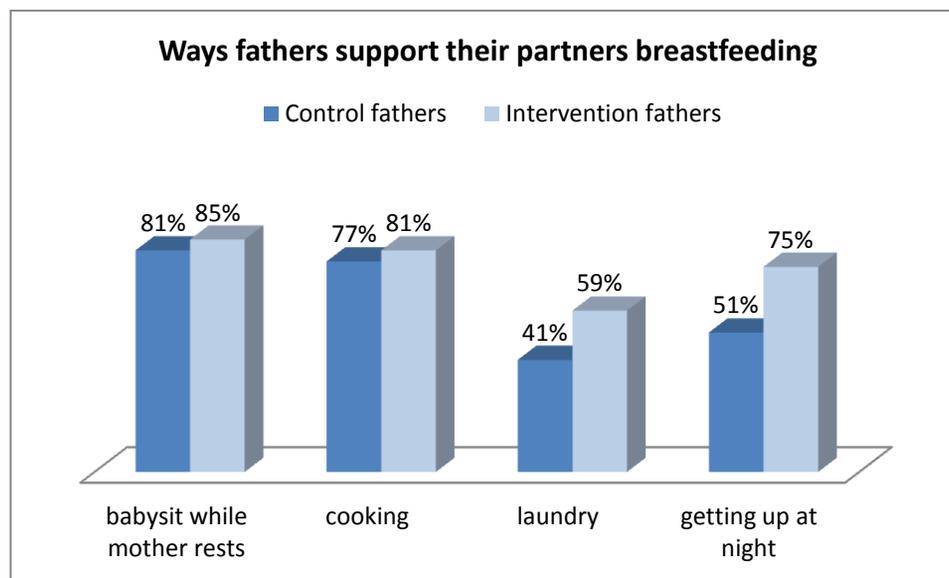


Figure 9: Comparison of support strategies between fathers in the intervention group and fathers in the control group

7.8 QUALITATIVE RESULTS: REASONS FOR BREASTFEEDING CESSATION

The six week questionnaire contained a series of open-ended questions related to reasons for ceasing breastfeeding and any difficulties encountered with breastfeeding. There was a total of 791 (93%) maternal responses (n=423 intervention; n=368 control). In this section qualitative responses are quoted and are identified as [C] control or [I] intervention. As the open-ended questions were not always answered in detail, and often with only one or two words, content analysis was the preferred method of data analysis. Mothers' responses to the reasons for cessation of breastfeeding were coded by the researcher to identify common themes and pseudonyms were used to maintain confidentiality.

Maternal perception of barriers to breastfeeding included: unrealistic expectations of the parenting and breastfeeding experience, inadequate support and lack of "practical" information to overcome difficulties. There were more similarities than differences between the groups responses with 48 different categories subsequently condensed into three major themes related to barriers for continuing to breastfeed: unrealistic expectations of the parenting experience and breastfeeding, importance of support to successfully breastfeed, and lack of practical information to feel confident and competent with breastfeeding.

Physical difficulties involving the baby included tongue tie which reduced the baby's capacity to suck effectively. In such cases mothers invariably reverted to bottle feeding, sometimes expressing breast milk, but mainly with formula. Physical difficulties associated with the mother included mothers with inverted or flat nipples who reportedly had greater difficulty breastfeeding, contributing to their early cessation.

Mothers from both the intervention and control groups experienced difficulties with breastfeeding related to perceived insufficient milk supply and attachment. The following mother's response paints a clear picture of reasons for early breastfeeding cessation:

"Nipples severely grazed, bleeding and engorged. I was in too much pain [to breastfeed] and baby wasn't getting enough" (Briana, 22yrs[C]).

7.8.1. Theme One: Unrealistic expectations of the parenting experience and breastfeeding

The theme of unrealistic expectations was developed from reviewing the responses of the mothers in regard to their experiences of breastfeeding and parenting. Unrealistic expectations were associated with how the baby would behave and sleep, leaving many mothers experiencing

frustration, overwhelming tiredness and sleep deprivation. The expectation by some mothers that parenting is “natural” and that baby would just “fit into our life” left them unprepared for the reality of a newborn at home. As this mother stated:

“People [should] not sugar coat what parenting is really like. It’s not always fun, it’s very stressful, and just because you’ve given birth does not mean you have a natural mothering instinct” (Pamela, 23 yrs [C]).

Similarly, several mothers expressed their frustration not feeling adequately prepared for breastfeeding:

“It would have helped to be told that breast feeding is HARD and not just something that comes naturally” (Wendy, 22 yrs [C]).

Olivia’s following comments support the theme:

“[If] Someone explained the negative things that can happen e.g. sore nipples, heavy and hard boobs, maybe to say it will happen for the first few weeks and then be all good”(Olivia, 28 yrs [C]).

Many mothers became overwhelmed with the demands of breastfeeding and associated not getting enough sleep to a perceived poor milk supply and the reason for changing to formula:

“I was not coping with the high on demand feeds of 14 hours constantly. I managed it for a week then started to get quite depressed” (Julie, 27 yrs [I]).

Another mother found expressing milk was exhausting and ultimately affected her milk supply:

“Expressing was getting too much as not able to sleep for long and getting stressed and tired which then affected the milk production” (Marnie, 35 yrs [C]).

Feeling uncertain and needing proof of an adequate food intake for their baby resulted in the following mother deciding to change to formula. She identified formula as the easier alternative to breastfeeding as it let her measure how much her baby was getting, reducing her anxiety:

“Formula feeding became easier [than breastfeeding] and I knew how much he was getting by giving him the bottle” (Phenh, 20 yrs [C]).

Some mothers wanted to have more sleep and believed that formula feeding would give them that rest: “

“[I give my baby] formula feeds to help baby sleep through the night” (Kristy, 31 yrs [C]).

Similarly, mothers expressed concerns about the time it took to breastfeed and found bottle feeding with formula more conducive to their needs:

“Formula is quicker than breastfeeding; [I] sat a lot on the couch all day constantly feeding” (Sheryl, 27yrs [C]).

7.8.2 Theme Two: Importance of support to successfully breastfeed

Support can be defined as informal (family and friends) or formal (health professionals) (264). Support is very important for successful breastfeeding and was identified in the formative research (Chapter Four). The majority of fathers participating in the RCT were returning to work within four weeks of their baby’s birth: 72% of fathers in the control group and 73% of the intervention fathers.

Paid maternity and paternity leave was identified by many participants as an important source of support, but not available to all. The following mother explained:

“If my husband was just able to have more [paid] time off work in the first couple of months, he could help settle/attend to the baby through the night” (Helen, 29 yrs [I]).

Several mothers in the study had family in another state of Australia or overseas which left them feeling isolated and unsupported. For example, Brenda stated:

“It really would help to have friends or family drop in to give me some support. Someone to call when I need a break. I feel so isolated” (Brenda, 26 yrs [I]).

Most mothers were appreciative of the help afforded them in hospital, but some mothers were not confident in their ability to breastfeed and were disappointed in the formal support received from the midwives in the hospital. Some comments related to the quality of communication:

“I needed clearer, consistent communication from staff in hospital. It wasn't until I was visited at home by a lactation consultant that I felt I had the information and support I needed to be able to do it [breastfeed]” (Xiau, 32 yrs [C]).

The importance of formal support was identified by another mother who felt let down by the health services when she was discharged from hospital with no follow up for four weeks:

“I had sore nipples from poor attachment, and didn't get to see lactation consultant until baby was 4 weeks old (very disappointed with that)” (Chloe, 24 yrs [C]).

7.8.3 Theme Three: Practical information to successfully breastfeed

Similar to the theme of unrealistic expectations, many mothers from both the intervention and control group wrote about not having enough practical information in the antenatal classes around breastfeeding. Issues included how to maintain good milk supply by adequate fluid intake and regular breastfeeding as well as the risk of a reduced milk supply associated with supplementing breast milk with formula, or the risk of baby rejecting the breast following a supplemented formula feed. The following mother was not aware that supplementing with a bottle of formula could not only reduce her milk supply, but stop the baby breastfeeding. She explained:

“When [we went] out for the weekend and put her on formula to be easy... Then tried to breast feed she wouldn’t go back to breastfeeding, I didn’t know, no-one told me that” (Raelene, 21yrs [C]).

Likewise, Melissa found

“Introduction of formula reduced breast milk production” (Melissa, 18yrs [I]).

Understanding the process of breastfeeding, the nutritional benefits and adaptation of breast milk to baby’s needs would have helped the following mother who believed formula supplied the required nutrition for her baby:

“[I] felt much better that my baby is now getting what she needs from the formula” (Helen, 18 yrs, [C]).

7.9 DISCUSSION

The formative research indicated there was little understanding about the benefits of breastfeeding and that many of the participants had underestimated the effort required to successfully breastfeed. The outcomes of the present RCT at six weeks illustrated the many ways fathers found to support their partner to breastfeed. They included emotional (getting up at night), physical (cooking and shopping) and practical support (doing the laundry). These findings contrast with a recent study involving focus groups of expectant men (n=40) and women (n=81) in the US. The researchers found that men were aware of ways to support their partner with the baby-related tasks around the home, but were not aware of the support needed to facilitate successful

breastfeeding (265). Likewise in a British study, fathers reported requiring more relevant details concerning some of the practical issues involved in supporting their partner's breastfeeding (266).

The intervention targeted fathers and incorporated men from a wide cross section of socioeconomic settings with the majority of participants in low socioeconomic locations due to the increased number of antenatal classes offered at the hospitals in the low SES areas. Elements of hegemonic masculinity were utilized to enhance the relevance and acceptability of the interventions material (233). It is likely it could also be used by researchers in other cultures to enhance fatherhood practices.

Data from mothers whose partners were in the intervention and control group were comparable in relation to demographic characteristics, intention to breastfeed, and type of birth outcomes. A key result for this study was that mothers whose partner was in the intervention group and in a higher SES level were more likely to be exclusively breastfeeding ($p=0.003$) than mothers whose partner was in the control group and high SES. This study also identified older age and higher socioeconomic status of the father in the intervention group to be related to higher rates of “any” breastfeeding at six weeks and decreased rates of fully formula feeding. Similar results were found in a large Swedish population cohort study of 51,671 fathers which found infants were less likely to be breastfed if their father was unemployed or from a low socioeconomic background (41).

Contrasting with other breastfeeding research, participants in the present study who were in the intervention group and in a low SES grouping were found to have higher breastfeeding rates ($p=0.012$) compared to the control group (267-269). Elsewhere paternal low socioeconomic status has been correlated with reduced breastfeeding duration (267, 269, 270) and increased positive attitudes to formula feeding were found in parents who were from a low socioeconomic status in USA (98). The increase in breastfeeding duration for those participants in the present study's intervention group, who were in low SES, could be attributed to the increased opportunity in the intervention antenatal class to discuss breastfeeding strategies and to source appropriate resources for help. The intervention antenatal class focussed on the role of “father” and may have empowered men to better transition to parenthood and their new role. The results of a study by Barclay, Donovan and Genovese with 53 new fathers recognised the importance of promoting the role of father and found that this new role was their greatest concern (271)

7.9.1. Breastfeeding intention and intended duration

Most women who intend to breastfeed do initiate breastfeeding (272), and the majority of mothers (96%) in this study from both the control and intervention groups intended to breastfeed their baby. Maternal intention at baseline to breastfeed was 95.2% for mothers whose partner was in the intervention group and 96.7% for mothers whose partner was in the control group. Exclusive breastfeeding was the intention for 81% of women in the control group and 83% of women in the intervention group. At six weeks postnatal only 75% in the control group and 81% in the intervention group were categorised as providing “any” breastfeeding, with 25% of mothers in the control group and 19% of mothers in the intervention group fully formula feeding. These results are supported by an American study with 1,573 new mothers that found a substantial difference between their intention to exclusively breastfeed (70%) and the reality of this at one week (50%) (273). Likewise, a Canadian study found that women who intended to breastfeed for fewer than four months (or were unsure how long) were more likely to discontinue breastfeeding within four weeks of discharge from the hospital (268, 274). In contrast, a British study with 10,548 women found intention to breastfeed for six months correctly predicted 91% of women who initiated breastfeeding and 72% of women who were still breastfeeding at six months. They used logistic regression with intended duration as the only explanatory variable and suggested a strength of relationship between maternal prenatal intention to breastfeed and both breastfeeding initiation and duration (275).

There was statistical significance ($p=0.016$) between the intervention and control group participants from the high SES in their intention to breastfeed antenatally and again at six weeks postnatal ($p=0.003$). The intervention group mothers who intended to exclusively breastfeed for longer than 6 months, were less likely to formula feed at six weeks compared to those mothers whose partner was in the control group ($p=0.014$).

Contrary to global studies with mothers from low SES, the mothers whose partner was in the intervention group and low socioeconomic bracket showed a statistically significantly more positive result at six weeks postnatal for breastfeeding outcomes ($p=0.012$) than mothers whose partner was in the control group and low SES. Supporting the premise that increased support and education about breastfeeding can increase breastfeeding initiation, five trials involving 582 women on low incomes in the USA showed breastfeeding education had a significant effect on increasing initiation rates compared to routine care (276). Conversely, in another Australian study with cross-sectional data from 9,618 babies, living in disadvantaged accommodation was associated with decreased breastfeeding initiation and duration ($p<0.001$) (277).

In relation to the WHO breastfeeding recommendations of exclusive breastfeeding for six months, only 37% of mothers participating in the RCT intended to meet the six month target with a third intending to stop breastfeeding before six months, and 27% of mothers being undecided in relation to duration. This result was reflected in another Australian study with 409 first time mothers, with only 42% intending to breastfeed exclusively for six months (278). The fact that so few mothers intended to breastfeed to six months requires further investigation and more advocacy for breastfeeding duration at a community and health service level.

Including fathers in the antenatal intervention and following up with educational support contributed to the increased breastfeeding duration for mothers in the intervention group. Mother's knowledge and attitudes, followed by husband's support, were identified as important in influencing infant feeding choice in a study with 230 mothers in Hong Kong (279).

7.9.2 Perinatal breastfeeding knowledge, support and concerns

Although mothers in the present study had attended hospital based antenatal education sessions they still expressed a need for more practical information associated with breastfeeding. The environmental audit of participating hospitals purported to give comprehensive breastfeeding information but mothers may have been unable to process the breastfeeding information with “labour” fears being their highest priority in the antenatal classes. Several studies have found that breastfeeding is only a small part of antenatal education and may not meet the mothers’ postnatal needs (21, 156, 280). Mothers reported limited information perinatally about breastfeeding problems including instruction on maintaining a good milk supply. This was reflected in an increased response to supplementing breastfeeding with formula for perceived insufficient milk supply and decreased breastfeeding duration rates from baseline intention. Similarly, in a Mexican study with 207 first time mothers, perceived insufficient milk supply was the primary motive for cessation or complementary feeding (180). Additionally, an American study with 1323 mothers found that mothers' concerns about breastfeeding and nutrition issues were the most frequently cited reasons for stopping breastfeeding during the first 2 months (119). More practical information and education in the perinatal period around milk production, strategies for maintaining a good milk supply and the nutritional benefits of breast milk could decrease the need for complementary feeding. This information, coupled with support and increased postnatal community follow up from the health services and lactation consultants could enhance the mothers’ efforts to breastfeed and also delay introduction of formula.

Challenges to effective antenatal education include readiness of participants to learn and for classes to be parent-centred and needs-driven (281, 282). Researchers have found that adults would rather focus on current issues than material that may be useful in the distant future (249). This reflects the difficulty of producing a comprehensive antenatal program that meets all participant needs. Traditionally didactic teaching methods have been used in antenatal education classes with conflicting results (283, 284). In a Canadian RCT with 110 mothers, adult learning principles were included in an antenatal breastfeeding workshop which increased both self-efficacy and exclusive breastfeeding duration (284, 285). Similarly, in the present RCT, the intervention antenatal class was based on adult learning principles and received excellent feedback from the fathers participating about the relevance and usefulness of the breastfeeding information in the class.

Participants from hospitals in the low SES areas sought help most frequently for breastfeeding difficulties from the general practitioner suggesting a possible lack of available child health and public lactation consultant services within those communities. This was supported by conversations with community midwives at three of the participating hospitals who reported a lack of lactation consultants within the public domain and limited community midwife access postnatal due to staff shortages. Research has found that lactation consultants can increase the duration of breastfeeding with relevant information and support for the mother (151, 213, 286, 287) and would be the most appropriate source of information for breastfeeding difficulties or problems (184). A British study found that doctors received very little formal education about breastfeeding, and ongoing training for health practitioners who worked with breastfeeding women was not routine, possibly reducing the quality of formal support available for breastfeeding mothers (280, 281).

Mothers in this present study expressed uncertainty about the influence of alcohol on breastfeeding and the effect on breastfeeding outcomes. A recent study with 772 breastfeeding mothers revealed that 36% of the mothers had consumed alcohol whilst breastfeeding (288). Giglia and Binns found the majority of 547 breastfeeding women consumed up to two standard drinks per week (289) which was in line with the National Dietary Guidelines (290).

Fletcher, Vimpani and Russell found that health topics such as breastfeeding may not be perceived as particularly relevant to fathers in the antenatal period (291). Incorporating small group activities into the intervention antenatal class associated with breastfeeding importance may increase the relevance of breastfeeding for those fathers. Expectant and new mothers whose partners are supportive and well informed about breastfeeding, experience the benefits of increased support and potential for increased duration of breastfeeding (292).

7.9.3. Facilitators to breastfeeding

Mothers in the intervention group had more support from their partners (86%: n=387) than the mothers in the control group (82%: n=314) because of the intervention education and support packages provided over the first six weeks postnatal, reinforcing the problem solving strategies discussed in their antenatal class. Fathers in the intervention group were more likely to assist their partner with cooking, laundry and getting up at night than fathers in the control group, consolidating support for their partner to continue breastfeeding. Similarly, mothers (n=720) in a British RCT found encouragement and praise for their breastfeeding efforts and practical support from their partner helpful in continuing to breastfeed (280). Evidence has suggested that when information was provided to mothers it positively impacted breastfeeding (21, 293); in the same way, when fathers are afforded the same input, the capacity for breastfeeding duration increases (143). Concurring with these results, Rivera and colleagues determined that 92% of fathers studied (n=100) were interested in supporting their partner to exclusively breastfeed (294). Several qualitative studies in Britain with fathers also identified a need for more relevant and accessible information about the benefits of breastfeeding as well as details concerning some of the practical issues involved in supporting their partner's breastfeeding (146, 153, 266). French demonstrated in an American study that one educational class for expectant fathers increased the probability that a mother might initiate breastfeeding (295).

In a Swedish study with 20 first time fathers, being an advocate was supportive and vital to the mother's breastfeeding success (296). Studies have found that fathers not only influence the decision to breastfeed but they also play an instrumental role in whether mothers continue breastfeeding or stop earlier than planned (113, 297). In a qualitative American study with four breastfeeding mothers, Cole found that fathers who attended classes on the basics of breastfeeding who had increased their breastfeeding knowledge were more likely to understand the mothers' experiences and therefore provide a greater level of support (298). Similarly, results from a Canadian study involving in-depth interviews with 21 fathers found that knowledge to encourage and assist their partners in breastfeeding contributed to their partners breastfeeding success and ultimately to their baby's health (145). Whilst each of these studies had small sample sizes, the qualitative results reflect an in-depth understanding of support needs for successful breastfeeding continuance.

Mothers who were still breastfeeding at six weeks recorded 83% enjoyment with breastfeeding. Only 42% of mothers in the control group who had ceased breastfeeding reportedly enjoyed the

experience of breastfeeding and only 65% stated they would breastfeed their next child. A higher percentage of mothers (58%) whose partner was in the intervention group enjoyed breastfeeding even though they had ceased breastfeeding by six weeks ($p=0.037$) and 77% reported that they would breastfeed their next child.

7.9.4. Barriers to breastfeeding and fathers support for breastfeeding

The qualitative findings of this present study suggested the primary barriers to breastfeeding exclusively for even six weeks included the unrealistic expectations of the mothers about the time it took to breastfeed a newborn, the difficulties with attachment and the perceived lack of adequate milk supply. These results were supported by two Australian study that found incompatible and unrealistic expectations contributed to breastfeeding cessation (42, 204). Mothers identified a lack of realistic information from the hospital-based antenatal classes about breastfeeding: the pain experienced, the time it took, demand-feeding and the stress of demand-feeding as contributing factors to early cessation. The early cessation for 25% of mothers whose partner was in the control group and 18% for mothers whose partner was in the intervention highlights the importance of more breastfeeding instruction on correct attachment and realistic information about potential breastfeeding difficulties in the postnatal period. These stressors were also identified in other studies (150, 299-301).

Mothers in the present study were often overwhelmed with the demands of breastfeeding and changed to formula feeding to enable them to “have a break” and get some sleep. In a Taiwanese study with 591 mothers who initially intended to exclusively breastfeed, 39% changed to formula feeding by one month, with milk insufficiency, maternal tiredness, and breast problems identified as reasons for changing their feeding practice (302). In a similar vein, Canadian researchers found incompatibility of breastfeeding with personal needs and life style were cited as reasons for early breastfeeding cessation (303).

Mothers experienced a lack of consistent support when their partners returned to work and expressed concerns with the minimal paternal paid leave currently available to employees in Australia. Establishing successful breastfeeding can take a number of weeks and lack of paternal paid leave decreased ongoing support for the new mother trying to breastfeed. O’Brien recognised the importance of parental paid leave to boost fathers’ emotional investment and connection with infants as well as supporting mothers (252).

Whilst no fathers in this study acknowledged feeling “left out” when their partner was breastfeeding, other studies have found that a father’s desire to be actively involved with infant feeding may well be an ongoing barrier to support for breastfeeding. For example, a British study reported that the fathers’ desire to be included in the infant feeding process led to mothers electing to bottle-feed rather than breastfeed to facilitate that involvement (166). Fathers in an American study with 268 couples, indicated that they felt left out of the care giving experience by not having sufficient information and resources to manage breastfeeding problems resulting in them feeling isolated and distant from their partner (304). Similarly, a Taiwanese study with 1,699 men reported that fathers may feel disconnected from their partner and baby during the breastfeeding experience thus reducing their capacity for support (35). Finally, a Scandinavian study with 20 fathers found that their partner’s breastfeeding experience contributed to their feelings of being insignificant and ambiguous towards breastfeeding (296).

7.9.5. Baby Friendly Health Initiative

Antenatal education usually incorporates breastfeeding instructions, and the Baby Friendly Hospital Initiative (BFHI) purportedly promotes and supports breastfeeding in the 10 steps to successful breastfeeding (305). All staff in BFHI are trained in breastfeeding advocacy and promotion which could reduce the potential incidence of conflicting advice, especially if the hospital adhered to the UNICEF guidelines (306). Commitment to reducing attachment difficulties, instruction on maintaining a good milk supply and demand-feeding are routine procedures within the 10 steps to successful breastfeeding (reported in Chapter Two) found in BFHI hospitals (307). With only four maternity hospitals out of 14 in Western Australia classified as BFHI, there is a need for more maternity hospitals to become BFHI, and for health professionals to become better breastfeeding advocates to maintain breastfeeding duration.

Routine implementation of the WHO/UNICEF Baby Friendly Initiative across hospital and community services was recommended as core to breastfeeding in a British study (308). Breastfeeding initiation was hampered and delayed in a non-BFHI hospital by hospital routines and staff in a Nigerian study with 500 women where none of the successful steps to breastfeeding were implemented (309). Similarly, an American study with 1,907 mothers found mothers who experienced six (6 out of 10) Baby-Friendly practices compared with mothers who experienced none were 13 times more likely to stop breastfeeding early (214, 310). The public health challenge for all health professionals is to effectively promote exclusive breastfeeding for six months within

the entire community and to lobby for more accredited Baby Friendly Hospitals to help achieve this goal.

7.10 CONCLUSION

The results of the present study found that more mothers whose partner was in the intervention group were offering any breastfeeding at six weeks postnatal compared to those mothers whose partner was in the control group. The RCT had a positive impact on breastfeeding duration with mothers in the low socioeconomic areas whose partner was in the intervention group contrary to current global research and highlights the importance of father inclusive perinatal intervention strategies targeting specific demographics. More mothers in the intervention group than the control group felt supported and enjoyed the breastfeeding experience. Exclusive breastfeeding at six weeks postnatal was highest in the intervention group with older fathers in the high socioeconomic demographic.

Chapter Eight summarises the key results under each objective, the study limitations and the implications for future research and clinical practice.

CHAPTER EIGHT: SUMMARY AND IMPLICATIONS FOR CLINICAL PRACTICE

This chapter will review the key results under each objective as well as implications for clinical practice, education and health policy. It will report on the objectives of the study and highlight the limitations experienced during the study.

8.0 INTRODUCTION

The aim of the present research was to develop, implement and evaluate a father inclusive perinatal support intervention to increase breastfeeding duration. The intervention was designed to provide fathers with information about the breastfeeding benefits for mother and baby and, in addition, how to promote the best nutritional start for their child. A further goal was to acknowledge and promote the role of the father by informing fathers about lifestyle changes and coping mechanisms in their transition to parenthood.

The study design was a randomised control trial (RCT). The formative research utilised qualitative methods to identify the facilitators and barriers to breastfeeding and a theoretical framework in the development of a father inclusive perinatal support intervention.

The ‘any breastfeeding’ rates for the intervention group were significantly greater at six weeks. The results of the RCT at six weeks showed 81% of mothers in the intervention group were offering “any” breastfeeding at six weeks postnatal compared to 75% of the mothers in the control group ($p=0.047$). The intervention group mothers were 1.46 times more likely than the control group of mothers to offer ‘any breastfeeding’ in the unadjusted analyses. Mothers whose partners were in the intervention group were also more likely than mothers whose partners were in the control group to offer ‘any breastfeeding’ after adjusting for age and hospital or SES. In addition, the infants of older fathers were more likely to receive ‘any breastfeeding’ at six weeks compared to infants of younger fathers. Those fathers in the high SES were more likely to have breastfeeding babies than those fathers in the low SES. The results for the participants who were in the intervention group and also low SES compared with the control group in low SES showed a statistical significance in increased breastfeeding duration.

This study increases the knowledge about the possible ways of increasing the duration of breastfeeding in socioeconomic disadvantaged populations. It confirms the need for future

research into interventions that could target breastfeeding in the lower SES. It illustrates the importance of father inclusive practice in not only maternity services but across all health services.

8.1 OBJECTIVE ONE: TO IDENTIFY FACTORS WHICH ENCOURAGE FATHERS TO SUPPORT THEIR PARTNERS' BREASTFEEDING

Fathers were encouraged to support their partners breastfeeding efforts with positive feedback recognised in the formative research as "Dads do make a difference" (257). Fathers who anticipated their partners' needs, encouraged and praised their efforts to breastfeed and were committed to the importance of breastfeeding were associated with effective partner support according to the mothers who were interviewed. Many fathers supported their partners with physical, emotional and practical support which included shopping, laundry, cooking and spending time with their partner whilst she fed their baby.

"Wanting to be involved" was identified from the fathers' data as the major theme around their needs, with sub-themes of wanting more information, learning the role and being an advocate (257). Fathers also expressed a need to be informed about breastfeeding difficulties and possible solutions. They wanted access to resources that could assist their partner to breastfeed and wanted to know how best to help their partner with general parenting concerns. These included concerns around "how to settle a crying baby" (257). Fathers in this study recognised a need to be informed of the benefits of breastfeeding to both the mother and the baby, and the importance of their support to successful breastfeeding.

Fathers should be included in the discussion of the infant feeding decision and the education surrounding breastfeeding. In addition fathers should have adequate access to resources that address difficulties associated with breastfeeding. Findings from the present study recognise that breastfeeding promotion interventions should be provided by health care professionals at critical times during the perinatal period.

8.2 OBJECTIVE TWO: TO IDENTIFY FACTORS WHICH DISCOURAGE FATHERS FROM SUPPORTING THEIR PARTNERS' BREASTFEEDING

Fathers were discouraged from supporting their partners' breastfeeding efforts by their own time constraints, sleeplessness and work commitments, as was seen in Chapter Four. Some fathers found the relentlessness of breastfeeding difficult to incorporate into their everyday life without feeling overwhelmed. To overcome issues surrounding perceived barriers, such as a father's attitude and time constraints, information and education about breastfeeding needs to be

discussed with each parent in the perinatal period (55, 311). Information about the benefits of breastfeeding for both mother and baby and how to effectively support their partner to breastfeed were components of the intervention antenatal class. The discussions incorporated practical ways of giving support that included increasing household chores, for example, vacuuming, shopping and cooking.

8.3 OBJECTIVE THREE: TO DESIGN, IMPLEMENT AND EVALUATE A PERINATAL FATHER INCLUSIVE SUPPORT INTERVENTION

A father inclusive perinatal support intervention was designed, implemented and evaluated. The design of the program was informed by the formative research that identified the facilitators and barriers to breastfeeding (Chapter Four). The theoretical frameworks underpinning the program design included the Social Cognitive Theory, the Health Belief Model and Gender Theory. Social Cognitive Theory (225) offered the opportunity to explore the reciprocal determinism between personal, social and environmental influences and their influence on breastfeeding behaviour and support. The Health Belief Model allowed for the influence of the person's perceptions of the benefits and barriers to adopt the suggested behaviour (breastfeeding) as well as to increase their capacity to implement it (229). From the formative research the inclusion of an additional theoretical driver was the importance of learning the role of being a father. This required the researchers to review theory around hegemonic masculinity and the social construction of masculinity (233, 312, 313) and social construction of role (314). Hegemonic masculinity refers to the cultural dynamic between genders by which men sustain a leading social position. Utilising the understanding of social construction of masculine roles the project sought to build upon the key positive perceptions of men as problem-solvers within a relationship, and as protectors and providers.

The men in the formative research indicated a strong preference to receive male specific information delivered by a male educator who was also a father. Adopting an adult learning style for the antenatal intervention was successful in engaging the fathers and the positive responses obtained from process evaluation immediately following the intervention antenatal class reinforced the choice of male facilitator for this phase of the intervention. The results revealed that more than 90% (n=307) of the fathers who attended the antenatal class found it useful, helpful and well worth attending. They reported that the facilitators were informative, easy going and the fathers' exclusive antenatal session was an asset to the antenatal program.

Fathers highly recommended the classes be included in all future mainstream antenatal programs. Similarly, in a prospective cohort study involving a peer support program for Hispanic fathers, the participants found the opportunity to discuss issues surrounding fatherhood with other fathers empowering (315).

8.4 OBJECTIVE FOUR: TO IDENTIFY ANY CHANGES IN THE ANXIETY AND DEPRESSION SCORES FOR THE MALE PARTICIPANTS IN THE INTERVENTION AND CONTROL GROUPS FROM BASELINE (ANTENATAL) TO SIX WEEKS POSTNATAL

Male participants from this study experienced a reduction in anxiety from baseline to six weeks across both the intervention and control groups (see Chapter Six). There was a small but statistically significant difference ($p=0.048$) between the two groups with self-reported anxiety scores lower in the men from the intervention group at six weeks postnatal (316).

Increasing breastfeeding knowledge and support resources, identifying the developmental milestones of their baby and providing information about the signs and symptoms of postnatal depression as well as information about agencies for support were considered important to reduce paternal postnatal anxiety (316). The antenatal class gave the fathers in the intervention group the opportunity to engage with other new fathers and to discuss relevant concerns which may have contributed to this decrease in anxiety. In a comparison study of father-focussed groups for antenatal education and standard antenatal delivery the researchers found that men in the father-focused group significantly changed their coping efforts by seeking more social support (317). Contrary to the results of the present study, Hanson et al found that fathers often reported that childbirth classes were not helpful and, in some cases, classes increased their fears about childbirth and the transition to parenting (318).

Fathers' active participation in family life will likely be one of the most important social developments in coming decades (252). Ensuring that antenatal education and hospital practices focus more on men's needs may reduce their distress levels and improve both maternal and paternal satisfaction with parenthood (319). Demonstrating this need Nystrom and Ohling determined that being confident as a father, living up to the new demands of the infant and being the protector and provider were increased sources of strain for new fathers (320).

Depression scores remained low and unchanged for the majority of fathers across the perinatal period under study (316). Unlike transitory anxiety recorded across the perinatal period, those fathers who recorded moderate to severe scores of depression at baseline (as measured with the

HADS) with no change at six weeks may have had an ongoing depression. This was not likely to be relieved by the intervention which was aimed specifically at increasing breastfeeding duration, and did not address any underlying depression. Similarly in a meta-analysis of prenatal and postpartum depression researchers found 10% of fathers experienced depression across the perinatal period (37) .

8.5 OBJECTIVE FIVE: TO DOCUMENT THE BREASTFEEDING INITIATION AND DURATION RATES AT SIX WEEKS POSTPARTUM AMONG MOTHERS WHERE FATHERS COMPLETE THE FATHER INCLUSIVE PERINATAL SUPPORT PROGRAM COMPARED TO RATES WHERE FATHERS DO NOT ATTEND AN INTERVENTION

The results identified 96% (n=823) of all mothers who intended to breastfeed and the breastfeeding outcomes for initiation confirmed that 92% (n=788) of all mothers were breastfeeding their baby in hospital. Mothers whose partner was in the intervention group intended to exclusively breastfeed 85% (n=392), combination feed 11% (n=50) and fully formula feed 2% (n=8). Mothers whose partner was in the control group intended to exclusively breastfeed 84% (n=332), combination feed 12% (n=49) and fully formula feed 2% (n=8). Only 2% in each group were unsure of infant feeding choice (p=0.790).

On discharge from hospital 9% of the mothers whose partner was in the control group ceased breastfeeding within the first week at home compared to 7% of mothers whose partner was in the intervention group. As discussed in Chapter Seven, pain, engorgement and attachment difficulties headed the reasons for early cessation of breastfeeding and although they are all modifiable, education, adequate practical information and support were not acknowledged as readily available.

The influence of the intervention with the additional education and support increased the offer of “any” breastfeeding rate at six weeks and reduced the number of babies who were fully formula fed. A greater proportion of mothers whose partner was in the intervention group 81% (n=345) were breastfeeding (any) at six weeks compared to the control group 76% (n=281) (p=0.047).

8.6 RECOMMENDATIONS FOR THE DEVELOPMENT OF SUSTAINABLE HEALTH PROMOTION PROGRAMS

Health promotion programs that support breastfeeding need to include fathers and actively promote the benefits to both mother and baby of exclusive breastfeeding for six months. Despite attending routine hospital antenatal classes more than 20% of participants in this study had stopped breastfeeding by four weeks postnatal.

Breastfeeding information in the antenatal period may not be considered a current issue for expectant parents and results from this study suggest health education programs to increase breastfeeding need to be focussed across the perinatal period.

Fathers and mothers reported needing more information about breastfeeding in the antenatal period even though breastfeeding was included in the antenatal class they attended. This may have influenced the increased supplementation with formula and early cessation of breastfeeding that occurred in the first few weeks postnatal. Understanding milk production and how to maintain a good milk supply is essential for successful breastfeeding, self-confidence and self-efficacy. The focus needs to be on support and increasing self-efficacy. Understanding the process of breastfeeding and strategies for problem solving around potential difficulties could help achieve a greater self-confidence to breastfeed, which in turn could increase exclusive breastfeeding duration. Antenatal classes are time-limited and a take-home package of breastfeeding strategies (correct positioning and attachment, information on maintaining a good milk supply and solutions to common breastfeeding problems) could be useful for new parents to review postnatal.

Current antenatal education practice may need to be reviewed in light of the comments from participants under study. Hospital practices need to be resourced to enable antenatal educators to impart appropriate, relevant and evidenced-based information. Utilising technology with DVD's and iPhone/iPad applications (or "apps") could help some mothers and fathers to sustain their breastfeeding efforts. The auditory, kinesthetic and visual aspects of the iPhone/iPad appeal to a variety of different learners and learning styles (321).

Breastfeeding difficulties and inconsistent information can jeopardise the intended duration of breastfeeding. The evidence, documented in Chapter Four, suggests that more realistic information regarding breastfeeding difficulties needs to be available to both parents with more accessibility to community child health nurses and community midwives postnatal (Chapter Seven). Formal support was criticised in this present study, a finding supported by Piscane who argued: "many health professionals have no tools for the empowerment of the breastfeeding women, which probably represents the most effective intervention for improving breastfeeding rates"(p.337) (322).

Future research needs to assess the education needs and resources required to support a standardised antenatal program that enhances the expectant parents' knowledge and contributes to increased self-efficacy with respect to breastfeeding. Further research is recommended to develop a comprehensive standardised antenatal program for all expectant parents incorporating a

gender-specific option. Promoting postnatal groups or specific breastfeeding skills classes will increase community nurse access postnatal which is essential for ongoing advocacy and support for breastfeeding. Antenatal educators need to be supported by their health service in this delivery and adequately trained to present evidenced-based practice that supports and promotes breastfeeding.

Empowering and involving fathers with problem-solving skills for breastfeeding difficulties and more support from health care professionals in the community are recommendations from this study. Reiterating the conclusion from a systematic review of breastfeeding interventions to promote initiation and duration “A problem-based approach, in which new research is funded based on an assessment of the issues, and of the problems faced by women and by practitioners, is essential” (p.731) (323).

8.6.1 Recruitment for health promotion programs

Engaging men in the formative stage of this study was challenging and the anonymity and convenience of online surveys worked well to capture male responses. Whilst focus groups have the advantage of increasing the depth of answers by dialogue between participants, in this study fewer men were either available or open to the time challenge of focus groups. Use of internet interventions and information technology have been shown to improve outcomes in other health issues, for example for patients with diabetes through enhanced education and support (324).

Those fathers in the intervention group who responded to the six week survey were positive about the education/support package but future research with father inclusive practices may benefit from the experience of this study and utilise the technology of internet, iPhone, SMS and Skype to increase response rates. Supporting the concepts applied to the development of the six week education/ support package the Fatherhood Engagement Project in New South Wales (Australia) found that fathers need ongoing support and information about child development, the impact of experiences in the early years and how they can contribute to their child’s wellbeing, learning and development (325).

8.6.2 Government initiatives

Participants expressed concern with insufficient community resources following their discharge from hospital. An investment from government to increase lactation consultants, community midwives and child health nurses could contribute to the increase of breastfeeding duration or continuation by making available more resources for support and the amelioration of breastfeeding difficulties. In support of this the Global Strategy has an expectation that countries will actively promote and commit to breastfeeding with government, health industry and community support (88).

Health care determinants such as routines in maternity wards and consistent advice influence the capacity of mothers and fathers to feel confident and competent to breastfeed (326). One of the pledges from the Innocenti Declaration was to ensure that every facility providing maternity services fully practiced all 10 of the Ten Steps to Successful Breastfeeding set out in the joint WHO and UNICEF statement 'Protecting, promoting and supporting breastfeeding: the special role of maternity services' (13).

Baby Friendly Health Initiatives at all maternity hospitals could decrease early breastfeeding cessation and increase breastfeeding outcomes thereby reducing future healthcare costs. Hospitals may need financial support to train, monitor and evaluate practice to gain accreditation in all 10 steps to successful breastfeeding. Accreditation costs are based on birth numbers and range from \$4,000-\$8,500 per year (97) but as part of a government initiative, it could be money well spent. In the UK (308), Scotland (213) and Sweden (327) evidence-based practice supports the accreditation of maternity hospitals for BFHI to promote and increase breastfeeding initiation and duration.

The continued decrease in breastfeeding duration is a public health problem that requires political, financial and community support to meet the recommendations of WHO and NHMRC for exclusive breastfeeding for six months with the introduction of complementary foods thereafter. American, Australian and British studies all confirm the need for ongoing research and advocacy for breastfeeding (21, 155, 328). The health and economic benefits of breastfeeding have been shown to be substantial in studies in the USA and Australia (329-331) and even a small increase in breastfeeding rates brings substantial benefits. The 6% increase in breastfeeding duration by mothers whose partner was in the intervention group shown in the present study is of public health significance with increased health benefits for both mothers and babies.

8.7 LIMITATIONS OF THE STUDY

The limitations of this study are identified as occurring in both the formative research process and in the RCT. The primary limitation for the formative research was the difficulty engaging fathers for focus groups. To overcome this, an online survey was devised that mirrored the focus group questions and an exact question guide developed for telephone interviews. Fathers were more open to internet and telephone involvement rather than focus group attendance. Acknowledging the inherent limitations of this research the researchers were still able to access 76 parents from a range of socioeconomic settings, and were able to identify several consistent themes.

8.7.1 Randomised Controlled Trial

Participants were primarily first time parents, but also included second relationships and/or having other children. This previous experience with breastfeeding, support and increased knowledge could influence their results.

The design of the intervention antenatal class was limited by time constraints associated with implementing it in hospitals with a pre-existing antenatal education program. There was reduced time and availability for the inclusion of an additional hour within the standard program at each of the hospitals. This allowed selected information (developed from the formative research and feedback from the fathers involved with the pilot testing) to be included in the antenatal class.

As private hospitals were not included in the study, generalisation can only be made within a public patient domain in Western Australia, although the sample size used in the RCT gives validity to the results.

The qualitative data analysis from the maternal six week survey used content analysis to determine outcomes rather than thematic analysis as the questions were not answered in depth: usually in a brief sentence of just a few words.

Data collected at six weeks was limited due to respondent burden and brevity of the six week questionnaire which asked for essential elements only (breastfeeding outcomes, level of support, birth method and feeding difficulties) but adds to the justification for further research to increase breastfeeding duration.

Nationality and cultural practice were not explored nonetheless they could be relevant and important for future interventions given the increasing multicultural communities within Australia, and particularly Western Australia.

There was no capacity to differentiate the intervention components to the positive outcomes of the RCT. Did the male antenatal class influence the duration of breastfeeding? Did the combination of antenatal class and six week follow up support influence the duration of breastfeeding or would the six week support package alone, have had the same response? Further research into a three-streamed RCT with fathers would better illustrate the components most responsible for duration increases: one arm could be a father inclusive antenatal session, another arm could be an education and support program delivered postnatal for six weeks and the third could be a combination of both antenatal session and six week support program. A comparison would then be made of breastfeeding initiation and duration outcomes at six weeks for all three, to a control group which received standard antenatal education.

8.8 DISCUSSION

The formative stage of the research study involved exploration of the facilitators and barriers to breastfeeding identified by mothers and fathers of breastfed babies. The results indicated the lack of relevant, timely information by both antenatal educators and hospital staff to ensure breastfeeding success; the need for increased support and encouragement for breastfeeding efforts and the importance of the fathers' role (257). The results were comparable with a British study of mothers at a drop-in infant feeding centre who experienced insufficient support and inconsistent information from some health professionals (184). That study emphasised the need for adequate education, information, evidence-based practice and accessible resources to support successful breastfeeding continuation.

The delivery of standard antenatal by midwives and physiotherapists was didactic at most of the hospitals in our study and used a combination of videos, practical demonstrations, whiteboard and Microsoft PowerPoint presentations to impart information and processes involved with childbirth, breastfeeding and parenting skills. The father inclusive antenatal class utilised small group work, pair-share concepts of adult learning and encouraged the men to discuss their concerns and expectations of fatherhood. The male facilitators engaged the men in discussions about breastfeeding, breastfeeding difficulties and strategies for solutions. Research suggests the use of

more adult learning principles (development of decision-making skills) and a reduction in didactic teaching could increase health literacy and self-efficacy (253).

Contrasting studies have shown either an increase in breastfeeding duration with antenatal education and associated practices or little difference in breastfeeding duration. Limitations of these studies include small sample size, inconsistent definitions of breastfeeding and retrospective recall of breastfeeding practice. For example, a small study of 78 mothers in Thailand (159) found a marked increase in exclusive breastfeeding at six months with knowledge sharing practice with empowerment strategies (KSPES). Breastfeeding duration was increased but with individual counselling in a RCT conducted in Singapore with 400 mothers (332) rather than with printed or audiovisual educational material. In contrast, a Canadian RCT with 200 mothers found an antenatal education program made little difference to breastfeeding duration (15). Future interventions could incorporate both these elements for potential success to increase breastfeeding duration.

Participants from hospitals in the low socioeconomic status areas sought help most frequently for breastfeeding difficulties from the general practitioner suggesting a possible lack of available child health and public lactation consultant services within those communities. Research has found that lactation consultants can increase the duration of breastfeeding with relevant information and support for the mother (144, 206, 274, 275) and would be the most appropriate source of information for breastfeeding difficulties or problems (184).

8.9 CONCLUSION

“The planning of public health interventions to promote longer and more exclusive breastfeeding practices requires an understanding of the factors that affect breastfeeding including the predictors, determinants, barriers, influences, and contributing factors” (p 52) (333).

The present study has highlighted the determinants, barriers and influences for successful breastfeeding and utilised the information to develop and implement an intervention for fathers to increase the duration of breastfeeding.

It was the first RCT in Australia to focus on fathers and their influence on their partners breastfeeding support. It has been successful in developing, implementing and evaluating a father inclusive perinatal support intervention and meeting the objectives of the study. The inclusion of fathers in the intervention acknowledged their important role as the primary support person for

their partner in both the breastfeeding process and the parenting experience. Fathers attending the intervention antenatal class responded well to the opportunity to engage with other men in an informal setting with an experienced male educator. The importance of both informal and formal support was acknowledged by participating mothers and fathers and a need for increased community resources was expressed by several participants. The RCT was well received and supported by both the participants and associated health services.

The facilitators and barriers to breastfeeding identified in the formative research to inform development of the father inclusive perinatal support program were consistent with those identified by global studies. The facilitators to successful breastfeeding discussed in the formative research included the importance of the father and the importance of support for breastfeeding success, whilst the barriers focussed on the time it took to breastfeed, painful nipples, engorgement and perceived insufficient milk supply for baby's needs.

Most importantly, and in response to the purpose of this study, the intervention increased "any" breastfeeding in the intervention group compared to the control group and reduced fully formula feeding in the intervention group compared to the control group at six weeks. Participants with low SES in the intervention group had statistically higher breastfeeding duration at six weeks compared to those participants with low SES in the control group. Given this demographic has traditionally experienced the lowest breastfeeding outcomes in duration the results of this study are worthy of further investigation and support.

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APPENDICES

APPENDIX A. FORMATIVE RESEARCH

A1. FOCUS GROUP QUESTIONS FOR MOTHERS

Objectives for focus groups - mothers

- (a) Obtain descriptions of the perceived nature of fathers' positive support
- (b) Determine via nominal group technique the most effective support strategies fathers can use
- (c) Identify the acceptability of potential intervention strategies, in particular, educational and social marketing strategies aimed at enhancing the support of fathers for breastfeeding

We would like to start with a general discussion about breastfeeding

- 1. How did you come to make the decision to breastfeed?
- 2. How was your partner involved with that decision?
- 3. What would keep you breastfeeding?

We would like to talk a bit about your experience of breastfeeding

- 1. What support have you found helpful during your breastfeeding experience?
- 2. What was not helpful or made your breastfeeding more challenging?
- 3. Can you tell us about the part your partner plays in your breastfeeding?
 - (a): What does he do that helps you?
- 4. How do you think your partner could have been more helpful?

We would now like to talk about ways that fathers can be more supportive in general

- 1. What would help your partner be more supportive?
- 2. How would this be helpful?
- 3. What stops this from happening?

We would now like to talk about what you think would help fathers to be more supportive

1. What information would be helpful?
 - (a) breastfeeding technique
 - (b) benefits of breastfeeding
 - (c) ways to be supportive
2. How would you present that information?
 - (a) pamphlets
 - (b) video
 - (c) email
 - (d) face to face

We would now like to talk about ways to maintain the support for your breastfeeding.

1. What do you think would keep your partner supporting you to breastfeed?
 - (a) More information in antenatal classes on breastfeeding
 - (b) Separate information sessions for dads on breastfeeding
 - (c) Regular contact with health professional for support in the first few weeks/months after the birth?
 - (d) If so who? (Midwifery service, child health nurses, GP?)
 - (e) New Dad meet ups
 - (f) Drop in sessions for Dads at local child health clinic (available on the weekends or evenings?)
 - (g) An online resource for dads to chat about parenting and breastfeeding issues

We would now like to find out which of these do you think would work best for fathers in general?

1. Which do you think would work best for your partner?
2. Could you tell me more about that?

A2. FOCUS GROUP QUESTIONS FOR FATHERS

Objectives:

- (a). Identify fathers' perceptions about breastfeeding
- (b) Identify factors that encourage fathers to support their partners breastfeeding (facilitators)
- (c) Identify factors that discourage fathers from supporting their partners' breastfeeding (barriers)
- (d) Identify the acceptability of potential intervention strategies, in particular educational and social marketing strategies aimed at enhancing the support of fathers for breastfeeding
- (e) Identify ways to maximize engagement and participation in such interventions

Section one: Infant feeding/ Breastfeeding

The Australian government has recently allocated \$9 million to promote breastfeeding.

1. What does it tell you about the importance of breastfeeding?

We are here to find out about your experiences as fathers of breastfeeding/fed children.

1. What are your first thoughts about breastfeeding?
2. How important do you think breastfeeding is for a baby?
3. How important do you think breastfeeding is for the mother?
4. Were there any difficulties for your partner to breastfeed?
5. Who helped with this?
6. How long do you think breastfeeding should continue?
7. If your partner has stopped breastfeeding, how was this decision made?
 - (a) May have been a choice that the couple discussed,
 - (b) May have been influenced by the child,
 - (c) Other circumstances, can you tell me about that?
8. When do you think solid food should be introduced?

Section two: Support

We would now like to ask you about the support your partner had to breastfeed

1. What sort of support has been given to your partner to assist her with breastfeeding?
2. What support have you given her?
3. What made it more difficult to give your partner support?
4. What would have made it easier?

Section three: Support strategies

If you were going to help fathers to support their partners to continue breastfeeding for six months what would you do?

ANTENATAL EDUCATION

1. Did you go to antenatal classes during your partner's pregnancy?
2. We are thinking about adding a one hour specialised education session for fathers (only) as part of the existing antenatal classes, what do you think of this idea?
3. Who do you think would be the best person to run these sessions?
 - (a) Healthcare professional, e.g. midwife
 - (b) Another Dad
 - (c) Combination of both
4. What would you like to see in that hour?
 - (a) What information
 - (b) What support
 - (c) What ideas?

Section four: Support strategies

When the baby comes home, some people feel quite isolated. We are looking for ways to support fathers and help them keep up the ongoing support of their partner's breastfeeding.

1. Would you have been interested in this support?
2. Do you think this would be helpful? How/ how not?
3. What would be the best way to support you?

Looking at the different options, which of these do you think would be useful?

1. Telephone support?
 - (a) How often?
 - (b) For how long?
2. Email contact?
 - (a) How often?
 - (b) For how long?
3. Written education information about baby's progress?
 - (a) What information would be useful?
 - (b) What format?

- (1) Leaflets,
 - (2) booklet,
 - (3) video
4. Home visit to discuss issues arising from parenting?
- (a) By whom?
 - (b) How often?
5. Help to link up with other Dads?
- (a) How often?
 - b) Where?

A3. INFORMATION LETTER FOR FOCUS GROUP INTERVIEW

Introduction

You are being invited to take part in a research study. Before you make your decision, it is important for you to understand why the research is being done and what it would involve. Please take as much time as you need to read the following information carefully. Ask us if there is anything that is not clear of if you would like more information.

What is the purpose of the study?

The purpose of this study is to explore your perception of how mothers and fathers are currently supported during their breastfeeding experience, what enhances or interferes with this support and your thoughts regarding strategies to improve support. For example, we will promote discussion on issues such as what you believe encourages and/or discourages fathers in supporting their partner's breastfeeding

Why have I been chosen?

You have been invited to participate in this study because you are a parent who has recent experience with breastfeeding.

Do I have to take part?

It is your decision whether or not to take part. If you decide to take part you can still withdraw at any time, without giving a reason.

What do I have to do?

We invite you to assist us by participating in a focus group interview with between 8 and 12 other Perth parents with recent breastfeeding experience. An experienced facilitator will conduct the interviews and encourage contribution from all parents. The interviews will be audio-recorded to assist with capturing all thoughts, feelings and strategies. Confidentiality of your responses and your anonymity will be assured. The interviews will be transcribed and any identifying data, such as personal names, will be removed. The transcriber will sign a confidentiality agreement ensuring their compliance with this important issue. Interview transcripts will then be coded to ensure confidentiality. Results published in professional journals will be reported as de-identified data or a summary of the whole group. Data will be stored in a locked cabinet with only the investigators having access to them.

If I have any queries or concerns I know that I can contact Jenny Tohotoa (Project Manager) on 92664739 or Dr Yvonne Hauck on 92662216 (Principle Investigator) at Curtin University of Technology.

Concerns or complaints

Curtin University of Technology's Ethics committee have given ethical approval for the conduct of this study. If you have any concerns or complaints regarding this study, you can contact Linda Teasdale, the secretary of the Human Research Ethical Committee at Curtin University (telephone number (08 266 2784) on a confidential basis. Your concerns will be drawn to the attention of the Committee who is monitoring the study.

A4. FOCUS GROUP CONSENT FORM

Consent Form for Focus Group Interview: Fathers Infant Feeding Initiative (FIFI Study)

1. I have been given clear information (verbal and written) about this study and have been given time to consider whether I want to take part.
2. I have been able to ask questions and they have been answered to my satisfaction.
3. I understand I may withdraw from the study at any stage.
4. I agree that research data gathered from the results of this study may be published, provided that I will not be identifiable.
5. If I have any queries or concerns I know that I can contact Jenny Tohotoa (Project Manager) on 92664739 or Professor Colin Binns on 9266 2952 at the School of Public Health at Curtin University of Technology.
6. If I have any concerns or complaints regarding this study, I can contact Linda Teasdale, the secretary of the Human Research Ethical Committee at Curtin University (telephone number 266 2784) on a confidential basis. I am aware that Curtin University of Technology's Ethics committee have given ethical approval for the conduct of this study.
7. I consent to take part in this research project.

_____ _____
Name of Participant Signature of Participant

Date_____

Name of Witness _____Signature of Witness _____

Date_____

APPENDIX B. QUESTIONNAIRES

B1. BASELINE QUESTIONNAIRE

SECTION 1: In this section we are interested in your thoughts about early parenting issues. For each of the following statements, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion.

The number '1' indicates strong disagreement, whereas '5' indicates strong agreement. Strongly Disagree = 1 Unsure = 3 Strongly Agree = 5

Statement Strongly Disagree Unsure Strongly Agree

1a) Parenting will be enjoyable

1 2 3 4 5

1b) Parenting will be hard work

1 2 3 4 5

1c) Parenting is something that comes naturally

1 2 3 4 5

1d) Having a new baby will not affect my relationship with my partner

1 2 3 4 5

1e) The baby will just "fit into our life"

1 2 3 4 5

1f) Parenting requires the support of others

1 2 3 4 5

1g) I feel confident that I will get the support I need

1 2 3 4 5

1h) Most women don't experience problems with breastfeeding

1 2 3 4 5

1i) Breastfeeding comes naturally

1 2 3 4 5

1j) Babies need to feed more when they are having a growth spurt

1 2 3 4 5

1k) Many women need to give their babies formula because they can't make enough milk

1 2 3 4 5

1l) Breastfeeding more often increases milk supply

1 2 3 4 5

1m) Getting extra rest and relaxation is necessary to ensure a good milk supply

1 2 3 4 5

1n) Breastfeeding babies have a higher I.Q.

1 2 3 4 5

1o) Babies who breastfeed have a lower risk of obesity

1 2 3 4 5

1p) Fathers are important in their babies lives

1 2 3 4 5

1q) Feeding formula to a baby will reduce the milk supply of the mother

1 2 3 4 5

1r) There is no difference between breastfed and formula fed babies immune systems

1 2 3 4 5

1s) Formula- fed babies sleep longer at night

1 2 3 4 5

1t) Breastfed babies have less ear infections than formula fed babies

1 2 3 4 5

SECTION 2: We would now like to ask you about your general opinions and feelings about infant feeding.

2a. Have you and your partner discussed how the baby will be fed?

Yes No

2b. When did you first discuss how your baby will be fed?

Before the pregnancy During the pregnancy Have not discussed

2c. How do you /your partner intend to feed your baby?

Breastfeed Formula feeding Unsure

2d. If you intend to breastfeed, how long do you plan to breastfeed this baby?

less than 1 month 1 to 3 months 4 to 6 months 7 to 9 months 10 to 12 months greater than 12 months Uncertain / undecided

2e. Do you think the opinion of the baby's father has any influence on how the baby is fed?

Yes No

Other comments.....

2f. What role did you play in the decision on how your baby would be fed?

We both discussed it freely and decided together My preference was the major influence. I didn't play a role in the decision.

2g. Were you breastfed?

Yes No Unsure

2h. Does your mother have any preferences for how your baby is fed?

Yes, she prefers formula feeding. Yes, she prefers breastfeeding

She doesn't mind how the baby is fed Never really discussed it with her

2i. Who has influenced your decision on how to feed your baby? You may tick more than one answer.

Partner Your mother Friend(s) Your mother-in-law

Sibling (i.e. sister or brother) A health care professional (i.e. doctor, midwife, nurse)

Other

SECTION 3. For each of the following statements, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion.

Statement Strongly Disagree Unsure Strongly Agree

3a) The benefits of breastfeeding last only as long as the baby is breastfed

1 2 3 4 5

3b) Formula feeding is more convenient than breastfeeding

1 2 3 4 5

3c) Breastfeeding increases mother infant bonding

1 2 3 4 5

3d) Breast milk is lacking in iron

1 2 3 4 5

3e) Formula-fed babies are more likely to be overfed than breastfed babies

1 2 3 4 5

3f) Formula feeding is the better choice if the mother plans to go back to work

1 2 3 4 5

3g) Mothers who formula-feed miss one of the great joys of motherhood

1 2 3 4 5

3h) Women should not breast-feed in public places such as restaurants

1 2 3 4 5

3i) Breastfed babies are healthier than formula fed babies

1 2 3 4 5

3j) Breast milk is less expensive than formula

1 2 3 4 5

3k) A mother who occasionally drinks alcohol should not breast-feed her baby

1 2 3 4 5

3l) Breast milk is the ideal food for babies

1 2 3 4 5

3m) Breast milk is more easily digested than formula

1 2 3 4 5

3n) Breastfeeding is more convenient than formula-feeding

1 2 3 4 5

3o) Fathers feel left out if a mother breastfeeds

1 2 3 4 5

3p) Formula is as healthy for a baby as breast milk

1 2 3 4 5

The number '1' indicates strong disagreement, whereas '5' indicates strong agreement. Strongly Disagree =

1 Unsure = 3 Strongly Agree = 5

(Iowa Infant Feeding Attitude Scale (De La Mora et al, 1999))

SECTION 4. The following questions ask your opinion on breastfeeding practices.

Please circle which response best fits for you.

1= strongly disagree 2= disagree 3= unsure 4= agree 5= strongly agree.

Statement Strongly Disagree Unsure Strongly Agree

4a) Breastfeeding helps women to lose weight after pregnancy

1 2 3 4 5

4b) Breastfeeding makes women's breasts saggy

1 2 3 4 5

4c) Breastfeeding makes women's breasts smaller

1 2 3 4 5

4d) Breasts are made for breastfeeding

1 2 3 4 5

4e) Women should breastfeed for as long as their children need

1 2 3 4 5

4f) Women don't need to breastfeed now that there's infant formula

1 2 3 4 5

4g) Breastfeeding means less time for men

1 2 3 4 5

4h) Breastfeeding gives too much attention to the baby & can spoil the baby

1 2 3 4 5

4i) Breastfeeding doesn't allow fathers to feed their babies

1 2 3 4 5

4j) Women have less energy and time for the baby's father if they breastfeed

1 2 3 4 5

4k) Women have no interest in sex when they breastfeed

1 2 3 4 5

SECTION 5: We would like to ask you some questions about your mood and general sense of well being. Read each item and select from the reply, which comes closest to how you have been feeling in the past week.

5a. I feel tense or wound up

- Most of the time A lot of the time
 From time to time Not at all

5b. I still enjoy things I used to enjoy

- Definitely as much Not quite so much
 Only a little Hardly at all

5c. I get a sort of frightened feeling as if something awful is about to happen

- Very definitely and quite badly Yes, but not too badly
 A little bit, it doesn't worry me Not at all

5d. I can laugh and see the funny side of things

- As much as I always could Not quite as much now
 Definitely not so much now Not at all

5e. Worrying thoughts go through my mind

- A great deal of the time A lot of the time
 From time to time but not too often Only occasionally

5f. I feel cheerful

- Not at all Not often
 Sometimes Most of the time

5g. I can sit at ease and feel relaxed

- Definitely Usually
 Not often Not at all

5h. I feel as if I am slowed down

- Nearly all the time Very often
 Sometimes Not at all

5i. I get a sort of frightened feeling like butterflies in the stomach

Not at all Occasionally

Quite often Very often

5j. I have lost interest in my appearance

Definitely I don't take as much care as I should

I may not take quite as much care I take just as much care as ever

5k. I feel restless as if I have to be on the move

Very much indeed Quite a lot

Not very much Not at all

5l. I look forward with enjoyment to things

As much as I ever did Rather less than I used to

Definitely less than I used to Hardly at all

5m. I get sudden feelings of panic

Very often indeed Quite often

Not very often Not at all

5n. I can enjoy a good book or radio or TV programme

Often Sometimes

Not often Very seldom

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SECTION 6: The following information about you will help us to analyse our data. We recognise some of the questions are personal. Please remember that your responses will remain strictly confidential.

6a. What suburb do you live in.....

6b. What is your age (years).....

6c. What is the highest level of education you have completed?

Left school before year 10 Junior/achievement certificate Yr 10 or equivalent TEE/TAE/ Yr 12 equivalent Trade, diploma or TAFE course Bachelor degree or higher Other (please specify)

6d. Are you employed or studying at the moment?

Yes, full- time Yes, part- time Yes, studying full-time

Yes, studying part-time No

6e. Do you work shift work?

Yes No

6f. Does your work require you to be away from home overnight on a regular basis?

Yes No

6g. What is your occupation?

If self-employed, please give your occupation.....

If currently unemployed, please give your occupation when working.

6h. After the baby is born, when do you plan to return to work?

Less than a week One week Two weeks Three weeks

Four weeks or more

6i. What is your marital status?

Never married Married Defacto Divorced or separated Other

6j. Were you born in Australia?

Yes No

6j (1) If no, where? _____

6j (2) And how long have you been in Australia? (in years).....

6k. Are you of Aboriginal or Torres Strait Islander descent?

Yes, Aboriginal descent Yes, Torres Strait Islander descent No

6l. Approximately what was your total family income for the past 12 months?

Less than \$15,000 \$15,001 – \$30,000 \$30,001 - \$45,000

\$45,001 - \$60,000 \$60,001 - \$ 75,000 \$75,001 - \$90,000

\$90,001 - \$105,000 \$105,001- \$120,000

Would you like to add any comments about thoughts / concerns regarding becoming a new parent?

“THANK YOU” We appreciate your comments and feedback

B2. SIX WEEK SURVEY: MOTHERS

To allow us to match your responses we ask that you complete the personal details section.

1. Please type the name of the hospital where your baby was born
2. Please provide the following personal details:

1. Personal Details

Name:

Address:

Suburb:

State:

Postal Code:

Email

Address:

Phone

Number:

2. Birth

We would like to know some information about your birth. Please read the following questions and select and circle the answer that best describes your experience.

1. Please indicate the method of delivery for your baby

Elective Caesarean

Emergency Caesarean

Simple vaginal delivery

Forceps delivery

Vacuum delivery

2. Did you experience any birth complications?

Yes

No

3. If yes, please describe the complications you experienced

3. Feeding

Your responses in the baseline questionnaire that you answered at antenatal classes indicated that you intended to breastfeed. We would like to ask you about your current infant feeding practices.

1. How is your baby currently being fed?

Breastfeeding only (no juice, no water, no formula). If so, Go to Q5

Mainly breastfeeding (occasional water or juice, no formula). If so, Go to Q5

Combination of breastfeeding and formula. If so, Go to Q2

Formula only. If so, Go to Q4

2. How many bottles of formula do you give your baby in 24 hours?

1 2 3 4

3. How much formula mixture is in the bottle?

50ml 100ml 150ml 250ml

4. If formula feeding only, what was the reason for the change from breastfeeding?

5. Did you experience any of the following during your breastfeeding?

Attachment difficulties

Engorgement

Mastitis

Insufficient milk supply

6. If so, did you seek help for this?

Yes

No

7. If yes, who did you seek help from?

Child health nurse

Doctor/General Practitioner

Lactation consultant

Mother

Mother-in-law

Partner

Sister

4. Wellbeing

We would like to ask you some questions about your mood and general sense of well being. Please read each question and select the answer that comes closest to how you have been feeling in the past week

5a. I feel tense or wound up

- Most of the time A lot of the time
 From time to time Not at all

5b. I still enjoy things I used to enjoy

- Definitely as much Not quite so much
 Only a little Hardly at all

5c. I get a sort of frightened feeling as if something awful is about to happen

- Very definitely and quite badly Yes, but not too badly
 A little bit, it doesn't worry me Not at all

5d. I can laugh and see the funny side of things

- As much as I always could Not quite as much now
 Definitely not so much now Not at all

5e. Worrying thoughts go through my mind

- A great deal of the time A lot of the time
 From time to time but not too often Only occasionally

5f. I feel cheerful

- Not at all Not often
 Sometimes Most of the time

5g. I can sit at ease and feel relaxed

- Definitely Usually
 Not often Not at all

5h. I feel as if I am slowed down

- Nearly all the time Very often
 Sometimes Not at all

5i. I get a sort of frightened feeling like butterflies in the stomach

- Not at all Occasionally
 Quite often Very often

5j. I have lost interest in my appearance

- Definitely I don't take as much care as I should
 I may not take quite as much care I take just as much care as ever

5k. I feel restless as if I have to be on the move

- Very much indeed Quite a lot
 Not very much Not at all

5l. I look forward with enjoyment to things

As much as I ever did Rather less than I used to

Definitely less than I used to Hardly at all

5m. I get sudden feelings of panic

Very often indeed Quite often

Not very often Not at all

5n. I can enjoy a good book or radio or TV programme

Often Sometimes

Not often Very seldom

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5. Support

We are interested in how you have been supported in your efforts to breastfeed and manage your new baby. Please read the following questions and select the answer that best describes your experience.

1. Breastfeeding support

I have been given sufficient support to breastfeed

Strongly Agree Neither Disagree Strongly
agree disagree

I have been encouraged to breastfeed

Strongly Agree Neither Disagree Strongly
agree disagree

I have enjoyed breastfeeding

Strongly Agree Neither Disagree Strongly
agree disagree

I would breastfeed my next baby

B3. SIX WEEK SURVEY: FATHER INTERVENTION GROUP

1. Personal Details: To allow us to match your responses we ask that you complete the personal details section

1. Please type the name of the hospital where your baby was born

2. Please provide the following personal details

Name:

Address:

Suburb:

State:

Postal Code:

Email

Address:

Phone Number:

2. Wellbeing: We would like to ask you some questions about your mood and general sense of wellbeing

5a. I feel tense or wound up

Most of the time A lot of the time

From time to time Not at all

5b. I still enjoy things I used to enjoy

Definitely as much Not quite so much

Only a little Hardly at all

5c. I get a sort of frightened feeling as if something awful is about to happen

- Very definitely and quite badly Yes, but not too badly
 A little bit, it doesn't worry me Not at all

5d. I can laugh and see the funny side of things

- As much as I always could Not quite as much now
 Definitely not so much now Not at all

5e. Worrying thoughts go through my mind

- A great deal of the time A lot of the time
 From time to time but not too often Only occasionally

5f. I feel cheerful

- Not at all Not often
 Sometimes Most of the time

5g. I can sit at ease and feel relaxed

- Definitely Usually
 Not often Not at all

5h. I feel as if I am slowed down

- Nearly all the time Very often
 Sometimes Not at all

5i. I get a sort of frightened feeling like butterflies in the stomach

- Not at all Occasionally
 Quite often Very often

5j. I have lost interest in my appearance

- Definitely I don't take as much care as I should
 I may not take quite as much care I take just as much care as ever

2. Which educational materials have been most helpful to you?

PowerPoint Presentation handout

New Fathers guide

Relaxation techniques brochure

Post natal depression card

3. Did you access any information from other places?

Yes

No

4. If so, where did you get the information from?

5. What other information or materials might have been helpful for you?

Thank you for completing this survey. You are now in the draw to win a \$50 Coles/Myer gift card to reward you for your efforts. Should you be the lucky winner, and your partner also completed a survey, the prize will be upgraded to a \$100 Coles/Myer gift card.

APPENDIX C. RANDOMISED CONTROLLED TRIAL (RCT)

C1. INFORMATION SHEET FOR RANDOMISED CONTROLLED TRIAL

You are invited to be part of a multicentre research study sponsored by Healthway. Before you make your decision, it is important for you to understand why the research is being done and what it would involve. Researchers at Curtin University of Technology are studying the influence of support for fathers upon how Perth babies are fed. As part of this project, expectant mothers and fathers attending antenatal classes at seven hospitals in Perth are being asked about their opinions and attitudes to infant feeding practices.

What are our expectations of you?

1. To complete an initial questionnaire at the first antenatal class (10 -15 mins)
2. To complete a questionnaire at six weeks, either by phone or email (5 mins)
3. To complete a final questionnaire at six months postbirth by mail (15 - 20 mins)

What you can expect for your efforts:

1. To be involved in exciting new research
2. To be in a draw for one of several \$50.00 Coles/Myer vouchers for completing the six week questionnaire.
3. To be eligible for one of several luxury overnight stays including dinner and breakfast at a leading hotel in Perth, on completion of the final questionnaire. (This offer is available for up to 12 months.)

You will be provided with a unique ID number when asked to complete the first questionnaire. When agreeing to participate in the study you will be assured of confidentiality as no staff other than the researchers will view the completed questionnaires. All questionnaires will be kept in confidential locked storage at Curtin University and will be destroyed after five years.

Fathers who agree to participate in the study will be randomly assigned to either the intervention group or control group within each hospital. The intervention contains two interconnected elements designed to complement one another. The first is an educational intervention for fathers and will be held in conjunction with regular antenatal classes at the participating hospitals and will be taught by a trained facilitator. In addition the fathers in the intervention group will receive ongoing support for six months.

You have the freedom to withdraw from the study at any time, without prejudice.

The ethical aspects of this study have been approved by the North Metropolitan Health Service Human Research Ethics Committee. If you should have any complaints or concerns about any ethical aspect of your participation in this research, you may contact the Committee through the Executive Office: ph 93462999. Any complaint will be treated in confidence and investigated, and you will be informed of the outcome.

The ethical aspects of this study have been approved by the South Metropolitan Health Service Human Research Ethics Committee. If you should have any complaints or concerns about any ethical aspect of your participation in this research, you may contact the Committee through the Executive Office: ph 94312929. Any complaint will be treated in confidence and investigated, and you will be informed of the outcome.

C2. CONSENT FORM FOR RESEARCH PROJECT 163/2008-2009



Father Infant Feeding Initiative (FIFI) 2008 -2010

1. I understand this research project has been approved by North Metropolitan Health Service Human Research Ethics Committee and complies with the guidelines contained in the National Health and Medical Research Council Statement on Human Experimentation. (1992)

2. I have been given information about the project and am able to give informed voluntarily consent. I am over 18 years.

3. The details of the process have been explained to me including the anticipated length of time it will take. I have been given the opportunity to ask questions.

4. I understand I may withdraw from the study at any stage without penalty.

5. In the event of an adverse outcome, I give permission for the hospital to contact the research team.

6. I agree that research data gathered from the results of this study may be published, provided that I will not be identifiable. I have been given a copy of this document.

If I have any queries or concerns I know that I can contact Jenny Tohotoa (Project Manager) on 92664739 or A/Prof Yvonne Hauck on 92662216 at the School of Nursing and Midwifery at Curtin University of Technology.

I consent to take part in this research project.

Name of Participant

Signature of Participant

Date

Name of Witness

Signature of Witness

Date

APPENDIX D. ANTENATAL RESOURCES

D1. NEW FATHERS GUIDE

D1.1 New Fathers Guide - Part 1

WEB SITE RESOURCES	EMERGENCY & HELP LINES	NEW FATHERS GUIDE
<p>1. Stages of development http://www.mayoclinic.com/print/infant-development/PR00061/METHOD=print</p> <p>2. Ongoing development stages http://www.babycenter.com.au/pregnancy/dads/diary/</p> <p>3. Breastfeeding demonstration http://raisingchildren.net.au/articles/breastfeeding_challenges_video.html/context/807</p> <p>4. Things to do with your baby http://www.ameda.com/breastfeeding/dad/know.aspx</p> <p>5. Being a good father http://www.fatherhood.org/10ways.asp</p> <p> </p> <p></p>	<p>Princess Margaret Hospital 9340 8222</p> <p>Poisons Information Centre 131 126</p> <p>Health Direct 1800 022 222</p> <p>Breastfeeding Support Service 1800 230 125</p> <p>Ngala 9368 9368</p> <p>After-Hours Medical Care 132660</p>	<p>The First 4 Weeks</p> <p>What you need to know!</p>

D1.2 New Fathers Guide - Part 2

	What Could Happen?	What's Happening Now?	What's Happening Now?
	Week 1	Week 2-3	Week 4
DAD	<ul style="list-style-type: none"> • Extreme tiredness • Feeling overwhelmed • Learning baby cues • No time together 	<ul style="list-style-type: none"> • Bathing / showering baby • Reading to baby • Comforting and settling baby • Going back to work 	<ul style="list-style-type: none"> • Watching for signs of increased anxiety • Continuing to play with baby • Having disrupted sleep with night feeds <p>BE AWARE OF THE SIGNS FOR POST NATAL DEPRESSION</p> 
MUM	<ul style="list-style-type: none"> • Extreme tiredness • Needing support • Breast engorgement • Attachment difficulties which can be overcome with support • Baby blues 	<ul style="list-style-type: none"> • Getting attachment correct • Having disrupted sleep due to night feeding • Most bleeding ceases • Still needing help and support 	<ul style="list-style-type: none"> • Growing spurt for some babies = increased feeding • Possible engorgement if feeds increase • Having disrupted sleep while feeding at night <p>BE AWARE OF THE SIGNS FOR POST NATAL DEPRESSION</p> 
BABY	<ul style="list-style-type: none"> • Feeding every 2-3 hours 24/7 • Sleeping intermittently • Needing soothing frequently • Easily startled • Crying to get needs met • Child health nurse visit 	<ul style="list-style-type: none"> • Feeding 2-4 hours 24/7 • Sleeping between feeds • Responding to mum and dad's voices • Having 4-6 wet nappies per day • Could show signs of colic = persistent crying 	<ul style="list-style-type: none"> • Becoming more routined with feeding pattern • Responding to the sound of your voice • Beginning to smile • Kicking legs and moving arms

D2. HOW TO BE A BREASTFEEDING CHAMPION

D2.1 How to be a breastfeeding champion – Part 1

BREASTFEEDING

- The best food for your baby is breast milk
- Breast milk costs less than formula
- Breastfeeding is more convenient
- Breastfeeding reduces the risk of:
 1. Type 2 diabetes
 2. Breast, cervical and ovarian cancer in breastfeeding mothers
 3. Childhood leukaemia



Healthway



Curtin 
University of Technology

Phone: 92664739
Fax: 92667444
E-mail:
j.tohotoa@curtin.edu.au

HOW TO BE A BREAST FEEDING CHAMPION



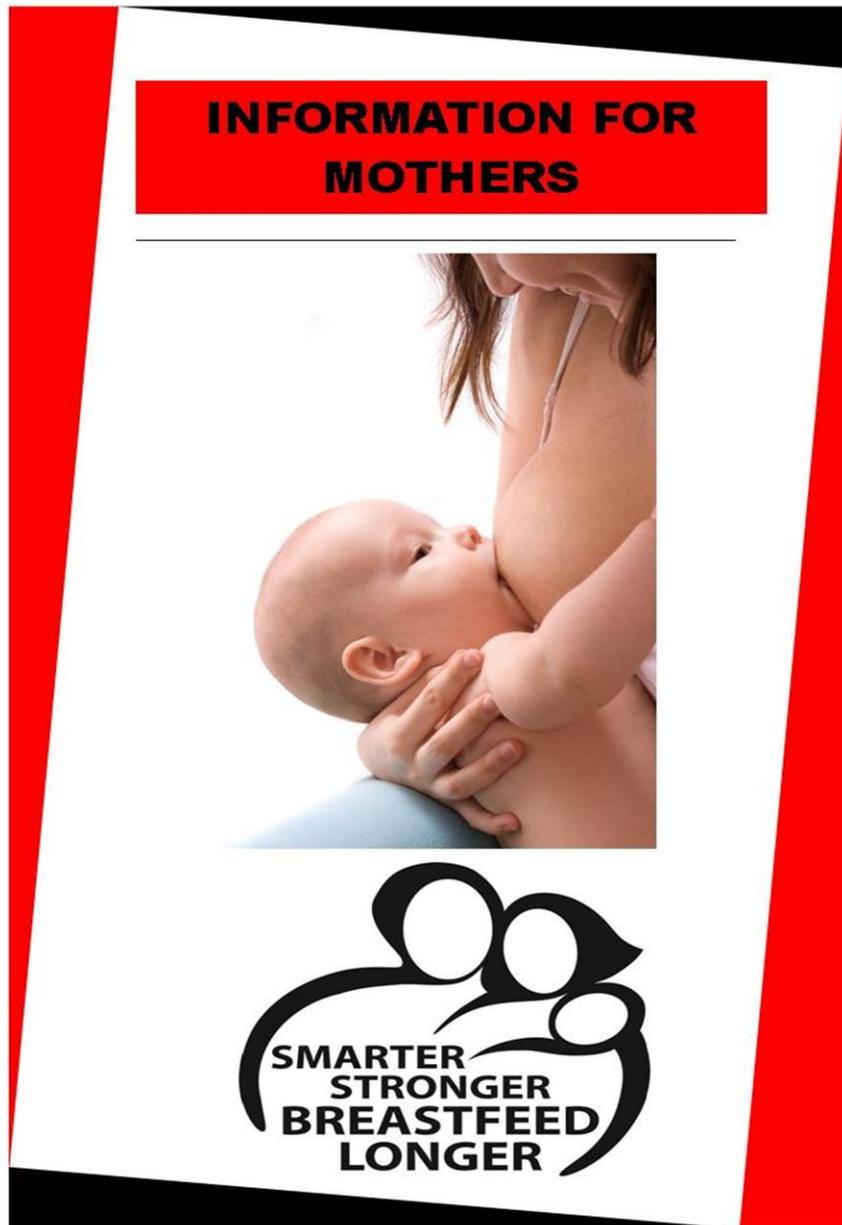
GIVING YOUR BABY THE BEST START IN LIFE

D2.1 How to be a breastfeeding champion – Part 2

Why should fathers encourage breastfeeding?	How can fathers be part of the breastfeeding team?	How to be a Champion
<ul style="list-style-type: none">• Research shows that breastfed babies have fewer colds and ear infections• Breast milk helps to build the babies brain and immune system• Breast milk is always the right temperature and ready to serve• Breastfeeding builds a close bond between mother, father and baby• Breast milk can change to meet all the baby's needs. It is all a baby needs for the first six months of life	<ul style="list-style-type: none">• Help around the house• Take care of other children to let mum get some rest• Take baby to mum for breastfeeding. Help her feel comfortable and relaxed• Keep mum supplied with fluids and food• Praise mum for breastfeeding, she's giving your baby the best start in life• Make time for just you and your baby. Babies need cuddles and hugs from their dads, too• Support the feeding routine and adjust life around it	<ul style="list-style-type: none">• Help mum and baby with the number of visitors to reduce stress and tiredness• Be aware of what needs doing in the house and seek help when you need it• Find ways to have time with each other: you have both been through an amazing experience



D3. MOTHERS' INFORMATION BOOKLET



D3.1 Why Breastfeed?

WHY BREASTFEED?

HEALTH BENEFITS OF BREASTFEEDING

- Exclusive breastfeeding for the first six months **will** provide **all** of the baby's nutritional needs
- Breast milk is a natural and biologically **perfect food** and **fluid** for most babies
- The milk changes during a feed from **thirst quenching** to **hunger satisfying**
- The **milk changes** as your baby grows to meet their nutritional needs

Reduces the mother's risk of

- **Type 2 diabetes**
- **Breast cancer**
- **Ovarian cancer**
- **Post natal depression**

Reduces the baby's risk of

- **Childhood leukaemia**
- **Type 1 & 2 diabetes**
- **Childhood obesity**
- **Asthma**
- **Sudden Infant Death Syndrome**
- **Acute Otitis Media (earache)**

D3.2 Common Breastfeeding Problems

COMMON BREASTFEEDING PROBLEMS

- Attachment: Up to 80% of women have difficulty breastfeeding
- Engorgement: (warm shower, cabbage leaves)
- Mastitis: (see GP)
- Insufficient milk: (usually need to feed more frequently)
- Tongue tie : (see GP)
- Introducing a dummy or pacifier before 4 weeks increases attachment difficulties

Inadequate nutrition before birth and in the first years of life can seriously interfere with brain development and lead to such neurological and behavioural disorders as learning disabilities and mental retardation.

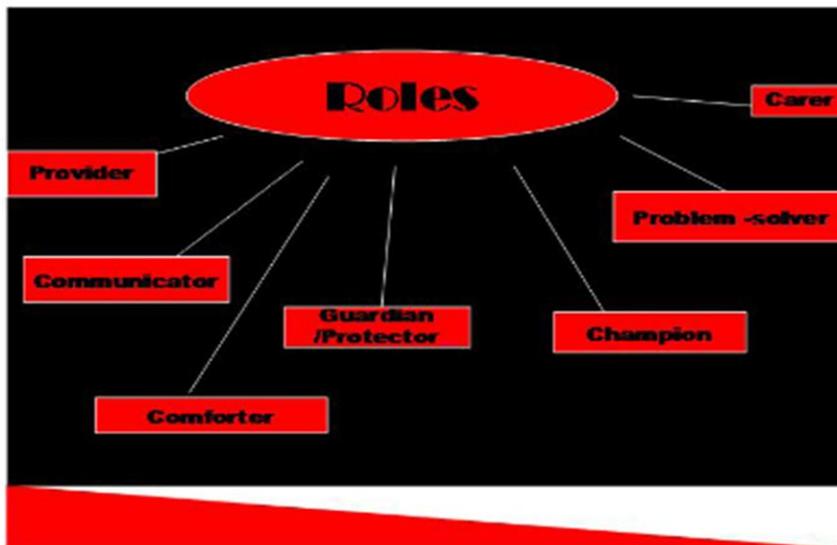
D3.3 The Role of Fathers

THE ROLE OF FATHERS

Fathers are the primary support to their partners. They are important in their baby's development and to the success of their partner's breastfeeding.

Fathers have a role in

- Maintaining a harmonious relationship with their partner
- Sharing in child rearing and child care responsibilities
- Supporting their partner in her relationship with their child
- Developing their own positive relationship with their child



D3.4 Good Bonding

Bonding includes:

Holding	Rocking
Singing	Feeding
Gazing	Kissing

Good bonding enables:

- **Physical, emotional and cognitive development**
- **Children to learn language and social behaviours for healthy development**

D3.5 Healthy Babies

HEALTHY BABIES

A healthy baby...

- Has normal colour for his/her ethnicity
- Maintains a stable body temperature
- Passes urine and opens his/her bowels at regular intervals
- Initiates feeds, sucks well on the breast and settles between feeds
- Is not excessively irritable or tense
- Is not excessively sleepy or floppy
- Has a respiratory rate 30-60 breaths per minute
- Has a pulse rate 100-160 beats per minute
- Has a body temperature around 37°

Babies can...

- Smell, Hear, Taste
- Feel pain
- Cry for hunger, sleep and pain
- Respond to you
- Settle with soothing or gentle music

Babies don't...

- Understand
- Cry for attention
- See very well
- Respond well to too much stimuli
- Know they are people

D3.6 Developmental Stages

DEVELOPMENTAL STAGES

All babies do not develop at the same rate.

By their first month, most babies

- Make jerky, quivering arm movements
- Bring hands near face and keep hands in tight fists
- Move head from side to side while lying on stomach
- Focus on objects 8 to 12 inches away
- Prefer human faces over other shapes
- Prefer black and white or high contrast patterns
- Hear very well and recognise parents' voices

- Children without touch, stimulation and nurturing can lose the capacity to form any meaningful relationships for the rest of their lives.
- Experiences during the first three years of life are critical to child development.

D3.7 Useful Websites

USEFUL WEBSITES

Stages of development

<http://www.mayoclinic.com/print/infant-development/PR00061/METHOD=print>

Ongoing development stages

<http://www.babycenter.com.au/pregnancy/dads/diary/>

Breastfeeding demonstration

http://raisingchildren.net.au/articles/breastfeeding_challenges_video.html/context/807

Things to do with your baby

<http://www.ameda.com/breastfeeding/dad/know.aspx>

Being a good father

<http://www.fatherhood.org/10ways.asp>

For more information please contact

Jenny Tohotoa

(08) 9266 4739



APPENDIX E. SIX WEEK SUPPORT PROGRAM

E1. SCHEDULE OF EVENTS

Schedule of Events

Developmental stages of infancy

- 0 – 12 weeks: crying a lot late afternoon/evenings**
- 3 - 5 weeks: following a moving light**
- 5 - 7 weeks: smiling, making baby noises, kicking legs up**
- 7 - 9 weeks: holding up head, lifting head while on tummy**
- 10 - 12 weeks: recognising faces, holding a rattle, hitting at toys that make a noise**
- 12 - 14 weeks: noticing and playing with hands**
- 12 - 20 weeks: getting teeth**
- 15 - 17 weeks: rolling over from front to back**
- 16 - 20 weeks: noticing and playing with feet, holding objects**
- 20 - 24 weeks: rolling over, grabbing toys, sitting up being held, doing push ups**
- 24 - 30 weeks: sitting up, eating solids**
- 30 - 36 weeks: crawling, separation anxiety, drinking from a cup**
- 36 - 40 weeks: pulling up on furniture**

These are only guides. All babies are not the same. Times may vary for your baby.



E2. RELAXATION EXERCISES

E2.1 Coping with Stress

Coping with Stress

Becoming a parent can be a stressful time.

Adapting to changes, balancing new demands and responsibilities and feeling frustrated, anxious or unsure can be challenging. Tiredness, daily duties, and things that happen in your life can combine to make you feel like it's all too much.

Normal stress can be motivating to get things done, but too much stress can be overwhelming, making it difficult to cope with everyday tasks. This may lead to illness or behaviour that hinders your parenting ability.

Knowing what contributes to your stress may help to devise solutions. For example, stress can be triggered by having too many people around or when your child cries for a long time.

Try to reduce your stress by

- eating well
- exercising
- talking things over with your partner or friend
- focusing only on tasks you must do
- being realistic about your goals, and
- lightening the mood with laughter

Anything that reduces your physical or mental tension can ease your stress levels.

Here are some simple ways to unwind.

- read a book
- go for a walk
- do some gardening
- take a hot bath or shower
- meditate or practice yoga

Helping your body physically relax is one way of relieving tension and feeling calmer. Try the muscle relaxation exercise overleaf...

E2.2 Muscle Relaxation

Muscle Relaxation

Relaxation exercises can have a positive effect on your body and mind.

Muscle relaxation is one of many ways of achieving physical relaxation. The following technique is an easy method of muscle relaxation which involves relaxing each part of your body one by one, called progressive muscle relaxation.

1. Choose a time of the day when you are confident that you won't be interrupted (for example, when baby is having a nap). About 20 minutes is a good length of time.
2. Find a place in the house that is quiet and away from everyone else.
3. Sit or lie down with your eyes closed. If you sit, you might want to sit in a comfortable chair or on the floor against the wall.
4. Make sure you are warm enough.
5. Start with your feet. As you slowly breathe in, tense the muscles in your feet and hold the tension briefly. As you breathe out, slowly relax them. Wait a moment, focusing on the relaxed feeling, then repeat once.
6. Move to your calves and repeat the above. Work your way up your body in order of knees, thighs, pelvis, stomach, chest, arms, hands, face and forehead. Repeat a couple of times for each body part until it feels heavy and relaxed.
7. When your whole body feels relaxed, continue to sit awhile, breathing gently in and out.
8. If it helps, imagine yourself in a quiet, serene setting or picture yourself in a favourite place of yours, like the garden, a forest or by a river. Keep imagining yourself in this place for a while.

If you have only a few minutes, try this relaxation exercise on just your arms, shoulders, and face. You'll be surprised at how well it works.

This information sheet is adapted from the raising children network website.

For more information about coping with stress and other parenting issues please visit

<http://raisingchildren.net.au/>



E3. STUBBY HOLDER



E4. POSTNATAL DEPRESSION POSTCARD

POST NATAL DEPRESSION: Warning Watch

WHAT TO LOOK FOR

1. Feeling a failure
2. Feeling overwhelmed
3. Feeling unable to cope
4. Feeling disconnected
5. Unable to care for self
6. Unable to care for baby

If you or your partner have been feeling like this for 2 weeks or more → **CONTACT G.P.**

- Call child health nurse
- Get support from family
- May need time off work

Spend time together
Practice relaxation

Can happen any time during the first year following the birth of your baby. Usually occurs around 4 weeks-8 weeks.

Curtin
University of Technology

Healthway



Internet Sites

MENTAL HEALTH EMERGENCY NUMBERS

Psychiatric Emergency Team
1300 555 788

Men's Line Australia
1300 789 978

Crisis Care
9223 1111

Parenting Line
1800 654 432

www.beyondblue.org.au

www.depressionet.com.au

www.mrdad.com

www.mbf.com.au

**POST NATAL
DEPRESSION**

APPENDIX F. PERMISSIONS

F1. HOSPITAL ANXIETY AND DEPRESSION SCALE

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