Breastfeeding in an urban population

Bond University

Thesis title

Breastfeeding in an urban population

Maree Anne Crepinsek

RN, RM, IBCLC

Submitted in total fulfilment of the requirements of the degree of

Master of Science by Research

2010

Principle supervisor

Assistant Professor Neil Smart

Co-supervisors

Professor Mieke van Driel

Dr Wendy Brodribb
Breastfeeding in an urban population

Declaration

This thesis is submitted to Bond University, in fulfilment of the requirements for the Degree of Master of Science by Research. This thesis represents my own work and contains no material which has been previously submitted for a degree or diploma at this university or any other institution, except where due acknowledgement is made.

Signed:       Date:
Breastfeeding in an urban population

Author’s contribution to Cochrane Review: ‘Interventions for preventing mastitis after childbirth’

Maree Crepinsek is the primary author as well as the contact author for this Cochrane Systematic Review. The conception, design and co-ordination of both the protocol and review were conducted by Maree Crepinsek. Maree also provided a clinical perspective for the review, as well as writing the review in Review Manager. Dr Neil Smart provided support as a co-author, providing general advice on the writing of both the protocol and review. Maree Crepinsek and Dr Neil Smart independently reviewed all articles found in the search, initially by title and abstract. Full texts of articles selected were then reviewed by Maree Crepinsek and Dr Neil Smart for inclusion into or exclusion from the review. Linda Crowe is the second author who provided a clinical perspective and general advice on the review. Maree Crepinsek and Linda Crowe independently extracted the data from the selected articles for analysis. Keryl Michener provided support as a librarian writing search strategies, carrying out searches and locating papers used as background research evidence.

The authors would like to acknowledge Karen New for her assistance and advice with the editorial review of the protocol and Michael Steele who provided statistical advice.

The authors would also like to acknowledge the ongoing support and extensive help that Philippa Middleton provided with the editorial review of both the protocol and review. Thanks to Maria Stoyadinova for help with translating Tanchev 2004 and Millie Anim-Somuah for help with translating Gurtovoi 1979 and Kulakov 2004.
Breastfeeding in an urban population

Acknowledgement

It is my pleasure to thank those who made this thesis possible. I would like to thank my supervisors, each of whom provided me with encouragement, support and direction while on this journey. Dr Neil Smart was there from the conception of my work, and guided me throughout, patiently reading and critiquing my work as I developed as a student. Dr Wendy Brodribb, helped to keep me grounded and has also been a mentor and contents expert, for which I am very grateful. Finally, Professor Mieke Van Driel provided encouragement and an overall direction for the completion of my work. Thank you for not only sharing your knowledge, wisdom and time with me, but also for helping me develop as a researcher.

I would also like to thank Philippa Middleton, Linda Crowe and Keryl Michener for the much appreciated contribution and collaboration in producing our Cochrane Systematic Review. In addition, I would like to extend a very warm thank you to the maternity staff of the Gold Coast Health Service District for their support and help with data collection, and for providing peer support and feedback throughout my studies. Thanks also go to my beautiful family and friends, especially my loving mother, and my friends Carolyn and Amanda Roberts, for showing interest in my work and giving me encouragement and support.

Finally, and most importantly, I would like to say thank you to my loving husband Beni, I owe you my deepest gratitude for your support not only as a loving husband and best friend, but also as the one person who showed me unconditional love and unwavering
Breastfeeding in an urban population

support throughout this period in our lives. You have been my rock; I could not have
done this without your love.

I would like to dedicate this work to all mothers – past, present, and future – who have
the important role of nurturing future generations.
Thesis abstract

Introduction

Despite the many health benefits of breastfeeding, exclusivity and duration rates fall short of the World Health Organisation guidelines. This body of work is an examination of breastfeeding exclusivity and duration in an urban population.

Aims

This thesis aimed to investigate the breastfeeding initiation rates of women in the Gold Coast region of Queensland, to report on the breastfeeding exclusivity and duration rates of a sample of breastfeeding women from this population, to describe their knowledge of mastitis, and to review published interventions for the prevention of mastitis in breastfeeding women after childbirth.

Methods

This longitudinal study investigated a population of women who delivered their infants at the Gold Coast hospital in 2008. Firstly, the prevalence of breastfeeding upon hospital discharge in a cohort of postpartum women was observed and reported. From this population, a subgroup cohort was recruited and followed for a period of six months or until they weaned their infant. The subgroup study was designed to provide cross-sectional data about breastfeeding exclusivity and duration within an Australian urban population, as well as to compare breastfeeding women’s knowledge of mastitis within the clinical definition. Finally, a Cochrane systematic review examined the published literature on interventions for the prevention of mastitis after childbirth.
Results

Findings suggest that breastfeeding exclusivity and duration rates observed are comparable with rates from other national studies including survey data. Prevalence data showed that 87.5% of women discharged from hospital exclusively breastfeeding. The cross-sectional subgroup showed participants exclusively breastfed for a mean of 95.27 ± 73.40 days, while the mean breastfeeding duration was 125.36 ± 70.47 days. The responses to the questionnaires demonstrated that the majority of women have a minimal understanding of mastitis and its treatment. Participants reported that their first option when seeking information on mastitis was their mother or family and friends, followed by their general practitioner. The Cochrane Systematic Review identified the need for better quality trials and interventions that are more vigorous in the prevention of mastitis following childbirth. The trials published to date produced no statistically significant findings or benefits from any interventions designed.

Conclusions

Ongoing research is required into improving breastfeeding duration rates so that they reach recommended levels. Further research into effective interventions for the prevention of mastitis in the postpartum period is required to reduce the prevalence of mastitis in breastfeeding women.
## Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABA</td>
<td>Australian Breastfeeding Association</td>
</tr>
<tr>
<td>ANHS</td>
<td>Australian National Health Survey</td>
</tr>
<tr>
<td>BF</td>
<td>Breastfeeding</td>
</tr>
<tr>
<td>BFHI</td>
<td>Baby Friendly Hospital Initiative</td>
</tr>
<tr>
<td>BSES-SF</td>
<td>Breastfeeding Self Efficacy Scale – Short Form</td>
</tr>
<tr>
<td>CDCU</td>
<td>Central Data Collection Unit</td>
</tr>
<tr>
<td>EL/CS</td>
<td>Elective Caesarean Section</td>
</tr>
<tr>
<td>EM/CS</td>
<td>Emergency Caesarean Section</td>
</tr>
<tr>
<td>GCHSD</td>
<td>Gold Coast Health Service District</td>
</tr>
<tr>
<td>GCH</td>
<td>Gold Coast Hospital</td>
</tr>
<tr>
<td>HSCQ</td>
<td>Health Statistic Centre Queensland</td>
</tr>
<tr>
<td>NHMRC</td>
<td>National Health &amp; Medical Research Council</td>
</tr>
<tr>
<td>PDCS, QLD</td>
<td>Perinatal Data Collection Centre Queensland</td>
</tr>
<tr>
<td>QLD</td>
<td>Queensland</td>
</tr>
<tr>
<td>SIDS</td>
<td>Sudden Infant Death Syndrome</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>VD</td>
<td>Vaginal Delivery</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
# Table of Contents

- Bond University 1
- Thesis title 1
  - Breastfeeding in an urban population 1
- Author’s contribution to Cochrane Review: ‘Interventions for preventing mastitis after childbirth’ 3
- Acknowledgement 4
- Thesis abstract 6
  - Introduction 6
  - Aims 6
  - Methods 6
  - Results 7
  - Conclusions 7
- Abbreviations 8
- Table of figures 10
- Table of tables 13
- Table of appendices 13
- Thesis inspiration 16
- Thesis overview 17
- Chapter 1 Literature review – Australian and global breastfeeding overview 20
- Study aims 38
- Chapter 2 Methods 39
  - Breastfeeding definitions 40
  - Study 1: Prevalence of breastfeeding at the Gold Coast Hospital 41
  - Study 2: Breastfeeding duration and exclusivity in an urban population 42
  - Study 3: Cochrane systematic review - Intervention for the prevention of mastitis after childbirth 44
  - Methodology flow chart of the studies used in this thesis 45
- Chapter 3 Prevalence of breastfeeding at the Gold Coast Hospital 46
  - Introduction 46
  - Methods 48
  - Results 51
  - Conclusions 55
Breastfeeding in an urban population

Chapter 4 Breastfeeding duration, exclusivity and knowledge of mastitis in an urban population

Introduction 57
Methods 58
Results 68
Conclusions 89

Chapter 5

Study 3 Cochrane systematic reviews - ‘Intervention for the prevention of mastitis after childbirth’ 89

Background 89
Methods 89
Results 90

Chapter 6 Discussion

Introduction 92
Summary 92

Limitations of the first two studies in this thesis 101
Summary of recommendations from studies 102

Appendices

Appendix 1: Questionnaire 106
Appendix 2: Breastfeeding Self-Efficacy Scale (BSES) 109
Appendix 3: Cochrane Systematic Review 110

References 111

Table of figures

Figure 1: Outline of thesis chapters 19

Figure 2: Schema defining the varied definitions of exclusive and partial breastfeeding rates. 41

Figure 3: Flow chart briefly describing the methods used in each of the three studies for this thesis. 45

Figure 4: Flow chart outlining the design of Study 1, ‘Prevalence of breastfeeding at the Gold Coast Hospital’ and the tools used to collect data for this study. 48

Figure 5: Illustration of the age distribution of the women who gave birth at the Gold Coast Hospital in 2008 as reported in Study 1. 51
Breastfeeding in an urban population

Figure 6: Illustration of the infant feeding choice made by the women who gave birth at the Gold Coast Hospital in 2008 as reported in Study 1.

Figure 7: Reported number of women who had a vaginal delivery (VD) including instrumental / assisted deliveries (i.e. vacuum, forceps), elective caesarean section (EL/CS) or emergency caesarean section (EM/CS) birth at the Gold Coast Hospital during the data collection period for the ‘Prevalence of breastfeeding study’ (n=1093), grouped by the woman’s parity.

Figure 8: Flow chart illustrating an overview of the methodology used for Study 2 ‘Breastfeeding duration, exclusivity, and knowledge of mastitis in an urban population’.

Figure 9: Frequency distribution of the number of children (parity) of the women from the ‘Breastfeeding exclusivity and duration study’ (n=200).

Figure 10: Survival curve of breastfeeding duration grouped by parity for a six month period of the women from Study 2 ‘Breastfeeding exclusivity, duration and knowledge of mastitis in an urban population’ (n=200).

Figure 11: Survival curve for breastfeeding exclusivity grouped by parity for a six month period of the women from Study 2 ‘Breastfeeding exclusivity, duration and knowledge of mastitis in an urban population’ (n=200).

Figure 12: Breastfeeding trends at one month from several available sources (see Footnote below) This figure illustrates the comparison of breastfeeding rates at 1 month as reported from available sources including the women from Study 2 ‘Breastfeeding exclusivity, duration and knowledge of mastitis study in an urban population’ (n=200).

Figure 13: Breastfeeding Self Efficacy Scale – short form (BSES-SF) score distribution. Data collected from the participants during the initial interview when recruited into Study 2 - ‘Breastfeeding exclusivity, duration and knowledge of mastitis study in an urban population’ (n=200).

Figure 14: Scatter pot – illustrating the relationship between the Breastfeeding Self Efficacy Scale - short form (BSES-SF) score and the number of days that women...
exclusively breastfeed (maximum of 182 days of exclusive breastfeeding reported) from Study 2 participants (n=200).

Figure 15: Scatter Plot – illustrates the relationship between the Breastfeeding Self Efficacy Scale - short form (BSES-SF) score and the total duration of breastfeeding reported (maximum of 182 days duration of breastfeeding reported) from Study 2 participants (n=200).

Figure 16: Frequency distribution of responses for question (1) reporting the women’s knowledge of mastitis: What is mastitis?

Figure 17: Frequency distribution of responses for question (2) reporting the women’s knowledge of mastitis: How do you treat mastitis?

Figure 18: Frequency distribution of responses for question (3) reporting the women’s knowledge of mastitis: How did you find this information?
Table of tables

Table 1: Global view illustrating the percentage of infants (at six months) exclusively breastfed (2006). (4) 21

Table 2: Australian National Health Survey, reporting the age of breastfeeding mothers in 2001. (37) 27

Table 3: Profile of the women from who gave birth at the Gold Coast Hospital, including their type of delivery, parity, and method of feeding when discharged from hospital during the period of data collection for the ‘Prevalence of breastfeeding’ study in 2008. 54

Table 4: Infant feeding methods reported by Queensland health in 2006, and the Gold Coast Hospital in 2006 (Perinatal Data Collection) & in 2008 (Data from Study 1). 55

Table 5: Comparison of the women’s parity between our two studies ‘Prevalence of breastfeeding study’ and ‘Exclusivity and duration of breastfeeding study’ in 2008. 69

Table 6: Frequency of categorical variables for education and occupation as reported on the women in Study 2. 71

Table 7: Breastfeeding intention data, collected from the women in Study 2 – ‘Breastfeeding exclusivity, duration, and knowledge of mastitis study in an urban population’. 72

Table of appendices

Appendix 1: Questionnaire 106

Appendix 2: Breastfeeding Self-Efficacy Scale (BSES) 109

Appendix 3: Cochrane Systematic Review 110
Breastfeeding in an urban population

Publications


Presentations


Posters


Breastfeeding in an urban population

Thesis inspiration

As a clinical midwife and lactation consultant in hospitals and private practice, sharing many women’s breastfeeding experiences and challenges has provided me with knowledge and an interest in breastfeeding and complications of lactation. This experience has led me to pursue breastfeeding research.

While at the University of Southern Queensland (USQ), the experience I gained as a researcher provided insight into investigating women’s experiences and complications of lactation. The research I conducted at USQ consisted of two studies. The first involved setting up a telephone support service for women in the postpartum period. This service provided women with weekly telephone support and consultation with an experienced lactation consultant during the first month postpartum. Part of the support service also involved triaging women to health services for support when required. Most referrals were for breastfeeding related complications. The second study involved interviewing women who had experienced extraordinary breastfeeding complications but had continued to breastfeed.

As a result of conducting these studies, and through experience and observations as a lactation consultant in private practice, it became apparent that mastitis was a common breastfeeding problem. Women would often only seek help with this debilitating disease in the later stages, instead of earlier when the outcomes and recovery could have been more favourable. These observations led me to investigate the prevalence of mastitis, along with what can be done to reduce its incidence and improve the duration and exclusivity of breastfeeding.
Breastfeeding in an urban population

Thesis overview

This thesis consists of four parts. Chapters 1, 3, 4 and 5 outline the four main elements including the literature review and three studies. Chapter 2 outlines the research design and methodology.

Following the review of relevant literature, Chapter 1 provides an overview of conditions that affect breastfeeding initiation, exclusivity, and duration trends on a global, national, and state level. This chapter then discusses complications of lactation, mastitis in particular, and concludes with the aims of the study.

Chapter 2 gives an overview of the methodology of each of the three studies in this thesis. A comprehensive outline of the methodology used for each study is detailed in the relevant chapter.

Chapter 3 covers 'Prevalence of breastfeeding at the Gold Coast Hospital'. This study collated breastfeeding and limited demographic information from women who birthed at the Gold Coast Hospital between January 2008 and April 2008. The data collected were used to compare maternal age, parity, mode of feeding and the type of delivery against national and international breastfeeding rates. Data on breastfeeding exclusivity, duration and knowledge of mastitis were not available for the women in this study, which led to Study 2 (covered in Chapter 4).

Chapter 4 details ‘Breastfeeding duration, exclusivity, and knowledge of mastitis in an urban population’. Firstly, this provides cross-sectional data about breastfeeding exclusivity and duration rates within an Australian urban population and, secondly, it
Breastfeeding in an urban population

compares the women’s breastfeeding knowledge of mastitis with the clinical
definition. Thirdly, Chapter 4 benchmarks the Gold Coast breastfeeding data with both
global and national statistics. During this study the participants were asked three
exploratory questions about their knowledge of mastitis, and findings from the review
of these questions has led to the third study in this thesis.

Chapter 5 is a Cochrane Systematic Review of the published literature on the
prevention of mastitis following childbirth up until November 2010 titled ‘Interventions
for preventing mastitis after childbirth’.

Finally, the results and limitations of these studies are discussed, as well as
recommendations. An outline of this thesis has been summarised in Figure 1.
Breastfeeding in an urban population

Thesis outline briefly describing each chapter

Chapter 1.
1. Review of the relevant literature, providing an overview of the initiation, exclusivity and duration of breastfeeding on a global, national and state level.
2. Exploration of complications of lactation with a particular interest in mastitis as a common breastfeeding problem that may reduce exclusivity and duration.

Study Aims

Chapter 2. Methodology - brief overview of the research design for the studies in this thesis

Chapter 3. Study 1 - 'Prevalence of breastfeeding at the Gold Coast Hospital' methods, results and discussion

Chapter 4. Study 2 - 'Breastfeeding duration and exclusivity in an urban population' methods, results and discussion

Chapter 5. Study 3 - 'Interventions for preventing mastitis after childbirth' a Cochrane Systematic Review of the published literature on interventions for the prevention of mastitis after childbirth

Chapter 6. Discussion, limitations and recommendations

Figure 1: Outline of thesis chapters