

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

I

**THE REASONS WHY WOMEN WITH
SMALL FOR GESTATIONAL AGE BABIES STOP BREASTFEEDING:**

A thesis presented in partial fulfilment of the requirements for the
Master of Arts Degree (Midwifery)
Massey University

Sarah Louise Hutchings

2000

“The child you have nourished from within for so many months is ready for nourishment from without. After the birth, your body continues to be your baby’s best source of warmth comfort, and food”.

Presser, Storza, Brewer and Freehand, 1983, p.24.

Abstract

There has been a multitude of research literature on breastfeeding benefits, incidence and duration of breastfeeding, characteristics of women who breastfeed and formula feed, and variables associated with breastfeeding initiation and success in the 'general' breastfeeding population. Unfortunately there has been very little written about breastfeeding in women who deliver small for gestational age (SGA) babies.

The literature has demonstrated that women with SGA babies have different characteristics to women in the general breastfeeding population as illustrated in the adjacent literature review. The literature review, which accompanies this thesis, has highlighted the multiple advantages associated with breastfeeding, which may be particularly beneficial for SGA babies. Whether women delivering SGA babies have different breastfeeding experiences, or reasons for discontinuing breastfeeding, however has never been investigated.

The research presented in this thesis is part of a randomised-controlled trial entitled "The effect of educational information on the duration of breastfeeding in small for gestational age babies". Only one arm of this larger study has been analysed due to the restraints of a 75-point thesis. The full program of study is in progress. The primary aim of this arm was to determine why women with small for gestation age babies stop breastfeeding. Other influences on breastfeeding success were also investigated to determine if these external influences were statistically significant.

The findings from this research project have demonstrated that women with SGA babies have the same breastfeeding concerns as women in the general breastfeeding population. The most commonly cited reason for stopping breastfeeding were concerns about 'not enough milk'. Forty four percent of the women cited the midwife as being the most 'valuable' support with their breastfeeding experience. Overall the women with SGA babies had very good breastfeeding rates at 3 and 6 months postnatally compared with the general breastfeeding population statistics. This is a credit to the midwives caring for

these women and babies and may also be related to the fact that term SGA babies have been undernourished in utero and can often be hungry babies with 'catching up' to do.

These research findings also support the idea that the introduction of supplementary bottles administered on the postnatal wards can have a detrimental effect on future breastfeeding success. However, small for gestational age infants are at increased risk of hypoglycaemia and supplemental feeding may be necessary if the infant is feeding poorly or shows evidence of hypoglycaemia. Any strategies that can improve the breastfeeding duration for SGA infants can result in a wide range of health benefits. The adjacent literature review demonstrates that breastfeeding is the best form of infant feeding and may be even more so for small term babies.

Preface

As an adjunct to this research project a large review of the literature on the benefits of breastfeeding and the literature on SGA babies and breastfeeding was reviewed. Literature on the 'characteristics' of the women who deliver SGA babies was also summarised. This revealed that women with SGA babies are more likely to come from a lower socio economic group, smoke, possibly use recreational drugs and have other medical conditions eg. high blood pressure.

Within the following research project is a smaller literature review specifically relating to women with SGA babies and breastfeeding. This literature reveals that no other studies previously carried out have specifically investigated the breastfeeding experiences of women with SGA babies, and more specifically 'the reasons why women with SGA babies stop breastfeeding'. There is only one previous study that investigates the breastfeeding rates or the variables associated with breastfeeding success in women breastfeeding term SGA babies.

Acknowledgments

It would not have been possible to produce this thesis without the support of Massey University and my supervisor Dr Gillian White. I am very grateful to the women who gave their time in the aim of improving our understanding of breastfeeding in women with term SGA babies.

There are a number of people who have supported me and contributed to the publication of this thesis.

Associate Professor, Dr Lesley McCowan has been instrumental in my career development. Without her passion for research and her mutual interest in the long-term health outcomes of SGA babies, I may not have been inspired to continue. Lesley has also given of her time generously to assist with proof reading and statistical analysis. Professor Jane Harding was also very helpful with the statistical analysis.

Cassandra Ford (midwife) continued recruiting women to this research study and posting/ receiving the questionnaires. Without her efforts, this study would not have been possible.

I am very grateful to Heather Jackson (lactation consultant) who assisted with the development of the educational video.

My mother Bev has always been a constant source of reminder that "I should be studying". For her support and reminding I am very grateful. Mum was also a great help with proof reading. I am also grateful to my father Gordon for never reminding me to study.

I am eternally grateful to my husband Kent who supported me both emotionally and financially while I completed my thesis. I am very lucky to have such wonderful support from my family and friends as there have been many times I would have rather spent with them rather than studying.

TABLE OF CONTENTS

	Page
Title page.....	i
Abstract.....	iii
Preface.....	v
Acknowledgements.....	iv
Table of contents.....	vii
List of tables.....	xi
List of figures.....	xii
Glossary of terms.....	xiii
Abbreviations used in this literature review.....	xv

SECTION I: BACKGROUND INFORMATION

Chapter	Page
1 Introduction	
Background	17
Aim	20
Justification	20
Outline of the following chapters	21

2 **Physiology and pathophysiology related to breastfeeding term small for gestational age babies**

	Page
Breast milk constituents in women with small for gestational age babies	23
Comparison of human breast milk with common supplements	25
Emotional stress and the effect on breastfeeding	28
Malnutrition and the effect on breastfeeding	30
Smoking and the effect on breastfeeding	32
Special considerations when breastfeeding small for gestational age babies	32
Weight gain	32
Hypoglycaemia	33
Hypothermia	38
Small mouth	39
Congenital abnormalities and syndromes	40
Drug usage and breastfeeding	41
Other important breastfeeding considerations	43
The woman that chooses not to breastfeed	43
Human Immunodeficiency Virus and breastfeeding	44
Conclusion	47

3 **Literature specific to small for gestational age babies and breastfeeding**

Literature from the midwifery domain	50
Literature from the paediatric domain	52
Literature from the nutritionists' domain	59

4	Possible interventions aimed at improving breastfeeding rates in small for gestational age babies	
		Page
	Research on breastfeeding interventions	67
	Breastfeeding interventions in women with preterm babies	67
	Breastfeeding interventions in women from lower socio economic groups	67
5	Background to the major study “The effect of educational information on the duration of breastfeeding small for gestational age babies”	
	Brief description of the proposal	73
	Detailed project description	74
	Aims, objectives and plan of the research	74
	Hypotheses	74
	Participants	75
	Initiation and termination of the project	75
	Risks and benefits	76
	Departure from standard patient management	76
	Ethical approval	76
	Confidentiality	76
	Retention of data	77
	Conclusion	77

SECTION II: THE RESEARCH UNDER INVESTIGATION

6	Design and methodology “The reasons why women with small for gestational age babies stop breastfeeding”	
	Aims, objectives and plan of the research	79

Method	80
Study population	81
Methods of recruitment	82
Follow-up	83
Data collection	83
Control of variables	84
Information and variables collected	85
Study definitions	86
Statistical methods	86
7 Results	88
8 Discussion	103
9 Conclusion and future directions	114
Appendices	118
References	133
Bibliography	147

LIST OF TABLES

	Page
Table 1: Characteristics of the women	90
Table 2: Infant data	91
Table 3: Response rates for data collected	91
Table 4: Breastfeeding rates in women with SGA babies (4 months)	92
Table 5: Breastfeeding rates in women with SGA babies (10 months)	92
Table 6: Breastfeeding rates and maternal variables at 3 months	93
Table 7: Breastfeeding rates and infants variables at 3 months	94
Table 8: Results from the intervention (video & pamphlet) at 6 months	95
Table 9: Breastfeeding rates and maternal variables at 6 months	96
Table 10: Breastfeeding rates and infant variables at 6 months	97
Table 11: Breastfeeding rates and infant variables at 9 months	97
Table 12: Source of information rated as the most and least valuable	98

LIST OF FIGURES

	Page
Chapter 2	
Figure 1: Factors that may be responsible for the inhibition of the let-down reflex	29
Figure 2: The possible adverse effects of hypoglycaemia on breastfeeding	36
Chapter 4	
Figure 3: Negative cycles	66
Chapter 6	
Figure 4: Summary plan of the research	81

GLOSSARY OF TERMS

The research articles reviewed have statistical abbreviations and medical abbreviations. The following definitions will be used:

Appropriate for Gestational Age (AGA) usually defined as the birth weight between the 10th percentile and the 90th percentile for gestational age.

Confidence Interval (CI) indicates the precision of an estimate. It conveys more information because it indicates a range of values for the true effect.

Gestational Hypertension (GH) is a diastolic ≥ 90 with an increase of 15 mmHg.

Gestational Proteinuric Hypertension was defined as gestational hypertension and proteinuria of $> 300\text{mg}/24$ hours and/or at least '++' [proteinuria on repeated testing with urine dip sticks, in the absence of urinary tract infections.

Intra-Uterine Growth Restriction (IUGR) is a birth weight below the population 10th percentile, corrected for gestational age. Replaced by SGA in recent times.

Low Birth Weight (LBW) refers to all infants whose birth weight is 2500 grams or below, irrespective of the cause and without regard to the duration of gestation.

Milk bank refers to the place where breast milk (donated by other mothers) is stored

Odds Ratio (OR)= odds of event in treatment group/odds of event in comparison group

Otitis media is an inflammation of the middle ear

Relative Risk (RR)= risk of event in treatment group/ risk of event in comparison group

Risk Difference = risk of event in treatment group minus the risk of event in the comparison group, also known as "attributable risk" or absolute risk reduction

SD = standard deviation was defined as a statistic used to measure the variation in a set of scores.

SIDS (sudden infant death syndrome) was defined clinically as the sudden, unexpected death of an apparently healthy infant for which a routine autopsy fails to identify the cause (Schulte, Price, James, 1997, p.184).

Small for Gestational Age (SGA) is a birth weight below the population 10th percentile (corrected for gestational age) of an accepted reference.

ABBREVIATIONS USED IN THIS LITERATURE REVIEW

/ Indicates separation of numerator and denominator

AGA	appropriate for gestational age
GP	general practitioner
GPH	gestational proteinuric hypertension
HIV	human immunodeficiency virus
IUGR	intrauterine growth restriction
LBW	low birth weight
LSCS	lower segment caesarean section
OR	odds ratio
PHC	Public Health Commission
RR	relative risk
SD	standard deviation
SIDS	sudden infant death syndrome
SGA	small for gestational age
UK	United Kingdom
UNICEF	United Nations Children Fund
WHO	World Health Organisation