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**Feeding Practices and Growth of Preterm Infants
Discharged from the Neonatal Intensive Care Unit at
Auckland City Hospital until Twelve Months Corrected
Age**

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Jennifer Angela-Jane Vitali

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Abstract

Background: Preterm infants are unique in their physiological, developmental and nutritional needs. Previous research regarding the preterm infant has focused on interventions within the hospital setting. Recently the lack of research in the post discharge period has been highlighted. The period after discharge poses a vulnerable period as previous intensive care, growth and nutritional monitoring of the infant are no longer readily available. The aim of this study was to identify current breastfeeding, complementary feeding, feeding practices and growth of preterm infants after hospital discharge from the Neonatal Intensive Care Unit (NICU) at Auckland City Hospital until twelve months corrected age.

Method: Infants who were born preterm (<37 weeks' gestation) were recruited from Auckland City Hospital NICU, a tertiary care level hospital. Home visits were undertaken at four months after discharge and at twelve months corrected age to collect anthropometric measurements. Online surveys were administered at four months post discharge and at six, nine and twelve months corrected age. Data collected included demographic information at birth, mode of feeding, age of introduction of complementary foods and types of foods introduced to infants. Data were analysed using descriptive statistics. Group comparisons were made using Pearson's chi-square (χ^2), Fisher's Exact test and paired T- tests. Differences were considered significant at $P < 0.05$.

Results: Sixty-eight preterm infants were recruited from the NICU at Auckland City Hospital of whom the majority (76%) were born moderate to late preterm. The median (range) age of babies was 34 weeks (24⁺² - 36⁺⁶ weeks) and their mean (\pm SD) birth weight was 2.03 \pm 0.65 kg. At hospital discharge 73% of the infants were exclusively breastfed. By four months after discharge this had decreased to 46%, and by 12 months corrected age, only 21% of babies continued to be breastfed. The mean chronological age of complementary food introduction was 23 \pm 4.4 weeks (range 12 - 34 weeks). The majority of the babies (84%) started complementary feeding within the recommended age range. The most common first food was baby rice (45%) and infants showed increasing variation in their diet from six until twelve months corrected age. Z-scores for weight, length and head circumference were calculated using UK-WHO data. There was a significant decrease in mean Z-scores for

weight, length and head circumference between birth and hospital discharge. The majority of infants regained this deficit by four months and twelve months corrected age. Although, there were a few infants found to be at risk of growth faltering.

Conclusion: This study shows that the majority of preterm infants discharged from the NICU are breastfed at discharge, although, breastfeeding declines significantly by four months after discharge and thereafter. The majority of infants are introduced to complementary feeding appropriately although the choices of early complementary foods need to be addressed to include high energy nutrient dense foods. Lastly, growth in the post discharge period of these infants was adequate to support and maintain growth for the majority of infants, more research is needed to determine the feeding practices over this time which impacted on growth.

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Dedication

I would like to dedicate this thesis to my Dad, Devan Vitali. Sadly you didn't get to see me complete this although your unconditional love and support surely motivated me to get this done! I love you more than words can say Pops!.

I would also like to dedicate this to my darling girl, Mia Cornes, not a day goes by that I don't miss your beautiful smile!

Table of Contents

Abstract	ii
Acknowledgements	iv
Dedication	v
Table of Contents	vi
List of Tables	xi
List of Figures	xii
Appendices.....	xiii
Abbreviations List	xiv
Contributions Table	xvi
Chapter 1.0 Introduction	1
1.1 Introduction.....	1
1.2 Purpose of the Study.....	6
1.2.1 Aim	7
1.2.2 Objectives	7
1.2.3 Hypothesis	7
1.3 Structure of the Thesis	8
Chapter 2.0 Literature Review	9
2.1 Preterm Birth.....	9
2.1.1 Definition of Preterm Birth.....	9
2.1.2 Classification of Preterm Birth by Birth Weight.....	9
2.1.3 Classification of Preterm Infants by Age Terminology	9
2.1.4 Causes of Preterm Birth	9
2.1.5 Rates of Preterm Birth.....	10
2.1.6 Complications Associated with Preterm Birth	11
2.1.7 Feeding the Preterm Infant	12
2.1.8 Importance of Post-Discharge Nutrition in Preterm Infants	13
2.2 Breast and Formula Feeding Practices in Preterm Infants	14
2.2.1 Exclusive Breastfeeding	15
2.2.2 Mixed Feeding	15
2.2.3 Benefits of Breastmilk	15
2.2.4 Composition of Breastmilk	15

2.2.5 Exclusive Breastfeeding in Preterm Infants	16
2.2.6 Fortification of Breastmilk	17
2.2.7 Preterm Infant Formulas	17
2.2.8 Breastfeeding Recommendations.....	18
2.2.9 Duration of Breastfeeding in Preterm Infants	18
2.2.10 Breastfeeding Initiation in Hospital.....	19
2.2.12 Breastfeeding after Hospital Discharge.....	22
2.2.13 Factors Affecting Duration of Breastfeeding	25
2.3 Preterm Infants and Complementary Feeding	26
2.3.1 Definition of Complementary Feeding.....	26
2.3.2 Introduction to Complementary Feeding Preterm Infants.....	26
2.3.3 Early Introduction of Complementary Feeding	27
2.3.4 Late Introduction of Complementary Feeding	28
2.3.5 Recommendations for Complementary Feeding.....	29
2.3.6 Current Complementary Feeding Practices.....	34
2.3.7 Age of Introduction of Complementary Feeding	34
2.3.8 Factors Affecting Introduction of Complementary Feeding.....	36
2.3.9 First Food Introduced for Complementary Feeding.....	36
2.3.10 Complementary Foods Eaten Over First Year of Life	37
2.3.11 Sources of Feeding Information in New Zealand.....	38
2.3.12 Introduction of Other Fluids in Preterm Population	38
2.4 Vitamin and Mineral Supplement Practices in Preterm Infants	40
2.4.1 Supplementation Guidelines	40
2.4.2 Supplement Use in Preterm Infants.....	41
2.4.3 Supplementation and Mode of Feeding.....	41
2.5 Growth in Preterm Infants	41
2.5.1 Definitions of Growth in Infants	42
2.5.2 Growth Assessment Tools	42
2.5.3 Growth in Preterm Infants.....	43
2.5.4 Factors Affecting Growth in Preterm Infants	44
2.5.5 Consequences of Poor Growth	45
2.5.6 Preterm Infant Growth at Hospital Discharge	46
2.5.7 Preterm Infant Growth Post Hospital Discharge	47
2.5.8 Feeding Practices Affecting Growth after Hospital Discharge.....	47

2.6 Summary	50
Chapter 3.0 Methods.....	51
3.1 Study Design	51
3.2 Ethics	51
3.3 Study population	51
3.3.1 Setting	51
3.3.2 Eligibility Criteria	52
3.3.3 Exclusion Criteria.....	53
3.3.4 Sample Size.....	53
3.3.5 Consultation for the Study	54
3.4 Recruitment of Participants	54
3.5 Baseline Birth and Demographic Data Collection.....	55
3.5.1 Birth Data Collection from Medical Notes.....	55
3.5.2 Demographics Questionnaire	55
3.6 Tools to Assess Infant Feeding Practices.....	55
3.6.1 The Infant Feeding Practices Questionnaire.....	55
3.6.2. Anthropometric Measurements	58
3.7 Procedure	59
3.7.1 Survey administration	59
3.7.2 Home visits	60
3.8 Data analysis:.....	60
Chapter 4.0 Results	62
4.1 Description of Participants	62
4.2 Milk Feeding Practices in Preterm Infants	65
4.2.1 Main Type of Milk Feeding used for Preterm Infants	65
4.2.2 Mode of Feeding	67
4.2.3 Singleton and Twin Births and Association with Milk Feeding	67
4.2.4 Ethnicity.....	67
4.3 Complementary Feeding in Preterm Infants.....	68
4.3.1 Age of Complementary Food Introduction.....	68
4.3.2 Infants Meeting Preterm Feeding Guidelines.....	69
4.3.3 First Foods Introduced to Preterm Infants	69
4.3.4 Food Frequency Questionnaire Data	70
4.4 Feeding Practices in Preterm Infants	72

4.4.1 Number of Meals and Snacks per day	72
4.4.2 Feeding Practices of Preterm Infants at Nine and Twelve Months Corrected Age	72
4.4.3 Breast or Formula Milk fed Before Solids.....	73
4.4.3 Reasons for Starting Solids	73
4.4.5 Parent Reported Advice and Support for Introducing Complementary Feeding	74
4.4.6 Fluids Intake in Preterm Infants.....	74
4.5 Vitamin and Mineral Supplementation Practices.....	75
4.6 Growth in Preterm Infants	76
4.6.1 Z-score analysis for Weight, Length and Head Circumference	76
4.6.3 Z-Score Change as an Indicator of Faltering Growth	77
4.6.5 Growth and Timing of Complementary Feeding	78
Chapter 5.0 Discussion	80
5.1 Study Characteristics.....	81
5.2 Breastfeeding and Other Milk Feeding in Preterm Infants from Discharge until Twelve Months Corrected age.....	81
5.2.1 Breastfeeding at Hospital Discharge	81
5.2.2 Breastfeeding and Milk Feeding at Four Months Post Discharge.....	82
5.2.3 Breastfeeding and Milk Feeding until Twelve Months Corrected Age.....	82
5.2.4 Singleton and Twin Birth and Breastfeeding	83
5.2.5 Ethnicity.....	84
5.2.6 Type of Formula used by Preterm Infants at Six and Twelve Months Corrected Age	85
5.3 Complementary Feeding in Preterm Infants.....	85
5.3. Age of Introduction of Complementary Feeding.....	85
5.3 Infants Meeting Preterm Complementary Feeding Guidelines.....	86
5.3. Supports for Introducing Complementary Feeding to Preterm Infants.....	87
5.3. First Foods Introduced to Preterm Infants	88
5.3 Commonly Eaten Foods at Six, Nine and Twelve Months Corrected age	89
5.4 Feeding Practices in Preterm Infants.....	91
5.3 Sequence of Infant Feeding.....	91
5.3 Texture of Complementary Foods	91
5.4. Introduction of Other Fluids to the Preterm Infant Over Until Twelve Months Corrected Age	92
5.5 Supplementation Practices from Hospital Discharge until Twelve Months Corrected Age.....	92
5.6 Preterm Infant Growth	93

5.6.1 Mean Growth of Preterm Infants from Birth until Twelve Months Corrected Age.....	93
5.6.2 Preterm Infant Growth According to Meeting Preterm Feeding Guidelines	96
Chapter 6.0 Conclusion.....	98
6.1 Summary of the Study.....	98
6.2 Conclusion	99
6.3 Strengths	100
6.4 Limitations.....	101
6.5 Recommendations for Future Research	103
Reference List.....	104
Appendices.....	116

List of Tables

Table 2.1 Preterm Infants Breastfeeding at Hospital Discharge Worldwide.....	21
Table 2.2 Worldwide Studies Showing the Percentage of Preterm Infants being Breastfed after Discharge from the Hospital.....	24
Table 2.3 Term and Preterm Infant Complementary Feeding Recommendations from around the World.....	32
Table 2.4 Age of Introduction of Complementary Food to Preterm Infants from Observational Studies Worldwide.....	35
Table 2.5 Changes in Weight, Length and Head Circumference Z-scores in Preterm Infants at Hospital Discharge.....	47
Table 4.1. Baseline Characteristics of Preterm Infants.....	64
Table 4.2 Mother’s Demographic Characteristics at Birth.....	65
Table 4.3 Type of Formula Used at Six and Twelve Months Corrected Age.....	66
Table 4.4 Corrected Age of Solids Introduction in Preterm Infants.....	69
Table 4.5 First Foods Introduced to Preterm Infants.....	70
Table 4.6 Introduction of Foods to Infants at Six, Nine and Twelve Months Corrected Age..	71
Table 4.7 Meals and Snacks per Day at Six, Nine and Twelve Months Corrected Age.....	72
Table 4.8 Feeding Practices at Nine and Twelve Months Corrected Age.....	73
Table 4.9 Number and Percentage of Infants fed Milk before Solids.....	73
Table 4.10 Reasons for Introducing Solids for the First Time.....	74
Table 4.11 Introduction of Fluids at Six, Nine and Twelve Months Corrected Age.....	75
Table 4.12 Infants Taking Supplements at Six, Nine and Twelve Months Corrected Age.....	75
Table 4.13 Preterm Infants with a Negative Change in Z-Score by One or More Standard Deviations.....	78
Table 4.14 Preterm Infants with a Positive Change in Z-Score by One or More Standard Deviations	78

List of Figures

Figure 2.1 Timeline of Changes in Complementary Feeding Recommendations.....	29
Figure 3.1 Study Design of Post Discharge Feeding Practices of Preterm Infants Study.....	52
Figure 4.1 Flow Diagram of Recruitment and Final Number of Participants.....	62
Figure 4.2 Main Type of Milk Feeding at Hospital Discharge and thereafter until Twelve Months Corrected Age.....	66
Figure 4.3 Ethnicity and Main Type of Milk Feeding at Discharge, Four Months Post Discharge and Twelve Months Corrected Age.....	68
Figure 4.4 Mean (\pm SD) Weight Z-scores for Preterm Infants at Birth, Discharge, Four months Post Discharge (PD) and Twelve Month Corrected Age (CA).....	76
Figure 4.5 Mean (\pm SD) Length Z-scores for Preterm Infants at Birth, Discharge, Four months Post Discharge (PD) and Twelve Month Corrected Age (CA).....	76
Figure 4.6 Mean Head Circumference Z-scores for Preterm Infants at Birth, Discharge, Four months Post Discharge (PD) and Twelve Month Corrected Age (CA).....	76
Figure 4.7 Growth at Twelve Months Corrected Age in Relation to Introduction of Complementary Feeding According to and not According to Guidelines.....	79

Appendices

- Appendix A** Study Information Sheet
- Appendix B** Contact Letter
- Appendix C** Infant Informed Consent Form
- Appendix D** Maternal Informed Consent Form
- Appendix E** Data Collection from Medical Notes
- Appendix F** Demographic Questionnaire
- Appendix G** Infant Feeding Practices Questionnaire Four Month Post Discharge
- Appendix H** Infant Feeding Practices Questionnaire Six Months
- Appendix I** Infant Feeding Practices Questionnaire Nine Months
- Appendix J** Infant Feeding Practices Questionnaire Twelve Months
- Appendix K** Standard Operating Procedure Weight
- Appendix L** Standard Operating Procedure Length
- Appendix M** Standard Operating Procedure Head Circumference
- Appendix N** Infant Feeding Practices Questionnaire email
- Appendix O** Infant Feeding Practices Questionnaire email Reminder
- Appendix P** Data Collection Sheet 2

Abbreviations List

ACH	Auckland City Hospital
AGA	Appropriate for Gestational Age
ANZNN	Australian and New Zealand Neonatal Network
ADHB	Auckland District Health Board
BDA	British Dietetics Association
CA	Corrected Age
EBF	Exclusively Breast Fed
EBM	Expressed Breast Milk
ELBW	Extremely Low Birth Weight
ESPGHAN	European Society of Paediatric Gastroenterology, Hepatology and Nutrition
EUGR	Extra-uterine Growth Restriction
FFQ	Food Frequency Questionnaire
GP	General Practitioner
GUINZ	Growing up in New Zealand
IUGR	Intra-uterine Growth Restriction
LBW	Low Birth Weight
MOH	Ministry of Health (New Zealand)
NEC	Necrotising Enterocolitis
NICU	Neonatal Intensive Care Unit
RCT	Randomised Control Trial
RDI	Recommended Daily Intake
SD	Standard Deviation
SGA	Small for Gestational Age
UK	United Kingdom
US	United States

VLBW Very Low Birth Weight
WHO World Health Organisation

Contributions Table

Contributors	Role in Research
Jenny Vitali	Student researcher, research design including six, nine and twelve month questionnaire development, contacting and following up participants, assisting with follow up, statistical analysis, results interpretation, main author of thesis
Dr. Cath Conlon	Massey University academic supervisor, applied for ethics, research design, assisted with questionnaire development, assisted in interpretation of results, revised and approved the thesis.
Barbara Cormack	Professional Supervisor, advised on research design, assisted with recruitment of participants and revised thesis.
Owen Mugridge	Participant recruitment, anthropometric measures of infants, development of standard operating procedures assisted with questionnaire development and administration.
Prof. Frank Bloomfield	Advised on research design
Cheryl Gammon	Assisted with statistical analysis, revised thesis.
Briar Emmett	Research design, baseline questionnaire and demographic data collection, applied for ethics, participant recruitment, MSc student who presented Vitamin D results at four months post discharge.
Charlotte Moor	Research design, baseline questionnaire and demographic data collection, applied for ethics, participant recruitment, MSc student who presented iron status results at four months post discharge.