

EXPRESSED BREAST MILK FOR PREMATURE
INFANTS IN NEONATAL INTENSIVE CARE UNIT:
EXPLORING THE EXPERIENCES OF MOTHERS
AND NURSES

BY

SITI AZUNA BINTI ABU BAKAR

A thesis submitted in fulfilment of the requirement for
the degree of Doctor of Philosophy in Nursing

Name of the Kulliyyah
International Islamic University Malaysia

SEPTEMBER 2021

ABSTRACT

Background: Premature infants in the Neonatal Intensive Care Unit require specialized medical support including receiving good nutrition after birth. Therefore, breast milk is an ideal source of nutrition that has been chosen to optimize the growth and development of premature infants. The process of preparation expressed breast milk from mothers to premature infants in the Neonatal Intensive Care Unit could be challenging. In order to facilitate mothers to express breast milk and promoting exclusive breastfeeding practice, mutual agreement between mothers and nurses in Neonatal Intensive Care Unit is essential. **Objectives:** This study aimed to explore mothers' experience in handling expressed milk and to understand the nurses' practice in supporting EBM mothers in the Neonatal Intensive Care Unit. This study also to identify the current guidelines including policies and procedures related to breastfeeding management specifically on expressed breast milk. **Methods:** A qualitative research design using purposive sampling with multiple methods was conducted involving 19 in-depth interviews with mothers whose premature infants hospitalized in neonatal intensive care unit, 4 focus groups discussion among 16 nurses working in Neonatal Intensive Care Unit and analysis of 20 documents related to breastfeeding and breast milk management. Data were digitally recorded, transcribed, and analyzed using NVivo. Thematic analysis and content analysis were adopted concurrently in analyzing the rich data from participants. **Results:** This study identifies four major conceptual ideas derived from participants' experience in handling expressed breast milk: (1) received good support and motivation; (2) challenges and obstacles faced during expressing breast milk; (3) efforts to continue expressing breast milk; and (4) mothers' needs. On the other hand, six themes were captured in the focus groups: (1) prioritized main topics for health education, (2) follow checklist and guideline, (3) engaged in education session, (4) encountering the difficulties, (5) nurse's needs, and (6) valuing mothers' feedback. Documents on breastfeeding management were tabulated under two topics: (1) management of expressed breast milk in the NICU; and (2) breastfeeding practice in the NICU. **Conclusions:** Hospital management, nurses' commitment, and maternal awareness on the importance of breast feeding play an important role in ensuring that premature infants receive optimal nutrition. However, some factors influence these three components. By implementing standard guidelines in the management of expressed breast milk in the NICU gave staff an advantage in managing expressed breast milk and providing support to mothers.

Keywords: *Expressed breast milk, mother, nurses, premature infant, NICU*

خلاصة البحث

الخلفية: يحتاج الرضع السابقون في وحدة العناية المركزة لحديثي الولادة إلى دعم طبي متخصص بما في ذلك الحصول على تغذية جيدة بعد الولادة. ولذلك، فإن لبن الأم مصدر مثالي للتغذية تم اختياره لتحقيق النمو والنمو الأمثل للأطفال الرضع قبل الأوان. وقد تكون عملية الإعداد المعرب عنها اللبن الثدي من الأمهات إلى الرضع قبل الأوان في وحدة العناية المركزة بالمواليد تحدياً. ولتيسير قيام الأمهات بالتعبير عن لبن الأم وتشجيع ممارسة الرضاعة الطبيعية الحصرية، من الضروري الاتفاق المتبادل بين الأمهات والممرضات في وحدة العناية المركزة بالمواليد. **الأهداف:** وتهدف هذه الدراسة إلى استكشاف تجربة الأمهات في التعامل مع الحليب المعبر عنه وفهم ممارسة الممرضات في دعم الأمهات في وحدة العناية المركزة بالمواليد. وهذه الدراسة أيضاً لتحديد المبادئ التوجيهية الحالية، بما في ذلك السياسات والإجراءات المتصلة بإدارة الرضاعة الطبيعية، وعلى وجه التحديد بشأن لبن الأم المعبر عنه. **المناهج:** وأجري تصميم بحثي نوعي باستخدام أخذ عينات هادفة بأساليب متعددة شمل 19 مقابلة متعمقة مع الأمهات اللاتي أدخلن رضعهن السابق لأوانه إلى المستشفى في وحدة العناية المركزة لحديثي الولادة، 4 أفرقة تركيز مناقشة بين 16 ممرضة يعملن في وحدة العناية المركزة لحديثي الولادة وتحليل 20 وثيقة تتعلق بالرضاعة الطبيعية وإدارة اللبن الثدي. تم تسجيل البيانات رقمياً ونقلها وتحليلها باستخدام NVivo. واعتمد التحليل الموضوعي والتحليل المحتوى في آن واحد في تحليل البيانات الغنية الواردة من المشاركين. **النتائج:** وتحدد هذه الدراسة أربعة أفكار مفاهيمية رئيسية مستمدة من تجربة المشاركين في التعامل مع لبن الأم المعبر عنه: (1) تلقى الدعم والتحفيز الجيدين؛ و(2) التحديات والعقبات التي تواجه أثناء التعبير عن لبن الأم؛ و(3) الجهود المبذولة لمواصلة التعبير عن لبن الأم؛ و(4) احتياجات الأمهات. ومن ناحية أخرى، تم تناول ستة مواضيع في مجموعات التركيز: (1) أولوية المواضيع الرئيسية للثقف الصحي، و(2) إتباع القائمة المرجعية والمبادئ التوجيهية، و(3) المشاركة في دورة التعليم، و(4) مواجهة الصعوبات، و(5) احتياجات الممرضة، و(6) تقييم تعليقات الأمهات. وجدولت الوثائق المتعلقة بإدارة الرضاعة الطبيعية في إطار موضوعين: (1) إدارة اللبن الثدي المعبر عنه في وحدة العناية المركزة لحديثي الولادة؛ (2) ممارسة الرضاعة الطبيعية في وحدة العناية المركزة لحديثي الولادة. **الخلاصات:** وتلعب إدارة المستشفيات، والتزام الممرضات، والتوعية النفاسية بأهمية الرضاعة الطبيعية دوراً هاماً في ضمان حصول الرضع قبل الأوان على التغذية المثلى. غير أن بعض العوامل تؤثر على هذه العناصر الثلاثة. وبتنفيذ مبادئ توجيهية معيارية في إدارة لبن الأم المعبر عنه في وحدة العناية المركزة لحديثي الولادة، أعطى الموظفون ميزة في إدارة لبن الأم المعبر عنه وتقديم الدعم للأمهات.

الكلمات الرئيسية: اللبن الثدي المعبر عنه، الأم، الممرضات، الرضيع السابق لأوانه، وحدة العناية المركزة لحديثي الولادة

APPROVAL PAGE

The thesis of Name of Student has been approved by the following:

Asst. Prof. Dr. Siti Mariam Binti Muda
Supervisor

Asst. Prof. Dr. Siti Roshaidai Binti Mohd Arifin
Co-Supervisor

Asst. Prof. Dr. Lee Siew Pein
Internal Examiner

Associate Prof. Dato' Dr. Hamizah binti Ismail
Chairman

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Doctor of Philosophy in Nursing

.....
Asst. Prof. Dr. Siti Mariam Binti Muda
Supervisor

.....
Asst. Prof. Dr. Siti Roshaidai Binti Mohd Arifin
Co-Supervisor

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of

.....
Asst. Prof. Dr. Lee Siew Pein
Internal Examiner

This thesis was submitted to the Department of Postgraduate and Research and is accepted as a fulfilment of the requirement for the degree of Doctor of Philosophy in Nursing

.....
Asst. Prof. Dr. Sanisah Binti Saidi
Deputy Dean of Postgraduate & Research

This thesis was submitted to the Kulliyah of Nursing and is accepted as a fulfilment of the requirement for the degree of Master of Doctor of Philosophy in Nursing

.....
Assoc. Prof. Dr. Muhammad Kamil Che Hasan
Dean, Kulliyah of Nursing

DECLARATION

I hereby declare that this thesis is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Siti Azuna binti Abu Bakar

Signature 

Date: 27 September 2021

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

**DECLARATION OF COPYRIGHT AND AFFIRMATION OF
FAIR USE OF UNPUBLISHED RESEARCH**

**EXPRESSED BREAST MILK FOR PREMATURE INFANTS:
EXPLORING EXPERIENCES OF MOTHERS AND NURSES IN
NEONATAL INTENSIVE CARE UNIT**

I declare that the copyright holder of this thesis is Siti Azuna binti Abu Bakar.

Copyright ©2021 by Siti Azuna binti Abu Bakar. All rights reserved.

No part of this unpublished research may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the copyright holder except as provided below.

1. Any material contained in or derived from this unpublished research may be used by others in their writing with due acknowledgement.
2. IIUM or its library will have the right to make and transmit copies (print or electronic) for institutional and academic purposes.
3. The IIUM library will have the right to make, store in a retrieval system and supply copies of this unpublished research if requested by other universities and research libraries.

By signing this form, I acknowledged that I have read and understand the IIUM Intellectual Property Right and Commercialization policy.

Affirmed by Siti Azuna binti Abu Bakar



.....
Signature

27 September 2021

.....
Date

ACKNOWLEDGEMENTS

Firstly, Alhamdulillah, with Allah mercy and granted me with courage to complete this study. The journey that InsyaAllah will nurture me into better servant to Him. It is my utmost pleasure to dedicate this work to my parents Abu Bakar bin Alias, Siti Hatijah binti Adnan, and my family, who granted me the gift of their unwavering belief in my ability to accomplish this goal: thank you for your support and patience.

A special thanks to Asst. Prof. Dr. Siti Mariam binti Muda for her continuous support, encouragement, and leadership, and for that, I will be forever grateful. Your role as a mother has encourage me to continuously believe in myself and guide me to see the light. I always see this journey as a journey in a tunnel and your light has led me to the other side of the tunnel. I wish to express my sincere appreciation to my co-supervisors Asst. Prof. Siti Roshaidai binti Ariffin for her guidance, advices, and motivation. A special thanks to Associate Prof. Dato' Dr. Hamizah binti Ismail for her continuous support and encouragement. I am also indebted to Assoc. Prof. Dr. Shareena binti Ishak in providing the comfort environment in research setting and her contribution during data collection phase. Without their continued support and interest, this thesis project would not have been the same as presented here.

Finally, my sincere appreciation also extends to the staff of Kulliyyah of Nursing, Office of Postgraduate Studies of Kulliyyah of Nursing, all my colleagues especially Rusila Ruslan and others who have provided assistance at various occasions. Their views and tips are useful indeed. Unfortunately, it is not possible to list all of them in this limited space. Many thanks to health care providers and staff in NICU PPUKM for their kindness in ensuring the study runs well.

TABLE OF CONTENTS

Abstract	ii
خلاصة البحث	ii
Approval page	ii
Approval page	ii
Declaration	iii
Declaration of copyright and affirmation of fair use of unpublished research	vii
Acknowledgements	viii
Table of Contents	ix
List of Tables	xvii
List of Figures	xix
Chapter One	1
Introduction	1
1.1 Introduction	1
1.2 Background	3
1.3 Personal Interest and Motivation	6
1.4 Problem Statement	7
1.5 Significance of the Study	9
1.6 Research Objective	10
1.7 Research Question	11
1.8 Exclusive Breastfeeding Practice	11
1.8.1 National Breastfeeding Policy	12
1.8.2 Expressed Breast Milk	14
1.8.3 Baby Friendly Hospital Initiative	16
1.9 Definition of Term	22
1.9.1 Expressed Breast Milk	22
1.9.2 Nurses in NICU	23
1.9.3 Premature Infants	23
1.10 Summary	24
Chapter Two	25
Literature Review	25
2.1 Introduction	25
2.2 Understanding Expressing Breast Milk from Mother's Perspectives	25

2.2.1 Method	26
2.2.1.1 Inclusion and exclusion criteria.....	26
2.2.1.2 Search Strategies	27
2.2.2 Findings.....	30
2.2.2.1 Negative Thought Towards Expressing Breast Milk	32
2.2.2.2 Mothers’ obstacles to expressing breast milk success.....	35
2.2.2.3 Strategies for Success Expressing Breast Milk	37
2.2.3 Conclusion	39
2.3 Understanding Expressing Breast Milk from The Health Care Provider’s Perspectives	41
2.3.1 Method	41
2.3.1.1 Inclusion and exclusion criteria.....	41
2.3.1.2 Search Strategies	42
2.3.2 Findings.....	45
2.3.2.1 Factor Successful of Supporting EBM in NICU	46
2.3.2.2 The approach used by health care provider during EBM support session.....	48
2.3.2.3 Challenges in implementing EBM Support.....	50
2.4 Evidence Based Policies And Regulations To Address Support For Expressed Breast Milk.....	56
2.4.1 Method	56
2.4.1.1 Inclusion and Exclusion Criteria	56
2.4.1.2 Search Strategies	57
2.4.2 Finding	59
2.5 The Existing Theoretical Constructs for The Study Of Breastfeeding.....	63
2.5.1 Introduction	63
2.5.2 Breastfeeding Self-Efficacy Theory.....	64
2.6 Summary.....	66
Chapter Three.....	69
Methodology	69
3.1 Introduction.....	69
3.2 Methodology Foundation	69
3.2.1 Philosophy underpinning	69
3.2.2 Constructivist Paradigm.....	70
3.2.2.1 Components of Constructivism.....	70
3.2.2.2 The Methodology in Constructivism.....	71
3.2.3 Qualitative Design.....	72
3.2.3.1 Advantages of Qualitative	72
3.2.3.2 Qualitative Descriptive Research	73
3.3 Conduct Of The Present Study	77
3.3.1 Study Setting	77
3.3.2 Study Population	78
3.3.3 Inclusion and Exclusion Criteria.....	78
3.3.3.1 Postnatal Mothers of Premature Infants	78
3.3.3.2 Staff Nurses	79
3.3.3.3 Document Related to Breast Milk Management	80
3.3.4 Sampling Size	81

3.3.4.1 Postnatal Mother of Premature Infants in Neonatal Intensive Care Unit	81
3.3.4.2 Nurses in NICU	81
3.4 Recruitment Process	82
3.4.1 Document Collection Process	83
3.4.2 Recruitment Process of Mother.....	84
3.4.3 Recruitment Process of Nurses	86
3.5 Method of Data Collection	88
3.5.1 Interviews with Postnatal Mothers of Premature Infants.....	89
3.5.1.1 Preparation and Planning for the interviews	89
3.5.1.2 Participant.....	90
3.5.1.3 The Settings for Interviews	91
3.5.2 Focus Group Discussion with Nurses in NICU	91
3.5.2.1 Preparation and Planning for the focus group discussion	93
3.5.2.2 Participant.....	95
3.5.2.3 The Settings and the Focus Group Session	96
3.5.3 Document Analysis	98
3.5.3.1 Preparation and Planning for Documents Analysis.....	98
3.5.3.2 Compiling Documents.....	99
3.5.4 Reflection	100
3.5.4.1 Planning for Reflection.....	100
3.6 Method of Data Analysis	103
3.6.1 Thematic Analysis.....	103
3.6.1.1 Process for Thematic Analysis	103
3.6.2 Content Analysis for Focus Group Discussion	104
3.6.2.1 Process for Content Analysis.....	105
3.6.3 Content Analysis for Documents	106
3.6.3.1 Process for Content Analysis of Expressed Breast Milk Documents.....	107
3.7 Trustworthiness of Study.....	109
3.7.1 Credibility	109
3.7.2 Transferability	113
3.7.3 Dependability	114
3.7.4 Confirmability	116
3.8 Ethical Considerations	116
3.8.1 Ethical Approval	116
3.8.2 Informed Consent.....	117
3.8.2.1 Research objective and aim	118
3.8.2.2 Potential risks	118
3.8.2.3 Description of expected benefits	118
3.8.2.4 Confidentiality and anonymity of participants	119
3.8.2.5 Participant rights.....	119
3.8.3 Confidentiality	119
3.8.3.1 Data Protection	120
3.8.3.2 Pseudonym	120
3.9 Summary	124
Chapter Four	125
Finding	125

4.1 Introduction.....	125
4.2 Phase One: The Exploration of Mothers’ Experiences in Handling Expressed Breast Milk for Their Premature Infants in the NICU.....	127
4.2.1 Mothers’ Demographic Data.....	127
4.2.2 Identify the Themes from Mothers Life Experience.....	129
4.2.3 Theme 1: Received Good Support and Motivation	132
4.2.3.1 Received Education and Support by Healthcare Provider ..	132
4.2.3.2 Supportive Family Members	138
4.2.3.3 Encouragement from the Neighborhood and Community ..	141
4.2.4 Theme 2: Challenges and Obstacles Faced During Handling Breast Milk.....	143
4.2.4.1 Mothers' Attitude Makes the Different.....	143
4.2.4.2 Facing Equipment’s’ Problems	158
4.2.4.3 Services and Facilities Issues	161
4.2.4.4 Family Matter	163
4.2.5 Theme 3: Efforts to Continue Breast Milk Expression.....	166
4.2.5.1 Pre-milking routine.....	167
4.2.5.2 Changing Dietary Intake Routine.....	171
4.2.5.3 Being Self-Motivated	175
4.2.6 Theme 4: Mothers’ Needs.....	183
4.2.6.1 Knowledgeable	183
4.2.6.2 Proper Facilities and Equipment	185
4.2.6.3 Needs of Privacy and Rest.....	185
4.2.7 Summary	186
4.3 Phase Two: The Exploration of Nurses’ Experience in Supporting Mothers to Prepare Express Breast Milk for Premature Infants in the NICU	189
4.3.1 Nurses’ Demographic Data.....	189
4.3.2 Identify the Themes from Nurses Practices	191
4.3.3 Theme 1: Prioritized Main Topics for Health Education.....	192
4.3.3.1 The Importance of EBM.....	193
4.3.3.2 Highlight of Hygiene During Expressing Breast Milk	194
4.3.3.3 Focusing on How to Express	195
4.3.3.4 Extra Attention to Get the First Colostrum	196
4.3.3.5 Highlight the Expressing Schedules	197
4.3.3.6 Managing the EBM	197
4.3.4 Theme 2: Follow Checklist and Guidelines.....	203
4.3.4.1 Making an Assessment Before Providing EBM Support	203
4.3.4.2 Health Education Given Based on Mothers' Knowledge	204
4.3.4.3 Using Demonstration Equipment	206
4.3.4.4 Conducting a Question-and-Answer Session	206
4.3.4.5 Demonstration and Practical Sessions during Teaching	207
4.3.4.6 Follow Up.....	207
4.3.4.7 Conducting Observations	209
4.3.4.8 Re-educating the Mother	210
4.3.4.9 Referring the Case if the Issue Does not Solve	211
4.3.4.10 Issues Commonly Faced by Nurses in EBM Support Practice	212
4.3.4.11 Documentation	216
4.3.5 Theme 3: Engaged in Education Session.....	218

4.3.5.1 Individual experiences.....	218
4.3.5.2 Practices in Giving EBM support in EBM	219
4.3.5.3 Participate in Educational Program	220
4.3.5.4 NICU Routine.....	221
4.3.6 Theme 4: Encounter the Difficulties	223
4.3.6.1 Workload Reduced the Quality of Teaching	223
4.3.6.2 Unsupported Healthcare Provider from Others Department.....	224
4.3.6.3 Mothers Who are Not Interested in Providing EBM.....	225
4.3.6.4 Unsupportive Family Members	226
4.3.7 Theme 5: Nurses’ Needs	227
4.3.7.1 Up-To-Date Breastfeeding Courses	227
4.3.7.2 Continuous Education	228
4.3.8 Theme 6: Valuing Mothers’ Feedback.....	228
4.3.8.1 Positive feedback.....	229
4.3.8.2 Negative feedback	229
4.3.8.3 Appreciation	229
4.3.9 Summary	230
4.4 Phase Three: Discovering Breast Milk Management Related Documents in NICU.....	234
4.4.1 Compiling Selected Documents.....	234
4.4.2 Identify the Themes from Compiling Selected Documents	236
4.4.3 Theme 1: Management of EBM in NICU.....	238
4.4.3.1 EBM Support During First Visit to NICU	238
4.4.3.2 Preparation.....	240
4.4.3.3 EBM storage in the NICU	240
4.4.3.4 Sterilisation Process.....	241
4.4.3.5 Heating the breastmilk.....	242
4.4.3.6 Feeding delivery to Infants	242
4.4.3.7 Documentation	242
4.4.4 Theme 2: Breastfeeding Practice in NICU.....	244
4.4.4.1 Colostrum	244
4.4.4.2 Pasteurized Expressed Breast Milk (PEBM).....	244
4.4.4.3 Fresh EBM.....	246
4.4.5 Summary	246
4.5 Personal Reflection.....	247
4.5.1 Reflection in Depth Interview Process with Mother of Premature Infants.....	247
4.5.2 Researcher’ Reflection in Focus Group Discussion Process with Nurses.....	250
4.5.3 Researcher’ Reflection in Document Compiling Process	254
4.5.4 Reflexive Account on Personal Background	257
4.6 Summary.....	258
Chapter Five.....	259
Discussion	259
5.1 Introduction.....	259
5.2 Factors Contributing to Expressed Breast Milk Practice.....	259

5.3 Relationships Between Breastfeeding Self-Efficacy with Mothers' Performance in Expressing Breast Milk.....	264
5.4 Impact of Support from Various Parties to Practice in Preparation of Expressed Breast Milk for Premature Infant in the NICU	266
5.4.1 Professional Support During Expressing Breast Milk	266
5.4.2 The Influence of Family Support on Lactation Practice Among Mothers	268
5.5 The Choice of Coping Strategies in Expressed Breast Milk Practice	271
5.6 The Successes and Failures in the Implementation of Evidence-based Guidelines for Breastfeeding Support	273
5.7 Impact of the Baby Friendly Hospital Initiative Programme on Practice of Nurses in NICU	275
5.8 Summary	278
Chapter Six.....	279
Conclusion	279
6.1 Introduction.....	279
6.2 Achievement of Study	279
6.3 Recommendation	280
6.3.1 Nursing Education.....	280
6.3.2 Nursing Practice	280
6.3.3 Nursing Research	283
6.4 Limitation	284
6.5 Conclusion	284
References.....	286
Appendix.....	302
Appendix 1.....	303
Approval letter from Kulliyyah of Nursing	303
Appendix 2.....	304
Approval letter from IIUM Research and Ethics Committee	304
Appendix 3.....	309
Approval letter from UKM Research and Ethics Committee	309
Appendix 4.....	310
Translation verification	310
Appendix 5.....	312
Table of literature review	312
Appendix 6.....	328
Participant information sheet (mother)	328
Appendix 7.....	332
Participant information sheet (staff nurses)	332
Appendix 8.....	336
Consent form.....	336
Appendix 9.....	338
Table of research methodology	338
Appendix 10.....	342
Slaid presentation for briefing (NICU)	342
Appendix 11.....	346

Advertisement for mother	346
Appendix 12.....	347
Semi-Structured Interview guide for mothers.....	347
Appendix 13.....	348
Mothers' demographic data worksheet	348
Appendix 14.....	350
In depth Interview's transcript (mother)	350
Appendix 15.....	358
Thematic analysis table (mother).....	358
Appendix 16.....	371
Advertisement of research (nurses in NICU).....	371
Appendix 17.....	372
Approval for continuous professional development (CPD) point from Malaysia Nursing Board	372
Appendix 18.....	373
Letter appointment as research assistance.....	373
Appendix 19.....	374
Semi-structured focus group guide (nurses in NICU)	374
Appendix 20.....	376
Demographic data worksheet: focus group discussion with nurses in NICU	376
Appendix 21.....	378
Focus group discussions' transcript	378
Appendix 22.....	390
Table of content analysis (Focus group discussion with nurses in NICU)	390
Appendix 23.....	392
List of activities with potential participants	392
Appendix 24.....	393
List of documents for document analysis	393
Appendix 25.....	394
Document worksheet form.....	394
Appendix 26.....	399
Field note for in depth interview for postnatal mother	399
Appendix 27.....	400
Interview schedule for postnatal mothers	400
Appendix 28.....	402
Postgraduates activities	402
Appendix 29.....	404
COREQ (COnsolidated criteria for REporting Qualitative research) checklist	404
Appendix 30.....	406
Table of certificated and NGO related field.....	406
Appendix 31.....	407
Proofread certificated	407
Appendix 32.....	408
Abstract translation certificated	408

LIST OF TABLES

Table 1.1 The benefits of breast milk	12
Table 1.2 Types of premature infant	23
Table 2.1 Selection criteria of the studies	27
Table 2.2 Keywords used in various combination	28
Table 2.3 Selected studies	30
Table 2.4 Findings of literature review	31
Table 2.5 Selection criteria of the studies	42
Table 2.6 Keywords used in various combination	42
Table 2.7 Selected studies	45
Table 2.8 Findings of qualitative analysis	46
Table 2.9 Keywords used in various combination	57
Table 2.10 Included articles	59
Table 3.1 Characteristics of qualitative descriptive research	74
Table 3.2 Methodology foundation	76
Table 3.3 Table schedule interview	90
Table 3.4 Focus Group Schedule	96
Table 3.5 Summary of research methodology	121
Table 4.1 Mothers' demographic data	128
Table 4.2 Demographic of the infants	129
Table 4.3 Receiving good support	132
Table 4.4 The challenges	143
Table 4.5 Mothers' efforts to continue express breast milk	166
Table 4.6 Mothers' needs	183
Table 4.7 Demographic data of staff nurses	190

Table 4.8 Components involved in the health education process	193
Table 4.9 Managing the EBM	198
Table 4.10 EBM support strategies	203
Table 4.11 Facilitators to EBM support	218
Table 4.12 Barriers to EBM support	223
Table 4.13 Nurses needs	227
Table 4.14 Mothers' feedback	229
Table 4.15 List of selected documents	235
Table 4.16 Types of document	236
Table 4.17 Process involved in management of EBM	238
Table 4.18 Different types of expressed breast milk	244
Table 6.1 Recommended key practice	282

LIST OF FIGURES

Figure 1.1 National breastfeeding policy	13
Figure 1.2 Basic information for successful exclusive breast feeding	14
Figure 1.3 Safe expressed breast milk practice	16
Figure 1.4 The 13 steps toward successful breastfeeding	18
Figure 1.5 List of government and private hospitals recognized as Baby-Friendly Hospital in 2012	19
Figure 1.6 Activities of breastfeeding promotion programs throughout Malaysia	22
Figure 2.1 Flow diagram of search strategy for understanding expressing breast milk from mother's perspectives	29
Figure 2.2 Flow diagram of search strategy for understanding expressing breast milk from the health care provider's perspectives	44
Figure 2.3 Flow diagram of search strategy	58
Figure 2.4 Breastfeeding self-efficacy theory	66
Figure 3.1 The flow of recruitment process	87
Figure 3.2 Focus group discussion process	94
Figure 3.3 Strategy for reflection	102
Figure 3.4 Thematic analysis process	104
Figure 3.5 Content analysis process	106
Figure 3.6 Stages of document analysis	108
Figure 4.1 Summary of findings	126
Figure 4.2 Mothers' Experience in handling expressed breast milk	131
Figure 4.3 Nurses' experiences in practice EBM support	191
Figure 4.4 Common issues discussed by nurses	212
Figure 4.5 Summary of compiling selected document	237
Figure 4.6 EBM Management process in NICU	239

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

World Health Organization (WHO) defined premature birth as a birth of a infant before reaching 37 completed weeks of gestation (WHO, 2016). Premature infants require a high level of care to ensure that they would be able to develop a strong immune system, with the normal growth and development (Cooke, 2016). The optimal nutrition during the early life of an infant is essential in achieving those goals. The ideal goal is to provide the optimal nutrition to the premature infants with approximately the in-utero growth of a fetus of the same gestational age in terms of body weight as well as the body composition and organ development (Gidi et al., 2020; Wittwer & Hascoët, 2020). Breast milk not only provides the nutrients required, but also assists in the development of the gastrointestinal system by providing factors to stimulate the growth, motility, and maturation (Ottolini et al., 2020; Zhang et al., 2020). Breast milk is best suited to the infants needs to ensure a balanced nutrition with unaffected growth. Breast milk has been recognized as the golden standard because it has all the nutrients inclusive of the early immunization. The WHO has recognized the exclusive breastfeeding as giving infants breast milk only for six months without any other additional food or drink (WHO, 2018).

In recent years, this area has been significant advances in research of human milk for premature infants. So far, in Malaysia context, the research on this topic focuses on laboratory test for contamination of expressed milk (Nem-Yun, 2016). Research in these areas are usually carried out using quantitatively (Alonso-Díaz et al., 2016; Grazziotin

et al., 2016; Nakamura et al., 2016; Vizzari et al., 2020) It is generally agreed that expressed breast milk (EBM) contamination happen however, the issue can resolve if others researcher also exploring the real situation makes the contamination occur. Having greater insight into mothers, neonatal nurses and practice of human milk management would yield useful information about previous research. Understanding real situation in handling expressed human milk is not only important for acquiring new knowledge about EBM, but also for premature infants and the improvement of nursing care. The focus of this study is exploring experiences of mother, nurses in NICU and availability of nursing practices document in expressed human milk management in NICU.

This thesis consists of six chapters. Chapter one describes the background of the study. In chapter two, the researcher discussed 14 studies regarding experiences of handling EBM among mothers using qualitative synthesis. This chapter also discussed another 14 studies related neonatal nurses in promoting EBM using qualitative synthesis. Systematic literature review was used to search the current policies and procedures related EBM management and manage to be discussed 12 articles within this issue. This is followed by chapter three, where the research methodology and approach used is explained. In chapter four and five, the results of the study are presented and discussed. In the final chapter, the conclusion is highlighted to discuss this study findings for future recommendations based on nursing education, practice, and research. Then some limitation will be explained throughout the journey of this research. The following sections will include background of the study, problem statement, and significance of the study, research questions and research objectives.

1.2 BACKGROUND

Globally, fifteen million premature infants are born every year and approximately one million died because of the premature morbidities (WHO, 2012). The most common acute problems premature infants are respiratory difficulties, nutritional and feeding problem, hypothermia, electrolyte imbalance (hypoglycaemia, hypocalcaemia), intra-ventricular haemorrhage (IVH), necrotizing enterocolitis (NEC), liver immaturity, risk of infection, patent ductus arteriosus, anaemia of prematurity, retinopathy of prematurity and metabolic bone disease of prematurity (Lawn et al., 2013; WHO, 2012). Premature infants in neonatal intensive care unit (NICU) need adequate nutritional support to achieve normal developmental growth (Cooke, 2016; Grunberg et al., 2019; Hair et al., 2013), development of the gastrointestinal system and decreases the risk of Necrotizing enterocolitis (NEC), and late-onset sepsis (Boquien, 2018; Hair et al., 2018; Zhang et al., 2020). In recent years, breastmilk presents essential benefits to premature infants, mothers, and institutions. With an estimated 4 percent reduction in incidence, human milk offered a strong protective effect against NEC (Miller et al., 2018). Human milk has also provided a potential cost-effective reduction in length of stay for parents and hospitals and extreme premature retinopathy (ROP) (Miller et al., 2018).

Breast milk is best suited to the infants needs to ensure a balanced nutrition with unaffected growth. Breast milk has been recognized as the golden standard because it has all the nutrients inclusive of the early immunization (Lewis et al., 2017). Despite the importance of breast milk for premature infants in the NICU, breastfeeding seems impossible due to various reasons such as lack of professional support, mother-infant separated, infants' health condition and difficulties in maintaining milk volume (Wilson, 2012).

In recent years, this area has been significant advances in research of human milk for premature infants. Development of milk bank (Borges et al., 2017; Gelano et al., 2018; Murthy et al., 2019; Weaver et al., 2019), and donor breast milk (de Halleux et al., 2017; Kantorowska et al., 2016; Madore et al., 2017; Power et al., 2019) to meet the demand is the outcome of premature infants not receiving enough breast milk in NICU.

Mother recognized the benefits of breast milk in very premature infants during the NICU admission (Jackson, 2014; Kair et al., 2015). For mother of premature infants, EBM has emerged as a new method of lactation and motherhood (Kapoor & Jajoo, 2019). Mothers also shared negative feeling regarding pumping their breast milk (Bower et al., 2017; Henderson, 2015; Ikonen et al., 2016). Additionally, there is limited current studies concerning the lived experiences of mother in handling their EBM, particularly pertaining to motherhood challenges and support needs (Alves et al., 2016; Briere et al., 2015; O'Sullivan et al., 2017). Many quantitative studies have reported the contamination of the EBM (McMullan et al., 2018; Nem-Yun, 2016; Opperman et al., 2020) and this was associated with related lack of best practice for equipment preparation, expressing, storing and transport (Gharaibeh et al., 2016; Haiden et al., 2015; Rodrigo et al., 2018). Hence, there is needs to explore mother' practice in handling their EBM at home.

Health care provider especially neonatal nurses recognize the value of human milk and committed to EBM promotion (Froh et al., 2017; Shattnawi, 2017; Yang et al., 2018; Yilmazbaş et al., 2020). Hospital involvement in Breastfeeding Hospital Initiative (BFHI) has increased staff awareness in supporting EBM in NICU (Balogun et al., 2017; Esbati et al., 2020; Fok et al., 2020; Fradkin et al., 2020; Salem et al., 2020; Spatz, 2018; WHO, 2020). Despite the growing numbers of BFHI recognized, there is little-to-no data concerning the lived experiences of nurses' EBM support program,