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Determinants of successful breastfeeding by young mothers in New Zealand.

A thesis presented in partial fulfillment of the requirements for the degree of

Masters in Science

in

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Abstract

Background: International research has shown that younger mothers are less likely to initiate/maintain breastfeeding (BF) than older women. Optimising BF maintenance in young mothers is important because early cessation of BF has been associated with negative health outcomes for the infant, which may extend beyond infancy into adulthood. Despite this, little is known about the facilitators of successful BF in this group. Therefore, the purpose of this study was to investigate the factors that enabled a group of mothers who gave birth at a young age to successfully breastfeed for at least 4 months.

Objective: To gain an in-depth understanding of the factors that led to a successful breastfeeding experience in mothers who gave birth at a young age.

Methods: Seventeen positive deviants were identified. These were mothers who gave birth under the age of 25 years, who had successfully BF for at least 4 months. Participants were recruited through various support groups and breastfeeding networks. Semi-structured in-depth interviews were conducted in person or over the phone with each of the seventeen mothers. The interviews were recorded and transcribed, which enabled theme identification. Demographic information was also collected using a short questionnaire. A thematic analysis was used to analyse the qualitative data obtained from each mother's breastfeeding experiences. Interpretative phenomenology was used to extract themes from the transcripts, these were then double-checked by two researchers in the research team.

Results: Participants were located throughout the North Island of New Zealand (NZ). Eleven mothers identified themselves as NZ European, three mothers identified as NZ European and Māori, and one mother identified as NZ European and Hawaiian. The mothers had given birth between the age of 15 through to 24 years and these births occurred between 2004 and 2017.

Despite purposive sampling, of mothers who had successfully BF, participants identified core barriers to BF. These barriers were explored in depth before

enablers of BF could be identified and examined. The key barriers include lack of breastfeeding knowledge, expectations, which differed from the lived experience, the quality of the initial support for BF, lack of ongoing support for BF and initial difficulties with the practice BF.

Once the core barriers to BF had been fully explored, it was possible to identify and examine the enablers of successful BF. It became evident through the data analysis that the mothers found alternative solutions to overcome these barriers. These solutions were categorised into three key enablers, resilience in the face of adversity, a positive breastfeeding culture and the economy of BF. These factors facilitated the mothers to overcome the barriers they were faced with, which enabled them to successfully breastfeed.

Conclusion: Intrinsic motivation amongst positive deviants appears to be a driver of information and support seeking behaviour, which enhances self-efficacy and breastfeeding resilience amongst young mothers.

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Abbreviations

BF	Breastfeeding
BFHI	The Baby Friendly Hospital Initiative
EBF	Exclusive breastfeeding
GUINZ	Growing Up in New Zealand
MOH	Ministry of Health
NZ	New Zealand
NZBA	The New Zealand Breastfeeding Authority
OECD	Organisation for Economic Co-operation and Development
SD	Standard Deviation
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

Definitions used within this thesis

Exclusive breastfeeding	Solely breast milk, from the breast or expressed, and any prescribed medicines that have been given from birth (Ministry of Health, 2012).
Infant	Birth to 1 year (Ministry of Health, 2009).
Lactogenesis II	The onset of abundant milk secretion, which, usually occurs around 4-days postpartum, when milk secretion rises (Hill, Chatterton & Aldag, 1999; Kent, 2007).
Full breastfeeding	The infant has only had breast milk and no other liquids or solids, except for any prescribed medicines, in the past 48 hours (Ministry of Health, 2002).
Partial breastfeeding or mixed feeding	The infant has had some breast milk and some infant formula or other solid food in the past 48 hours (Ministry of Health, 2002).
Phenomenology	The study of situations that occur in the everyday world from the viewpoint of the person that is experiencing it (Kleiman, 2004).
Positive deviants	Individuals who share the same socioeconomic characteristics as their peers/other members of the community and yet manage to find ways to overcome barriers and actually practice positive behaviours without external interventions (Schooley & Morales, 2007).
Self-efficacy	One's belief in one's ability to succeed in specific situations or accomplish a task (National Breastfeeding Advisory Committee, 2008).

Chapter 1: Introduction

1.1 The context of breastfeeding

Globally each year, more than 800,000 preventable deaths occur in children under the age of five years old due to inadequate breastfeeding (BF) practice (Victoria et al., 2016). These deaths could be prevented by increasing the rates of optimal feeding practices (WHO & UNICEF, 2009), by achieving early initiation of BF and the provision of solely breast milk for the first six months, followed by BF in conjunction with complementary foods for two years or beyond (WHO, 2003).

A major factor associated with reduced rates of BF at six months is a mother's age. Younger women are more likely have a shorter duration of BF compared to older mothers (Forster, McLachlan, & Lumley, 2006; Scott, Aitkin, Binns, & Aroni, 1999). Currently very little is known about the factors which promote a longer BF duration in young mothers (Biro, Yelland & Brown, 2014). Therefore, more research is needed to identify the barriers and facilitators of BF maintenance in young mothers.

1.2 Breastfeeding in New Zealand

Currently, BF recommendations in NZ are aligned with those of the World Health Organisation (WHO) recommendations. Exclusive BF (EBF) is defined as solely breast milk, from the breast or expressed, and any prescribed medicines that have been given from birth (Ministry of Health, 2012). EBF is recommended until the infant is around six months. This is to be followed by a period of continued BF alongside the introduction of solids (MOH, 2008). However, any breastfeeding during the initial six months will benefit the infant (MOH, 2008).

Although breastfeeding initiation rates are high in New Zealand the overall duration of breastfeeding is not optimal. This is supported by recent BF rates on discharge from maternity facilities, which shows that the majority of infants in NZ were EBF at two weeks of age (MOH, 2010). However, as high BF rates are not

maintained, the Ministry of Health (MOH) set BF targets with the goal of improving BF duration (MOH, 2002). One initiative established by the MOH with the intention of increasing BF rates in NZ is the Baby Friendly Hospital Initiative (BFHI). As the BFHI has been found to positively impact BF rates in other countries (National Breastfeeding Committee, 2008).

In New Zealand, BF rates also vary between demographic groups. More specifically, younger mothers (MOH, 2015) and mothers from minority ethnic groups (Plunket Society, 2010) have lower rates of BF. Increasing the duration of breastfeeding in these mothers is a national objective because BF provides social, economic and environmental benefit to the infant, family and society (Gartner et al., 1997).

1.3 Breastfeeding in young mothers

The low level of BF maintenance in younger New Zealand mothers is concerning because birth rates among young women (15-24 years) are approximately one fifth of all live births (MOH, 2017). Figures from 2013 placed NZ second highest for youth births compared to other developed Western countries (OECD, 2017).

1.3.1 Barriers to breastfeeding

Exploring barriers to BF in young mothers may provide insight into factors which could be modified through BF promotion to enable these young women to BF. Age has been associated with several factors which have been found to negatively impact BF duration, for example, breastfeeding difficulties, lack of knowledge and the transition into adulthood. Breastfeeding difficulties are most profound immediately postpartum, while young mothers are starting their BF journey (Clapis et al., 2013), and can impact both initiation and duration of BF. Wambach & Cole (2000) also identified large gaps in knowledge within this population (Wambach & Cole, 2000). The transition into adulthood also means young women are required to make BF choices as people new to adult-life. This may result in mothers visualising feeding decisions in a different way to older mothers (Hunter & Magill-Cuerden, 2014). Therefore, due to the complexity of young childbearing

women's lives, advice will need to consider the barriers to breastfeeding in this population and tailor support to their specific needs.

1.3.2 Facilitators of breastfeeding

Young mothers tend to have positive attitudes toward breastfeeding. Yet, their desire to BF does not always translate into practice. They also have a desire to be a good mother (Hunter & Magill-Cuerden, 2014). This need to be a good mother is what enables these women to overcome the negative attitudes people show toward them throughout their pregnancy. It may also contribute to the intention many young mothers have to BF. However, in practice, many of these young mothers never start BF or stop soon after giving birth (Hunter & Magill-Cuerden, 2014; Wambach & Koehn, 2004). They also desire community and family integration. Yet, the lack of support some mothers receive from such social networks can make EBF hard to maintain (Hunter & Magill-Cuerden, 2014). Their initial experiences may also contribute to this gap between the intention to BF and maintenance of BF (DiGirolamo et al., 2005).

Breastfeeding support is an important facilitator of BF success. There are different types of support which are important to young mothers and promote successful BF. The different types of support include network, information, esteem, emotional and instrumental support (Dykes, Moran, Burt, & Edwards, 2003; Moran, Edwards, Dykes, & Downe, 2007). Not all support is equal; the type of support they are receiving is also important. The most helpful support for young mothers to continue to BF is emotional, network and esteem support (Dykes et al., 2007).

1.4 Theoretical approach

In this study, positive deviants are identified. These are individuals who demonstrate healthful behaviours that deviate from the norm (The Positive Deviance Initiative, 2010). In this instance, positive deviants are young mothers who have been able to breastfeed successfully (partial or exclusive BF for more than four months).

There is a paucity of evidence identifying facilitators of BF in young women, which is problematic and warrants further study. The positive deviant approach will provide a greater understanding of the BF experience of individuals who have maintained successful BF. This will identify factors which enabled the young mothers to overcome barriers and continue to BF.

This study will apply the phenomenological framework using in-depth, semi-structured, interviews. This is followed by, analysis to find associations and common factors leading to successful BF (Morse, 1995; Rice, 1999).

1.5 Significance of the research

Breastfeeding in young mothers is a significant challenge in health care. Although age has been identified as a barrier to BF, limited research has been conducted to identify factors that contribute to BF maintenance in young women. Therefore, learning about the experiences of young mothers who successfully BF will provide insight into the factors which promote BF maintenance in this group. Further research is required to identify the enabling factors for young women.

Understanding the experiences of successful young BF women can highlight creative solutions and ways to overcome the present barriers (Hunter & Magill-Cuerden, 2014). It will identify enabling factors already present in NZ. The solutions the mothers have been able to find themselves can then be applied to the wider group of young mothers. And so, this is likely to improve the effectiveness of BF initiatives in NZ.

1.6 Purpose of the study

1.6.1 Aim

To explore and understand the factors enabling New Zealand mothers who gave birth at a young age (<25 years old) to BF for at least 4 months.

1.6.2 Objectives

1. To explore the young mothers' experience of successful breastfeeding.
2. To identify the key themes, which emerge as contributing to the breastfeeding experience.

3. To gain an in-depth understanding of enabling factors which contribute to breastfeeding success.

1.7 Thesis structure

This study is structured into four chapters. The first chapter puts the research into context and explains the purpose of conducting this study. The second chapter reviews the literature, which covers the context of BF, BF rates, public health implications, beneficial effects of BF, barriers and facilitators of BF and current available evidence on BF in young mothers. Chapter 3 is presented as a generic manuscript for publication but is formatted to meet the requirements of the thesis. Finally, Chapter 4 provides a summary of this study, the strengths and limitations and identifies key recommendations for future research.

1.8 Contributions of the researchers

Table 1.1 Researchers' contributions to this study

Author	Contributions to Thesis
Rebekah Polglaze	Led the research, applied for ethics, designed research including questionnaires and protocols, recruited participants, conducted research, qualitatively analysed data, interpreted results, main author of thesis and manuscript.
Dr. Cathryn Conlon	Academic supervisor, assisted with ethics application, designed research, assisted with development of questionnaires and protocols, revised and approved the thesis and manuscript.
Roger Hughes	Professional supervisor, developed the conceptual research question, designed research, revised and approved the thesis and manuscript.
Owen Mugridge	Assisted in recruitment of study participants.

Chapter 2: Literature review

2.1 The context of breastfeeding

2.1.1 Introduction

This chapter provides a review of the current literature examining breastfeeding (BF) recommendations and BF practice globally, including New Zealand. BF is a traditional practice and the biological norm for infant (birth – 2 years) feeding in most cultures (Ministry of Health, 2012). Exclusive breastfeeding (EBF) provides infants with the optimum nutrition required for growth and development and also supports their emotional wellbeing. Factors already identified in the literature relating to the initiation and duration of EBF will be explored, with a specific focus on BF practices in young mothers (<25 years).

Literature was accessed via Scopus, a database of scientific articles. Scopus was chosen because it is a database with a comprehensive collection of international medical science and health journals. In order to conduct an unbiased review, and to widen the search a second article database - Medline was also used. Key search terms used included: breastfeeding, breastfeeding rates, breastfeeding initiation, breastfeeding duration, adolescents, teenage, young mother(s), positive deviants, and qualitative analysis. Google Scholar was used as necessary to assist in locating full-text articles unavailable through Scopus or Medline. Reference lists of key articles were screened to locate extra articles. An article was only included in this review if, it was written in English, the full text was available and it was published in the past 40 years.

2.1.2 Breastfeeding recommendations

Globally each year, more than 800,000 preventable deaths occur in children under 5 due to inadequate BF practice (World Health Organisation, 2003). Optimum BF practice, as recommended in the Global BF Strategy could prevent these deaths (WHO & UNICEF, 2009). These deaths could be prevented if BF is initiated within the first hour after birth, with BF continuing up to two years of age or beyond (WHO, 2003).

More specifically, the WHO recommends exclusive BF until infants are six months (or 26 weeks) of age. At six months of age they should receive nutritional, adequate and safe food to complement BF (Kramer & Kakuma, 2002). WHO recommendations are based on the findings from a systematic review by Kramer (2002) compared the effect of EBF for 6–7 months with ‘EBF for at least 3–4 months and mixed feeding thereafter. This review, which was updated in 2012 (Kramer & Kakuma, 2012), found lower morbidity for gastrointestinal infection and a reduced risk of respiratory infection in infancy in infants EBF for six months or more compared with infants who were EBF for three to four months or an infant partially BF (Kramer & Kakuma, 2002). Therefore, the WHO recommendation forms a global health goal, which aims to decrease infant mortality and morbidity (WHO & UNICEF, 2009).

Despite the WHO recommendations, some mothers choose to partially BF their infant. Partial BF occurs when “an infant has had some breast milk and some infant formula or other solid food in the past 48 hours” (Ministry of Health, 2002). The BF Collective target for partial BF at one year is 80%. Partial BF may be more realistic for mothers to achieve, as 74% of babies are partially BF at one year of age (WHO & UNICEF, 2017a). Although EBF until six-months is optimal, partial BF before six-months of age is better than not BF. This is because any BF will benefit the infant (MOH, 2011).

BF recommendations in New Zealand are aligned with the WHO recommendations. EBF is recommended until the infant is around six months of age and is then followed by the introduction of complementary foods (WHO, 2003). The New Zealand recommendations for BF differ slightly from the WHO. BF is advised for 12 months or beyond, rather than stating two years or beyond (MOH, 2008). In New Zealand, health professionals felt two years could be an unachievable goal. Particularly, for Māori and Pacific women, who currently do not BF for as long as Pākeha women (Plunket Society, 2010).

2.1.3 Breastfeeding rates

2.1.3.1 Breastfeeding rates worldwide

Although global data on breastfeeding is incomplete – and at times difficult to interpret, there are strong indications that the recommended practice of exclusive breastfeeding (EBF) during the first six months of an infant’s life is the exception rather than the rule. Overall, the rate of EBF in infants less than six months old is 40%, with only 23 countries achieving a rate of 60% or more. Rates in some regions are particularly low; in the Americas, for instance, only one in twenty countries has achieved an EBF rate of 60% or more (WHO & UNICEF, 2017a). Of those mothers who exclusively BF, many still BF for a shorter duration than recommended (Quigley, Carson, Sacker & Kelly, 2016).

The low overall levels of EBF, and for the wide variations between countries can be attributed to a wide range of sociocultural factors. In order to identify the relevant factors in each country, to acknowledge progress and to advocate for continued improvements, the WHO and UNICEF have developed a global breastfeeding scorecard. Factors include national policies (e.g. legislation; the availability of paid maternity leave) and regional or local initiatives (e.g. the availability of community breastfeeding programs; the provision of counselling) (WHO & UNICEF, 2017b). The use of this scorecard is one way in which the BF Collective, a partnership of non-governmental organisations led by WHO and UNICEF aims to increase EBF rates to over 60% and early BF initiations to 70% by the year 2030 (WHO & UNICEF, 2017a).

2.1.3.2 Breastfeeding rates in New Zealand

New Zealand data has traditionally focused more on the issues of initiation and duration of breastfeeding, rather than on whether it is exclusive or partial. Therefore, the data is not directly comparable to the WHO and UNICEF reports referred to above. Overall, New Zealand data indicates a long-term trend towards higher levels of breastfeeding, at least during the first few months, but significant demographic variation.

High-quality long-term data on breastfeeding in New Zealand comes from the longstanding practice of visits by Plunket nurses to mothers of newborns between the first two to six weeks after birth. This indicates a nearly doubling of breastfeeding of newborns during the thirty-year period up to 2000 (from 48 – 84%), though little further improvement was found in the subsequent decade (Plunket Society, 2010). The high overall rates of initiation of breastfeeding are further supported by Ministry of Health statistics indicating that approximately 93% of New Zealand mothers were breastfeeding their newborns two weeks postpartum (MOH, 2017).

The main area of concern in relation to New Zealand, therefore, is not initiation of breastfeeding but maintenance of the practice. The median age to stop EBF in New Zealand is 3.85 months (Morton et al., 2012). This is observed alongside a steady decline in BF rates within the first six months postpartum (MOH, 2009). Growing Up in New Zealand (GUiNZ), a large prospective longitudinal study also found 94% of mothers stopped EBF by 24 weeks (Morton et al., 2012). Consequently, the Ministry of Health set targets for EBF and full BF. Currently, BF rates do not meet these targets. See Table 2.1 for further detail (MOH, 2002; MOH, 2010 Plunket Society, 2010). Because of these concerns regarding the low numbers of New Zealand mothers who continue breastfeeding after the first few months, the aim of government policy is to focus on improving BF rates at six weeks, three months, six months and onwards (MOH, 2009).

Table 2.1 EBF + full BF rates at 2 weeks, 6 weeks, 3 month and 6 months postpartum compared to the 2010 targets set by the Ministry of Health in 2002 (MOH, 2002; MOH 2010; Plunket Society, 2010)

Time Postpartum	2010 BF targets for EBF + Full BF (%)	Rate of EBF + Full BF* (%)
2 weeks	/	93%
6 weeks	90	65
3 months	70	55
6 months	27	26

*This data is from Plunket society, who see almost nine out of ten of NZ infants.

Another area of concern in relation to breastfeeding rates in New Zealand is the wide demographic variations, with low BF rates among certain age and ethnic groups. For instance, young mothers are the least likely to EBF, with mothers less than 20 years of age having the lowest BF initiation rates overall, as shown in Table 2.2 (MOH, 2017). Aside from age, the minority ethnic groups, which have lower BF rates compared to the rest of the New Zealand population are Māori, Pacific and Asian. These BF rates are lower, irrespective of time since birth. As shown in Table 2.3 (Plunket Society, 2010). The impact these demographic factors have on BF is further discussed in section 2.4.2.2.

Table 2.2 Rates of breastfeeding in New Zealand at two weeks postpartum, by maternal age group (MOH, 2017).

Maternal Age	Exclusive BF (%)	Full BF (%)	Partial BF (%)	TOTAL (%)
<20 years	60.9	7.7	16.7	85.3
20-24	67.9	8.4	13.9	90.2
25-29	70.9	8.7	13.5	93.1
30-34	71.1	9.6	14.0	94.7
35-39	68.9	9.8	16.0	94.7
40+ years	62.0	10.3	20.9	93.2
TOTAL (%)	69.3	9.1	14.6	

Table 2.3 New Zealand exclusive and full breastfeeding rates in 2009, by ethnicity (Plunket Society, 2010).

Time since birth	Ethnicity	Percentage of mothers continuing to EBF and Full BF
2 - 5 weeks	Māori	59%
	Pacific	54%
	Asian	60%
	Pākeha	70%
16 weeks - 7 months	Māori	19%
	Pacific	20%
	Asian	19%
	Pākeha	30%

2.2 Breastfeeding from a public health perspective

2.2.1 Determinants of breastfeeding

There are many components required to promote successful BF. Rollins et al., (2016) revised several conceptual frameworks, in order to understand the complexities of BF promotion and identify the determinants of BF. The revised conceptual model for the determinants of BF consists of three categories. These are the structural, settings and individual determinants of BF (Rollins et al., 2016). Structural determinants associated with BF include, the social factors affecting the population as a whole. For example, advertising, social trends, media, and availability of commercial products. Settings in which can affect BF mothers include, health systems, family/community environments and the workplace. At the individual level, a women's BF behaviour is influenced by personal attributes, for example, age, education, weight and confidence (Thulier & Mercer, 2009). It is also influenced by attributes of her baby, for example, wellbeing, sex, and temperament. BF is a behaviour built on the relationship between mother and baby (Jansen, Weerth & Riksen-Walraven, 2008).

Although the conceptual model categorises the determinants, the promotion of successful BF is complex because each component is interlinked. Interventions can impact any of the above determinants, such interventions include, policy, legislation, media and social mobilisation in order to change social attitude and practice. For example, changes in structural determinants affect three main settings, the cultural, social and market context (Rollins et al., 2016). Which, in turn results in the mother internalising the influences/interventions put in place at the structural and settings levels (Rollins et al., 2016).

2.2.2 Public health implications

BF success is not just the sole responsibility of a mother. Yet, the developed world is not currently an enabling or supportive environment for many mothers who desire to BF (Dyson, Green, Renfrew, McMillan, & Woolridge, 2010; Shaw, Wallace, & Bansal, 2003). BF promotion needs to take a collective societal approach. This means financial investment and political support are required to promote, protect and support BF. Society must realise the advantage BF can provide to children, women, and the wider population (Rollins et al., 2016). This is possible if countries rapidly improve BF practice by up-scaling current interventions, programs and policies. It is something that is very achievable. However, the use of marketing by the large and ever growing breast milk substitute industry, which is large and still growing, to undermine the effort to improve BF will need to change. This will create a more supportive environment for mothers trying to BF (Rollins et al., 2016).

2.2.3 Public health approach to improve breastfeeding in New Zealand

The Global BF strategy encourages, protects and supports BF in order to promote mothers to successfully BF. As part of this strategy, the ‘Ten Steps to Successful Breastfeeding’ were established (UNICEF, 2005). These steps are now central in many New Zealand MOH documents and initiatives (Ministry of Health, 2006; National Breastfeeding Committee, 2009). In 1999, the MOH, known as the Health Funding Authority at the time, contracted to The New Zealand Breastfeeding Authority (NZBA) to implement the Baby Friendly Hospital Initiative (BFHI) in New Zealand along with the New Zealand National Strategic Plan of Action for Breastfeeding 2008-2012.

The BFHI was created to meet the ‘Ten Steps to Successful BF’ and address the poor BF rates and early weaning prevalent in New Zealand (NBAC, 2009; NZBA, 2014; WHO, 2003). To obtain the baby friendly accreditation, hospitals are required to achieve a minimum EBF rate of 75% upon discharge, comply with the ‘Ten Steps’ and adhere to the international code of marketing of breast-milk substitutes and subsequent relevant World Health Assembly resolutions (NZBA, 2014). Since the BFHI was established, 98% of hospitals have gained accreditation to the internationally recognised program, which has positively impacted on national BF (NBAC, 2009; NZBA, 2014). Presently EBF rates on discharge from a BFHI accredited maternity service are 84.4% (Plunket Society, 2010).

2.3 Beneficial effects of breastfeeding

Breastfeeding provides optimal nutrition to the infant and is associated with an array of health benefits (MOH, 2002 & 2008). These benefits, detailed below are for the infant, the mother and also society.

2.3.1 Specificity of human milk

The protein found in infant formula reflects the protein seen in mature human milk (Lönnerdal, 2008). It has more protein overall and also a higher ratio of whey to casein (El- Agamy, 2007). The ratio of whey to casein protein in breast milk is approximately 80:20. More specifically, however, it is 90:10 for the first few months postpartum, reducing to 60:40 once lactation is established (around 2 – 3 months), and 50:50 later on in lactation (Darragh & Lönnerdal, 2011). This demonstrates that breast milk is dynamic and fluid and able to change depending on the infant’s needs. Formula is not dynamic and cannot do this. The protein in formula is also less bioavailable than what is found in breast milk (Le Huerou-Luron, Blat & Boudry, 2010).

There is lower concentration of both the lactose and the lipids in early breast milk than there is in infant formula. The specific distribution of the macronutrient (carbohydrate, fat and protein) contributes toward a food source that is readily digestible, which means the infant can utilise the nutrients more effectively. The lipids present in infant formula differ markedly to those found in breast milk.

Therefore, breast milk is more beneficial for the gastrointestinal maturation of an infant compared to infant formula (Delplanque et al., 2015; Le Huerou- Luron et al., 2010). Although their physiological role is not yet fully understood, lipid composition is of utmost importance to infant growth and development.

Aside from the nutritional aspect, breast milk has a number of other benefits. It provides the infant with various growth factors, nucleotides, maternal antibodies, immunologic components, hormones, cytokines and enzymes. Further information on these benefits is presented in the review paper written by Le Huerou-Luron et al., 2010. All of these components work together to support organ development, in particular, the digestive system. They also enhance the maturity of the infant's own immune system and elicit a protective response in the infant against several illnesses (especially infectious diseases) (Weaver, 1997; Le Huerou-Luron et al., 2010). Therefore, this highlights one of the limitations of infant formula. It is not specific to the needs of the infant or their developmental requirements, which change as the infant grows (Delplanque et al., 2015).

2.3.2 Benefits of breastfeeding for the infant

Breast milk is readily digested and supplies sufficient energy and nutrients that an infant requires for the first six months of life (Campbell, 1996; Le Huerou-Luron et al., 2010). One limitation to breast milk providing the infant with the appropriate nutrition is if the mother is vitamin D deficient (Dawodu & Tsang, 2012), or has a sub-optimal diet (Innis, 2014). Breast milk has also been shown to help reduce infant hospitalisation and mortality (Campbell, 1996; Bachrach, Schwarz & Bachrach, 2003; MOH, 2008).

Aside from benefits in infancy, there is evidence that BF has health benefits, which extend into adulthood. Conditions, where evidence has proven such benefits from BF include, cardiovascular disease, diabetes (WHO, 2007; WHO, 2013; Chung et al., 2007) and obesity/overweight (WHO, 2007; Chung et al., 2007; Cope & Allison, 2008).

Conversely, not exclusively BF is associated with a number of health risks. For example, NZ research has reported not EBF is major risk factor for sudden infant

death syndrome (Davidson-Rada, Caldis & Tonkin, 1995; Mitchell, Brunt & Everard, 1994; Mitchell et al., 1997; Mitchell & Thompson, 2001). Research also indicates, not exclusively BF within the first six months of an infant's life may increase the severity and incidence of acute respiratory tract infections, and could potentially result in death (Grant et al., 2011).

2.3.3 Benefits to mothers of breastfeeding

There are several benefits of BF for the mother also. BF may aid women to lose the weight they have gained throughout pregnancy (Campbell, 1996), and help them develop an intimate bond with their infant (Jansen, Weerth & Riksen-Walraven, 2008). It may be useful as a natural form of contraception (Campbell, 1996; Lawrence, 2000), and to avoid postnatal depression (Lawrence, 2000; Chung et al., 2007). There is emerging evidence that BF is also linked to a reduced risk for some cancers (Bartick, 2013; Salone, Vann & Dee, 2013), for example ovarian cancer (Jordan, 2012; Feng, Chen & Shen, 2014) and breast cancer (Do Carmo França-Botelho, 2012). However, further investigation is required to determine causality (Chung et al., 2007).

2.3.4 Benefits to society of breastfeeding

Benefits of adequate BF for society are largely economic. Economic benefits occur when both direct and indirect health costs associated with preventable diseases are avoided (Almroth, Greiner, & Latham, 1979; Bartick & Reinhold, 2010; Renfrew et al., 2012; Rollins et al., 2016). The pediatric diseases found to have risk ratios favouring BF include, sudden unexplained death of an infant, asthma, necrotizing enterocolitis, atopic dermatitis and childhood obesity (Bartick & Reinhold, 2010). A key approach to avoid these preventable diseases is to improve EBF maintenance (Bartick & Reinhold, 2010; Fisher 2010). This would be possible if families adhered to the World Health Organisation (WHO) guidelines, to EBF for the first six months (Bartick & Reinhold, 2010). Furthermore, a New Zealand study found, increasing the prevalence of EBF at six months postpartum to 50% would reduce hospital costs by \$12.7 million per year. This reduction in hospital costs is associated with the reduced hospitalisation of infants aged less than 12 months (Fisher, 2010).

2.4 Barriers and facilitators to breastfeeding initiation and duration

2.4.1 Breastfeeding initiation

A key longitudinal study conducted in the 1970's identified that breastfeeding behaviour after birth was associated with breastfeeding durations (Salariya, Vann & Dee, 1978). In this early study women were randomly assigned to either early initiation of BF (within 10 minutes of birth) or late initiation of BF (4-6 hours after birth). Then these mothers were then assigned to either feed their infants every 2 hours or every 4 hours. Women who were randomised to early initiation of BF and then feeding their infants every 2 hours had the longest breastfeeding duration (Salariya, Vann & Dee, 1978). This seminal study provides evidence for the recommendations around BF initiation, as part of the Ministry of Health's breastfeeding action plan (2002).

2.4.2 Breastfeeding duration

Factors affecting BF duration in Western countries have been classified into four categories, psychological, biological, social, and demographic factors, are summarised in Table 2.4 (Thulier & Mercer, 2009).

Table 2.4 Factors which affect breastfeeding duration in Western countries (Thulier & Mercer, 2009).

Psychological	Biological	Social	Demographic
<ul style="list-style-type: none">• Maternal confidence• Maternal intention• Stress• Depression	<ul style="list-style-type: none">• Maternal obesity• Maternal and infant physical problems• Delivery methods• Inadequate milk supply• Smoking• Parity	<ul style="list-style-type: none">• Maternal employment• Social support• Family support	<ul style="list-style-type: none">• Maternal age• Maternal ethnicity• Education• Family income• Marital situation

2.4.2.1 Psychological factors

Several psychological factors have been associated with successful BF. These include a mother's confidence, interest in BF and intention to BF (Morton et al., 2012). Maternal confidence is also known as self-efficacy (Meedyia et al., 2010), which is 'one's belief in one's ability to succeed in specific situations or accomplish a task' (NBAC, 2008). Self-efficacy is positively associated with the perception of sufficient milk supply (Meedyia et al., 2010; National Breastfeeding Advisory Committee, 2008) and overcoming difficulties in the initial phase of BF (DiGirolamo et al., 2005). This is important because increasing maternal self-efficacy may also increase BF initiation and duration.

Psychological factors have also been linked to less desirable BF practices, such as poor BF initiation and early cessation. Early BF cessation occurs if an infant is weaned prior to the recommended guidelines (WHO, 2003). However, it may also occur if solids are introduced to an infant prior to 17 weeks (Agostoni et al., 2008). Some factors negatively linked to BF maintenance include embarrassment to feed, a lack of self-confidence, no intention to BF/a negative attitude (Heath et al., 2002), stress, postnatal depression and tiredness (Butler et al., 2002; Morton et al., 2012). Perception of milk supply and the ability to provide enough milk to the infant are two more factors affecting BF duration. Gatti (2008) reviewed this topic thoroughly and found the perception of inadequate milk supply was significantly linked with lower scores of maternal confidence, satisfaction, and self-efficacy.

2.4.2.2 Demographic factors

There are several demographic factors associated with whether a mother is more likely to be successful at BF. There is a positive correlation between maternal age and duration of BF [odds ratio = 0.50, 95% confidence interval 0.34– 0.74] (Scott, Aitkin, Binns & Aroni, 1999). This means a woman aged 30 years, was approximately half as likely to stop BF, as a woman aged 20 years. In general, the older a woman is the longer she is likely to BF (Scott et al., 1999). The father's preference for BF has been associated with longer BF duration (Scott et al., 1999). This suggests partners influence BF success by acting as either supports or deterrents, based on their BF preferences (Scott et al., 1999; Scott, Landers, Hughes & Binns, 2001). GUiNZ also found, a large proportion of New Zealand

mothers with a higher educational qualification plan to BF their infant (Morton et al., 2010). Other studies in Western populations have also found, maternal education to impact BF success. Marital status, socioeconomic status and ethnicity have also been associated with BF practice. Women, who are older, married, have a higher educational qualification or have a higher socioeconomic status are more likely to initiate and continue to BF their infants (Callen & Pinelli, 2004; Ford & Lobbok, 1990; Meedya et al., 2010).

An association is also seen between ethnicity and BF duration. In New Zealand, minority groups such as Māori, Pacific and Asian have a lower rate of BF compared to Pākeha (Table 2.3). Prior to European colonisation, all Māori infants were breastfed and lactating mothers were supported and valued. Since colonisation, Māori and Pacific populations are more likely to have a lower socioeconomic status compared to other ethnic groups. Socioeconomic status, which has been linked to BF rates and may be a contributing factor for the reduced BF rates in these groups (NBAC, 2008).

2.4.2.3 Social factors

One social factor associated with BF duration is the attitude of health professionals toward mothers. During the 20th century, Western general practitioners (GPs) were significantly involved in the "medicalisation" of BF (Ryan & Grace, 2001). In New Zealand, this medicalisation was linked with the hospitalisation of women for their childbirth and strictly timed feeding regimes. This standardised approach to infant feeding also led to strong recommendations for women to switch from BF to bottle-feeding (Ryan & Grace, 2001). Steadily over the past few decades, this medicalisation of infant feeding has declined. This change in emphasis is shown by the fact that 98% of NZ hospitals have gained accreditation to the internationally recognised BFHI, as mentioned earlier in section 2.2.1. This has improved the social environment around BF and positively impacted on national BF rates (NBAC, 2009; NZBA, 2014).

The perceived need for women to return to employment soon after birth is another social barrier to BF in NZ. This need to return to work shortly after birth is driven by the NZ law, which entitles mothers to be paid maternity leave for up to 18-

weeks, with the option to extend their leave, unpaid, to one year postpartum (Ministry of Business, Innovation and Employment, 2012). There is a considerable gap between the 18-week paid parental leave offered in NZ and the WHO recommendations to EBF to six months (WHO, 2003). Furthermore, NZ is among the most restrictive countries in the OECD in terms of the employment criteria for accessing parental leave and lack flexibility in the way leave may be used (Families Commission, 2007).

The short duration of paid parental leave is problematic because nearly one-third of all NZ mothers took the minimum amount of 18-weeks of paid parental leave available to them. Although the majority of mothers take some form of maternity leave, approximately 16% of mothers previously in paid employment did not take any leave (GUiNZ, 2014). In these cases, this is concerning because there is a negative correlation between mothers returning to work and BF initiation/maintenance (Chatterji & Frick, 2005; Rondó & Souza, 2007). The groups of mothers who were more likely to return to work immediately postpartum and not take any paid or unpaid maternity leave include younger mothers and Māori (GUiNZ, 2014). These groups of mothers have already been discussed in section 2.4.2.2, with regard to demographic variation in BF rates. Approximately one-quarter of mothers less than 25 years of age (36%) and mothers who identified their own ethnicity as Māori (23%), did not take any leave. The mothers who do not take any paid parental leave may need to return immediately to work for financial reasons (GUiNZ, 2014). Therefore, this may contribute to the demographic variation in BF maintenance found in both younger mothers and Māori mothers.

Social factors, which can positively or negatively influence BF practices and duration, include maternal support and information available to the mother. GUiNZ found New Zealand women obtain advice and support from Plunket nurses, friends and family, books, the internet and magazines, their midwife and GP, and in some instances pharmacists (Morton et al., 2012). The quality and evidence base of the advice they receive is clearly essential. For example, consultation with a traditional healer was linked with a reduction in BF duration in the Pacific Island community

in New Zealand (Butler et al., 2002). On the other hand, Plunket nurses positively impact BF duration. There has been a 35% increase in BF over the last 30 years, which was observed by Plunket nurses in their first visit at two weeks postpartum (Plunket Society, 2010).

Another factor, which can have a positive or negative influence on BF practices, is BF culture. Even though BF is the biological norm for infant feeding (Ministry of Health, 2009), it is not always the cultural norm. In some Western societies, artificial feeding is regarded as convenient, safe and usual (Dyson, Green, Renfrew, McMillan, & Woolridge, 2010). If mothers come from such an environment, their intention to BF may go against cultural norms and expectations (Hunter & Magill-Cuerden, 2014). It is these cultural norms within a family and society, which strongly influence feeding choices (Benson, 1996). A positive BF culture is, therefore, an important component of BF success. In New Zealand, when considering the need for a positive BF culture, the worldview of both Māori and Pākehā must be acknowledged. Historically, breastfeeding was the cultural norm for Māori. However, this has been altered due to their prolonged exposure to Western society (Glover, Manaena-Biddle & Waldon, 2007).

In addition to broader socio-cultural factors, influences of friends and family are particularly important to BF duration. In particular, support from the partner is essential to BF success (Thulier & Mercer, 2009). The majority of partners of most NZ women are favourable for BF. However, approximately one in ten partners regard bottle-feeding as superior (Heath et al., 2002). In these cases, enhancing partner support may be an important aspect to consider when creating a culture that enables New Zealand women to BF their baby for longer (Scott et al., 2001). Furthermore, first-time mothers may lack the supportive socio-cultural environment, which mothers of more than one child have access to. Overall, mothers with more than one child have the support networks of other mothers and grandmothers, which helps connect them with health and community appropriate to their needs (NBAC, 2008). These social supports all contribute to the development of a BF culture, which promotes successful BF.

Consequently, social support from other BF mothers may result in a first-time mother obtaining prior exposure to BF. Prior exposure to BF may occur by mothers witnessing BF first hand. An earlier study found, if mothers had previously seen BF they were more likely to be successful themselves (Ineichen et al, 1997). Prior exposure to BF is not limited to first-hand experience. Mothers also obtained prior exposure to BF when having antenatal discussions with their midwife, their own mother or their partner (Ineichen, Pierce, & Lawrenson, 1997). Mothers who had discussed BF were more likely to BF successfully. Additionally, antenatal BF education has been found to significantly impact maintenance of BF to six weeks ($p < 0.001$) (Duffy, Percival & Kershaw, 1997).

2.4.2.4 Biological factors

Inadequate milk supply is continually reported in the literature as a fundamental reason for women to stop BF and introduce artificial milk (Henly et al., 1995; Thulier & Mercer, 2009). New Zealand research is consistent with the results reported in the literature. New Zealand studies have found inadequate milk supply to be one of the principal risk factors linked to shorter BF duration/early BF cessation (Essex, Smale & Geddis, 1995; Heath et al., 2002; Butler et al., 2002; Butler, Tukuitonga, Paterson & Williams, 2004). This BF cessation occurs with any BF, however, it affects EBF in particular. A New Zealand longitudinal study focusing on Pacific women found, participants frequently reported inadequate milk supply as a key factor relating to BF cessation. However, the prevalence of this varied between differing BF practices. For example, of the women who EBF their infant, 21% reported they felt they had inadequate milk supply. However, more than 50% of the women who mixed fed, and 53% of those mothers exclusively formula feeding reported this (Butler et al., 2002). Growing Up in New Zealand found, 52% of women (from the Counties-Manukau, Auckland and Waikato regions) discontinued BF by 9-months postpartum. Reasons for BF cessation were multi-factorial. The biggest reason, however, was inadequate breast milk (Morton et al., 2012).

Inadequate milk supply may be due to several interlinked factors. It is important to consider all aspects that could contribute towards this when trying to understand the reasons for early BF cessation. Maternal factors associated with inadequate

milk supply include physical aspects, for example, fatigue, sleep disturbance (Dykes, Moran, Burt & Edwards, 2003), and breast pain (Thulier & Mercer, 2009). Psychological aspects, for example, stress, confidence and intention to BF (Kronborg & Vaeth, 2004; Thulier & Mercer, 2009). Biological factors, for example, a damaged duct/neurological system and/or inappropriate hormone concentration (prolactin, oestrogen, and oxytocin) (Kent, Prime & Garbin, 2012), and impaired glandular tissue (Neifert, Seacat & Jobe, 1985; Kent et al., 2012). It is interesting that despite being so commonly reported by mothers as a reason to stop BF, it is predicted as few as 5% of women are not physically able to produce sufficient breast milk, due to biological reasons (Thulier & Mercer, 2009; Kent et al., 2012).

Perceived inadequate milk supply, however, may result in incomplete milk removal from the breast, which will biologically alter a mother's milk production. It will decrease milk production and so also reduce supply (Fraser & Cullen, 2009). The perception of an inadequate milk supply is thought to be more common than actually having an inadequate milk supply (Gatti, 2008; Thulier & Mercer, 2009). The signs of inadequate milk supply often described by mothers support this belief. These include infant crying, waking during the night, and fussiness. These are not reliable signs of inadequate milk supply because they may also occur due to other reasons, such as the infant not receiving enough milk despite it being available (more related to feeding technique). These signs may also be associated with normal infant behaviour (Gatti, 2008; Kent et al., 2012).

In order to avoid perceived inadequate milk supply and so increase BF rates, it appears women may require further education around the signs of normal BF (Heath et al., 2002). This could include information about when BF is sufficient (after the 4th day). These signs include wet diapers of 6 or more per day and how the breast should feel throughout a feeding session (getting softer and lighter as the feed progresses) (Smith & Tully, 2001).

Other biological factors have been linked to shorter BF duration. Some birthing practices and methods have also been linked with early BF cessation, such as

caesarean delivery (Butler et al., 2004) and epidural pain relief (Henderson et al., 2003). Maternal obesity has been linked with late lactogenesis II, the onset of abundant milk secretion, which, usually occurs around 4-days postpartum, when milk secretion rises (Hill, Chatterton & Aldag, 1999; Kent, 2007). It has also been linked to reduced milk production, which may result in early BF cessation (Amir & Donath, 2007). Maternal pain or sore breasts throughout lactation is another major factor identified by New Zealand women, which affects BF maintenance (Butler et al., 2002; Heath et al., 2002). Several studies found maternal smoking is also associated with earlier BF cessation (Ford et al., 1994; Butler et al., 2002; Butler et al., 2004). Twice as many women who smoke more than 20 cigarettes per day were found to give up BF after leaving hospital compared to women who do not smoke (Ford et al., 1994).

2.5 Breastfeeding and young mothers.

Overseas research has identified that, although young mothers are just as likely to initiate BF as older mothers, they are less likely to be BF at 1 week, 6 weeks and 6 months post-partum (Biro et al., 2014). In addition, a maternal age less than 25 years ($P=0.000$) is one of the strongest predictors to cease BF (Forde & Miller, 2010).

This is problematic because approximately one-fifth of all live births in New Zealand are to mothers less than 25 years old (Ministry of Health, 2017). However, there is very little evidence on the factors, which promote BF in this group (Biro, Yelland, & Brown, 2014; Forde & Miller, 2010; Scott, Aitkin, Binns, & Aroni, 1999). Therefore, understanding what factors promote and inhibit BF continuation in this population is essential for increasing BF continuation for young mothers.

2.5.1 Barriers and Challenges to breastfeeding faced by young mothers

There is also a positive correlation between age and several factors, which have been negatively associated with BF maintenance. These factors, which present as barriers to BF duration, include having a health care concession card, being single, not finishing high school education, having the first baby and smoking (Biro et al., 2014).

Furthermore, several key challenges faced young mums have been identified as reasons to stop BF. This includes, going back to school/work, sore nipples, not liking the idea, embarrassment, having to do it all by themselves, beliefs of mothers, partners and friends influence their decision to stop BF (Camarotti, Nakano, Pereira, Medeiros, & Monteiro, 2011; Clapis, Cangiani Fabbro, & Ruiz Beretta, 2013; Ineichen et al., 1997). Two studies from Australia and the UK found that feeding in front of men, even family members, is frowned upon (Benson, 1996; Stapleton, 2010).

Young mothers from Western societies are also less likely to BF if they come from socially and economically disadvantaged environments. In such environments, artificial feeding is regarded as convenient, safe and usual (Dyson et al., 2010; Shaw, Wallace, & Bansal, 2003). Therefore, young women who intend to BF may be required to go against cultural norms and expectations of young people within Western society (Dyson et al., 2010; Shaw et al., 2003).

2.5.1.1 Transition into adulthood

One barrier, specific to young women is the process of transitioning from childhood to adulthood. This is because young women are required to make BF choices as people new to adult-life. Due to this, they are usually individualistic and desire approval and acceptance as adults. Yet, they also long for the protection and dependency of childhood (Frankel, 1998). Becoming pregnant does not mean the developmental stages of adolescence are sped up, and as young people, they still must progress through them. In this context, childbirth initiates the transition to a new adult self into the community (Wilkins, Baker, Bick, & Thomas, 2009).

The transition from childhood into adulthood also means the psychological and developmental requirements of young mothers differ from older mothers. This may result in them visualising feeding decisions in a different way to older mothers. Therefore, this may result in different barriers and challenges that younger mothers need to overcome (Hunter & Magill-Cuerden, 2014). This aspect of development is further discussed in the literature. However, recommendations for promoting BF to young mothers and the specific considerations that need to be

accounted for are addressed (Greenwood & Littlejohn, 2002; Lavender, Thompson, & Wood, 2005; Pobocik et al., 2000).

2.5.1.2. Initial difficulties with breastfeeding

Another barrier to breastfeeding in young mothers are initial difficulties. These difficulties, which are most profound immediately postpartum include, problems latching, perceived inadequate milk supply, pain, and difficulty positioning the baby (Clapis et al., 2013). Problems during the initial phase of BF double after hospital discharge (Camarotti et al., 2011). These problems often occur once the young mothers return home because they are less likely than older mothers to have the social support needed to minimise or resolve their problems. These difficulties, therefore, contribute to a higher probability of early BF cessation (Camarotti et al., 2011). A descriptive, longitudinal study in young mothers aged 10 – 19 years identified this may be a critical period during which young mothers require support (Clapis et al., 2013).

Moreover, during the first six months postpartum, BF difficulties resolve. A significant proportion ($p < 0.05$) of the initial BF difficulties have been found to resolve over time as young mothers learn more about the BF process (Clapis et al., 2013). This indicates that if the mothers were able to get through that critical initial period and continue BF, their issues will most likely resolve.

Perceived inadequate milk supply was one difficulty that did not appear to resolve. Mothers continually reported inadequate milk up to 6 months, which resulted in supplementation of breast milk with formula (Clapis et al., 2013). This is not an optimal outcome as the young mothers who reported prolonged BF difficulty and perceived their milk supply to be inadequate also reported problems with latching, cracked nipples, and pain while BF (Camarotti et al., 2011). These results highlight the need of BF support for mothers who perceive their milk supply to be inadequate. This would help to provide them with alternative solutions to overcome this difficulty. One limitation of these results is, that the best way to support these mothers to overcome the perception of inadequate milk supply is still unknown.

2.5.1.3 Lack of knowledge

Another factor that has been found to negatively impact BF is a lack of knowledge around breastfeeding (Camarotti, Nakano, Pereira, Medeiros, & Monteiro, 2011; Clapis, Cangiani Fabbro, & Ruiz Beretta, 2013; Goulet, Lampron, Marcil, & Ross, 2003). More specifically, lack of knowledge is evident in young mothers through the misconceptions and negative perceptions they have around BF (Goutlet et al., 2003). Therefore, addressing these misconceptions by increasing mothers knowledge around BF and providing tailored support for those who need it could help to improve BF duration in this population.

Furthermore, this lack of knowledge has resulted in mothers fearing the perception of others. This lack of knowledge has caused some young women to have the attitude that they are a 'rookie' mother and adults, which has led them to crave the acceptance and affirmation from those close to them (Hunter & Magill-Cuerden, 2014). They also want people to judge them positively because they fear they will be labelled a 'bad' mother. In addition, they do not want to be labelled as a 'bad' mother because it may result in their baby being removed from their care (Frankel, 1998).

2.5.2 Facilitators of breastfeeding in young mothers

2.5.2.1 Support

Although support is key to BF success for women of all ages (as discussed in section 2.4.2.3), a recent study has shown the type of support is particularly important for young mothers. A qualitative study identified five types of support that were important to young mums (Dykes, Moran, Burt, & Edwards, 2003; Moran, Edwards, Dykes, & Downe, 2007). The different types of support include network, information, esteem, emotional and instrumental support. Not all support is equal, the most helpful for young mothers were emotional, network and esteem support (Dykes et al., 2003). Emotional support enables young women to feel cared for (Moran et al., 2007). Emotional support may be from a health professional (Benson, 1996; Dykes et al., 2003; Lavender et al., 2005), a peer counsellor or by a mother's partner, family or peers (Benson, 1996; Dykes et al.,

2003; Lavender et al., 2005). Network support provides the mothers with a sense of belonging to a group of people who have the interests and/or social activities. This type of support can come from, but is not limited to, family, friends, colleagues and/or social groups. These relationships can strongly influence young mothers' decisions regarding the initiation and continuation of BF (Moran et al., 2007). Two qualitative studies found, a young woman's own mother was crucial to their decision to BF or not (Benson, 1996; Dykes et al., 2003). Esteem support enhanced the young mothers' feelings of self-efficacy, which increased their confidence and promoted BF maintenance (Dykes et al., 2003; Lavender et al., 2005).

Understanding the different types of support will provide greater insight into the needs of young women, which will enable better support to be provided to young mothers. Midwives need to consider the difficulties that young mothers face maintaining BF and provide the appropriate support. They must acknowledge the provision of the incorrect type of support, e.g. informational support may distance them from their families or add tension to fragile relationships. Advice needs to be appropriate to the individual situation of the young mothers' lives and reduce, rather than increase, the emotional stress they are feeling (Hunter & Magill-Cuerden, 2014). Henceforth, specifically targeted education programs for young adults may help to increase BF initiation and duration (Moran et al., 2007).

2.5.2.2. Prior exposure to breastfeeding

Aside from support, a small observational study has provided insight into the importance of prior exposure to BF, to promote BF maintenance. They found only 21 of the 55 young mothers studied had BF (Ineichen et al., 1997). Unfortunately, one of the limitations of this study was that BF duration was short. Nearly half (10 out of 21) of those who had BF gave up by the end of week one. Two had given up after one feed and another two by the end of the first day. Only three mothers had BF for at least 3 months, however, two others were continuing to BF at the time of the survey. Despite the short BF duration, they found some interesting results. The mothers in their sample who had BF (even for a short time) were more likely to have talked with their midwife, other health professionals, their own mother and their partner about BF. They were also more likely to have seen BF themselves than non-BF mothers (Ineichen et al., 1997). This shows the importance of prior

exposure to BF through discussions about BF and first-hand experience. It also reveals the useful information that can be obtained by talking to successful young mothers.

2.5.2.3. Young mother's attitudes toward breastfeeding

Breastfeeding attitudes held by young mothers do not always translate into BF practice. This is seen through a young mother's belief that BF is good for themselves and their baby. Yet, despite this, they are less likely to BF than older mothers. Many young mothers intend to BF, but never start, or stop soon after giving birth (Hunter & Magill-Cuerden, 2014; Wambach & Koehn, 2004). Their initial experiences may also contribute to this gap between the intention to BF and maintenance of BF (DiGirolamo et al., 2005). (DiGirolamo et al., 2005).

Young mothers have a desire to BF and be a good mother. This desire is supported by their belief that it promotes bonding. They also believe it's quick, convenient, healthy and cheap (Ineichen et al., 1997). These beliefs are similar to the reasons older mothers choose to BF (Ineichen et al., 1997). However, one other reason that differs for young mothers choosing to BF compared to older mothers is that it is good for the mother's figure (Ineichen et al., 1997). An earlier study of young mothers' attitudes around BF also highlighted that young women feel their babies' needs are the priority (Nelson, 2009). Therefore, they show characteristics of wanting to be a good mother. They also want others to see them as one (Hunter & Magill-Cuerden, 2014). This need to be a good mother is what enables these women to overcome the negative attitudes people show toward BF throughout their pregnancy. However, they also desire community and family integration, which makes EBF hard to maintain (Hunter & Magill-Cuerden, 2014). Henceforth, including communities and families in BF promotion may help to increase BF maintenance.

2.5.3 Approaches to increase breastfeeding in this population

The needs of this vulnerable population and the stage of their development become more complicated by pregnancy. Younger women may be more likely to face a double disadvantage. They are a vulnerable population but they also may not receive adequate advice and support through the current health care system and

wider society. Advice may not be tailored enough to their specific needs (Yelland, Sutherland, & Brown, 2012). Henceforth, BF inequities will only be reduced if strategies to promote BF actively target women from socially disadvantaged environments more so than the population as a whole (Biro et al., 2014). Due to the complexity of the lives of young childbearing women, supporting them to BF will need an approach that addresses both the social disadvantage and the resulting health inequities.

In order to reduce these health inequities attempts have been made to increase mother's knowledge around BF. Various methods of educating young mothers have been trialled, such as dedicated BF support groups. In these descriptive studies, education and continued support were provided. This was over the phone, through health professionals, peers, or laypersons (Greenwood & Littlejohn, 2002; Lavender, Thompson, & Wood, 2005; Pobocik et al., 2000). One limitation to these trials was poor uptake because teenage parents are known to be at risk of psychological, medical, developmental and/or social problems (Johnson, 2007; McLeod, Pullon, & Cookson, 2002; Volpe, 2002). However, with the right support and education, BF maintenance in young mothers may increase

Despite the attempts to increase mother's knowledge to help mothers meet EBF recommendations, there is a strong preference for mixed feeding among young mothers. This is in line with previous research completed in the US and UK. Early supplementation with formula is common in this population (Grassley & Eschiti, 2011; Wambach & Koehn, 2004). Despite breast milk expression providing a healthier alternative, current research suggests that breast milk expression long term is problematic for this population. Although not optimal, the barriers young mothers need to overcome to continue BF have raised the suggestion that mixed feeding may be a more realistic, achievable and practical goal (Nelson, 2009). In order to enable more young women to EBF, either creative solutions to the barriers they face need to be found or beliefs and attitudes within society overall need to be challenged and changed (Hunter & Magill-Cuerden, 2014).

2.6 Positive deviance analysis

Traditionally the term deviance has been used to describe negative behaviours. In the field of nutrition, researchers have studied at-risk individuals who perform better than their peers from as early as the 1960's. The positive deviance research approach is problem-solving and asset-based. Positive deviants are individuals who demonstrate healthful behaviours that deviate from normative but unhealthy community behaviours. They experience the same barriers and challenges as others, however, they display certain behaviours and strategies that enable them to overcome these, while others do not. Young mothers from low socioeconomic communities, who successfully BF for an extended period, are positive deviants in communities where BF duration is normally limited. The overarching goal of a positive deviance approach is to achieve “sustainable behavioural and social change by identifying solutions already existing in the system” (The Positive Deviance Initiative, 2010).

Positive deviance analysis recognises that positive deviants have developed strategies and accessed resources and support in real-world contexts that seem to work (Leavy, 2011; The Positive Deviance Initiative, 2010). This analysis provides an opportunity to identify strategies and supports that can be applied and shared by others.

2 6.1 Definitions of positive deviance

Defining positive deviance has its limitations because one universal definition of positive deviance does not exist. All definitions contain three key components (behaviour, deviation, and success) (Fowles, 2007; Marsh Schroeder, Dearden, & Sternin, 2004; Positive Deviance Initiative, 2010; Saco, 2005). The problem arises as each definition emphasises the key components and describes the key components in different ways. Additionally, not all definitions are suitable to be used across various research disciplines.

Therefore, multiple researchers have attempted to define positive deviance. The Positive Deviance Initiative research group has defined positive deviance as: “The observation that in every community or organisation, there are a few individuals

or groups whose uncommon but successful behaviours and strategies have enabled them to find better solutions to problems than their neighbors who face the same challenges and barriers and have access to same resources” (The Positive Deviance Initiative, 2010).

The definition by Schooley and Morales (2007) indicates positive deviants are “individuals who share the same socioeconomic characteristics as their peers. Yet they manage to find ways to overcome barriers and actually practice positive behaviours without external interventions” (Schooley & Morales, 2007). This fits well with this research question and is the definition, which will be used.

2.6.2 Positive deviance methodology

As with the definition, there is not one universal methodology used to undertake a positive deviance approach. The literature describes several methodologies to carry out the positive deviance approach (Fowles, 2007; Marsh et al., 2004; Saco, 2005; The Positive Deviance Initiative, 2010). Although positive deviance analysis can be undertaken using different methods, each methodology is consistent with the analytical approach. The underlying principles of the positive deviance approach are the same. All include a positive deviance inquiry, which recognises the significance of the problem, the needs of their community, the positive deviant individuals and identifies the successful behaviours/practices of the positive deviant individuals. This, in turn, facilitates the design of the intervention and aids its implementation. In this instance, positive deviant case sampling is used to select cases that illustrate successful BF. In order to, elicit rich and detailed information, which provides a new perspective on young mothers, which can then be applied to the wider group of young mothers (Rice, 1999).

The biggest limitation of positive deviance literature is researchers being unclear about their methodology/findings. This needs to be changed should positive deviance analysis be used as a regular approach to research for health promotion. Positive deviance has not been used extensively to address health-related problems. However, the few studies which have used a positive deviance approach have had successes, which cannot be ignored, Herrington & van de Fliert (2017)

have reviewed these in further detail. Therefore, standardising positive deviance methodologies would be beneficial for health promotion in the future.

2.6.3 Theoretical framework

One such approach to positive deviance analysis is phenomenology. Phenomenology is the study of situations that occur in the everyday world from the viewpoint of the person that is experiencing it. Phenomenology emphasises the individual's construction of a 'life-world'. The 'life-world' is considered to be the individuals' world of their everyday life, which encompasses the entirety of people's unquestioned, subjective experience of the biological world they live in, including the subconscious actions that people make every day. Every single individual's life-world will be different, and it is in truly understanding the life-world that creates the actions they take, which can bring understanding to how a person may act in a situation (Rice, 1999). Due to the guidelines provided by WHO not currently being achieved by most mothers in New Zealand, let alone young mothers (Morton et al., 2012) it is important to obtain a clear understanding of the experiences that successful young mothers face. Understanding how to overcome the major difficulties that arise from the perspective of the mother herself is a gap in our clinical knowledge, which is problematic and warrants further study.

A phenomenological approach to inquiry involves a search for the meaning of the BF experience to these individuals. This provides a foundation from which to build an essential understanding of what it is like to be a young mother trying to BF. Through the interpretive approach to phenomenology, the researcher uses their prior knowledge and insight to understand, interpret and unleash hidden meanings from these experiences in order to produce a vivid textual representation of the phenomenon previously described (Kleiman, 2004). Interpretive frameworks are therefore used to seek out the relationships and meanings that knowledge and context have with each other (Penner, 2008). This study will apply the interpretive phenomenological framework (Rice, 1999), through the use of in-depth interviews and analysis to find associations that are common factors leading to successful BF and then relating the results back to the current understanding.

2.7 Summary

Breast milk provides an infant with the optimal nutrition required for growth, as well as emotional support food for an infant. It provides all the necessary nutrients for growth and development during the first six months of life and also bioactive components. Therefore, breast milk benefits an infants' health.

The New Zealand Ministry of health recommends mothers to EBF to six months and beyond. This is followed by the introduction of complementary foods while continuing to BF until twelve months or beyond (MOH, 2011). However, a large proportion of infants in New Zealand are not currently meeting these recommendations to maintain BF. Therefore, the main concern for BF in New Zealand is to increase the prevalence of EBF/full BF until six months and BF until twelve months (Plunket Society, 2010), which has not yet reached the 2010 targets set by the Ministry of Health in 2002 (MOH, 2002). It has also been revealed that young mothers do not adopt the EBF until six months of age guidelines (Clapis et al., 2013). Due to this, the promotion of EBF and full BF in New Zealand is necessary for increasing BF duration.

Reasons to stop BF before six months include illness of the mother and child, physiological problems and life stressors (Forde & Miller, 2010), as well as perceived inadequate supply of breast milk (Essex, Smale, & Geddis, 1995). For example, going back to school/work, sore nipples, not liking the idea, embarrassment, having to do it all by themselves, beliefs of mothers, partners and friends influence their decision to stop BF. These reasons may also contribute to the short duration of BF observed in New Zealand.

Many factors are negatively linked to breastfeeding duration. Maternal age is one of these factors, which is a major barrier to BF duration and early BF cessation. Being a young mother significantly increases the likelihood of stopping the EBF regardless of all other conditions (Clapis et al., 2013). Therefore, BF in younger mothers is a challenge in health care. Another factor linked to reduced BF maintenance are BF difficulties, there is an increased prevalence of BF difficulties in younger mothers in the first ten days of the baby's life compared to subsequent

stages postpartum. Many young mothers also lack knowledge in certain aspects of BF, which includes various misconceptions and negative perceptions (Goutlet et al., 2003). Increasing mothers knowledge around BF and providing tailored support for those who need it may enable mothers to overcome initial difficulties, which could help to improve BF duration in this group.

Little is known about the factors that contribute to successful BF in mothers who gave birth at a young age (Scott et al., 1999). What is known, however, is that antenatal BF education significantly impacts maintenance of BF to six weeks ($p < 0.001$) (Duffy, Percival & Kershaw, 1997). There is also a gap between the desire to BF and the ability to BF. Young women do intend to BF, but either never start, or stop soon after giving birth (Hunter & Magill-Cuerden, 2014; Wambach & Koehn, 2004). These two factors highlight the paucity of information relating to facilitators of BF in this group. Understanding what enhances BF in this population may help to promote BF duration. Further research would provide insight into factors that enable young women to BF, which can be used to identify future initiatives. This significant gap in the research emphasises the need to understand more about women who successfully BF at a young age as it will highlight factors that enable mothers to overcome the barriers currently preventing them from being successful (Ineichen et al., 1997). This will be of social and economic benefit to the family and nation (Gartner et al., 1997). It will also improve the health of the infants, giving them the best possible start to life.

Chapter 3: Determinants of successful breastfeeding by young women in New Zealand.

3.1 Abstract

Background: International research has shown that younger mothers are less likely to initiate/maintain breastfeeding (BF) than older women. There is a paucity of evidence to explain why some young women successfully exclusively BF (EBF) for at least 4 months, while EBF is not successfully maintained by others.

Purpose: To gain an in-depth understanding of the factors that led to a successful breastfeeding experience in mothers who gave birth at a young age.

Methods: The breastfeeding experience of seventeen mothers (<25 years at the time of BF), who BF for at least 4 was obtained through structured in-depth interviews. These were conducted in person or over the phone. The interviews were recorded and transcribed, which enabled thematic analysis.

Results: Participants were located throughout the North Island. The BF challenges and barriers faced by the young mothers are similar to those faced by mothers of all ages. Lack of breastfeeding knowledge, expectations, which differed from the lived experience, the quality of the initial support for BF, lack of ongoing support for BF and initial difficulties with the practice BF were identified as the key barriers to BF in our mothers. Resilience in the face of adversity, a positive breastfeeding culture and the economy of BF were identified as strong influencers of successful BF in young mothers. These influencing factors empowered the mothers to overcome the barriers they were faced with, which enabled them to maintain successful BF practice.

Conclusions: Intrinsic motivation amongst positive deviants appears to be a driver of information and support seeking behaviour, which enhances self-efficacy and breastfeeding resilience amongst young mothers.

3.2 Introduction

The World Health Organisation [WHO] and the Ministry of Health [MOH] in New Zealand recommend exclusive breastfeeding [EBF] until infants are six months of age (MOH, 2008). Breastfeeding [BF] provides optimal nutrition to the infant and is associated with an array of health benefits (MOH, 2002 & 2008), such as a reduction in infant mortality, as well reduced severity and incidence of acute respiratory tract infections (Grant et al., 2011) and the prevention of chronic diseases later in life (WHO, 2007; WHO, 2013; Chung et al., 2007). Benefits of BF are also economic, as both direct and indirect health costs associated with preventable diseases are avoided if BF practice is optimal (Bartick & Reinhold, 2010; Rollins et al., 2016).

The Ministry of Health (2002) has set targets to bring breastfeeding rates in New Zealand up to the level of other OECD countries. Although New Zealand [NZ] has high BF initiation rates, BF duration and exclusivity in NZ are well below these recommended targets (MOH, 2002; MOH 2010; Plunket Society, 2010). Therefore, the main area of concern in NZ is not initiation of BF but maintenance of the practice.

In New Zealand, there are the wide demographic variations, with low BF rates among certain age and ethnic groups (MOH, 2017). There is a negative correlation between maternal age and duration of BF; younger mothers are less likely to BF than older mothers (Scott et al., 1999). Minority groups such as Māori, Pacific and Asian are also less likely to BF compared to Pākeha (Plunket Society, 2010).

The reduced rates of BF among younger mothers are a concern in NZ because approximately one-fifth of all live births are to young mothers (less than 25 years old) (MOH, 2017). There is a paucity of evidence on BF facilitators in this group (Biro, Yelland, & Brown, 2014; Forde & Miller, 2010). Positive deviance analysis is the study of individuals who demonstrate healthful behaviours that deviate from the norm (Herrington & van de Fliert, 2017; The Positive Deviance Initiative, 2010). Therefore, positive deviance analysis may help to identify some of the facilitators of successful BF in young mothers. Therefore, the aim of this study is to

explore and understand the factors enabling mothers who gave birth at a young age (<25 years old) to BF for at least 4 months.

3.3 Methods

A qualitative phenomenological research design was used in this study. Ethics approval was gained through the Massey University Ethics committee, Northern Application 16/52. Written informed consent was obtained from participants, which conformed with the National Ethics Advisory Committee guidelines (National Ethics Advisory Committee, 2012).

Setting: This qualitative study was set in the North Island of New Zealand.

Recruitment and Selection: Participants were recruited through support groups and breastfeeding networks which included La Leche League, Plunket, Teen Parent Schools, midwives and lactation consultants. Interested mothers consented for the group leaders to share their contact information with the research team.

Inclusion criteria for selection of the positive deviant mothers include women aged less than 25 years when they gave birth and had partially or exclusively breastfed for 4 months or more. Initial attempts were made to recruit mothers who gave birth within the past two years, however, due to time constraints and the difficulty to find mothers the inclusion criteria were adjusted. Based on available evidence which indicates that mothers can accurately recall their breastfeeding experience up to 20 years after giving birth (Natland et al., 2012) the inclusion criteria was broadened to mothers who gave birth within the last 15 years. The sample size aimed to recruit 15 young mothers, however, the sample could have been smaller if redundancy/ data saturation was met prior (Rice, 1999). Women were contacted over the phone and screened to ensure they met the inclusion criteria to participate in the study.

Research Design: Semi-structured interviews –Participants completed a single in-depth recorded interview conducted by a trained female researcher. The interviews ranged from 30 to 60 minutes in length and were conducted face-to-face or over the phone, with a particular focus on exploring positive deviants lived experience of barriers and enablers of breastfeeding survival. Open questions such as how did you feel about breastfeeding before the birth of your baby? and what was the first 4 weeks of breastfeeding like for you? were asked to encourage the

mothers to talk about their experience. Probing was used to obtain comprehensive data or when clarification from the mothers was required. The questions included in the interview were designed to obtain insight into the challenges and barriers faced by mothers and their beliefs, knowledge and intentions around breastfeeding. Table 3.1, outlines the interview schedule, the key concept identified from the literature, which related to the interview questions and examples of probes. The key researcher developed the interview questions, which were pilot tested and peer reviewed prior to the study commencement. Participants were asked for permission to record the interviews but were informed that they could request that recording was stopped at any time. Following the interview, each recording was transcribed word for word into a transcript that could be used for the analysis.

Demographic questionnaire – Participants were also asked to complete a short questionnaire, which included ethnicity, maternal age, infant birth date, employment status, number of children, time in labour, type of delivery, number of infants born, time to initiate BF, and mother’s location at the time of BF.

Data Analysis: A thematic analysis was used to analyse interview transcripts through coding common phrases or words, which frequently arose from the transcripts, see appendix F. One trained researcher conducted the interviews and the thematic analysis. This was double-checked by two members of the research team to increase trustworthiness. The thematic analysis was conducted using the inductive method described by Bryman (2008) to identify trends in the data and develop themes. In an inductive approach, the themes highlighted are strongly correlated to the data itself and not the researcher’s preconception due to peer review of themes identified. This process occurred in several stages where the transcripts were re-organised by the questions asked and codes and themes were identified within each question enabling comparison of participants’ answers. The common themes and codes were then identified between the different questions, which helped to provide an understanding of the barriers which these mothers faced and the factors which enabled this group of young women to successfully breastfeed their infant for at least 4 months.

Table 3.1 Schedule for semi-structured interviews + inquiry logic

Interview questions	What information is expected to come from the resultant discussion	Probes specific to questions
How did you feel about breastfeeding prior to the birth of your baby?	Breastfeeding intention	What conversations about breastfeeding did you have with your partner/mother/midwife prior to giving birth?
Describe the very first time your baby latched?	Breastfeeding initiation	How did you feel? What difficulties did you have at this point? Did you have any help/support? (if yes, who?)
Describe your experience with breastfeeding in the first 4 weeks	Initial challenges regarding establishing technique, lactation, milk letdown	What did the first time the baby latched feel like? What problems did you have with the first few times breastfeeding?
What advice were you given on how long to breastfeed for?	Beliefs/attitude toward breastfeeding Knowledge about guidelines	Who gave this advice? When was the advice given to you?
How do you feel about breastfeeding in public?	Beliefs/attitude toward breastfeeding Information for social occasions, breastfeeding outside the house	Why? What experiences have you faced when breastfeeding in public?
Explain any breastfeeding difficulties you had and how you overcame them	Lack of time, sleep deprivation, diminished supply, other children, work, dietary requirements, anxiety	How did you find the sleepless nights? How did you manage your time, work, other children? Were there any special dietary changes you had to make once you started breastfeeding? Were you apprehensive about breastfeeding correctly? If yes, how?
Describe the support you had in the early days with your breastfeeding.	Breastfeeding support	Family? Midwife/ hospital nurses? Friends? GP? Support Groups? Internet Forums?
How has your opinion of breastfeeding changed over the course of your experience	Family life, Support groups, beliefs/attitudes toward breastfeeding	What caused the changes?
As baby got older, how did your breastfeeding routine change?	Breastfeeding duration	Did any new challenges arise? How did you cope with keeping baby full, or having enough milk?
What factors resulted in the decision to move baby off breast milk and onto solids?	Exclusive/Full Breastfeeding termination	When did this happen?
Having been successful, what would you say are the key reasons for your breastfeeding success?	Closing question/reflection	

3.4 Results and discussion

Characteristics of the participants:

For the purpose of this study, young mothers were defined as anyone who gave birth between the ages of 15 and 24 years. Seventeen young mothers, whose births took place from 2004 through to 2017, were recruited for this study (Table 3.2). The study participants were located throughout the North Island of New Zealand, from Wellington to the Far North. All 17 mothers identified themselves as New Zealand European, however, three also identified as Māori, and one also identified as Hawaiian.

Barriers and enablers of BF in young women were identified through this process. The core barriers identified included lack of knowledge, lack of ongoing professional support and initial difficulties with BF. The enablers were categorised into three key themes: Economy of time and money, breastfeeding culture and self-efficacy. In order to maintain participant confidentiality, the mothers in this study were identified by a unique code (P1-P17). This was used to identify the transcripts from which, each quote originated.

Table 3.2 Participant characteristics

Age mothers gave birth (years) ⁿ⁼¹⁸	Range		15 - 24
	Mean (SD ± 2.64)		20.4
Childs birth year ⁿ⁼¹⁵	Range		2004 – 2017
Marital Status ⁿ⁼¹⁵	Married		6
	Relationship with the baby's father		6
	Relationship with someone other than the baby's father		1
	Single		2
Employment Status ⁿ⁼¹⁴	Work in a workplace	Part-time	6
		Full-time	1
	Work from home	Part-time	1
		Full-time	1
	Unemployed		5
Number of children at time of breastfeeding ⁿ⁼¹⁵	1		11
	2		3
	3		1
Time in active labour (hrs) ⁿ⁼¹⁵	< 5		4
	5.0 – 7.9		5
	8.0 – 10.9		2
	11.0 – 13.9		0
	14.0 – 17.9		0
	> 18		4
Type of delivery ⁿ⁼¹⁵	Vaginal		13
	Ventouse		1
	Emergency C-section		1
Time to initiate BF after Birth (minutes) ⁿ⁼¹⁵	Range		10 – 90
	Mean (SD ± 21.4)		20.3
Number of infants born ⁿ⁼¹⁵	1		14
	2		1

There were a total of 15 study participants who answered demographic information.

Barriers to breastfeeding in this population

The mothers in this study identified a number of barriers to BF. The mothers identified core barriers to BF, which required in-depth evaluation. The key barriers identified were: Lack of breastfeeding knowledge, expectations, which differed from the lived experience, the quality of the initial support for BF, lack of ongoing support for BF and initial difficulties with the practice BF. This shows the challenges faced by mothers who give birth at a young age, are no different to the challenges faced by mothers who give birth at any other age (Dykes, Moran, Burt & Edwards, 2003).

Lack of breastfeeding knowledge and expectations which differed from the lived experience

Every mother in the study expressed their lack of knowledge was a barrier to BF. It was important to gather a rich dataset on their perspectives and perceptions as to what knowledge they lacked and to understand how this impacted on their BF experience. Lack of knowledge was also brought up by the mothers in every question except the final question on why they felt they had been successful.

Lack of knowledge was evident when BF did not go smoothly. Some mothers were unable to identify the signs that they were BF incorrectly, for example, they did not manage to latch properly. This was even to the point of that some mothers thought what they were experiencing was normal. They also reported difficulties reading the infant's cues, not knowing whether the infant was crying because of hunger or there was an alternative cause.

"It was my first time being a mum, I didn't know what to do so I just would feed every time he cried [P1]"

Another common perception identified by the mothers was that breastfeeding would be a 'natural process', which would be easy. Even when women were aware that other mothers had struggled with breastfeeding there was a perception that "it won't happen to me".

"I was quite naïve with my first ... I just thought naturally your body is there for your baby and so when they latch on you will have no problems and the milk will come out and they will get fed [P17]"

Therefore, these perceptions indicate the young mothers are misinformed. This may undermine a mother's decision to continue breastfeeding and have a negative effect on her BF practice (Sriraman & Kellams, 2016). Any misconception held by a mother of any age, indicates a lack of knowledge (Goutlet et al., 2003). Health professionals have a critical role to dispel misconceptions held by mothers (Sriraman & Kellams, 2016) as addressing any misconception will promote BF success. Misconceptions can be addressed by increasing a mother's knowledge around BF by providing evidence-based information, specific to her needs (Sriraman & Kellams, 2016). The provision of tailored support for those who need it is highly valued in this population (Dykes et al., 2003), and highlights the need for more personalised and supportive education programs to be available for young mothers.

Midwives provide critical initial support but it is of inadequate duration

Midwives provided most of the professional support to mothers. This was well received and the majority of participants spoke highly of it. Midwives held a fundamental position in the initial stages postpartum. Unfortunately, not all mothers in this study had a supportive midwife. However, the support provided by midwives was only available to the mothers in the initial phase of their BF journey, as it concluded 6 weeks postpartum.

"My midwife was really good in that first bit, leading up to the birth... she helped me latch the first time... and then I think she came for 6 weeks [P7]"

After the initial period, the lack of professional support became a barrier for these mothers. As they did not have any BF professional they could approach to obtain advice or support when difficulties arose after the first few weeks.

This lack of support for young mothers has been recognised as a key barrier to BF success, which was consistent with earlier studies. Provision of support and education and over the phone, through health professionals, peers, or laypersons have been researched (Greenwood & Littlejohn, 2002; Lavender, Thompson, & Wood, 2005; Pobocik et al., 2000). However, one limitation of these studies was poor uptake by young mothers. This has been attributed to an array of factors which young mothers are also dealing with, such as psychological, medical, developmental and/or social problems (Johnson, 2007; McLeod, Pullon, &

Cookson, 2002; Volpe, 2002). This suggests that dedicated ongoing support groups, focusing on the specific needs of the young mother should be a key focus for BF support in this population.

They are a vulnerable population who also need ongoing support. However, they may not currently receive adequate advice and support within the current health care system and because advice is not being tailored enough to the young mothers specific and increased needs (Yelland, Sutherland, & Brown, 2012) and a requirement for ongoing support. BF inequities observed between older mothers and younger mothers will only be reduced if strategies to promote BF actively target women from these socially disadvantaged environments. This means focusing interventions toward younger mothers more so than the population as a whole (Biro et al., 2014). Due to the complexity of the lives of young childbearing women, supporting them to BF will need an approach that addresses both the social disadvantage and the resulting health inequities.

Initial difficulties with breastfeeding

Breastfeeding difficulties were most profound immediately postpartum, when the young mothers were starting their breastfeeding journey. The difficulties faced by these young mothers were similar to issues most mothers face regardless of age and included adjusting to the lack of sleep, suffering from post-natal depression, inadequate milk supply and pain (Hedberg, 2013). Common sources of pain in the initial stages of breastfeeding included pinching, tenderness, bleeding, cracked nipples, thrush and mastitis. For some mothers, a lack of knowledge also resulted in the unnecessary endurance of pain because there was a simple solution to the problem. However, the lack of knowledge meant the mothers were unable to identify what the problem was.

“If I had known it was thrush I would have gone and got something for it ... It was quite a while... about a week or two... to persevere through the pain but that's just determination for you [P2]”

Many mothers did not mention having an inadequate milk supply. However, the ones who reported inadequate milk supply turned to formula, in order to top up their feeds. There were two key reasons mothers did not have enough milk. The baby had reflux and so had increased requirements. More commonly, it was

because the milk supply dropped, some mothers attributed this drop to stress. The inadequate milk supply, or perception of it, led the mothers to supplement with formula or to wean their infant.

“I was just really struggling to keep up... in those last few months I did use lactation support ... to try and boost it (breast milk) [P7]”

These initial challenges which were a key barrier to the young mothers were most profound initially. However, over time the mothers adapted as they reported they were able to overcome most of the difficulties reported initially because they sought support, these support structures are further discussed below. These difficulties align with findings from earlier studies that have examined the early stage of the breastfeeding journey in young mothers (Clapis et al., 2013) and older mothers (Dykes, Moran, Burt & Edwards, 2003; Thulier & Mercer, 2009). It indicates, that over time as the young mothers learn more about the BF process, BF becomes easier (Clapis et al., 2013). It also suggests that support during the first few weeks postpartum should be a focus of breastfeeding support. Therefore, support in this critical period is essential to ensure mothers overcome these barriers and continue BF.

Factors that enabled the young women to breastfeed

Once the core barriers to BF had been fully explored, it was possible to identify and examine the enablers of successful BF. The identification of the barriers to BF provided context to understand the enablers of successful BF. As participants had successfully BF, it became evident through the data analysis that they had found alternative solutions, which enabled them to overcome these barriers, see Table 3.3. These solutions were categorised into three key enablers, which were resilience in the face of adversity, a positive breastfeeding culture and that the economy of BF.

Table 3.3 Young mothers' experiences of breastfeeding challenges and strategies developed and applied: common themes noted across participant interviews

Core barriers	Common barriers experienced	Strategies developed and applied by the mothers
Breastfeeding knowledge and expectations which differed from the lived experience	Lack of knowledge Misconceptions around breastfeeding	Intrinsic motivation to seek information that would facilitate them in overcoming these challenges by speaking to family or researching information in books or on the internet.
Midwives provide critical initial support but it is of inadequate duration	Lack of professional support 6 weeks postpartum	Mothers created a positive BF culture around them by seeking support from their partner, their own mother or partners mother. This was possible through open communication with their families about their perspective on BF and their goals. This enabled family to support and encourage the mothers to achieve their goals.
Initial difficulties with breastfeeding	Lack of sleep Post-natal depression Inadequate milk supply Incorrect latch Pain - Pinching Tenderness Bleeding Cracked nipples Thrush Mastitis	Mothers demonstrated resilience as they had a strong sense of self-efficacy and a desire for independence. The positive BF culture they created facilitated the development of self-efficacy and also enabled mothers to demonstrate these characteristics.

Resilience in the face of adversity

Resilience is when a person achieves a positive outcome in spite of hardship (Hawley, 2000). Participants in this study were able to overcome the challenges and barriers to BF, which demonstrated resilience. Resilience was evident when

the participants demonstrated a strong sense of self-efficacy, a desire for independence and intrinsic motivation, which encouraged them to find out for themselves, the information they lacked to successfully BF.

Intrinsic motivation

The lack of knowledge reported by the mothers led them to deliberately seek information for themselves. These mothers were motivated to find their own information, which they sourced from a variety of sources. Some mothers used books and others Internet sources. Mothers accessed Google, websites, Youtube and blogs to get advice and tips from other mothers who shared their experiences to make other mums experiences easier.

“I learnt a lot from youtube... I used to search people who would youtube BF and stuff... and listen to their advice and what I could do to make it easier [P9]”

The individual qualities apparent in this group of mothers, such as intrinsic motivation enabled them to overcome the lack of knowledge, which is commonly reported in younger mothers (Camarotti, Nakano, Pereira, Medeiros, & Monteiro, 2011; Clapis, Cangiani Fabbro, & Ruiz Beretta, 2013; Goulet et al., 2003). Intrinsic motivation to BF is associated with mothers having a greater desire to initiate BF (Racine Frick Carpenter, Pugh, 2009). Acquiring knowledge was reported as one of the key factors mothers attributed to their successful BF maintenance. Therefore, increasing a mother’s knowledge could be a key factor to address in future initiatives to encourage BF promotion in young mothers.

Their own research also enabled the mothers to learn of strategies to overcome difficulties they experienced. It was their intrinsic motivation, which encouraged the mothers to seek out the knowledge that was a key factor in their BF success. because it fostered self-efficacy and resilience in the mothers.

“Having the knowledge really helped ... and not just having one person’s opinion [P16]”

Earlier studies have also found self-efficacy to be positively affected by intrinsic motivation (Meedya et al., 2010). Mothers who have an intrinsic desire to BF have a stronger sense of self-efficacy and so are more likely to initiate BF. Therefore, promoting a mother’s sense of self- efficacy will also increase her BF intention.

Self-efficacy

Self-efficacy is one's belief in one's ability to succeed in specific situations or accomplish a task, and it has been associated with successful BF (National Breastfeeding Advisory Committee, 2008). Self-efficacy has also been used interchangeably in the literature with confidence and it is closely linked with resilience. An early study identified positive experiences are associated with increased self-esteem, which contributes to self-confidence and personal satisfaction. The majority of mothers had health professional input for the first feed, which fostered a positive first experience of BF that the mothers could reflect on when difficulties arose within the first 4 weeks. Open communication also enhanced this, mothers were felt they could freely ask for help and support from health professionals and family. This encouraged the mothers as they learned that their initial BF difficulties were normal and so, this promoted a positive attitude among the mothers towards overcoming them. Furthermore, these experiences all strengthened resilience as they provided useful tools which could be used when the individual was confronted with barriers or challenges later on in their BF journey (Dumont & Provost, 1999).

Mothers reported their self-efficacy increased when they were able to overcome apprehension, nerves and difficulties. Their confidence in their abilities encouraged them to persevere through pain. And with perseverance, the issues they reported, resolved. And when they overcame these difficulties, breastfeeding also became more enjoyable. Furthermore, women who overcome problems in the initial phase of BF develop a stronger sense of self-efficacy (DiGirolamo, 2005). In addition, a strong sense of self-efficacy has been linked to more desirable BF practices (Heath et al., 2002). Therefore, increasing self-efficacy is fundamental for the promotion of successful BF.

“I found confidence in the fact that this was something I could do, I could breastfeed, it could be an enjoyable [17]”

Existing breastfeeding promotion interventions generally address social support but currently do not attempt to modify BF self-efficacy (Meedya et al., 2010). This

emphasises the gap present in the New Zealand health system and is an area for possible intervention to improve BF duration in young mothers. Peer support is an area, which could be used to improve self-efficacy and so promote BF duration. Some of the young mothers turned to peers for support. Open communication with other mothers provided them with an understanding that they were not alone in the difficult experiences and they were not failing because BF was not easy. Increasing the support of peers may help to increase a young mothers confidence, due to their desire for acceptance and approval of others (Frankel, 1998). Supporting young mothers to overcome challenges in the initial stage of the BF journey may also increase self-efficacy.

Independence

The mothers expressed a desire for independence and in order to overcome barriers and difficulties many of the mothers did their own research. This enabled them to decide what would work the best for themselves and their situation. They did not always conform to advice if they perceived an alternate solution to be 'better' for them. They also felt they needed to prove they could do it on their own.

"I needed to do my own thing and figure it out and prove to everyone that I can do it [P13]"

This highlights the need to encourage the mothers to feel they have made the best decision for themselves and their baby. Yet, at the same time, directing their decision toward optimal BF practice, which is in line with MOH guidelines (MOH, 2008).

This desire for independence may be related to their developmental stage in life because childbirth initiates the transition to a new adult self into the community (Wilkins, Baker, Bick, & Thomas, 2009). Although initiated, becoming pregnant does not accelerate the transition from childhood to adulthood (Frankel, 1998). Due to this, a young mother's unique psychological and developmental requirements may result in them visualising feeding decisions in a different way to older mothers (Hunter & Magill-Cuerden, 2014). Although the difficulties they face may not differ from older mothers, the approach to support and overcome them needs to take into account their developmental stage, their visualisation of the feeding decision and this desire for independence. Therefore, tailored advice and

support are essential for young mothers (Yelland, Sutherland, & Brown, 2012). The provision of tailored support for those who need it is highly valued in this population (Dykes et al., 2003) and it will ensure advice is appropriate to their specific needs, which will, in turn, promote BF duration.

Positive breastfeeding culture

The concept of culture helps explain the breastfeeding experience from the mother's viewpoint, which was explored in this study. The attributes of culture that can be related to the breastfeeding experience include social relationships, intergenerational transmission of ideas and internalisation of values based on childhood experiences. This is seen through the mother-infant relationship, partner and peer support, transmission of ideas from the participant's own mother and first-hand experiences of breastfeeding from childhood (Mojab, 2000).

The cultural environment of the breastfeeding mother was an important enabler for breastfeeding success. This was developed through open communication with family. Many mothers also talked about breastfeeding prior to the birth of their baby, this provided them with a better understanding of the journey they were to embark on. Open communication also enabled the mothers to obtain support and encouragement from family when difficulties arose, as those around them understood how important BF was for the mothers. It underpinned the support network used by these young mothers once the professional support from their midwife concluded at six weeks postpartum.

Mother-infant relationship

Breastfeeding was found to strengthen the mother-infant bond. Breastfeeding enabled the mothers to feel a connection that is special and more intimate than what bottle-feeding could provide. Earlier studies identified BF initiation to be a key factor which promotes bonding (Ineichen et al., 1997; Jansen, Weerth & Riksen-Walraven, 2008). Therefore, BF helps the mother to develop an intimate bond with their infant (Jansen, Weerth & Riksen-Walraven, 2008). This was key to creating a positive breastfeeding culture as mothers in our study identified the development of the bond with their infant was empowering. It motivated them to continue BF because the infant was entirely dependent on their milk and

protection to stay alive. Therefore, encouraging mothers to foster a bond with their infant is one component which can enable successful BF maintenance.

“Breastfeeding her just felt special... I don’t think you can get a bond like what I felt with my daughter through using a bottle [P7]”

Mother-partner relationship

The majority of participants reported their relationship with their partner to be critical to their success. This is in line with the research in the literature; partner support has previously been highlighted in the literature to be an important enabler in breastfeeding success. Successful BF has been positively associated with the father’s preference for BF and BF duration (Scott et al., 1999; Thulier & Mercer, 2009). A father’s preference for BF also promotes a positive BF culture within the home environment which encourages the mothers to continue to BF.

This positive BF culture within the home environment was identified as participants reported their partners did whatever they could to help. This included bringing the baby to work for the mother to breastfeed, driving mother and baby to appointments, staying up at night and looking after other children and supporting them in whatever decisions they made.

“My husband, he has been there for me ... my husband was there through it all... he was really helpful [P14]”

Unfortunately, partner support was not available for all mothers. A small number of the mothers reported that their partner was unsupportive. And in some cases, the mother had nothing to do with their baby’s father. Therefore, they received no support from them. The lack of partner support led the mother to look for someone else who could provide support and fill the role the partner normally would. This alternative support person was usually a family member, for example, the participant’s mother.

“He wasn’t particularly supportive of it ... he found it unattractive and he didn’t like it and I think it weirded him out [P15]”

This demonstrates that a partner can influence breastfeeding success by acting as either a support or deterrent to the BF (Scott, Aitkin, Binns & Aroni, 1999, Scott, Landers, Hughes & Binns, 2001). Therefore, it is essential to direct interventions to

promote BF to the partner as well as the mother in order to foster a positive BF culture within the home environment.

Relationship with peers

The women were supportive of other breastfeeding mothers, both within their peer group and within their community. Several mothers spoke of sharing their expressed milk to support other women. Donating milk led to some of the mothers to find support from the women they met while doing this. Some participants also found support in other mums through support groups they were part of, such as La Leche League, antenatal class and teen school. This peer support was a key contributor to the positive BF culture experienced by the mothers outside the home and in the community. Mothers sought this support in the latter stage of the BF journey, once the support from the midwife had concluded.

“I met La Leche... when my daughter was about 6 months... who knows whether I would have given up or not, but it was just the perfect time to meet those women and have that support [P 11]”

Peer support, although important, should not replace the advice provided by health professionals. Ideally, this support would compliment the professional support the mothers require. However, because the professional support was of inadequate duration (six weeks), some mothers relied on peers instead. This highlights the need for extended support programs run by health professionals for these mothers, which could run in conjunction with peer support groups to strengthen the positive BF culture the mothers already have within their community.

Another concept mentioned by two mothers was the perception they were doing the right thing by breastfeeding their infant. Mothers highlighted being surrounded by others who were BF, fostered this feeling that they were doing the right thing. An earlier study also found young mothers express a need for approval and acceptance as adults (Frankel, 1998). Acceptance from peers, a key characteristic found in this population, impacts self-esteem (Wilkins, Baker, Bick, & Thomas, 2009). This desire to do the right thing drove these mothers to surround themselves with others who were also BF. Therefore it is essential mother's

surround themselves with others who have a positive attitude toward BF, as this will empower them to maintain successful BF, rather than discourage them from continuing to BF.

The majority of mothers (80%) in this study did not report attending coffee groups. However, one of the mothers who did attend one did not fit in, she expressed that she felt judged by the other mothers. This desire for community and family integration makes EBF hard to maintain when mothers feel judged (Hunter & Magill-Cuerden, 2014). This mother, therefore, did not go to any more coffee group sessions because she wanted to surround herself with support. This is problematic for mothers whose only support may be from groups such as these. The lack of support felt from peers may result in young mothers conforming to less desirable BF practices if they do not demonstrate resilience. Therefore, creating an enabling and supportive BF culture is important when encouraging mothers to continue BF.

Aside from support groups, this group of young mothers also used the technology to connect with other mums. They did this through Facebook, following women who blog about breastfeeding, or using apps. The online support was more useful for the mothers as it was more accessible.

“I started following lots of bloggers that were mums and they were always helpful giving out certain stuff, like breastfeeding [P8]”

Having a relationship with peers online was an extra support to the mothers. It complimented the support they had from their family, partner and peers as it provided another forum for support. Therefore, it is essential for the delivery method of professional advice and support to continually adapt to a style which mothers will access.

Intergenerational transmission of ideas

Young mothers looked to their own mother for advice, emotional support and practical help or assistance. This support was essential to their success. This is a key illustration of the importance of BF culture and the role of the maternal grandmother for young mothers.

“I wouldn’t have been able to do it without my mum [P6]”

Older women have not been found to rely heavily on their mother's advice, instead, they rely more on their partner for support (Thulier et al., 2009). This is one factor that differs between older mothers and younger mothers. A review paper found, a particularly strong influence was the participants' own mother and that this support was more commonly reported than support from partners (Moran et al., 2007). Another review paper, on the other hand, found family support to be an important factor for breastfeeding success, but they also found partner support to be particularly important (Shaw et al., 2003). It is undeniable, young mothers require support from those close to them, which may include both their own mother and their partner. Therefore, it would be beneficial to include the mother as well as the partner in BF promotion interventions, in order to encourage BF initiation and duration.

The advice shared from the maternal grandmother was based on her own infant feeding experiences. The advice given was not always sound, particularly if the grandmother giving the advice had not breastfed themselves. Yet, these ideas strongly influenced the mother's breastfeeding decisions. This example shows the potential impact incorrect advice could have on a young mother, who may not have defined intentions around BF.

"I remember mum saying once they started crawling and walking that they need to stop (BF) because it's not a good look for them to be asking for it ... that had a huge influence on why I did wean him off at 14 months instead of keeping going [P13]"

In spite of this, the participants in our study were successful in overcoming this barrier through sharing the knowledge they obtained from their own research with their mother and partners, who they relied on for support. And so, ensuring the wider family has an understanding of the recommendations and benefits of breastfeeding is key to creating a positive BF culture which will encourage BF maintenance. This is an area which could also be addressed in future initiatives.

Internalisation of values based on childhood experiences

Exposure to breastfeeding in childhood resulted in mothers having a more receptive attitude toward BF with their own infant. Therefore, when the mothers

gave birth it positively influenced their intention to breastfeed. Mothers were exposed to breastfeeding if their younger siblings were breastfed. This exposure meant the women grew up with the perception that was how you fed your baby. Breastfeeding became normalised. Therefore, when the mothers had their own children it influenced their intentions to breastfeed.

“I’d seen my mum breastfeed my 2 out of 3 younger brothers because I was old enough to remember that, so I just thought that was definitely what I was going to do [P6]”

An earlier study found, if mothers had previously seen BF they were more likely to be successful themselves (Ineichen et al, 1997). However, prior exposure to BF is not limited to the first-hand experience. Mothers can also obtain prior exposure to BF when having antenatal discussions with their midwife, their own mother or their partner (Ineichen, Pierce, & Lawrenson, 1997). Fourteen mothers in our study had discussed BF prior to the birth of their infant or attended antenatal classes, which facilitated the development of a positive BF culture. The positive BF culture the mothers were developing for themselves through these discussions helped the mothers form an intention to BF and also enabled them to initiate BF.

Not all mothers in this study had previously been exposed to breastfeeding. This meant they were not as comfortable with the idea of breastfeeding themselves.

“I never really saw breastfeeding growing up.... I had never seen anyone do it before either, other than in the street, where I was like, ooh... don’t look at her boob, so yeah, I really just wasn’t familiarised at all [P15]”

Exposure to breastfeeding as a child influences the mother’s perception of breastfeeding. If they were exposed to breastfeeding, they had internalised this experience and so were more comfortable with BF. Therefore, promoting BF observation and discussion before birth could encourage mothers to initiate BF, which in turn may also increase BF duration.

Economy of breastfeeding

Another key facilitator of successful BF was the economic savings mothers obtained, such as time, money and opportunity. Understanding the key drivers of

breastfeeding intention in this population may help to direct future interventions to be more engaging for young mothers.

Less time and effort required to breastfeed

Breastfeeding was recognised to be a quicker alternative than bottle-feeding as it involves less effort for the mothers than what is required in preparing a bottle. The mothers highlighted this as they found breastfeeding to be more convenient, which was a key motivator for many of our mothers. Bottles require sterilisation. The mother must prepare the formula and heat it to the correct temperature. Breastfeeding was easier for the mothers because it involved less effort and thinking. There was no prior preparation involved, or no advance planning needed to breastfeed. They preferred to breastfeed because it was as simple as putting the baby to the breast whenever it needed to be fed. Breastfeeding was also an easy way to console the infant, saving the mother time and effort.

“I am not a lazy person but I don’t like that you have to mix it, use boiled water, put the formula in. It just takes a long time, whereas your boob you just pop out whenever you need to feed [P17]”

Finding from an earlier study identified young mothers also reported BF was quick and convenient, which motivated them to continue (Ineichen et al., 1997). BF enables young mothers to invest time into other things because opportunities are not lost in time spent preparing formula for their infant. This could be used as an approach to attract interest from young mothers and encourage them to learn more about the benefits of BF, which may also promote increased BF initiation in this group of mothers.

Cost Saving

Young mothers reported that they breastfed due to the expense associated with formula feeding. The financial outlay for formula was a deterrent for these young mothers, whereas breastfeeding gave the mothers total control within resources immediately available to them. This was particularly evident when one mother identified that breastfeeding was the only financially viable option for feeding her infant.

“I wouldn’t have been able to afford to buy formula for him so I had to make it work [P13]”

Economic benefits of BF occur by reducing family expenditure on breast milk substitutes (Bartick & Reinhold, 2010). The infant formula industry is large and ever-growing, with global sales of all infant formula in 2014 estimated to be approximately US\$44.8 billion—projected figures estimate market value will reach \$70.6 billion by 2019 (Rollins et al., 2016). At the household level, one can of infant formula costs upwards of \$20 NZ dollars (Galtry, 2013). This is due to the varying costs between formula brands and the different products available. Therefore, the cost of providing infant formula for an infant up until the age of one year could be substantial for the mother. These financial savings associated with BF was a key motivator, which influenced the young mothers to maintain successful BF. This could also be used to promote BF to this population in order to encourage BF initiation and maintenance.

Healthier alternative

This sample of mothers also had a desire to put their infant before themselves. They wanted to do the best for their infant by giving them breast milk but also do the right thing. It was these reasons that motivated them to successfully breastfeed. They chose to breastfeed for the health benefits to their infant because breast milk was perceived as the healthier alternative to infant formula. Previous research of young mothers' attitudes around BF also highlighted young women feel their babies' needs are the priority (Nelson, 2009). This may be related to the stigma associated with young motherhood, which makes young women keen to portray themselves as good mothers (Graham and McDermott, 2006). This motivated them to continue breastfeeding in spite of adversity and so, demonstrate resilience.

Putting their infant first and giving them the best arose continually throughout the interview, it was mentioned by mothers in every question. When difficulties arose the mothers felt they had to breastfeed because breastfeeding was more important to them than putting the infant on formula. This desire also motivated the mothers to take responsibility, because they realised the importance of motherhood.

"I get this one chance to get this right for this kid... she should be my number 1 priority [P6]"

Therefore, when mothers gave their baby the best and did what they perceived to be the right thing in order to be seen as a good mother. The desire to be portrayed as a good mother may be particularly strong in younger women because they are developing fragile new identities as adults. However, with the right support and education, young mothers may be more likely to continue to BF, especially if they associate it good mothering (Graham and McDermott, 2006) and other key factors which strongly influence their motivation to BF.

3.5 Conclusion

One major limitation of this qualitative study was the length of time since some of the participants had given birth. Initial attempts were made to recruit mothers who gave birth within the past two years. However, due to the difficulty to find mothers and time constraints the inclusion criteria was broadened to include any mother who gave birth under the age of 25 years. Therefore, the extended time period since mothers gave birth and the time they were interviewed (up to 15 years), has the potential to negatively influence the results by reducing their trustworthiness.

Another limitation of this study lies in the analysis of results. One trained researcher conducted the interviews and the thematic analysis. Ideally, a triangulation of the data analysis between members of the research team would have occurred. However, due to time constraints, this was not possible. In order to increase the trustworthiness of the study, the thematic analysis was double-checked by two members of the research team.

Young women's knowledge about breastfeeding may be an important factor for breastfeeding success. Yet, because the mothers lacked knowledge around BF, they had to deliberately increase their own knowledge. This intrinsic motivation amongst positive deviants appears to be a driver of information and support seeking behaviour, which enhances self-efficacy and breastfeeding resilience amongst young mothers. Therefore, knowledge about breastfeeding may be an important factor, which could be addressed in any future strategies to enhance breastfeeding duration in young mothers.

Chapter 4: Conclusions

4.1. Summary of the study

This study was designed to gain an in-depth understanding of the factors that led to a successful breastfeeding experience in mothers who gave birth at a young age.

The primary objective of this study was to explore the young mother's experience of successful breastfeeding. Therefore, seventeen mothers were recruited who gave birth between the ages of 15 years to 24 years. These births took place from 2004 through to 2017. Semi-structured in-depth interviews were conducted to gain an understanding of their breastfeeding experience. These interviews lasted between 30 to 60 minutes. Demographic information was also collected using a questionnaire to provide further insight.

The second objective of this study was to identify the key themes, which emerge as contributing to the breastfeeding experience. Although every mother in the study breastfed for at least 4 months, they all expressed that their lack of knowledge was a barrier to BF. Within the dataset, a lack of knowledge was not the only barrier to BF, which the women identified with. The key barriers identified included, lack of breastfeeding knowledge, expectations, which differed from the lived experience, the quality of the initial support for BF, lack of ongoing support for BF and initial difficulties with the practice BF. The BF challenges and barriers highlighted by mothers who gave birth at a young age reflect the challenges and barriers identified by BF mothers of any age. Yet, the BF success observed in this population was attributable to their own actions rather than the wider environment in which they breastfed.

The final objective was to gain an in-depth understanding of enabling factors, which contribute to breastfeeding success. Three key factors, which strongly influence BF and enabled the mothers to be successful, include resilience in the face of adversity, a positive breastfeeding culture and that BF is cheaper, more convenient and healthier for the infant.

4.2. Conclusion

Although all the mothers in the study had been purposely recruited to ensure that they had successfully BF their infants for at least 4 months, they identified a number of key barriers to BF. These key barriers identified included, breastfeeding knowledge and expectations differ from the lived experience, midwives provide critical initial support, with some variability in quality, but it is of inadequate duration and initial difficulties with BF. Exploration of the barriers the mothers faced enabled a greater insight into their experience as a young mother.

Each participant also highlighted several key facilitators, which enabled her to overcome these barriers, such as resilience in the face of adversity, a positive breastfeeding culture and the economy of BF. It was the cost of formula, the convenience of putting the infant to the breast and the infant's health that motivated the mothers to successfully BF. However, their success was not solely related to motivation, it was also facilitated by a positive BF culture, self-efficacy and resilience.

Young women's knowledge about breastfeeding may be an important factor for breastfeeding success. Yet, because the mothers lacked knowledge around BF, they had to deliberately increase their own knowledge. This intrinsic motivation amongst positive deviants appears to be a driver of information and support seeking behaviour, which enhances self-efficacy and breastfeeding resilience amongst young mothers. Therefore, knowledge about breastfeeding may be an important factor, which could be addressed in any future strategies to enhance breastfeeding duration in young mothers.

4.3. Strengths

Data saturation is considered the gold standard, which, should be used to determine sample size in purposive samples (Guest, Bunce, & Johnson, 2006). A purposive sample occurs when participants are selected based on a predetermined criterion, which is relevant to the research objectives (Patton, 2002). Purposive sampling was used in this study and so, data saturation was required to ensure adequate and quality data were collected. Data saturation required continued

sampling within the specified population until the repetition of the data occurs and no new information is obtained (Bowen, 2008). Evidence-based recommendations regarding purposive sample sizes for interviews found that saturation occurred within the first twelve interviews (Guest et al., 2006). Data saturation occurred in this study after the fifteenth interview, however, to make sure data saturation had been obtained and two more interviews were carried out. Obtaining saturation in qualitative research is a strength of this study because it increases the trustworthiness of the content and gives the results of the study credibility.

Suggestibility, the incorporation of misinformation into a person's memory, can occur if participants are asked leading questions by the interviewer, this is also known as interviewer bias (Neusar, 2014). In order to minimise interviewer bias, participants were asked open-ended questions. This enabled them to share their experience without the influence of the interviewer's beliefs or ideals being known. Probing questions were then used to gain more in-depth information from the participants. This type of interviewing technique also minimised the desire of the participant to respond in a way that seems socially acceptable, despite the information being false (Neusar, 2014). The combination of open-ended questions and probing questions minimised social desirability bias and was a strength of the study.

The final strength of this study relates interviewer and social acceptance bias. Interviewer acceptance bias occurs when a participant provides answers that seem pleasing to the interviewer, in order to receive praise or acknowledgement (Neusar, 2014). Social acceptance bias can sometimes also occur with deviant populations, as they are not the 'norm' but may want to appear that way. The interviewer was a young woman with no children, this may have helped to reduce interviewer and social acceptance bias as respondents were more likely to answer freely. Due to the characteristics of the interviewer, the participants may not have felt pressurised to formulate answers that were socially acceptable or withhold personal information, as could have occurred with an older interviewer or a male interviewer. This enabled the interviewer to extract a large volume of relevant

information from the participants, in order to obtain a relatively in-depth insight into their experiences.

4.4. Limitations

One major limitation of this qualitative study was the length of time since some of the participants had given birth. Initial attempts were made to recruit mothers who gave birth within the past two years in the Auckland and Northland region. However, due to the limited population size, the difficulty to find mothers due to their spread across New Zealand and the lack of policies which identify and follow each live birth, the inclusion criteria was broadened to include any mother who gave birth under the age of 25 years. This is problematic because qualitative research is based on interviews, which requires the participants to retrospectively assess their experience. Recall of the BF experience means the participant may be subject to transience (the degradation of memory accessibility over time) and bias (the retrospective distortions that were mentioned above that are produced by our current knowledge, belief system, or persistence), two factors that contribute to memory distortion (Neusar, 2014). It is very easy to create a story of success, or failure, once the final result is known, which can cause information to be distorted and altered as to what and why it happened at the time (Neusar, 2014). Therefore, the extended time period since mothers gave birth and the time they were interviewed (up to 15 years) has the potential to negatively influence the results by reducing their trustworthiness. However, based on available evidence which indicates that mothers can accurately recall their breastfeeding experience up to 20 years after giving birth (Natland et al., 2012), the effect of this extended time frame on memory recall may be minimal for in this study.

Another limitation of this study lies in the analysis of results. One trained researcher conducted the interviews and the thematic analysis. Ideally, a triangulation of the data analysis between members of the research team would have occurred. However, due to time constraints, this was not possible. In order to increase the trustworthiness of the study, the thematic analysis was double-checked by two members of the research team.

The final limitation of this study is the decreased generalisability of results. The seventeen women in this study were solely located in the North Island of New Zealand. Women from the South Island of New Zealand are not represented. Therefore, the breastfeeding environment and experiences of these women may differ from the experiences of women in the North Island. The ethnicity of the participants also does not reflect all ethnic groups found in New Zealand. The mothers only identified themselves as Pākeha, Pākeha and Māori or Pākeha and Hawaiian. Ethnic groups, such as Pacific and Asian women were not represented in the study. Women of these ethnic backgrounds may have a different breastfeeding experience to Pākeha and Māori mothers. Very young mothers (15 – 17 years) were also underrepresented, as only one participant in this study was a very young mother (15 years). The experience of this mother would not be representative of all mothers her age. Socioeconomic data was also not studied, which may have provided further insight. Socioeconomic data may have been able to provide further explanations around why this group were successful. Socioeconomic data will also assist with determining the generalisability of the sample.

Recruitment methods may also have resulted in sample bias as mothers were recruited from groups such as La Leche League. All participants self selected for the study, which may also result in differing participant characteristics to those women who did not wish to participate. Women in such breastfeeding advocacy groups may also have different attitudes and beliefs regarding breastfeeding. Therefore, potentially limiting the generalisability of the results.

Therefore, due to the characteristics of the study population, future initiatives targeted to address the needs of mothers who have given birth at a young age, may not address the specific needs of all young New Zealand mothers. For example the specific needs of Pacific and Asian women and/or women who gave birth in the South Island of New Zealand or very young mothers.

4.5. Recommendations for future studies

1. To conduct further research in mothers of differing ethnicities who had given birth within the past five years using the triangulation method to analyse the results, in order to increase the trustworthiness and generalisability of results.
2. Further research should also examine the breastfeeding experiences of mothers who gave birth at a very young age (15 – 17 years), young Pacific and Asian mothers and young mothers in the South Island.
3. To identify key aspects that could be targeted in future breastfeeding initiatives in mothers who give birth at a young age.
4. Targeted research to explore the impact of peers on young mothers breastfeeding duration.
5. Conduct a pilot study to trial set interventions, such as support via social media platforms, aimed to prolong breastfeeding duration in mothers who give birth at a young age.

Chapter 5: References

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Appendix A: Information sheet

Researcher(s) Introduction

Researchers: Roger Hughes, Cathryn Conlon, Rebekah Polglaze – MSc (Dietetics)

Hi, my name is Rebekah Polglaze and I am a student researcher at Massey University studying to be a dietitian.

Project Description and Invitation

It is largely accepted that age is associated with breastfeeding duration, which therefore means young mothers are less likely to meet the current breastfeeding guidelines than older mothers. However, very little research has addressed the factors that lead to longer breastfeeding in mothers of all ages and nothing is known about the factors that directly impact young mothers and their breastfeeding duration.

The purpose of this study, therefore, is to investigate the socio-ecological factors that lead to breastfeeding duration in these young mothers. This project addresses the current knowledge gap around young mothers by focusing special attention on the mothers who meet the breastfeeding guidelines by using in-depth interviews to learn what factors helped them to achieve this. Specifically, in this project, we will be interviewing 20 mothers aged less than 25 years, who have breastfed (exclusive or partial) for 4 months or more and asking about their breastfeeding experience through a 1-hour in-depth interview to reveal the factors helped them to achieve successful breastfeeding. This project, by closely examining successful young mothers will shed new light on these mothers, which will provide a great platform for future initiatives aimed at increasing the number and duration of women breastfeeding in this group.

We would like to invite you to participate in in our study and share your success story.

Participant Identification and Recruitment

Recruitment method: advertisement through the La Leche League and early childhood centres, using posters, their website and recommendations from leaders etc.

Inclusion Criteria

- Anyone aged less than 25 years when they breastfed
- Partially or exclusively breastfed for 4 months or more
- Must speak english

Exclusion criteria

- Aged more than 25 years when they breastfed
- Breastfed for less than 4 months

Participant Number: 15 – 25 young mothers or until redundancy/ data saturation has been met.

There are no discomforts or risks to you should you decide to be involved in this study.

Project Procedures

- Participants will be involved in an hour long, comprehensive discussion about their breastfeeding experience, this will be recorded on tape.
- The interview process will take approximately 1.25 hours including relevant paperwork that will need to be completed beforehand
- There are no conflicts of interest.
- Interview Location: Massey Otearoha Campus Albany or a designated building in Northland (this will be dependent on the location of the participant and may be subject to change). The Albany interview facility will have a waiting room, which has tea and coffee provided as well as interview rooms, which are private. There is limited access to personnel who are not involved with the research to the building. There are bathroom facilities within the building; it has wheelchair and buggy access. We will set up one of the rooms next to the bathroom facilities with a baby-changing mat. There is also hand-washing facilities within the building. An appropriate interview location in Northland will be discussed with the participant and decided at the time of participation.
Any participants outside of Auckland or Northland will be able to have a skype or phone interview depending on their preference.

Data Management

- The researchers from this study will solely use data obtained for this study only for the purpose, which it has been collected. The identifying components of the data will be removed for analysis in order to preserve confidentiality. Should another researcher wish to use data collected from this study further consent will be required, and you will be contacted.
- All electronic data is stored in a password protected secure files as soon as it is obtained, on a Massey server. All hard data (e.g. consent forms) is stored in locked filing cabinets in a locked room in a locked building. Only members of the research team will have access to this data. If another researcher should wish to have access to the data you will be contacted for permission first.
- Raw data from the tape recording will be transcribed into a word document and both will saved onto a drive which is password protected, access-restricted, and used solely for Nutrition Research data. Once the study is completed, all files connected to the study are then transferred to a similar drive, which is for archived data.
- Data will be coded and put into a statistics program for analysis of patterns, these files will also be password protected, access-restricted, and used solely for Nutrition Research data.
- Upon completion of the study the data will be kept for 5 years in the form of an archived word document, plus additional SPSS data sets on a secure server. The supervisors, Roger Hughes and Cathryn Conlon will be responsible for the final disposal of the data.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study (up to 2 weeks after the interview);
- ask any questions about the study at any time during participation;

- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given a written copy of the transcript for review prior to analysis of the data.
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview.

You are welcome to contact either person above should you have any questions or concerns.

Project Contacts

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This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 16/52. If you have any concerns about the conduct of this research, please contact Dr Lily George, Acting Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x43923 email humanethicsnorth@massey.ac.nz.

Appendix B: Advertisement

BREASTFEEDING MUMS STUDY



Did you breastfeed your baby? We would love to hear your story.

<p>THIS STUDY WILL INVOLVE</p> <p>Completion of a short questionnaire and a 1-hour interview in the form of a discussion where you will have the opportunity to share your breastfeeding experience.</p> <p>Contact Details: Rebekah Polglaze: Ph 027 570 5515 Email: R.Polglaze@massey.ac.nz</p>	<p>WE ARE LOOKING FOR</p> <ul style="list-style-type: none">• Mothers aged less than 25 when they breastfed• Mothers who have breastfed for at least 4 months <p>Owen Mugridge: Ph 09 414 0800 ext. 43650 Email: O.Mugridge@massey.ac.nz</p>
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Share your success story to aid us in our mission to help other mothers to give their baby the best start in life, just like you did for yours.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 16/52. If you have any concerns about the conduct of this research, please contact Dr Lily George, Acting Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x43923 email humanethicsnorth@massey.ac.nz.

Appendix C: Consent form

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to the interview being sound recorded.

I wish/do not wish to have my recordings returned to me. *(Circle the relevant option)*

I wish/do not wish to have data placed in an official archive. *(Circle the relevant option)*

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature:

Date:

.....

Full Name - printed

.....

Appendix D: Questionnaire

Please fill out the information below. Circle the appropriate answer when required.

1. Name _____
2. Date of Birth _____
3. Current Age _____
4. Age you were when you breastfeed _____
5. Email address _____
6. Postal Address _____
7. Relationship status at time of breastfeeding
 - Single
 - In a relationship with baby's father
 - In a relationship with someone (not baby's father)
 - Engaged
 - Married
 - Civil Union
 - Domestic partnership
 - De Facto
 - Widowed
 - Other (please specify)
8. Employment status at time of breastfeeding
 - Work in a workplace – full time
 - Work in a workplace – part time
 - Work from home – full time
 - Work from home – part time
 - Unemployed

9. Which city and suburb did you live in at the time of breastfeeding

- City: _____
- Suburb: _____

10. Which ethnic group do you identify with

- New Zealand European
- Māori
- Samoan
- Cook Island Māori
- Tongan
- Niuean
- Chinese
- Indian
- Other (please specify)

11. Date of baby's birth _____

12. Baby's age now _____

13. Baby's sex

- Male
- Female

14. How was the baby born

- Vaginal birth
- Ventouse
- Forceps
- Emergency caesarean
- Elective caesarean

15. How long were you in active labour?

- <5 hours
- 5.0 – 7.9 hours
- 8.0 – 10.9 hours
- 11.0 – 13.9 hours
- 14.0 – 17.9 hours

- 18 hours +

16. How long did you push for? (please choose the option that is closest to what happened)

- 30 minutes
- 1 hour
- 2 hours
- 3 hours
- 4 hours
- Other (please specify)

17. How many children did you have at time of breastfeeding?

- 0
- 1
- 2
- 3
- 4
- Other (please Specify)

18. How many children do you have now?

- 0
- 1
- 2
- 3
- 4
- Other (please Specify)

19. Is this baby a twin or multiple birth

- Single
- Twin
- Multiple Birth

20. How quickly did the baby get onto the breast after birth?

- 10 minutes
- 20 minutes

- 30 minutes
- 40 minutes
- 50 minutes
- 1 hour
- 1.5 hours
- 2 hours +

Appendix E: Authority for the release of transcripts

I confirm that I have had the opportunity to read and amend the transcript of the interview(s) conducted with me.

I agree that the edited transcript and extracts from this may be used in reports and publications arising from the research.

Signature:

Date:

.....

Full Name - printed

.....

Appendix F: Qualitative analysis approach

Qualitative Analysis: Transcription (Morse, 1995)

Once the interviews are complete transcription occurs, the process is outlined below.

1. Make a copy of the recording for backup
2. Replay the interview recording as soon as possible after the interview has been conducted.
3. Listen carefully to the content – pay particular attention to the questions asked, participant’s response and write field notes to describe the interview context.
4. Transcribe the recording word-for-word from the interview (no paraphrasing)
 - i. Indicate who is speaking (participant [in italics and indented] or researcher [non-italics and outdented], indicate the relationship of people mentioned e.g. ... [mother] [infant] [partner])
 - ii. Pauses should be indicated by a dash, gaps or prolonged pauses should be indicated by ellipses
 - iii. All expressions – including exclamations, laughing, crying, expletives should be included within the transcript but are separated from the text and put within square brackets
 - iv. If the interviewee changes tone or pauses significantly this indicates the topic is *highly* important or emotionally charged, and it may become lost in transcribing. In this instance place researcher comments directly into the transcript using **bold font** in order to separate it from the rest of the interview.
5. Type interviews single-spaced, include a blank line between each speaker
6. Include wide margins to allow for coding on the left side and comments about the content on the right side.
7. Number each page and include the interview number as well as the participant number

8. Once transcribed, check the transcript against the recording for accuracy.
9. Save the file and create a backup copy

Thematic Analysis (Morse, 1995; Rice, 1999)

1. Read and re-read the transcripts as a whole to become familiar with the data
2. Arrange the transcripts by question, to enable analysis of themes within each question.
3. Coding is the key process in thematic analysis. Code the text based on the persistent words/phrases that are found within the data (see below for step-by-step guide).
4. List all the codes that are generated from the text and note the supporting evidence, including the number of the participant who said the quote.
5. Arrange similar codes together and name the overarching concept/theme
6. Refer back to the data and become familiar again with the key themes/concepts that continue to appear – these concepts may not be apparent when first looking at the transcripts, but instead are underlying themes that are found beneath the surface of the interview
7. List all the repeating themes/concepts within each question
8. Compare themes that arise within each question, to identify themes that appear multiple times over different questions.
9. Arrange data by theme, to assess further the recurring themes arising between multiple questions.
10. Consider how the codes relate to the specific themes
11. Address any questions that arise relating to the themes by looking back to the current literature and comparing whether the findings agree/disagree with past research, or highlight new ideas/understandings
12. Does the theme(s) change the way the current literature is viewed when analysing the literature from the new perspectives?
13. Do the themes agree with the present understanding for this group?

Coding – “identification of persistent words, phrases, or themes within the data” (Morse, 1995).

1. Arrange the participant responses into each question asked, to assess codes within each question
2. Note the main theme within each paragraph in the left hand column – e.g. Support Network
3. Collate each paragraph by their theme so that sub-themes can then be created.
4. Analyse the paragraphs associated with each theme, highlighting the main phrases that arise relevant to the theme.
5. Create sub-themes based on the phrases that indicate similar meaning and together make up a single idea. – e.g. support-mother, support-groups, support-father
6. The sub-themes can be further broken down into codes specific to the phrases that make them up, if this is possible – e.g. support-mother-breastfeeding, support-groups-shared-experiences, support-father-promotes-BF
7. Once codes are created the analysis data can be completed manually via thematic analysis (Rice, 1999).