A mixed-methods study of student experiences and mother-baby outcomes in a novel interprofessional student-led breastfeeding clinic.

AMY SARAH MILLER

This thesis is submitted in partial fulfilment of the requirements of Bournemouth University for the degree of Doctor of Philosophy (PhD)

April 2021

Abstract

A mixed-methods study of student experiences and mother-baby outcomes in a novel interprofessional student-led breastfeeding clinic.

Author: Amy Miller

Background: An interprofessional student-led breastfeeding Clinic provided collaborative care to mothers and babies with breastfeeding difficulties. Student midwives and student chiropractors providing care were supervised by their respective registered lecturer-clinicians. This pragmatic, mixed-methods study used qualitative methods to explore students' experiences and early-career practitioners' reflections of the Clinic, and quantitative methods to describe mother and baby feeding outcomes after attending the Clinic.

Methods: Thirty-two students participated in seven focus groups, and seven former students were interviewed. Thematic analysis was used to analyse the qualitative data. Fifty-four mothers who attended the Clinic participated in a prospective study. Data were collected when they first attended the Clinic, and again when their baby was six and twelve weeks of age. Statistical analyses were completed using SPSS.

Findings: Themes that emerged from the qualitative analysis were interprofessional working, learning in the Clinic, gaining confidence, supporting the dyad, supporting mothers, and the Clinic. Fifty-nine per cent of mothers (n=32) completed the questionnaire at six weeks, 52% (n=28) completed at twelve weeks. At six weeks, 100% (n=32) of mothers continued to breastfeed, 68% (n=21) were totally breastfeeding, and 73% (n=22) achieved their feeding goal. At twelve weeks, 85% (n=24) of mothers continued to breastfeed, 68% (n=19) were totally breastfeeding, and 71% (n=20) achieved their feeding goal.

Conclusions: Student and early-career midwives and chiropractors obtained valuable learning in the Clinic, particularly in collaborative practice and breastfeeding support. The interprofessional nature of the Clinic offered opportunities for students to develop the

knowledge, skills, and communication to provide breastfeeding support, whilst supporting mothers to continue to breastfeed and meet their personal goals.

Table of Contents

List of Figures

List of Tables

Acknowledgements

Wholeheartedly and unreservedly, thank you to my supervisors Edwin van Teijlingen, Sue Way, and Alison Taylor. Your expertise, support, patience, and passion for this research have made it what it is and developed me enormously as a researcher. Special thanks to Edwin for your endless Skype support through Covid-19.

Thank you to Bournemouth University for funding this research.

Thank you to the AECC University College Clinic reception team, especially Hazel Blewer, for your help with recruitment.

Thank you to the students and staff at the Clinic for your help with recruitment and for enthusiastically supporting this research.

Thank you to all the students, midwives, chiropractors, and mothers who shared their time and expertise by participating in the research. This work would not have been possible without your generous and insightful contributions.

My family, for your love, support, and patience with my absence. Special thanks to mum, for proofreading and late-night discussions.

Hazel, for always believing in me when things got tough and setting me back on my feet.

Michelle, for being my cheerleader, and continual virtual working-from-home PhD buddy for the past year.

Wendy and Jeni, for your love, wisdom, and faith in me. Thank you especially for your help over the finish line.

Joyce, for your exceptional mentorship, for giving me the research bug, and for challenging me to reach for the best that I can be and do.

1 Introduction

1.1 Introduction to the Clinic

This thesis is set in an interprofessional student-led breastfeeding clinic (referred to as 'the Clinic' from here on in). In the Clinic, student midwives and student chiropractors are supervised by their lecturer-clinicians, a midwife and a chiropractor respectively, to provide interprofessional and individualised breastfeeding support for mothers and their babies.

Aims of the Clinic

At its conception, there were two key purposes that it was hoped the Clinic would fulfil, these essentially related to interprofessional practice-based learning and to clinical service provision. For students, the Clinic aimed to provide the opportunity to engage in practice-based learning. Given the focus on breastfeeding and the interprofessional nature of the Clinic, the two key proposed areas of learning related to supporting breastfeeding and practicing interprofessionally. In terms of clinical services, the Clinic aimed to provide breastfeeding support for mothers and babies. In this Clinic, the principles of the Baby Friendly Initiative (Entwistle 2013) were implemented to provide individualised, mother and baby-centred, and evidence-based breastfeeding support. The two purposes of practice-based learning and service provision informed the dual focus of the initial research aims (1.3) and later the development of the research questions (3.7). As such, the students who provided care and mothers and babies who utilised the Clinic were the focus in this thesis.

The Clinic and its approach are described in detail in chapter two (2.9).

1.2 Introduction to the researcher

I was a student chiropractor and researcher in the Clinic from 2014-2016. My interest in the many combined components of this clinic grew as I gained clinical and research experience in this unique setting. I was increasingly intrigued by the multi-faceted clinical encounter and what effect it may have for breastfeeding dyads, and by the role this clinic had for students in learning, particularly for breastfeeding support and collaborative practice.

I am a woman who does not have children and has never breastfed, my own lived experience of this Clinic is through clinical and research lenses. More broadly, my experiences surrounding breastfeeding include listening to my mother talk about and relive her own struggle to breastfeed her two babies. In my previous clinical and research roles in the Clinic, I witnessed similar stories and struggles faced by many of the women who attended the Clinic. I acknowledge and welcome that these experiences form part of my motivation in undertaking this thesis. At the outset of this PhD, it was my hope that better understanding this Clinic and its approach may ultimately facilitate better care for mothers who are struggling to meet their feeding goals. My positionality is discussed in detail in chapter four (4.4).

1.3 Research aims

The aims of this thesis were to:

1. Explore students' experiences and early-career practitioners' reflections of the Clinic, with regards to their learning and practice around breastfeeding and interprofessional collaboration
2. Gain understanding of the demographic profile of mother-baby dyads who utilise this clinic, and their feeding outcomes after attending the Clinic.

These aims are revisited, and the research objectives are presented, at the end of the literature review (3.7).

1.4 Thesis outline

Chapter two provides the **background** and context to the thesis and introduces key concepts and definitions. Topics introduced in this chapter include the relevance of breastfeeding, breastfeeding in the United Kingdom (UK), the professions of midwifery and chiropractic, and the role of these professions in the provision of breastfeeding support, interprofessional education and collaborative practice, and student-led clinics. This chapter concludes with a detailed account of the Clinic from the students' and mothers' perspectives.

Chapter three is a **systematised review of the literature**, which addresses the intersections of interprofessional education and collaborative practice, student-led clinics, and breastfeeding. The chapter includes a critical analysis of the research conducted in the Clinic to date and concludes by highlighting the knowledge gaps to be addressed and the research objectives of this thesis.

Chapter four describes and justifies the **methodology and methods** applied to address the research objectives. A pragmatic approach to mixed-methods research was used. The positionality and role of the researcher are discussed. The research design and methods of the three component studies and their integration within the mixed-methods approach are detailed. The first study consisted of focus groups with students who had participated in the Clinic, the second was interviews with early-career midwives and chiropractors who had participated in the Clinic as students and progressed to post-registration practice, and the third was a prospective study of feeding outcomes with mothers who attended the Clinic. The approaches taken to data analysis are explained and justified.

Chapter five reports the **findings** from the three component studies discussed in chapter four. The findings from each study are presented separately, and then summarised. The thematic analyses of focus groups with students and interviews with early-career midwives are presented. The demographic data of mothers and babies who attended the Clinic and their feeding outcomes at six and twelve weeks are presented. The findings are summarised.

Chapter six discusses the findings in the wider context of the mixed methods study, providing **integration and triangulation of the findings**. Convergence and divergence within the findings are highlighted.

Chapter seven provides a **discussion** of the findings from chapters five and six in the context of the literature. Methodology, methods, findings, and implications are discussed. Strengths and limitations of the study are highlighted.

Chapter eight presents the **conclusions** of this thesis, including implications for practice and practice-based learning, and for further research. This chapter concludes with the contributions this thesis has made to new knowledge.

Chapter nine makes **recommendations** for clinical education and practice, policy makers, future research, and the Clinic.

2 Background

2.1 Introduction to the chapter

This chapter provides the background and context to this thesis and introduces key concepts and definitions related to the Clinic. As the Clinic is a unique phenomenon, the aim of this chapter is to set the scene around the Clinic by introducing and contextualising each of the elements individually, before bringing them together to describe and discuss this multifaceted Clinic. Each section introduces an element of the Clinic, and the Clinic is then described in detail.

Topics introduced in this chapter are the importance of breastfeeding (2.2), the contemporary global and UK contexts of breastfeeding (2.3), determinants of breastfeeding (2.4), the professions of midwifery (2.5) and chiropractic (2.6) and the role these professions have in breastfeeding support, interprofessional education and collaborative practice (2.7), and student-led clinics (2.8). The chapter concludes with a detailed account of the Clinic, where interprofessional education, collaborative practice, and midwifery and chiropractic practice intersect in a student-led breastfeeding clinic (2.9). The Clinic is discussed from the perspectives of both students and mothers, who were participants in the research studies conducted for this thesis.

Institutional anonymity

As the Clinic is truly unique, with no similar breastfeeding clinic in existence in the UK, it is unreasonable to claim that institutional anonymity is possible. As Guenther (2009) discussed, complex issues can arise when institutional anonymity is feigned in a situation where it cannot reasonably be upheld. Therefore, the names of the institutions are referred to in this chapter, and throughout the thesis. The anonymity of participants remained a priority.

2.2 The importance of breastfeeding

This section primarily summarises the findings from the 2016 Lancet series on breastfeeding. This Lancet series was the largest review of breastfeeding to date, with systematic reviews and meta-analyses commissioned by the World Health Organization (WHO) for the purpose of the series.

2.2.1 Health benefits of breastfeeding and health costs of not breastfeeding

2.2.1.1. Introduction to breastfeeding

Breastmilk has been described as personalised medicine for infants (Victora et al. 2016). It provides infants with the nutrients and bioactive components required for health and development (Ballard and Morrow 2013). These bioactive components affect the development of immunity (Cacho and Lawrence 2017) and play a profound role in the health and survival of infants (Ballard and Morrow 2013).

In the remainder of this subsection, the multiple benefits of breastfeeding for infants and mothers are summarised. It should be held in mind that the necessary alternative to breastfeeding is not breastfeeding. Culturally, particularly in the UK, breastfeeding is not the norm (Unicef UK Baby Friendly Initiative 2017). This norm of not breastfeeding is reflected in literature, where the benefits of breastfeeding are widely discussed. If breastfeeding were the cultural and societal norm, these benefits may be considered inherent, and the emphasis may instead be on the risks associated with not breastfeeding. For each positive benefit of breastfeeding discussed, there is the opportunity to consider breastfeeding and its benefits as the 'norm', and not breastfeeding being associated with risks. For example, Victora et al. (2016) estimated that upscaling breastfeeding to near-universal levels globally would save the lives of 823,000 children a year: conversely, not breastfeeding could be seen to cost the lives of 823,000 children a year.

2.2.1.2 Health benefits for infants

Infant mortality

Breastfeeding reduces the risk of infant and young child mortality in low-, middle- and high-income countries (Victora et al. 2016). In low- and middle-income countries (LMIC) infants who were exclusively breastfed had just 12% the risk of death compared to infants who were not breastfed (Sankar et al. 2015). Infants who had ever been breastfed, even short-term, had a reduced risk of sudden infant death by 36% (Ip et al. 2007) and reduced risk of necrotising enterocolitis, which has high fatality in all settings, by 58% (Holman et al. 2006).

Infant morbidity: early life

In LMICs, breastfeeding protected against diarrhoea, of which half of all cases could have been avoided by breastfeeding, reducing hospital admission by 72% (Horta and Victora 2013). Breastfeeding also protected against respiratory infections, of which one third could have been avoided by breastfeeding, reducing hospital admissions by 57% (Horta and Victora 2013). In high-income countries (HICs) breastfeeding was protective against otitis media in children under two years of age (Bowatte et al. 2015). Later in life, children who were breastfed as infants had over two thirds fewer malocclusions than infants who were not breastfed (Peres et al. 2015).

Infant morbidity: later life

Adults who were breastfed as infants have health differences compared to adults who were not. Breastfeeding protects against obesity and some other non-communicable diseases (Victora et al. 2016), which have significant associated health and healthcare costs globally (Tremmel et al. 2017). Longer periods of breastfeeding were associated with a 26% reduction of odds of overweight and obesity, this reduction was fairly consistent across country income classification (Horta et al. 2015). After adjusting for socioeconomic status, maternal body mass index, and perinatal morbidity, overweight and obesity prevalence in adults who were breastfed as infants was reduced by 13% (Horta et al. 2015).

2.2.1.3 Health benefits for mothers

One important benefit of breastfeeding, particularly in LMICs, is the improved birth spacing obtained due to lactation amenorrhoea, particularly with increased predominance and exclusivity of breastfeeding (Chowdhury et al. 2015). There was a solid inverse relationship between breastfeeding and breast cancer: for every 12 months of breastfeeding there was a 4.3% reduction in the incidence of breast cancer (Chowdhury et al. 2015). When adjusted for parity and exclusion of nulliparity, breastfeeding was associated with an 18% reduction in the incidence of ovarian cancer (Chowdhury et al. 2015). Breastfeeding and maternal mental health also intersect. Negative early experiences of breastfeeding have been associated with increased odds of depressive symptoms at two months postpartum (Watkins et al. 2011), and mothers who initiated breastfeeding but then stopped due to pain or physical difficulties were at increased risk of depressive symptoms (Brown et al. 2016).

2.2.2 Additional benefits of breastfeeding and costs of not breastfeeding

2.2.2.1 Individual, healthcare, and societal costs of not breastfeeding

At the individual level, one direct cost of not breastfeeding is the purchase of breast milk substitutes. In the UK, costs of powdered formulation infant milks have been estimated at between £25.13 and £92.08 per month for a two- to three-month-old baby, depending on the brand used (First Steps Nutrition Trust 2021). This cost is around two times higher if using ready-to-feed milks (First Steps Nutrition Trust 2021).

Healthcare costs related to not breastfeeding are a further consideration. A recent study in Canada demonstrated that feeding mode was predictive of healthcare use and costs in the first year of life, with exclusively breastfed infants requiring fewer hospital admissions than mixed fed or exclusively formula fed infants (Taylor et al. 2020). In the UK, it was estimated that £31 million (in 2009 £) could be saved in health care costs for four acute diseases in infants and breast cancer in mothers if breastfeeding rates were doubled (Pokhrel et al. 2015). Unicef UK commissioned a report on preventing disease and saving resources, which highlighted the same four diseases, and estimated savings based on three policy scenarios: least optimistic, mid-level, and most optimistic (Renfrew et al. 2012). The least optimistic policy scenario was an increase in exclusive breastfeeding at four months to 21% and breastfeeding at discharge from neonatal units to 35%, the most optimistic was 65% exclusively breastfeeding at four months and 100% breastfeeding on discharge from neonatal units. Annually, these scenarios were estimated to save between £6.37 million and £26.85 million respectively on these four diseases alone (Renfrew et al. 2012). The same scenarios gave estimated annual savings of between £15 million and £28 million on breast cancer in mothers (Renfrew et al. 2012).

This Unicef UK report also contrasted potential costs of providing breastfeeding support and promotion with the potential costs of not breastfeeding (Renfrew et al. 2012). Examples included societal costs, for example of flexible working versus time away from work to care for ill children; governmental and community costs, for example providing breastfeeding-friendly spaces versus costs in education related to cognitive deficit; and family costs, for example the mother's time to seek and receive breastfeeding support versus the costs of formula, bottles, and time away from work to care for ill children (Renfrew et al. 2012).

2.2.2.2 Environmental and ecological costs

Breastmilk substitutes have environmental and ecological costs associated with production, packaging, and transport (Rollins et al. 2016). Breastfeeding can mitigate the environmental and ecological costs of breastmilk substitutes and has been described as a renewable food source for infants, which requires no production, transport, or packaging (Rollins et al. 2016). These additional benefits of breastfeeding have gained attention, and 'support breastfeeding for a healthier planet' was the World Alliance for Breastfeeding Action's topic for World Breastfeeding Week 2020, aligned with the United Nation's Sustainable Development Goals (World Alliance for Breastfeeding Action 2020).

2.3 Global and UK contexts of breastfeeding

2.3.1 Introduction

Despite the established and significant health benefits of breastfeeding, breastfeeding rates remain insufficient across all settings, particularly HICs (Victora et al. 2016). This is also despite multiple coordinated global efforts over the past 30 years, including the Innocenti Declaration in 1990, the Convention on the Rights of the Child in 1990, and the Baby Friendly Hospital Initiative in 1991 (now the Baby Friendly Initiative). The Innocenti Declaration stated that infants should be exclusively breastfed from birth to four months of age; this was later amended to six months of age with continuation of breastfeeding beyond six months (Unicef 2007). Access to information, education and support for breastfeeding were enshrined in the UN Convention on the Rights of the Child in 1990 (Unicef 1990). In response to the Innocenti Declaration, the Unicef Baby Friendly Hospital Initiative was founded by Unicef and the WHO in 1991, with the aim to change practices to protect, promote and support breastfeeding (World Health Organization and Unicef 2009).

The Baby Friendly Initiative (BFI) was updated and relaunched in the UK in 2013 (Entwistle 2013), with the main purposes of continuing to increase initiation and prevalence of breastfeeding and supporting health professionals to enable mothers and families to form close loving relationships with their babies. The Unicef UK BFI includes accreditation for services in maternity, neonatal, health visiting, and children's centres, together with universities providing pre-registration education in midwifery and health visiting (Unicef UK Baby Friendly Initiative 2020a). The BFI Theory of Change highlighted

the need for healthcare workers with the skills, knowledge, and communication to support breastfeeding, as a key component of protecting, promoting, and supporting breastfeeding (Unicef UK Baby Friendly Initiative 2019b).

These closely timed efforts on a global scale may have created cause for optimism for a global shift towards improved breastfeeding. Indeed, in the decade following the adoption of the Innocenti Declaration, declining breastfeeding rates were reversed, and globally exclusive breastfeeding rates increased by 15% (Labbok et al. 2006). Although breastfeeding rates have continued to improve worldwide, change has been slow and international targets remain far from reach (Victora et al. 2016).

2.3.2 Global disparities in breastfeeding

Disparities in breastfeeding rates were shown between countries, across the low-, middle- and high-income classifications, and within the income classifications of individual countries. Broadly speaking, lower-income countries have higher rates of breastfeeding, and within these countries, poorer people tend to breastfeed for longer (Victora et al. 2016). There is further disparity in HICs, where higher income and education levels are associated with more breastfeeding (Victora et al. 2016). In all income settings, breastfeeding rates are slowly increasing (Victora et al. 2016).

2.3.3 Breastfeeding in the UK

2.3.3.1 Breastfeeding data

In the UK, there is no longer standardised routine collection of breastfeeding data. The final and most recent National Infant Feeding Survey was published in 2012 (McAndrew et al.). In addition to the incidence, prevalence and duration of breastfeeding, these surveys reported extensive contextual information, including determinants of breastfeeding, choice of feeding methods, birth, and postnatal care and the early weeks (McAndrew et al. 2012). From 2013 to 2015, NHS England published data on the prevalence of breastfeeding at six to eight weeks after birth (NHS England 2017). From 2015, data collection about breastfeeding was devolved to local authorities and is collated and published quarterly by Public Health England (Public Health England 2020). This approach seeks to collect data on whether infants in each local authority are totally, partially, or not at all breastfed at six to eight weeks. In the most recent published report only 67 local authorities (45%) passed validation and had data published (Public Health

England 2020). As such, this reporting is not optimal to provide full local and national pictures, and includes only the feeding outcomes of one age group, making this data of very limited value compared to the in-depth National Infant Feeding Surveys.

2.3.3.2 National Infant Feeding Survey: prevalence and trends

The UK has some of the poorest breastfeeding rates in the world, with 34% of infants receiving breastmilk at six months of age and only 1% of infants being exclusively breastfed at six months of age (McAndrew et al. 2012). That said, breastfeeding rates have increased, including initiation of breastfeeding at birth from 66% in 1995 to 91% in 2010, breastfeeding at six weeks from 42% in 1995 to 55% in 2010, and breastfeeding at six months from 21% in 1995 to 34% in 2010 (McAndrew et al. 2012). Large inequalities with regards to breastfeeding were shown, these are further discussed in section 2.4.3.

2.3.3.3 UK approach to promoting and supporting breastfeeding

In the UK, supportive measures for breastfeeding included one year of paid maternity leave, and approximately 40% of maternity and health visiting services being BFI accredited (Rollins et al. 2016). The devolved governments of Scotland, Ireland, and Wales implemented comprehensive policies and programmes to support breastfeeding, and rates of improvement in breastfeeding were more rapid than in England, where these efforts have not been matched and improvement in breastfeeding rates is slower (Rollins et al. 2016). Another difference to note in these countries is the proportion of births in fully accredited Baby Friendly hospitals: England 58%, Wales 78%, Scotland 100%, and Northern Ireland 100% (Unicef UK Baby Friendly Initiative 2020b). Legislation around the International Code on Marketing of Breastmilk Substitutes is not comprehensive or enforced, and legal protections around breastfeeding in public are not well-publicised (Rollins et al. 2016). The breastmilk substitute industry in the UK continues to grow and was estimated to be worth $907 million (2019 US $) (Rollins et al. 2016).

Despite a steady increase in breastfeeding over the past 20 years (McAndrew et al. 2012), breastfeeding in the UK is far from meeting the WHO recommendation of exclusive breastfeeding for the first six months of life (World Health Organization 2020), despite some favourable conditions to support breastfeeding. Recently, attempts to address this fatigued issue have been made by different bodies in the UK, including a

call to action from Unicef UK to the UK governments (Unicef UK Baby Friendly Initiative 2016). The four action points were to develop a national infant feeding strategy board, include promotion, protection and support for breastfeeding in all relevant policy areas, to implement evidence-based initiatives to support breastfeeding in all maternity, health visiting, neonatal and children's centre services, and to fully adopt the International Code of Marketing Breastmilk Substitutes (Unicef UK Baby Friendly Initiative 2016). The Royal College of Paediatrics and Child Health issued a position statement on breastfeeding in 2019, with the following recommendations: increase initiation and continuation of breastfeeding, collect data on breastfeeding, and further research. Recommendations for further research included optimal breastfeeding practices for different groups of infants, approaches to support continuation of breastfeeding, long-term effects on health of mothers and infants, differences in infant outcomes with breastfeeding and expressed breastmilk feeding, and approaches to promote societal support for breastfeeding (Royal College of Paediatrics and Child Health 2019).

2.3.4 Summary

For decades, breastfeeding rates have been improving in the UK (McAndrew et al. 2012). However, change has been slow and there are significant challenges yet to be overcome, as demonstrated by the poor breastfeeding rates in the UK compared to other HICs (Rollins et al. 2016). Whilst efforts and attention have not been lacking, including the UK BFI, the Royal College of Paediatrics and Child Health position statement, and call to action from Unicef UK, the culture has been slow to respond and breastfeeding rates remain far from recommendations and targets.

2.4 Determinants of breastfeeding

2.4.1 Determinants of breastfeeding globally

Based on a systematic review, and reviewing and revising existing conceptual frameworks, Rollins and colleagues (2016) created a conceptual model of the determinants of breastfeeding and corresponding interventions to address these determinants. The model highlighted determinants at the structural, settings, and individual level.

2.4.1.1 Structural

At the structural level, social and cultural attitudes and market factors were highlighted, including social trends, advertisements, media, and products available to purchase (Rollins et al. 2016). These determinants are most readily addressed through legislation and policy, media, and social mobilisation, with the aim of influencing attitudes and practices (Rollins et al. 2016). An example of an intervention at the structural level includes adoption of the International Code of Marketing of Breastmilk Substitutes (World Health Organization 1981).

2.4.1.2 Settings

The structural determinants were expressed in three main settings: health systems and services, family and community, and workplace and employment (Rollins et al. 2016). Communication around feeding practices in these settings were via interactions, attitudes, practices, and information (Rollins et al. 2016). Examples of how health systems and services can influence breastfeeding are as follows. Healthcare workers influence feeding practices before and after birth, and when challenges arise (Labbok and Taylor 2008). At all levels through the healthcare workforce, gaps in knowledge and skills around infant feeding were apparent (Leviniene et al. 2009; McAllister and McKinnon 2009).

Within the family setting, experiences and practices of female relatives affect incidence and duration of breastfeeding (Fuller and White 1998; Meyerink and Marquis 2002; McAndrew et al. 2012), and supportive attitudes of fathers lead to longer duration of breastfeeding (Bar-Yam and Darby 1997; Gibson-Davis and Brooks-Gunn 2007; Namir et al. 2017). This influence of mothers' social and cultural norms was also reflected in the UK, where mothers who were breastfed as babies were more likely to breastfeed (89%) compared to mothers who were not breastfed (60%), and mothers who had friends who had breastfed their babies had higher rates of intention to breastfeed (92%) compared to mothers whose friends had only formula fed (60%) (Renfrew et al. 2012).

2.4.1.3 Individual

At the individual level, intending to breastfeed was attributed to subjective norms and knowing that breastfeeding is beneficial (Rollins et al. 2016). Mothers' intentions to breastfeed were predictive of initiation of breastfeeding (Lawton et al. 2012), and of

duration of breastfeeding (DiGirolamo et al. 2005) given supportive contexts (Kervin et al. 2010). Conversely, practices and advice which undermine self-efficacy and confidence around breastfeeding had a negative impact on continuance of breastfeeding (Avery et al. 2009; Brown et al. 2014). Not successfully breastfeeding with a previous baby was associated with being less likely to attempt breastfeeding with a subsequent baby (McAndrew et al. 2012). Common reasons for stopping breastfeeding were poor breastfeeding positioning and attachment (Odom et al. 2013), inadequate support in early weeks, and expectation of breastfeeding difficulties (Rollins et al. 2016). When mothers assumed that they have insufficient milk, either due to infant crying and fussiness, perceived hunger, or inability to settle (Howard et al. 2006a; Wasser et al. 2011), this often led to breastmilk substitutes being introduced (McCann and Bender 2006).

2.4.1.4 Recommendations to improve breastfeeding practices

In summary of their review, and to answer the question 'what will it take to improve breastfeeding practices?', Rollins et al. (2016) made the following six recommendations for action: disseminate the evidence of the fundamental role of breastfeeding, foster positive societal attitudes towards breastfeeding, show political will to promote breastfeeding and its benefits, regulate the breastmilk substitutes industry, scale up and monitor breastfeeding interventions and trends in breastfeeding practices, and for political institutions to exercise their authority and remove structural and societal barriers to breastfeeding.

2.4.2 Determinants of breastfeeding in the UK

This subsection summarises the determinants of breastfeeding identified in the most recent National Infant Feeding Survey by McAndrew and colleagues (2012) specific to the UK context, and the factors associated with breastfeeding in England by Oakley and colleagues (2013). It is important to note that eight out of ten mothers in the National Infant Feeding Survey stopped breastfeeding before they had wanted to (McAndrew et al. 2012).

2.4.2.1 National Infant Feeding Survey

Although arguably out of date, the National Infant Feeding Survey (McAndrew et al. 2012) has been used here to demonstrate the multiple determinants of breastfeeding,

with consistent measures across determinants, and within a large cohort, to help set the scene specifically in the UK context.

The most deprived areas had the lowest rates of breastfeeding across all infant age points (McAndrew et al. 2012). Differences in breastfeeding depending on mothers' education were seen, mothers who left education aged 16 or younger had lower breastfeeding rates at six weeks (32%) compared to mothers who left education aged 18 or older (70%). Differences were seen across socioeconomic groups: mothers with routine and manual jobs had the lowest rates at six weeks (42%) and mothers in professional and managerial jobs the highest (70%). At six weeks, mothers aged under 20 had the lowest breastfeeding rate (24%) and mothers aged 35 or over had the highest breastfeeding rate (67%). Mothers' ethnicity also showed differences in breastfeeding initiation and duration, mothers who were white had the lowest breastfeeding rates at six weeks (68%), compared to Asian or Asian British (83%), Black or Black British (90%), and Chinese or other ethnic group (93%).

In the perinatal period, various factors were associated with breastfeeding initiation and continuation. Breastfeeding initiation was higher in mothers and babies who had skin-to-skin contact in the first 12 hours after birth (81%) compared to those who did not (61%), this also correlated with breastfeeding at one and two weeks. Additional feeds in the hospital, birth centre, or unit, including formula milk, water, or glucose, were associated with an increased risk of stopping breastfeeding in the first few weeks. Of mothers who initially breastfed, 69% were shown how to put their baby to the breast in the days after birth, this varied greatly between first-time mothers (84%) and mothers of second or later babies (50%). In terms of time spent by the person supporting them breastfeeding, mothers reported that the person left once baby was feeding and returned to check on them (38%), left once baby was feeding and did not return (37%), and a minority (15%) had someone stay with them for the entirety of the feed. Signs of effective feeding were explained to 48% of women, and 37% of women felt confident in recognising these signs.

Mothers who stopped breastfeeding in the first week cited the following reasons: baby not sucking or rejecting the breast (33%), painful breasts or nipples (22%), and feeling she had insufficient milk (17%) (McAndrew et al. 2012). Mothers who stopped in the second week cited insufficient milk (28%), baby not sucking or rejecting the breast (22%),

and painful breasts or nipples (21%). Of the mothers who stopped in the first two weeks, 85% would have liked to continue breastfeeding. These mothers felt that the following measures may have helped them continue: more support or guidance from hospital staff, midwives, and family (23%), if the baby attached more easily (19%), and less pain (14%).

2.4.2.2 Factors associated with breastfeeding in England

This analysis utilised data from all 151 Primary Care Trusts in England, which analysed data on initiation of breastfeeding, breastfeeding at six to eight weeks, and several sociodemographic variables (Oakley et al. 2013). Data were complete for 141 of the 151 Trusts and included breastfeeding practices at six to eight weeks. Initiation of breastfeeding across the different Trusts varied from 39% to 93%, the mean was 72%; any breastfeeding at six to eight weeks varied from 19% to 83%, with a mean of 45%; exclusive breastfeeding at six to eight weeks varied from 14% to 58%, with a mean of 32%.

In Trusts outside of London, the following sociodemographic factors were associated with gains in all three breastfeeding outcomes: lower area-based deprivation, higher rate of births to mothers aged 35 and older, and higher proportion of Black and Minority Ethnic population. Breastfeeding initiation in these Trusts was affected by deprivation, the most deprived quintile had a 32% reduction of odds of initiation compared to the least deprived quintile. Breastfeeding at six to eight weeks in these Trusts showed increased odds with higher proportions of older mothers and mothers from Black and Minority Ethnic backgrounds. This analysis highlighted the significance of sociodemographic factors on breastfeeding practices in England, and that much of the differences in breastfeeding practices by area are accounted for by sociodemographic factors, reinforcing the crucial role that social and cultural norms play in feeding practices (Oakley et al. 2013).

2.4.3 Interventions to support breastfeeding

The determinants of breastfeeding identified above are often responsive to interventions to protect, promote and support breastfeeding (Haroon et al. 2013). In their systematic review and meta-analysis, Sinha et al. (2015) reviewed interventions to support breastfeeding in various settings. Within the health systems setting, interventions included individual counselling or group education, immediate support after birth, and lactation management (Sinha et al. 2015). These three approaches had a positive effect:

exclusive breastfeeding was increased by 49% and any breastfeeding by 66% (Sinha et al. 2015). Family and community support interventions included antenatal and postnatal support for mothers, fathers, and family members in the home: by lay and professional personnel (Sinha et al. 2015). These home and family-based approaches were successful at improving initiation, any and exclusive breastfeeding, and continuation of breastfeeding, and were most successful when spanning both antenatal and postnatal periods (Sinha et al. 2015). This systematic review concluded that breastfeeding practices were responsive to interventions in health systems, communities, and homes, and particularly responsive when interventions were made in combination across these settings (Sinha et al. 2015).

An updated Cochrane review of randomised or quasi-randomised controlled trials compared extra breastfeeding support with usual maternity care for healthy mothers of healthy term babies (McFadden et al. 2017). These authors found that all forms of additional support reduced the cessation of any breastfeeding, and also reduced the cessation of exclusive breastfeeding at four to six weeks and at six months (McFadden et al. 2017). Some characteristics of additional support which appeared to be particularly beneficial for duration and exclusivity of breastfeeding were support offered as standard care by trained personnel in antenatal and postnatal care, ongoing scheduled visits which allowed women to predict when support would be available, and tailored to both the setting and the needs of the population group (McFadden et al. 2017). With regards to continued exclusive breastfeeding, face-to-face contact, volunteer support, a schedule of four to eight contacts, and high proportion of breastfeeding in the community were proposed to contribute to success (McFadden et al. 2017).

2.4.4 Summary

Determinants of breastfeeding exist at structural, settings, and individual levels, and interventions can be used to target these different levels (Rollins et al. 2016). There are multiple and interconnected determinants of breastfeeding specific to the UK context, which include sociodemographic factors and perinatal experiences (McAndrew et al. 2012). Large inequalities in breastfeeding are evident in the UK and England, some of which related to other determinants of health, and have a strong relationship to social and cultural norms (Oakley et al. 2013). Breastfeeding rates are responsive to interventions, particularly interventions with known features of effective additional support (McFadden et al. 2017).

2.5 Midwifery

2.5.1 Introduction to midwifery

A midwife is a registered healthcare professional who provides care during pregnancy, birth, and the postnatal period (International Confederation of Midwives 2005). The role of a midwife is to:

> "provide skilled, knowledgeable, respectful, and compassionate care for all women, newborn infants and their families" (Nursing and Midwifery Council 2021).

In the UK, midwives are regulated by the Nursing and Midwifery Council (NMC) who set the standards, hold a register, provide quality assurance for education, and investigate complaints (Nursing and Midwifery Council 2021). Midwives must commit to uphold the NMC Code, which sets the professional standards of practice and behaviour (Nursing and Midwifery Council 2019b). As of March 2020, there were 45,060 registered midwives in the UK (Nursing and Midwifery Council 2020). The NMC also sets education standards for pre-registration midwifery programmes, these standards ensure student midwives achieve the NMC proficiencies and programme outcomes (Nursing and Midwifery Council 2019a).

2.5.2 Midwifery and breastfeeding support

The Lancet series on midwifery reported growing consensus on the important contribution midwifery had to make to high-quality maternal and newborn infant care (Renfrew et al. 2014). Within the framework for quality maternal and newborn care developed in this systematic review, support for breastfeeding mothers, health education, and peer support to promote initiation of breastfeeding were highlighted (Renfrew et al. 2014). Breastfeeding initiation and duration were outcomes identified to improve with midwifery care (Renfrew et al. 2014).

Breastfeeding support in the UK is provided by a range of health professionals, including midwives and health visitors, and lay or peer supporters (NHS UK 2019). Within the NMC Standards of Proficiency for Midwives (2019b), several references are made to infant feeding. This includes first line assessment and management of any complications and additional care needs of mothers and infants with regards to feeding; initiating sensitive, compassionate, woman-centred conversations about infant feeding; exploring women's attitudes, beliefs and preferences related to infant feeding; assessing relevant aspects

of infant feeding for both mother and infant; implementing care needs of the woman with regards to infant feeding; and working in partnership with women and in collaboration with interdisciplinary and/or multiagency teams to plan and implement care when problems arise with infant feeding (Nursing and Midwifery Council 2019b). The update to these standards in 2019 provided extended requirements around breastfeeding support, however breastfeeding support has been included in midwifery and pre-registration standards prior to this update, for example the NMC Standards of Proficiency for pre-registration midwifery education (Nursing and Midwifery Council 2009).

The Royal College of Midwives' Position Statement on Infant Feeding asserts that midwives should support informed choice about infant feeding, and that women's choices must be respected (Royal College of Midwives 2018). The Position Statement also highlights the barriers to breastfeeding, including the physical, mental, emotional, and societal challenges of breastfeeding, for which mothers and their partners should receive information and support to manage (Royal College of Midwives 2018).

2.5.3 Midwifery at Bournemouth University

The pre-registration midwifery programme at Bournemouth University (BU) has had Unicef UK BFI accreditation continuously since 2011 (Bournemouth University 2021). In the UK, 44% of pre-registration midwifery courses are accredited (Unicef UK Baby Friendly Initiative 2020b). This accreditation ensures that the education midwives have at the point of registration includes the basic knowledge and skills to support infant feeding and relationship building (Unicef UK Baby Friendly Initiative 2019a). Arguably, a targeted approach to breastfeeding education in the curriculum is required to achieve and sustain Unicef UK BFI (2019a). Angell and Taylor (2013) described the approach to teaching about breastfeeding at Bournemouth University. An evidence-based and practise-focused approach is taken, and prior to commencing teaching about breastfeeding, students are provided with activities designed to facilitate learning through reflection on their own experiences, and to discuss these experiences in a supportive learning environment (Angell and Taylor 2013). The pre-registration midwifery programme is three years, and student midwives have a range of placements throughout the programme. Student midwives have practice placements in the community, in hospital, and in a birth centre. Some of these settings do not have BFI accreditation and others are at various stages, including full accreditation. Knowledge and skills to provide

effective breastfeeding support are taught and assessed during the first year, students attend the Clinic from the start of their second year.

2.6 Chiropractic

2.6.1 Introduction to chiropractic

Chiropractic was defined by the World Federation of Chiropractic as:

> "A health profession concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system, and the effects of these disorders on the function of the nervous system and general health" (World Federation of Chiropractic 2009).

Chiropractors are health professionals who provide treatment for problems with bones, joints and muscles, the 'musculoskeletal system' (General Chiropractic Council 2021d). The title 'chiropractor' is protected by law in the UK, only someone registered with the General Chiropractic Council (GCC) may use it (General Chiropractic Council 2021c). The GCC registers chiropractors, publishes the Code covering standards of practice and professional conduct, sets educational standards, and acts if a chiropractor fails to meet the standards (General Chiropractic Council 2021c). Chiropractic is a small but growing profession in the UK, in March 2020 there were 3,356 registered chiropractors (Professional Standards Authority for Health and Social Care 2020). The GCC sets education standards and accredits chiropractic programmes at five institutions (General Chiropractic Council 2021b) and undertakes annual monitoring as part of quality assurance (General Chiropractic Council 2021a).

The World Federation of Chiropractic principles include a commitment to evidence-based, people-centred, interprofessional, and collaborative (EPIC) care (World Federation of Chiropractic 2019). Chiropractic has been described as a divided profession, with an 'evidence-friendly' faction who focus on musculoskeletal problems in a contemporary and evidence-based paradigm, and a 'traditional' faction who subscribe to historical concepts such as 'subluxation' and the spine as the centre of health (Leboeuf-Yde et al. 2019). The GCC has issued guidance to reiterate that there is no clinical evidence to support this 'traditional' approach, highlighting standards set out in the Code around evidence-based care (General Chiropractic Council 2016). This is also reflected in the GCC Education standards (2017).

2.6.2 Chiropractic for infants

Chiropractic treatment for infants does not consist of the same type of joint manipulation often associated with chiropractic and other forms of manual therapy for adults. Due to the differences in anatomy and biomechanics in the infant spine compared to the adult spine (Nuckley and Ching 2006), techniques should be adapted to account for these differences (Marchand 2015). A model of care has been developed with safety implications and recommendations for technique adaptations, including appropriate forces, with low force and low speed recommended in manual therapy for the 0–2-month age group (Marchand 2015).

In response to the paucity of high-quality evidence for the effect of paediatric manual therapy, Leboeuf-Yde and Hestbæk (2010) called for improved quality evidence founded on plausible rationale. Safety research in paediatric manual therapy is ongoing (Corso et al. 2020; Pohlman et al. 2020), and monitoring systems are being developed and implemented (Pohlman et al. 2020). Some authors have reported low levels of adverse events in manual therapy for children (Leboeuf-Yde and Hestbæk 2010; Marchand 2015). However, this was in the absence of active reporting systems, which have recently been shown to increase reporting of adverse events following chiropractic manual therapy for children (Pohlman et al. 2020). The most common parent-reported adverse events following chiropractic manual therapy in children are irritability or crying and pain or discomfort (Pohlman et al. 2020).

Using a valid and reliable outcome measure (Miller et al. 2016a), infant outcomes after a short course of chiropractic treatment have been demonstrated to be positive, with reduction in mothers' rating of common problems in infancy (Miller et al. 2019). The mean changes in scores before and after chiropractic treatment for the baby included improvements in mothers' anxiety related to her baby's problem (71%), and babies' feeding (68%), crying (60%) and sleeping (57%) (Miller et al. 2019). This large prospective study (n=1092) was the first of its kind to investigate infant outcomes following chiropractic care and was based at the AECC University College (AECC UC) teaching clinic. A scoping review of manual therapies, including chiropractic, reported moderately positive evidence for the effect of manual therapies for infants with musculoskeletal dysfunction and suboptimal breastfeeding (Hawk et al. 2018).

2.6.3 Chiropractic at AECC University College

The pre-registration chiropractic programme is four or five years, depending on the level of entry. Students spend their final year in supervised practice at the AECC UC teaching clinic, with optional additional placements including the Clinic. The unit covering paediatrics is delivered in the pre-clinic year. Therefore, only final year chiropractic students attend the Clinic. The chiropractic programme associated with the Clinic is one of five accredited by the GCC (General Chiropractic Council 2021b); at the beginning of this PhD programme in 2017 it was one of three. It is the only programme in the UK with a paediatric chiropractic clinic, where pre-registration chiropractic students provide chiropractic care to children and babies under the supervision of chiropractic tutors.

Following the introduction to midwifery (2.5) and chiropractic (2.6), it is important to highlight that healthcare professionals require appropriate education and training in the provision of breastfeeding support (Unicef UK Baby Friendly Initiative 2019b). One of the aims of the Clinic was to provide student midwives and student chiropractors with further opportunities for education and experience around breastfeeding support.

2.7 Interprofessional education and collaborative practice

2.7.1 Framework for Action on Interprofessional Education and Collaborative Practice

In 2010, the Health Professions Network Nursing and Midwifery Office of the WHO published the Framework for Action on Interprofessional Education and Collaborative Practice (World Health Organization 2010). This document highlighted the role that interprofessional education and collaborative practice can have as an innovative strategy to mitigate health workforce crisis, strengthen health systems, and improve health outcomes (World Health Organization 2010). This framework was a call to action to embed interprofessional education and collaborative practice in service delivery (World Health Organization 2010). Interprofessional education and collaborative practice have a chronological relationship; interprofessional education helps future and present healthcare workers to develop into collaborative practice-ready healthcare workers, who go on to deliver collaborative practice (World Health Organization 2010). Evidence has shown that opportunities for gaining interprofessional experience aid the development of skills required to become collaborative practice-ready (World Health Organization 2010).

Support for interprofessional education and collaborative practice has continued in the intervening decade, with health bodies adopting these into education standards, including the Nursing and Midwifery Council (2019a).

2.7.2 Introduction to interprofessional education

The Framework for Action on Interprofessional Education and Collaborative Practice defined interprofessional education as occurring when

> "students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes" (World Health Organization 2010, p.7).

The Centre for the Advancement of Interprofessional Education gives a similar definition, referring to professions rather than students, and quality of care rather than health outcomes (Barr 2002). In the literature, the term 'interprofessional' is often used interchangeably with interdisciplinary, multiprofessional, and multidisciplinary (Chamberlain-Salaun et al. 2013), and these authors called for stakeholders to collaborate to define and use terms consistently. A systematic review investigating the effectiveness of interprofessional education called for improved quality evidence relating to interprofessional education and patient outcomes following mixed findings, and heterogenous interventions and outcome measures (Reeves et al. 2013). Furber et al. (2004) suggested that practice-based learning could be a useful teaching and learning environment for interprofessional education, due to the interactive nature of practice. Research on interprofessional education is further explored in the literature review (3.3, 3.4).

The NMC Standards Framework for Nursing and Midwifery Education (Nursing and Midwifery Council 2018b) and Standards for Pre-Registration Midwifery Programmes (Nursing and Midwifery Council 2019a) refer to interprofessional education. Whilst programmes accredited by the NMC are required to embed interprofessional learning in their culture (Nursing and Midwifery Council 2019a), the GCC does not have requirements for interprofessional learning, any interprofessional provision is left to institutional discretion (General Chiropractic Council 2017). This is in contrast with other similar professions such as physiotherapy, where education standards state that programme must ensure students are capable of learning with and from students and professionals from other professions (Health and Care Professions Council 2018), and

standards of proficiency include working effectively within a multidisciplinary team (Health and Care Professions Council 2013).

Institutions providing midwifery education must work with service providers to demonstrate and promote interprofessional learning, and students must be empowered and supported to become capable of interprofessional teamwork (Nursing and Midwifery Council 2019a). Learning opportunities to enable students to achieve proficiencies related to interdisciplinary working must be provided by the institution and practice learning partners (Nursing and Midwifery Council 2019a). The GCC standards have less reach, only requiring an 'interdisciplinary approach' in order that students understand and recognise the wider healthcare sector (General Chiropractic Council 2017).

For the remainder of this thesis, interprofessional education refers to healthcare students and professionals learning about, from, and with each other to enable effective collaboration and improve quality of care. This definition acknowledges the students and early-career practitioners who were participants in the studies that follow, the qualified midwifery and chiropractic clinical leads who supervise the clinic, and the link this learning has to collaboration and patient care.

2.7.3 Introduction to collaborative practice

The WHO Framework for Action on Interprofessional Education and Collaborative Practice defined collaborative practice as occurring when:

> "multiple health workers from different professional backgrounds provide comprehensive services by working with patients, their families, carers and communities to deliver the highest quality of care across all settings" (World Health Organization 2010, p.7).

A collaborative practice-ready healthcare worker is "someone who has learned to work in an interprofessional team and is competent to do so" (World Health Organization 2010, p.7). Four core competencies for interprofessional collaboration have been presented, including working with other professionals with respect and shared values, using knowledge of own and others' roles to assess and address the needs of individuals and populations, communicate in a responsive and responsible manner with patients, families, communities, and professionals to promote and maintain health, and apply

values of relationship building and principles of team working to plan, deliver, and evaluate patient- and population-centred care (Interprofessional Education Collaborative 2016).

Collaborative practice is referred to indirectly in the Codes of the NMC (2018a) and the GCC (2016), with predominantly common ideas, and some variation in verbiage. Midwives must work co-operatively with colleagues, for example recognising their skills, expertise, and contributions, communicating effectively with colleagues, and keeping colleagues informed when providing shared care (Nursing and Midwifery Council 2018a). In collaborating with service users and families, midwives must work in partnership with people to ensure care is delivered effectively; encourage and empower shared decisions about care or treatment; and act in partnership with people receiving care (Nursing and Midwifery Council 2018a). Chiropractors must communicate effectively with patients, colleagues, and other healthcare professionals (General Chiropractic Council 2016). Collaboration with patients includes sharing information that is accurate, clear, and relevant to enable people to make informed decisions; exploring options, risks, and benefits, encouraging patients to ask questions; and developing and applying a plan of care in agreement with the patient (General Chiropractic Council 2016).

For the remainder of the thesis, collaborative practice refers to multiple healthcare students and professionals working with each other, patients, their families, carers, and the wider healthcare community to deliver the highest quality of care. This acknowledges the multiple relationships involved in healthcare delivery, and the ultimate aim underlying these relationships, which is high quality of care for the patients.

2.7.4 A case for interprofessional education and collaborative practice in breastfeeding support

An interprofessional, collaborative team may be well-positioned to support breastfeeding, owing to a broader collective scope of knowledge and practice to address the wide-ranging determinants of breastfeeding (2.4). A crucial timeframe when healthcare workers can influence the continuation of breastfeeding is when breastfeeding challenges arise (Rollins et al. 2016). Having an interprofessional, collaborative team may provide more comprehensive care, and be well-placed to help mothers overcome challenges. As breastfeeding challenges are often time-critical and

require prompt support, an interprofessional, collaborative team may provide an additional benefit by mitigating the delay of referrals.

2.8 Student-led clinics

2.8.1 Introduction to student-led clinics

A student-led clinic is a healthcare setting where students lead care under the supervision of registered professionals (Gillanders et al. 2018). In the literature, student-led clinics are also commonly referred to as student-run and student-assisted clinics (Frakes et al. 2014), and student-led services (Nicole et al. 2016). Student-led clinics originated in North America, with the aims of providing healthcare to people without health insurance or facing other barriers to accessing healthcare (Bostick et al. 2014), and providing an environment for healthcare students to gain clinical experience (VanderWielen et al. 2013; Bostick et al. 2014; Gorrindo et al. 2014). These clinics were initially popular within medical education (Simpson and Long 2007) and have been adopted by other health professions including midwifery (Bournemouth University 2018), chiropractic (Kopansky-Giles et al. 2007), and in interprofessional settings (Farlow et al. 2015).

The two key purposes of student-led clinics are providing opportunities for healthcare professions students to gain 'real life' clinical experiences, while providing beneficial outcomes for the service users (Kavannagh et al. 2014). Responsibility to patients and each other, authenticity of the clinic context and tasks undertaken, and collaboration with students and clinical supervisors each contribute to student learning in these clinics (Schutte et al. 2018). A systematic review was undertaken to investigate educational outcomes and client satisfaction of student-led clinics, which concluded that student educational outcomes were improved, and effective services were provided to clients (Marsh et al. 2015). However, due to the low number of high-quality studies available, these authors called for further research. The authors initially set out to review student midwife led clinics; this search yielded no literature and was subsequently expanded to include student-led clinics of any health profession (Marsh et al. 2015).

2.8.2 An argument for student-led clinics providing breastfeeding support

Several studies have noted substantial gaps in the knowledge and skills of healthcare workers to support breastfeeding (Renfrew et al. 2006; Leviniene et al. 2009; McAllister

and McKinnon 2009). Providing effective breastfeeding support relies upon practitioners with sufficient skills and knowledge, including the ability to communicate with mothers in a clear, helpful, mother-centred, and non-judgemental way (Unicef UK Baby Friendly Initiative 2019b). Providing an opportunity to develop the knowledge and skills to effectively support breastfeeding at the pre-registration stage may contribute to a skilled, supportive workforce better able to support mothers to breastfeed, as called for by the BFI (2019b). A student-led clinic may afford students opportunities to develop knowledge and skills in effective breastfeeding support, particularly within the Baby Friendly approach utilised in the Clinic.

In addition to providing learning experiences for students, provision of additional breastfeeding support for mothers and babies may be welcome. There is a need for face-to-face, ongoing, predictable breastfeeding support in the early weeks and months (Entwistle 2013; McFadden et al. 2017), and a lack of support was often cited as a reason when women stopped breastfeeding sooner than they want to (McAndrew et al. 2012). The Royal College of Midwives' Pressure Point report (2014) on postnatal care shortcomings included infant feeding support: 43% of women felt they did not receive enough information about breastfeeding and 30% of midwives felt they did not usually have enough time to support mothers with breastfeeding. Therefore, a student-led breastfeeding support clinic may provide a valuable and needed service in the community.

2.9 The Clinic

2.9.1 Introduction

The interprofessional student-led breastfeeding clinic (the Clinic) is based at the AECC UC teaching clinic. The Clinic is based in Boscombe East, directly adjacent to Boscombe West, the one of the most deprived wards in the South West of the UK (Bournemouth Borough Council 2016). There are links to public transport, and it is walking-distance from the town centre. The Clinic offers appointments free-of-charge every Thursday afternoon, appointments typically last between one and two hours. Mothers and families are usually recommended to attend by friends and family or by health professionals including midwives and health visitors. Upon booking an appointment via the AECC UC teaching clinic, mothers are screened by administrative staff to ensure they are accessing the appropriate service and are sent a 'welcome letter' (Appendix 1) which provides information about the Clinic and what to expect at their appointment.

Due to the COVID-19 pandemic (Godlee 2020), the Clinic has not been open since March 2020.

2.9.2 Students

The final-year student chiropractors who attend the Clinic are a small cohort who have opted to participate in the Clinic, alongside their role in the chiropractic teaching clinic. The chiropractic students have training at the beginning of their placement in the Clinic, which consists of attending a lecture from the lead chiropractor about the Clinic, observing another chiropractic student in the Clinic, and a 'walkthrough' of a Clinic day. Whilst there is a small team of registered chiropractors who supervise and support the students, it is usually the same registered chiropractor (EN).

The student midwives have a larger cohort and attend the Clinic less frequently. The student midwives have ongoing orientation to the Clinic each week, led by the registered midwife, as there is typically at least one student midwife who has not attended the Clinic before. This includes an explanation of the usual structure of an appointment, a reminder of the approach taken to breastfeeding support, including a facilitative approach (Schmied et al. 2011), and how to effectively complete the breastfeeding history form for the purpose of the medical records (Appendix 2). There is a small team of registered midwives who supervise and support the students, with one lead midwife (AT) who attends most of the time. The Clinic is held in a dedicated area of the teaching clinic. Student chiropractors set up the rooms with necessary equipment such as dolls and knitted breasts, examination cushion for the baby, and comfortable chairs for mothers. There is a focus on creating relaxed and 'non-clinical' environment; lamps are used for soft and low lighting, framed posters with images of mothers breastfeeding are displayed, and low stools are used by the midwifery team when observing a feed. A photograph of the Clinic is shown in Appendix 3.

2.9.3 Care in the Clinic

Throughout the appointment, midwifery students and supervising midwife aim to employ authentic presence and a facilitative style (Schmied et al. 2011). Authentic presence describes a trusting, connected relationship and rapport between the woman and the

person supporting her, and a facilitative style refers to enabling the person receiving support to draw from information and experience and learn for themselves (Schmied et al. 2011). In line with the BU midwifery programme, Unicef UK BFI principles for infant feeding support are also implemented. Hands-off breastfeeding support is standard, with the aid of dolls and knitted breasts to demonstrate positioning and attachment.

Student midwives and student chiropractors lead the appointment, and the supervising midwife and chiropractor will join them in the room at least once during the appointment. If students require any support or have questions, they will ask the relevant registered professional. Typically, the student midwife initiates the appointment. The mother's feeding goal and reason for attending the Clinic are established early, which allows students to provide individualised and person-centred care (Royal College of Midwives 2018). The student midwife uses a standardised history form (Appendix 2) to facilitate a discussion with the mother about her pregnancy, birth, and feeding history. Once the student midwife has completed the history form, student chiropractors ask additional history questions related to the baby's musculoskeletal health, such as postural or feeding position preference, signs of discomfort such as crying and irritability, and sleep positioning and practices. These complaints are commonly seen in chiropractic settings and alongside breastfeeding difficulties (Miller et al. 2019). A flow diagram depicting a typical appointment is shown in Appendix 4.

The mother is invited to feed her baby, and the feed is observed by both students. Student midwives assess positioning and attachment and may suggest changes to positioning and attachment and offer the mother information and affirmation as appropriate. Due to AECC UC policy, student chiropractors do not usually examine or treat babies under 21 days. As the mode age of infants attending the clinic was three weeks (Miller et al. 2017), students undertake examination and treatment of the babies most of the time, often in collaboration with the registered chiropractor. The student or registered chiropractor will offer to examine the baby, which includes taking vital signs, a neurological screen, and palpation and examination of the muscles and joints often associated with breastfeeding difficulties in babies. The muscles and joints of the upper spine, neck, and jaw can be implicated in babies with breastfeeding difficulties (Wall and Glass 2006; Miller et al. 2017). The findings of the examination are explained to the family, and chiropractic treatment is offered during the appointment when indicated by history and examination findings.

Based on the history, observation of a feed, and the physical examination of the baby, a plan for feeding is created in collaboration with the mother. Advice is provided verbally and written down for the mother to take home. If any referral is needed, for example for a tongue tie assessment or for the mother's mental health, this decision is made with the mother and is initiated before they leave the Clinic. A follow-up appointment in the Clinic is sometimes suggested for mothers who are deemed to need ongoing support, and where possible, continuity of carer is provided (Schmied et al. 2011). Further chiropractic care for the infant is recommended when indicated: this is typically a short course of treatment, with four treatments over two weeks on average (Miller et al. 2019). Rapid resolution of the baby's feeding difficulties, as well as other complaints such as crying, are typically seen in this population (Miller et al. 2019).

2.9.4 Summary of the Clinic

The Clinic is a unique and multifaceted setting. This concluding subsection locates the Clinic in the context of the introductory literature included in this chapter.

Within Rollins et al.'s (2016) conceptual model of the components of an enabling environment for breastfeeding, the Clinic can be described as a health service setting. Here, breastfeeding support is delivered 'when challenges arise', a key time when health professionals can influence and support feeding practices (Labbok and Taylor 2008). The Clinic fulfils some criteria of breastfeeding support demonstrated to improve duration and exclusivity of breastfeeding, including scheduled, face-to-face support, which is tailored to individual needs (McFadden et al. 2017). An individualised and mother-centred approach is taken, including identifying and providing support in line with mothers' feeding goals (Entwistle 2013; Royal College of Midwives 2018). As the Clinic is an interprofessional setting, it meets the NMC education standards (Nursing and Midwifery Council 2019a) requirements related to interprofessional learning, and the GCC education standards (General Chiropractic Council 2017) recommendations for an interdisciplinary approach.

The following chapter is a review of the literature, presented as the intersections between breastfeeding support, interprofessional education, and student-led clinics. The research

previously conducted in the Clinic is presented. The research questions developed following the review are presented at the end of the chapter.

3 Literature review

3.1 Introduction to the literature review

As described in 2.9, the Clinic is a unique setting with several component elements, interprofessional education and collaborative practice, student-led clinics, and breastfeeding. The approach to the literature review was developed iteratively following an initial wide-ranging exploration of the broad literature on these elements. The purpose of this review was to explore literature at the intersections of the component elements of the Clinic: 1) interprofessional education and collaborative practice in student-led clinics, 2) interprofessional education and collaborative practice and breastfeeding, and 3) breastfeeding and student-led clinics. The aim was to explore the range of available evidence in each of the three areas, including the effectiveness, potential benefits and challenges, and provide approaches to research methods and design which may be useful to the design of the study in this thesis.

Outline of the chapter

- Section 3.2 describes the approach and strategy taken to the literature review, including databases used, search strategy, inclusion and exclusion criteria, and other decisions made throughout the review. The amount of literature identified and included for each intersection is summarised.
- Section 3.3 discusses the literature at the first intersection, interprofessional education and collaborative practice, and student-run clinics.
- Section 3.4 focuses on the second intersection, interprofessional education and collaborative practice, and breastfeeding.
- Section 3.5 presents the existing literature about the Clinic and summarises what is known and not known specifically within the Clinic setting.
- Section 3.6 provides a summary of this literature review of interprofessional education and collaborative practice, student-led clinics, and breastfeeding, with particular emphasis on the Clinic.
- Lastly, section 3.7 presents the research questions developed from this review.

3.2 Strategy

3.2.1 Approach to the literature review

The approach taken was a systematised review of the literature, which considered all types of sources and research methodologies and methods, sourced, and selected in a systematised manner. Systematised reviews:

> "attempt to include elements of systematic review process while stopping short of systematic review" (Grant and Booth 2009, p. 95).

In systematised reviews, search methods may or may not include comprehensive searching, appraisal may or may not include quality assessment, synthesis of literature is typically narrative and accompanied by tables, and the analysis presents what is known, uncertainty of findings, and limitations of methodology (Grant and Booth 2009). This is different to a systematic review in that quality assessments were not included in the inclusion or exclusion criteria, a narrative rather than tabular approach was taken, and the literature was not used as a basis for practice recommendations (Grant and Booth 2009). In this review, comprehensive search strategies were employed (3.2.2), the synthesis is presented narratively with accompanying tables where appropriate, and is summarised to demonstrate what is known based on the research most relevant to this setting. A diverse range of literature was included to facilitate a broad understanding of topics, accepting a range of methodological quality. The individual studies were examined for methodological strengths and limitations, however appraisal and scoring tools were not utilised due to the heterogeneous literature included, which would have made comparisons unmeaningful.

3.2.2 Search strategy

Systematised searches of PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Excerpta Medica Database (EMBASE), Allied and Complementary Medicine Database (AMED) and Index to Chiropractic Literature (ICL) were conducted. These databases were selected to provide a sufficiently broad range of sources for the range of topics covered in the review, including the two professions of midwifery and chiropractic. Subject headings and synonyms were identified and included for each topic. Boolean logic was used to combine terms. The search terms used for each database are shown in Appendix 5. Reference searching of the literature was undertaken as a secondary search mechanism. This review was initially conducted in 2017 and last updated in December 2020.

The inclusion and exclusion criteria were developed iteratively for each of the three areas over several stages of sifting, initially to remove literature which was entirely irrelevant, and after this stage decisions were made about the depth and breadth of the literature to include (shown in Table 1). An example of a decision which was made iteratively was whether to include other health professions when considering literature on interprofessional education and student-led clinics, in addition to midwifery and chiropractic in these settings. Given the paucity of literature related to midwifery and chiropractic in interprofessional education and student-led clinics, other professions were included.

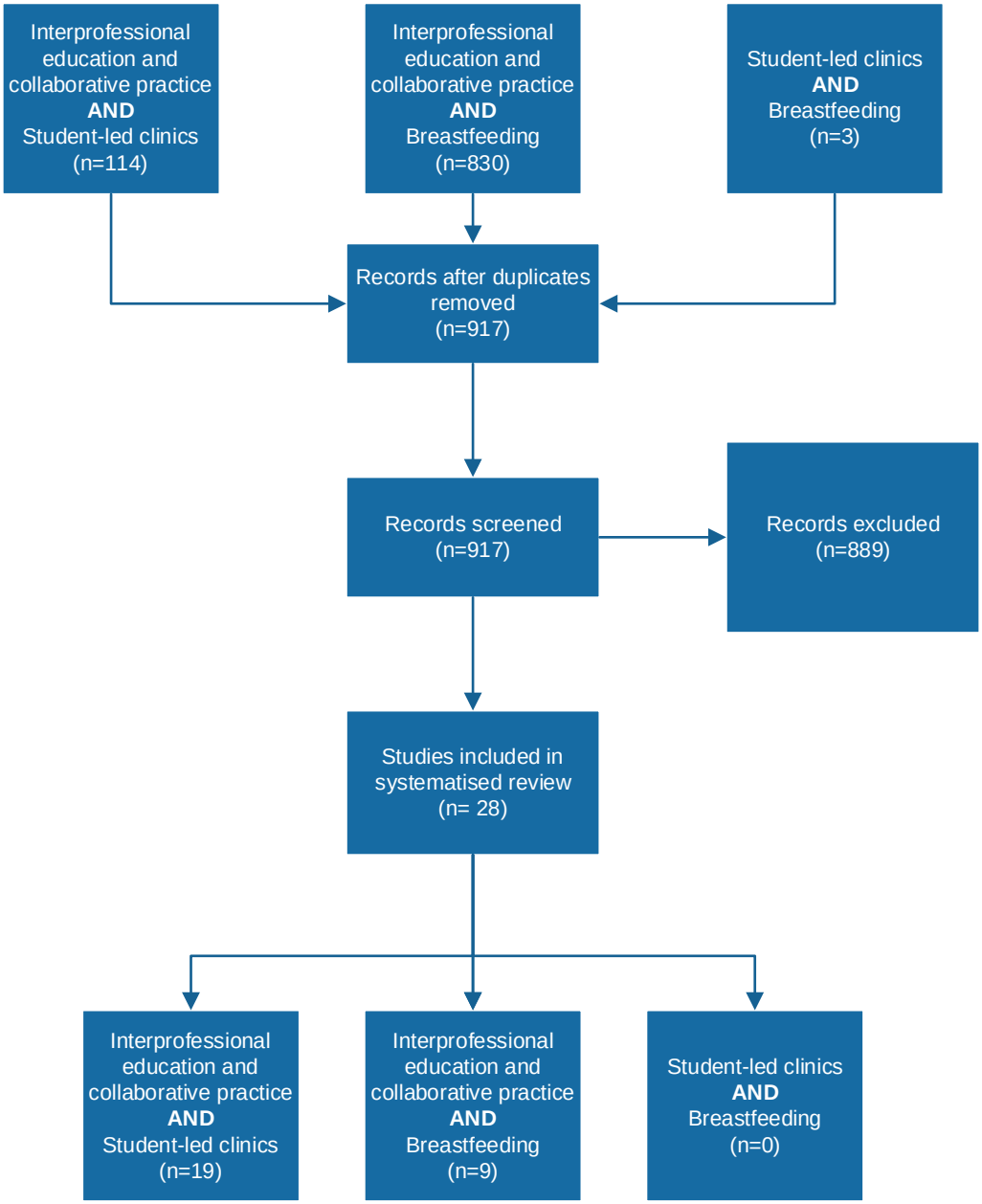
Table 1. Inclusion and exclusion criteria of the literature review.

	Inclusion criteria	Exclusion criteria
Interprofessional education and collaborative practice, **and** student-led clinics	Different terms (multidisciplinary, interdisciplinary, patient care team) which related to the definitions of interprofessional education and collaborative practice applied in this thesis (2.7.2 and 2.7.3 respectively); related to student-led clinics or services	Research related to patient outcomes, cost analysis, perceptions or experiences of supervising preceptors or clinicians, not research (e.g., a report about a clinic with no data presented).
Interprofessional education and collaborative practice, **and** breastfeeding	Different terms (multidisciplinary, interdisciplinary, patient care team) which related to the definitions of interprofessional education and collaborative practice applied in this thesis (2.7.2 and 2.7.3 respectively); related to any form of breastfeeding support from health professionals, including pre- and post-natal, individual and group settings, and home and healthcare settings; high-income countries	Not related to the definitions of interprofessional education and collaborative practice applied in this thesis (2.7.2 and 2.7.3 respectively); unwell and/or hospitalised mothers and/or babies; workplace and employment focused research; low- and middle-income countries
Student-led clinics **and** breastfeeding	Related to student-led clinics or services; related to any form of breastfeeding support from health professionals, including pre- and post-natal, individual and group settings, and home and healthcare settings; high-income countries	

After combining all literature and removing duplicates there were 917 unique entries. Sifting by title and abstract was undertaken, this reduced the included entries to 28. Figure 1 is a modified preferred reporting items for systematic reviews and meta-analysis (PRISMA) diagram (Moher et al. 2015), showing the total number of abstracts identified,

removal of duplicates, removal after sifting, and the total number of articles included in the review, for each of the six areas.

Figure 1. Modified PRISMA diagram of the screening process used in this review.



From the initial search of the four databases, 114 unique pieces of literature were identified on interprofessional education and collaborative practice, and student-led clinics. Following full-text sifting, 19 articles were included for review for this topic (3.3). Considering interprofessional education and collaborative practice, and breastfeeding,

830 items were identified in the initial search, with 9 articles included after abstract and full article sifting (3.4). The only unique item returned within the search on student-led clinics and breastfeeding was a poster presentation about this thesis, which was therefore not included. Given the paucity of research published on student-led clinics and breastfeeding, it appears that this is an as-yet untapped approach to providing healthcare student experiential learning about breastfeeding and breastfeeding support. The research specific to the unique context of the Clinic was discussed separately to the research identified from other settings. This was used to build understanding of what was known about learning, practice, and breastfeeding support in this setting (3.5).

3.3 Interprofessional education and collaborative practice, and student-led clinics

3.3.1 Introduction to the literature

The definitions for interprofessional education and collaborative practice, as set out in 2.7.2 and 2.7.3, were applied when assessing literature for inclusion in this section. Further descriptors were used in the search terms (Appendix 5) to ensure synonymous terms for ‘interprofessional education’ and ‘collaborative practice’ were included. None of the articles which met the inclusion criteria included midwives, nurse-midwives, or chiropractors. Students of other health professions were therefore included, most commonly medicine, nursing, and pharmacy, as shown in Table 2. Interprofessional student-led clinics included in this section of the review were predominantly based in the USA, as shown in Table 3. Most of the clinics provided general primary care (n=12) and most clinics provided care for underserved populations (n=11); and four provided specialised services such as smoking cessation or to support older people returning home after an acute hospital admission.

Table 2. Health professions involved in interprofessional student-led clinics in this section of the literature review.

Health professions	Number of times professions were part of an interprofessional student-led clinic section 3.3
Pharmacy	12
Medicine	11
Nursing	11
Social work	8
Occupational therapy	6
Physical therapy	5
Physiotherapy	4
Physician assistant	3
Public health	3
Speech therapy	3
Podiatry	2
Audiology	1
Counselling	1
Dentistry	1
Dietician	1
Kinesiology	1
Kinetics	1
Oral health	1
Osteopathy (USA)	1

Table 3. Country of interprofessional student-led clinics.

Country	Number of times countries were cited as the location of interprofessional student-led clinics in section 3.3
USA	11
Canada	5
Australia	2
New Zealand	1

The review for this section is divided into two key areas. Research related to measures of change are reported (3.3.2), where predominantly quantitative measures were used, including the Interdisciplinary Education Perception Scale (Luecht et al. 1990), Interprofessional Collaborative Competency Attainment Survey (Archibald et al. 2014), Interprofessional Education Collaborative Self-Assessment Tool (Dow et al. 2014), Interprofessional Socialization and Valuing Scale. (King et al. 2010), Readiness for Interprofessional Learning Scale (Parsell and Bligh 1999), and Teamwork Attitudes Questionnaire (Agency for Healthcare Research and Quality 2014). Research using

inductive, qualitative approaches such as focus groups follow (3.3.3). The literature presented in this section is then summarised (3.3.4).

3.3.2 Measures of change: student attitudes and perceptions around interprofessional education and student-led clinics

3.3.2.1 Interprofessional Education Collaborative core competencies (2016)

Caratelli et al. (2020) assessed an interprofessional pilot course providing care for underserved patients. The course consisted of traditional lecture-based learning, experiential learning in an interprofessional student-run free clinic, student reflections, and student evaluations. Nine participants were students of dentistry, kinesiology, and pharmacy. Statistically significant improvements were reported in students' knowledge and abilities in the Interprofessional Education Collaborative (2016) core competencies, demonstrated by the Interprofessional Collaborative Competency Attainment Survey (Archibald et al. 2014). Sevin et al. (2016) also investigated students' self-assessed report of Interprofessional Education Collaborative core competencies (Interprofessional Education Collaborative 2016), following one semester of providing patient care in an interprofessional student-led free clinic and reflective workshops. In this clinic, students of nursing, pharmacy and social work provided care for underserved people. Fifteen students completed a retrospective survey, and as with Caratelli et al. (2020), significant improvements were reported in all four domains of the competencies. The authors concluded that interprofessional education was effective within the service-learning environment.

Timm and Schnepper (2021) conducted a mixed-methods evaluation of an interprofessional clinical education model, developed to provide clinical education for students whilst providing a needed service for underserved populations. Students of nursing, social work, exercise sciences, and counselling provided care. The Interprofessional Education Collaborative competency self-assessment (Dow et al. 2014) was completed by students before and after a semester in this clinic, and significant differences in competencies were reported. Focus groups were held with students, and through thematic analysis, the following themes were identified: interprofessional teamwork, an unorthodox learning environment, delivery of primary and secondary prevention in the community, and reaching underserved populations. Authors concluded that the model demonstrated promise as a means for interprofessional clinical learning and service provision for the community.

3.3.2.2 Studies of a single group of students: student attitudes towards interprofessional student-led clinics

Weinstein et al. (2018) described the process utilised to develop a monthly interprofessional clinic where students of medicine, nurse practitioner, pharmacy and public health worked together in a primary care setting. The interprofessional clinic included pre-clinic didactic teaching, an interprofessional team huddle prior to providing patient care to plan care and clarify roles and responsibilities, and post-clinic debrief to address remaining concerns. The Teamwork Attitudes Questionnaire (Agency for Healthcare Research and Quality 2014) was completed by 36 students at baseline and 17 after the clinic, demonstrating improvements in student attitudes towards situation monitoring, limiting conflict, administration, and communication. This study was limited by the loss of follow-up data. Lee et al. (2018) created a tool to measure student experiences of a primary care student-run clinic and identify drivers of student engagement. Fifty-three per cent of student volunteers completed a cross-sectional survey, and analysis showed that 'likelihood to recommend the clinic to a friend' was significantly associated with students' clarity about their role in the clinic, the frequency of interprofessional interactions, and the quality of their medical education. Higher engagement scores were seen in students who participated for longer time periods and higher frequency. These authors highlighted readily modifiable aspects to drive engagement, which included professional role definition and clarity on the expected frequency of attendance to the clinic.

3.3.2.3 Differences between students who participated in interprofessional student-led clinics and students who did not

Sick et al. (2014) conducted a two-year observational prospective cohort study, comparing interprofessional attitudes and skills of students in three groups: students who participated in a student-run free clinic, students who had applied but were not accepted, and students who did not apply. Students of medicine, nursing, pharmacy, physical therapy, public health, and social work provided care to underserved patients with supervision of volunteer preceptors. Within all three groups, attitudes towards other professions worsened over time, however those students who participated in the clinic demonstrated the smallest decline, as measured by the University of West England Interprofessional Questionnaire (Pollard et al. 2004). There was a low response rate from students who did not apply, and response rates from students who did participate

dropped from 84.5% at the first time point to 27.5% at the third and final time point, presenting potential limitations of these findings.

Kovalskiy et al. (2017) reported on two groups of medical students' perceptions of interdisciplinary working, those who volunteered in an interprofessional student-run free clinic and those who did not. A survey including questions adapted from Shrader et al. (2010) and questions from the Readiness for Interprofessional Learning Survey (Parsell and Bligh 1999) was used. Statistically significant differences between the two groups' perceptions were not evident for most items, significant differences were seen in the following three items: student volunteers were more likely to have worked with other healthcare professions, believed they had better understanding of the role of medicine, and the roles of patient education and pharmacy, in an interprofessional team. Seif et al. (2014) reported significant improvements in interprofessional attitudes and perceptions and in perceptions of clinical reasoning skills, when comparing students who had and had not participated in an interprofessional student-run free clinic. This study utilised the Readiness for Interprofessional Learning Scale (Parsell and Bligh 1999), Interdisciplinary Education Perception Scale (Luecht et al. 1990), and Self-Assessment of Clinical Reflection and Reasoning (Royeen et al. 2001), and included students of medicine, pharmacy, occupational therapy, physical therapy, and physician's assistants. Similarly to Kovalskiy et al. (2017), no significant differences were seen between students who had and had not participated in the interprofessional clinic. However, pre- and post-test scores for students who participated, and scores between participant and non-participant groups, were significantly different on the Interdisciplinary Education Perception Scale.

Tsu et al. (2018) compared students' perceptions of interprofessional roles after attending either a multidisciplinary or pharmacy-only student-run smoking cessation clinic for underserved populations. Students completed a survey about roles of other professions before and after a multidisciplinary smoking cessation training workshop, and after attending the smoking cessation clinic. Before and after the training workshop, statistically significant improvement was found in student perceptions of other healthcare professions, and students who participated in the multidisciplinary clinic reported significantly greater impact on perceptions of other healthcare professions than students who attended the pharmacy-only clinic. These authors reported participation in an interprofessional student-run free clinic to be an effective means of improving awareness of the role of other health professions.

3.3.3 Exploration of student experiences, learning, attitudes, and perceptions around interprofessional education and student-led clinics

3.3.3.1 Student learning in interprofessional student-led clinics

Focus groups and interviews

Lie et al. (2016) conducted focus groups with students of medicine, physician's assistant, occupational therapy, and pharmacy to gain understanding of student learning in an interprofessional student-run clinic, serving underserved patients. Common themes about learning across professions were role recognition, team-based care appreciation, patient experience, advocacy-/systems-based models, personal skills, and career choices. Synthesis of findings suggested a learning continuum, starting with a team huddle, and continuing through providing shared care and student interactions; observing and interacting with students from other professions was vital in this learning.

Housley et al. (2018) analysed student reflections after participation in an interprofessional student-led clinic providing care for underserved patients, and mapped these reflections against the Interprofessional Education Collaborative's competencies (Interprofessional Education Collaborative 2016). Themes generated from student reflections included knowledge sharing, clinical skills teaching, communicating with patients, and role discovery. Knowledge sharing correlated with the Interprofessional Education Collaborative domain of roles and responsibilities, much of the learning in this setting related to discovery and definition of their own and others' role. Ng et al. (2020) also conducted a reflection session with students, aiming to examine changes in attitudes and practices of student volunteers following placement at an interprofessional student-run clinic for an underserved community. Focus groups were analysed, demonstrating a shift in student attitudes around awareness of their own assumptions and perceiving their learning and contribution as meaningful, even when not directly providing client care. Changes in practice were reported to be individualised patient assessment and treatment and feeling comfortable working in interprofessional teams. These shifts in attitudes and practice were aided by authentic interactions with patients, a patient-centred approach, and the interprofessional context.

Passmore et al. (2016) conducted interviews with physical therapy students (n=7) and preceptors (n=8) providing care in an interprofessional student-run clinic, to explore

perceived benefits of this experience. Themes included valuing the interprofessional team and the 'think big-picture' approach to patient care. Working towards a common goal was a feature of the interprofessional team theme, and collaboration between professions was facilitated by the lack of professional hierarchy in the clinic. Participation in interprofessional student-run clinics was deemed to be valuable for physical therapy students.

Guirguis and Sidhu (2011) examined experiences of pharmacy student and preceptors within an interprofessional student-run clinic for adolescents and young adults. Three students and three preceptors participated in interviews, three themes arose: dynamic team roles, interprofessional role understanding, and personal benefits. Personal benefits included gaining confidence in collaborative working, gaining hands-on experience, and learning in a safe, open environment with a common goal. Preceptor role models helped students to expand the boundaries of their comfort levels in the interprofessional setting.

Surveys

Hu et al. (2018) evaluated student learning and skill development among students attending a student-run free clinic for marginalised populations. Semi-structured pre- and post-participation surveys were completed by 96% of students. In the post-participation survey, the following skills were reported to have been most developed: understand the roles and expertise of members within the interprofessional team, collaborate and communicate effectively within an interprofessional team, and reflect on one's own performance, strengths, weaknesses, and personal development. Participating in the clinic was reported to be an 'immersive and authentic' experience. O'Brien et al. (2013) explored students' perceptions of an interprofessional student-led clinic. Thirty-seven students of nursing, physiotherapy, podiatry, counselling/psychology, occupational therapy, and oral health completed surveys; written responses were analysed. Ninety-one per cent of students stated a change in how they relate to other professionals, 83% had a positive experience, and 78% gained understanding of what the other health professionals did.

3.3.3.2 Specialised clinical services provided by interprofessional student-led clinics

Gustafsson et al. (2016) conducted a focus group with seven students of occupational therapy, physiotherapy, and speech pathology who provided care for clients with neurological conditions. Students reported validation of their own role in the team and considered this alongside others' approaches and perspectives, whilst working towards a common goal. Confidence in identifying their own role, asking questions, and communicating with other professions was also attributed to their participation. These authors propose interprofessional student-led clinics may also benefit students when they progress to post-registration practice. Dubouloz et al. (2009) described the development and implementation of an interprofessional educational clinic, designed to meet local needs of older adults returning home from hospital stays, and school-aged children with learning challenges. The clinic included students of eight health professions. Data collected using the Description of a Meaningful Interprofessional Learning Situation Tool, developed for this study, were analysed and three themes emerged: development of knowledge of other health professionals, interprofessional education as a facilitator of the development of professional identity and practice, and interprofessional supervision as a means of developing competencies. Kent et al. (2014) investigated student perceptions of an interprofessional student-run free clinic, serving a marginalised population of patients aged 70 or over who had returned home following an acute admission to hospital. Professions represented in this clinic were dietetics, medicine, nursing, occupational therapy, pharmacy, physiotherapy, podiatry, social work, and speech pathology. Students reported development in their perspectives of issues affecting patients' health, gaining knowledge about other professions' roles and referral pathways, and enhancement of their interprofessional communication skills.

3.3.4 Summary of literature: interprofessional education, collaborative practice, and student-led clinics

There was no report of student midwives, nurse-midwives, or chiropractors in this section of the review, suggesting that these groups of students are not represented in interprofessional student-led services in the way that many other health professions students are. Most interprofessional student-led clinics were reported to provide care for underserved people and communities, in a primary care model. There were three interprofessional student-led services which provided specialised care to specific patient groups (Dubouloz et al. 2009; Kent et al. 2014; Gustafsson et al. 2016), again, these tended to be providing care to those in most need.

Although validated measures exist and have been utilised in some interprofessional student-led clinics and services, there was heterogeneity in the measures used in the literature identified in this subsection, making comparisons across different settings challenging. There was also heterogeneity in the health professions included, which may further complicate drawing conclusions about the impact of interprofessional student-led clinics on student knowledge, skills, and attitudes. However, O'Brien et al. (2013) did state there were no significant differences between health professions in their study of student perceptions of their interprofessional clinical experiences, suggesting that the range of health professions may not be a substantially limiting factor in drawing conclusions in research into interprofessional student-led clinics. Clinics used a range of approaches to student learning and service provision, with some approaches solely describing provision of care, others included additional elements such as interprofessional 'team huddles' (Lie et al. 2016), didactic teaching (Weinstein et al. 2018), and reflective sessions (Hu et al. 2018) as part of the student experience. Broadly, the studies included in this section reported improvement in students' knowledge, skills, and attitudes related to interprofessional working after participating in interprofessional student-led clinics.

There was a greater degree of agreement in the findings from qualitative studies of interprofessional student-led clinics, despite the broad range of health professions involved in this section of reviewed literature. Common themes across literature included in this section (3.3.3) were recognising the roles of their own and other professions within a team, collaborative and team working, communication skills with patients and members of other professions, working towards common goals with other professions, and personal development including gaining confidence.

3.4 Interprofessional education and collaborative practice, and breastfeeding

3.4.1 Introduction

As with the previous section, the definitions for interprofessional education and collaborative practice set out in 2.7.2 and 2.7.3 were applied when assessing literature for inclusion in this section. Further descriptors were used in the search terms (Appendix 5) to ensure synonymous terms for 'interprofessional education', 'collaborative practice',

and ‘breastfeeding’ were included. Although a significant body of literature was returned in this search (830 unique entries), much of this did not meet the applied definitions of interprofessional education or collaborative practice used in this thesis (2.7.2, 2.7.3) and related more to professions making referrals and communicating with other professionals in different settings, and hence were excluded. Seven articles are discussed in this section, two of the studies identified in this search were based in the Clinic and are discussed separately, alongside other research set in the Clinic (3.5).

3.4.2 Interprofessional education, collaborative practice, and breastfeeding literature

Renfrew et al. (2006) reported the learning needs of health professionals in the UK to better support breastfeeding, and their recommendations are included here to set the scene in this section of the review. This paper was the final in a series of work, one of which is also included in this section of the literature review (Dykes 2006). Major deficits in knowledge, skills and attitudes of many health professionals were identified, leading professionals to report providing poor information and having low levels of confidence in promoting and supporting breastfeeding (Renfrew et al. 2006). A particular need to prepare professionals to support diverse and disadvantaged groups was highlighted. Barriers to effective education and practice were identified. These included a lack of common approaches to provide support leading to inconsistent and conflicting information, inappropriate forms of care, and fragmentation of care which prevented practitioners from developing understanding of the ‘whole breastfeeding experience’. Reliance on ‘breastfeeding champions’ was reported, in the context of high workload demands, which limited attendance of training. One of the challenges identified in breastfeeding education and training was the lack of integration of knowledge, which would better support understanding of breastfeeding, and included the need for a biopsychosocial approach. Training which included practical observation or actual practice, with mentorship, were preferred by practitioners, particularly when compared to didactic approaches.

Recommendations for future breastfeeding education and training for health professionals included a funded, mandatory, interagency, and multidisciplinary approach, with universities as a key provider of pre- and post-registration training (Renfrew et al. 2006). Courses should facilitate reflexive integration of knowledge within a biopsychosocial approach (Renfrew et al. 2006). Education should involve practice-

based learning, including observation of skilled practitioners in an environment with high standards of care, and should be tailored to different professions (Renfrew et al. 2006). Dykes (2006) highlighted the role of practitioner knowledge, attitudes, and skills as influencers of their provision of breastfeeding support, and as key areas to consider in education for practitioners. Recommendations for breastfeeding education included developing courses with a biopsychosocial approach, multidisciplinary education to support coherent and cohesive approaches, mentorship in practice, and tailored education for different practitioner groups (Dykes 2006).

Wieczorek et al. (2016) conducted interviews with midwives, nurses, physicians, and a manager, working in the same maternity unit, to explore lack of collaboration as a barrier to implementation of the Baby Friendly Initiative. Findings demonstrated a diverse range of approaches to breastfeeding and support, where different professions pursued different aspects of the Baby Friendly Initiative in their practice, and spatial divisions within the unit were reported as an exacerbating factor in lack of communication. These authors called for consideration of how diverse perspectives of practice and knowledge could be integrated, to improve collaboration and facilitate better implementation of the Baby Friendly Initiative.

A multiple method evaluation of interprofessional workshops to enhance healthcare professionals who provide care to women during and after pregnancy, including breastfeeding, was conducted by Olander et al. (2018). Midwives, health visitors, dieticians, nurses, a general practitioner, and a breastfeeding specialist participated. Attitudes towards interprofessional collaboration improved, and participants gave examples in collaborating in practice. The workshops appeared to be beneficial for increasing collaboration in practice. Radoff and Forman (2019) reported a midwife-led breastfeeding training programme for obstetrics and gynaecology residents. Post-programme evaluations demonstrated increased knowledge and confidence in lactation support, which was lacking from their core curriculum. Provision of breastfeeding education to residents was proposed as a means of breastfeeding promotion and support and improving breastfeeding rates.

Bunik et al. (2014) described an interprofessional collaboration between a paediatrician, lactation consultant, and a psychologist, providing interprofessional and sequential care.

This ‘trifecta breastfeeding approach’ was described and two cases presented, illustrating the roles of each professional. Witt et al. (2019) assessed the introduction of a collaboration between a lactation consultant and a primary care provider and its impact on breastfeeding rates, based on a needs assessment. After implementation, visits for lactation support doubled, and other healthcare providers reported provision of better breastfeeding support and a positive breastfeeding support experience for parents.

3.4.3 Summary of literature: interprofessional education, collaborative practice, and breastfeeding

There is a paucity of research on the use, role, and effect of interprofessional or collaborative education in breastfeeding support. However, there have been calls for this gap to be addressed, particularly in practice. Few reports of original research were presented in the literature identified in this section of the literature review, and original research available had limitations. Whilst midwives were included within some of the research presented in this section, chiropractors were not. All of the original research described post-registration education and collaboration, pre-registration health professions students were not evident in this research.

3.5 Research in the Clinic to date

3.5.1 Introduction to the research conducted in the Clinic to date.

Research to date in the Clinic has been conducted to explore student experiences, quantify mother-baby characteristics, and investigate mothers’ experiences of the Clinic. There has also been a service evaluation which reported feeding outcomes six to twelve weeks after attending the Clinic. The existing research is presented below: student experiences of the Clinic (3.5.2), mother-baby demographic data (3.5.3), mothers’ experiences of care (3.5.4), and mother-baby feeding outcomes (3.5.5). This section is then summarised (3.5.6). This research in particular formed key considerations in the development of research questions for this thesis (3.8), and in the study design (4.3.5), due to its proximity to this unique setting.

3.5.2 Student experiences of the Clinic

This research was presented as a conference poster; as such the methods, findings, and conclusions were brief. One focus group was conducted with midwifery and chiropractic

students close to completing pre-registration training, which was analysed for themes (Heritage and Miller 2017). Reported themes included educational value of the Clinic, understanding of another discipline, improved skills, and insight into the patient experience. Knowledge and skills obtained by chiropractic students from midwifery students included advanced history taking. Insight into the patient experience included the emotional strains of breastfeeding difficulties, and the reassurance parents obtained from interprofessional agreement about the best course of action. The sample size was not reported, nor were the findings from midwifery students despite the focus group including both professions, which presents challenges in interpretation of this data. That said, it is the only available work which has explored student experiences in the Clinic and provides initial insight for future study.

As this is the only report of student experiences in the Clinic, with limitations in terms of detail provided, exclusion of student midwives experiences, and a presumably small sample, substantial scope exists for further exploration. This need for exploration is further supported by the current scarcity of evidence of student-led clinics for breastfeeding support, and should include experiences of student midwives and student chiropractors.

3.5.3 Mother-baby demographic data

This descriptive study was the first attempt to collect information about mothers and babies who utilise the Clinic. The study used standardised forms, completed by student chiropractors in the Clinic, to collate information about mother-baby dyads attending the Clinic (Miller et al. 2017). Common breastfeeding problems were difficulty attaching (54%), painful feeding (44%), and the baby having a one-sided feeding preference (35%). Birth intervention was disproportionately high compared to local and national data, particularly forceps deliveries (21% of babies in the Clinic compared to 7% nationally over the same timeframe). Commonly identified musculoskeletal problems identified in babies by chiropractors were the mid-back (66%), neck (58%), and neck muscles (sternocleidomastoid) (44%). It was noted that babies in this population had postural problems, including not tolerating supine positioning (43%), one-sided postural preference of the head and neck (45%), and deformity of the head (29%), all posited to further support the notion that these babies had musculoskeletal problems. One key limitation of this study was the data collection method, which may have been vulnerable to inaccuracies or incompletion. It was proposed that intervention at birth, feeding

difficulties, and musculoskeletal problems in infants appear to co-exist in this population, due to the design and data analysis, this association was not substantiated.

Demographic data about mothers was lacking from this study, particularly with regards to determinants of breastfeeding, which is one key area identified for inclusion in future research. Use of direct maternal report, rather than 'second hand' via student chiropractors, may be a means to improve reliability of data collected.

3.5.4 Mothers' experiences of care in the Clinic

This was the first research to explore mothers' experiences of care in the Clinic. Semi-structured interviews were conducted with 18 mothers, immediately after their appointment in the Clinic (Miller et al. 2015). Analysis involved a research team conducting content analysis, and discussing and revising analysis until agreement was reached, which was a particular strength of this study. Themes were related to likes and dislikes in breastfeeding support. 'Likes' were contextualised reassurance and specific (individualised) advice, which they described and gave examples of receiving in the Clinic. 'Dislikes' were poor continuity of care, insufficient time, and rules and pressures. Conflicting advice from healthcare professionals and family and friends was a subtheme across the 'dislike' findings. Context was provided around the thematic findings with mothers' reasons for wanting to breastfeed, including the physical and emotional challenges associated with expressing breastmilk, making formula milk, and sterilising bottles. Mothers' experiences of the Clinic were also reported, which included having time, not feeling rushed, feeling that people cared about them and their feeding, and knowledgeable students and staff.

This study was a methodologically sound exploration which provided understanding of mothers' experiences, likes and dislikes of breastfeeding support, within and beyond the Clinic. Therefore, this was not a priority for further exploration in this study.

3.5.5 Mother-baby feeding outcomes

This service evaluation was conducted as a precursor to inform future research, as the first investigation of feeding outcomes after attending the Clinic (Miller et al. 2016b). Mother-baby feeding outcomes were collected 6-12 weeks after attending the Clinic by

postal questionnaire. Eighty-five mothers were eligible and participated, 72 (85%) completed the follow-up questionnaire. Sixty per cent of babies were under four weeks when they attended the Clinic, 65% of mothers were aged 31 or older, and 85% of mothers were white British. At presentation to the Clinic, 26% of babies were exclusively breastfed, at follow-up 6-12 weeks later, 86% were exclusively breastfed. This data showed a reversal of the usual drop-off in breastfeeding from birth to six weeks of age (McAndrew et al. 2012), which has not been demonstrated elsewhere in the literature. The return of completed follow-up questionnaires was high, contributing to validity of findings.

Based on the service evaluation design, modest sample size, and the paucity of supporting research in the Clinic, it is not possible to make substantial claims from this article alone. However, given the reversal of the expected precipitous decline in exclusive breastfeeding, further study of feeding outcomes in this Clinic was warranted as a matter of priority.

3.5.6 Summary of research in the Clinic

Four studies have been conducted in the Clinic to date, focusing on mothers' experiences of the Clinic, mother-baby demographic data, mother-baby feeding outcomes within a service evaluation, and a small study of student experiences. These studies each provide a starting point for planning future research, however they do not provide definitive understanding due to the research designs and limitations, and only a single study in each area.

3.6 Summary

Interprofessional education, particularly in a collaborative practice setting, is beneficial for student healthcare professionals to develop competencies in interprofessional and collaborative practice. Interprofessional education commonly occurs within student-run clinics, which are often set up to provide interprofessional opportunities for student healthcare professionals, and to meet the needs of underserved communities, particularly in North America. These clinics typically provide general primary care, rather than specialised services. Given the benefits for students, and the need for creative solutions to provide placements to fulfil clinical experience requirements for registration, student-led clinics may be of multiple benefit, particularly within an interprofessional

context. Student midwives and student chiropractors were not participants in the interprofessional education or student-led clinics identified in this review. Apart from the previous research undertaken in the Clinic, there was no evidence reporting midwifery and chiropractic collaboration, either in practice or education.

3.7 Research questions

3.7.1 Introduction

Following this review, there were a host of valuable questions which could have been addressed. The research questions were narrowed down and chosen, with consideration for the constraints of a PhD timeline and resources. This process involved prioritisation of questions, for example areas which had the sparsest literature and areas which were of most relevance were prioritised. Three topics were initially identified: student experiences of learning and practice in the Clinic, mother-baby characteristics with an emphasis on determinants of breastfeeding, and mother-baby feeding outcomes after attending the Clinic. Three research questions emerged, outlined below (3.7.2, 3.7.4, 3.7.5). Following data collection with students about their experiences to address research question one, an additional question emerged about the impact of the Clinic on early-career practice, particularly supporting breastfeeding (3.7.3). This was a reflexive addition to the study.

3.7.2 Student experiences of the Clinic

Given the very limited exploration of student experiences of the Clinic to date (3.5.2), this was an area of priority. As highlighted by Renfrew et al. (2006), healthcare workers' knowledge, skills, and attitudes can influence mothers' feeding practices. The Baby Friendly Initiative has highlighted the need for healthcare workers to have skills and knowledge to support breastfeeding, including the ability to communicate with mothers in a clear, helpful, mother-centred, and non-judgemental way (Unicef UK Baby Friendly Initiative 2019b). It was not known whether students perceived changes in their knowledge or skills to support breastfeeding having attended the Clinic. Given the lack of existing understanding of this topic, a broad and exploratory question was posed. This was in favour of existing measures which focused only on interprofessional education and collaborative practice, as highlighted in 3.3.1, which would have neglected the unique focus on breastfeeding in this interprofessional student-led clinic.

Research question 1: What are the student experiences of learning and practicing in the Clinic?

3.7.3 Early-career practitioner reflections of the Clinic and experiences of practice

This reflexive addition was made in response to data collected to address research question one. Students talked hypothetically about how they might support breastfeeding in post-registration practise, which led to this question. No research had been conducted with practitioners after participating in the Clinic, this was another novel area of exploration, which again related to healthcare workers' knowledge, skills, and attitudes in breastfeeding support, within an interprofessional collaborative context. This question was also broad and exploratory, reflecting the lack of existing literature in this area.

Research question 2: What were midwives' and chiropractors' experiences of learning and practicing in the Clinic, and how did these experiences influence their early-career practise?

3.7.4 Mother-baby characteristics

Following collection of demographic data, both as an endeavour on its own (3.5.3) and alongside other research (3.5.5), there was some understanding of the demographic profile of mothers and babies who typically attended the Clinic. However, this demographic data was somewhat limited, particularly with regards to demographic factors known to be determinants of breastfeeding, such as mothers' ethnicity, education, and marital status (2.4.2), and other related information such as the feeding history and reason for attending the Clinic. Therefore, this question was developed to further explore mother-baby characteristics surrounding breastfeeding.

Research question 3: What are the characteristics of mothers and babies who attend the Clinic?

3.7.5 Mother-baby feeding outcomes

As feeding outcomes in the Clinic had been collected as part of a service evaluation (3.5.5) with remarkably positive outcomes, but not as a research investigation, this was another priority. The design of the questionnaire and outcomes utilised in this study are detailed in the following chapter (4.9.3). Given the benefits of breastfeeding to mothers

and babies (2.2), it is important to understand the impact of interventions used to support breastfeeding.

Research question 4: After attending the Clinic, what are the feeding outcomes for mothers and their babies at six and twelve weeks of age?

These broad-ranging questions, encompassing the service providers (students) and service users (mothers and their babies), were triangulated to provide a broader and deeper understanding of the Clinic. The methodology and methods applied to address these four research questions are presented in the following chapter.

4 Methodology and methods

4.1 Introduction to the chapter

This chapter discusses the methodology and methods applied in this thesis, to address the research questions (3.8) informed by the systematised review of the literature in the previous chapter. Research philosophy is introduced and the underlying philosophy in this thesis, pragmatism, is discussed (4.2). Mixed-methods research is introduced and discussed as an approach to research (4.3). The role of the researcher and positionality in this thesis are considered (4.4). An overview of the mixed-methods study in this thesis is presented (4.5). The qualitative components of the study are introduced (4.6), followed by the methods utilised in focus groups with students (4.7) and interviews with early-career practitioners (4.8). The quantitative components of the study are introduced (4.9), followed by the methods utilised in the study of mother-baby characteristics and feeding outcomes (4.10). The processes used in the integration and triangulation of qualitative and quantitative data are discussed (4.11). Ethical considerations are outlined (4.12). The chapter is summarised (4.13).

4.2 Research philosophy

4.2.1 Philosophical world views

An essential component of the research process, which should occur in the initial stages, is identification of the philosophical foundation for the research (DePoy and Gitlin 2020). Researchers are encouraged to state their philosophical assumptions, to provide context to and explanation for their research approach (Ormston et al. 2014; Creswell and Creswell 2018). The approach in this thesis was informed by the researcher's philosophical assumptions, the research design or 'procedures of inquiry', and the research methods, including data collection, analysis, and interpretation (Creswell and Creswell 2018).

As recommended (DePoy and Gitlin 2020), I explored and identified my philosophical orientation, or worldview, at the outset. A 'worldview' has been defined as "a set of basic beliefs that guide action" (Guba 1990), and as:

> "a general philosophical orientation about the world and the nature of research that a researcher brings to a study" (Creswell and Creswell 2018).

As philosophical ideas influence research practice, these ideas should be identified and utilised explicitly (Creswell and Creswell 2018). Ontological positions, the nature of the world or reality and what can be known about it, include realism and idealism (Ormston et al. 2014). Realism states that an external reality exists independent of our beliefs or understanding: conversely, idealism states that no external reality exists independent of our beliefs or understanding (Ormston et al. 2014). Epistemological positions, how knowledge can be developed and the limits to knowledge, include deductive and inductive logic (Ormston et al. 2014). Deductive logic uses a 'top-down' approach: theory is used to propose a hypothesis, which is tested using observations and accepted or rejected based on the findings, strengthening or weakening the original theory (DePoy and Gitlin 2020). Inductive logic uses a 'bottom-up' approach, using observations to seek general patterns or rules, often to develop new or existing theories (DePoy and Gitlin 2020).

Different research philosophies adopt varying ontological and epistemological stances. Table 4 outlines three worldviews commonly used in research: post-positivism (associated with quantitative research), constructivism (associated with qualitative research) and pragmatism (associated with mixed-methods research) (Creswell and Creswell 2018). Pragmatism is outlined below (4.2.2) as the approach taken in this thesis.

Table 4. A summary of post-positivist, constructivist, and pragmatic worldviews in research practice. Adapted from Ritchie et al. (2014); Creswell and Plano Clark (2017); Creswell and Creswell (2018); DePoy and Gitlin (2020).

	Post-positivism	Constructivism	Pragmatism
Ontology	Critical realism Singular reality	Relativism Multiple constructed realities	No fixed ontological perspective Singular and multiple realities
Epistemology	Distance and impartiality Deductive reasoning	Closeness and subjectivity Inductive reasoning	No fixed epistemological perspective Practicality driven
Axiology	Bias is eliminated as far as possible	Bias and interpretation are discussed and used	Multiple stances Both unbiased and biased
Associated research designs	Quantitative, e.g., experiments	Qualitative, e.g., ethnographies	Often mixed methods, e.g., explanatory sequential
Associated research methods	Deductive to test theory Closed questions Surveys, measurements Descriptive and statistical analysis	Inductive to build patterns, theories, and interpretations Open questions Interviews, group discussion, observation Content analysis, grounded theory, interpretive phenomenological analysis	Both closed and open questions Both experimental and naturalistic types of data collection Both deductive and inductive approaches to data analysis

4.2.2 Pragmatism

Pragmatism has been described as a deconstructive paradigm, which prioritises ‘what works’ to address research questions (Teddlie and Tashakkori 2010), rather than ontological or epistemological debates (Feilzer 2010). Pragmatism accepts both assertions of a ‘real world’ and of an individual experience of the world, and states these assertions need not be mutually exclusive (Johnson and Onwuegbuzie 2004). Common dualisms between qualitative and quantitative purists are rejected, often in favour of

mixed-methods approaches (Johnson and Onwuegbuzie 2004; Teddlie and Tashakkori 2010). Pragmatism offers a set of philosophical tools to address problems, rather than a philosophical position (Biesta 2010). Pragmatic researchers use the design and methods best suited to facilitate further understanding of the research problem (Creswell and Creswell 2018).

4.2.3 Pragmatic underpinnings of mixed-methods research

4.2.3.1 Introduction

Johnson and Onwuegbuzie (2004) presented mixed-methods as a 'third paradigm', which recognises value in both qualitative and quantitative approaches, and particular value in combining approaches to maximise strengths and minimise limitations inherent to each. Pragmatism provides justification for combining qualitative and quantitative approaches (Johnson and Onwuegbuzie 2004), and has come to be associated with mixed-methods research (Creswell and Creswell 2018). The pragmatic justification for mixed-methods is a case of utility: research means are justified for research ends; the research questions drive the research methods (Biesta 2010; Creswell and Plano Clark 2017). Pragmatism can be considered at a practical level, choosing methods suitable for the research question, and at a philosophical level, where qualitative and quantitative approaches are distinct yet equally valuable (Yardley and Bishop 2015).

4.2.3.2 Rationale in this thesis

Given specific research questions in this thesis (3.7), it was evident that qualitative and quantitative methods would be necessary, and a paradigm which facilitated mixed-methods was therefore required. Further considerations in identifying a research approach included the philosophical assumptions of the researcher and the experience of the researcher (Creswell and Creswell 2018). As a novice researcher without strongly held or developed philosophical assumptions, and some experience of qualitative and quantitative approaches, a pragmatic approach was further supported and was utilised in this thesis.

4.2.3.3 Philosophical assumptions in this thesis

I outline my ontological, epistemological, axiological, and methodological assumptions below. This is to avoid the potential pitfall of using a paradigm as means to disengage from discussions about assumptions (Biesta 2010), and to be clear and precise about

the assumptions at the outset of this research (Creswell and Creswell 2018). This is an expansion on the pragmatic approach summarised above (Table 4).

Ontologically, methods were applied which reflected both multiple and singular realities, with qualitative and quantitative approaches (Ormston et al. 2014). Epistemologically and axiologically, the practicality focus of pragmatism was applied (Biesta 2010; Creswell and Plano Clark 2017): qualitative aspects of closeness, subjectivity, and bias were present in some aspects of the study; quantitative aspects of distance, impartiality, and minimised bias were applied in others. Methodologically, the pragmatic tradition of mixing methods was upheld (Johnson and Onwuegbuzie 2004). Inductive methods were used to build patterns, deductive methods were used to test hypotheses: the exploration of student experiences and practitioner reflections of the Clinic employed qualitative tools, and the study of mother-baby characteristics and feeding outcomes employed quantitative tools. The rhetoric in this thesis continues in the more formal style typically associated with quantitative research, in the reporting (5.2, 5.3) and discussion of the findings of the qualitative aspects, a more conversational style is adopted (DePoy and Gitlin 2020) to reflect my proximity to the participants and data.

4.3 Mixed-methods research

4.3.1 Introduction to mixed-methods research

Mixed-methods designs are situated in the middle of the qualitative-quantitative continuum (Creswell and Creswell 2018), forming a distinct methodology. Mixed-methods rely on combining or integrating qualitative and quantitative approaches and data (Creswell and Creswell 2018). In mixed-methods research, the research questions are fundamental in directing the methods implemented and obtaining data which is meaningful to address the questions (Johnson and Onwuegbuzie 2004).

Initially, mixed-methods sought convergence of qualitative and quantitative data (Jick 1979). There is recognition of the inherent limitations of qualitative and quantitative approaches, and combinations of traditionally ‘incompatible’ methods are used to minimise limitations and maximise strengths (Creswell and Creswell 2018; DePoy and Gitlin 2020). In support of mixed-methods, DePoy and Gitlin (2020) argue that complex phenomena often require complex and combined approaches to gain understanding. Mixed-methods have become increasingly popular (Feilzer 2010), in part due to breadth

and depth of understanding that the approach can provide (Doyle et al. 2016). Mixed-methods can provide a powerful tool to investigate the complexities of health and healthcare (Fetters et al. 2013).

4.3.2 Strengths and limitations of mixed-methods research

Whilst mixed-methods originated to minimise limitations of other approaches, it presents its own challenges. Creswell and Plano Clark (2017) highlighted potential challenges associated with mixed-methods research: time and resources required to complete the multiple steps inherent in mixed-methods, including time for multiple sets of data collection; sampling issues including sample size; analytic and interpretive issues; teamwork, particularly in inter-, multi-, and trans-disciplinary teams; and page and word limits in applications and publications. Further to these practical issues, researcher skills have also been highlighted as a potential challenge (Johnson and Onwuegbuzie 2004). Creswell and Plano Clark (2017) suggest researchers have experience in qualitative and quantitative methods, as well as grounding in mixed-methods in the form of reading literature, undertaking training, and seeking expertise of others, prior to embarking on mixed-methods research. More theoretically, mixed-methods has been criticised by methodological purists who advocate for single paradigm approaches (Johnson and Onwuegbuzie 2004).

These challenges are weighted against the advantages that mixed-methods can afford. In addition to providing means of harnessing strengths to offset limitations of qualitative or quantitative approaches (Johnson and Onwuegbuzie 2004), mixed-methods approaches can help to answer questions which cannot be answered using only qualitative or quantitative approaches and provide new insights through synergy (Creswell and Plano Clark 2017). This can be particularly helpful when research problems are broad and wide-ranging (Johnson and Onwuegbuzie 2004), as mixed-methods researchers are free to adopt methods most suited to the problem (Creswell and Plano Clark 2017). Other benefits include opportunities for researchers to develop skill sets and bridges across traditional qualitative-quantitative divides (Creswell and Plano Clark 2017). A potential consequence of the benefits above is strengthened findings, due to convergence and corroboration, and a more complete understanding of the problem (Johnson and Onwuegbuzie 2004).

4.3.3 Mixed-method designs

Key considerations in mixed-methods designs include paradigm emphasis and timing of the qualitative and quantitative components in relation to each other (Johnson and Onwuegbuzie 2004), as shown below (Figure 2). The timing of the qualitative and quantitative elements may be concurrent (also called parallel or convergent), sequential with qualitative first (exploratory), or sequential with quantitative first (explanatory); these basic designs are the three core mixed-methods designs (Creswell and Plano Clark 2017). This is not an exhaustive description of ways in which methods can be mixed, more complex strategies can be 'built' based on these three starting points (Creswell and Creswell 2018). Further development of the mixed-methods design relies on identifying the paradigmatic emphasis, which can be equal between qualitative and quantitative approaches, or have a 'dominant' approach (Johnson and Onwuegbuzie 2004).

The mixed-method approach is summarised below, in terms of philosophical assumptions, strategies of inquiry, methods, and researcher practices (Table 5).

Figure 2. Summary of common mixed-methods designs. Adapted from Johnson and Onwuegbuzie (2004) and Creswell and Creswell (2018).

		Time order	
		Concurrent	**Sequential**
Paradigm emphasis	**Equal status**	QUALITATIVE + QUANTITATIVE	QUALITATIVE → QUANTITATIVE (exploratory) QUANTITATIVE → QUALITATIVE (explanatory)
	Dominant status	**QUALITATIVE** + quantitative **QUANTITATIVE** + qualitative	**QUALITATIVE** → quantitative qualitative → **QUANTITATIVE** (exploratory) **QUANTITATIVE** → qualitative quantitative → **QUALITATIVE** (explanatory)

Table 5. A summary of mixed-methods approaches to research. Adapted from Creswell and Creswell (2018).

	Mixed methods
Philosophical assumptions	Often associated with a pragmatic paradigm
Strategies of inquiry	Sequential, convergent, and transformative
Methods employed	Both open- and closed-ended questions Both emerging and predetermined approaches Both text and numeric data
Practices of the researcher	Collects both qualitative and quantitative data Presents a rationale for combining approaches Integrates data at some point of the inquiry Procedures presented visually Employs practices of both qualitative and quantitative research

4.3.4 Rationale for a mixed-methods approach in this thesis

The rationale for mixed-methods in this thesis aligns with the rationale for a pragmatic approach (4.2.3): qualitative or quantitative approaches alone would not have addressed the range of questions (Creswell and Creswell 2018). When considering the research questions (3.7), questions one and two required a qualitative, inductive approach, and questions three and four required a quantitative, deductive approach. Additionally, mixed-methods allow for more complete findings (Creswell and Plano Clark 2017), in this case gaining new insight into student experiences, and building on existing knowledge about mothers and babies, specifically within the context of the Clinic. These data were triangulated to better understand the roles the Clinic has for these two groups, with the aim of producing a more complete understanding of the Clinic (Johnson and Onwuegbuzie 2004). Finally, different audiences may have different expectations of research. For effective research, particularly in health services, qualitative and quantitative approaches are needed (Pope and Mays 1993). With a mixed audience for this research and thesis, which contains different professions, aspects of clinical learning, and the public health issue of breastfeeding, mixed-methods were further justified.

Student learning and practice in the Clinic were new phenomenon to explore. As there was no existing published literature, an inductive, bottom-up approach was suited to explore and gain initial understanding of this population's experiences (Creswell and

Creswell 2018). This qualitative approach was justified in addressing the questions, and in potentially directing future research once important ideas had been identified (Creswell and Creswell 2018).

When investigating the utility of an intervention and factors which influence outcomes, a quantitative approach is required (Creswell and Creswell 2018). Describing characteristics and outcomes of mothers and babies attending the Clinic required a standardised approach to data collection to address the research questions. Given the existing qualitative and quantitative research on this group of participants (3.5), and the wider literature available on determinants of breastfeeding (2.4), key variables were identifiable and were implemented in this part of the study.

4.3.5 Design of the mixed-methods study in this thesis

At the design stage of study, there were key decisions to make (Creswell and Plano Clark 2017). This included the design and methods of the component qualitative and quantitative studies (4.3.5.1), the status or emphasis of the components (4.3.5.2), the sequence of the components (4.3.5.3), and the point of synthesis of the components (4.3.5.4).

4.3.5.1 Methods used in the qualitative and quantitative components

Focus groups were used as the means of data collection to explore student midwives' and student chiropractors' experiences of learning and practice in the Clinic. Different approaches to data collection were considered, including interviews and questionnaires. This method was selected for several reasons. First, focus groups can be particularly helpful as a means of orientation within a new field of study (Flick 2014), which was important because previous investigation of student experiences of the Clinic were limited (3.5.2). Second, they allow for group interaction to illustrate the issues explored (Lewis and McNaughton Nicholls 2014), which was deemed valuable due to the collaboration inherent in the Clinic. Focus groups also illuminate and allow for exploration of different views within the group (Lewis and McNaughton Nicholls 2014), which was anticipated to be useful in drawing out nuances of similarities and differences of students' experiences of the Clinic, providing additional richness to this novel exploration. Focus groups typically consist of a group of six to eight participants who share characteristics and use a schedule of questions to facilitate group discussion (Silverman 2017). Focus

groups may stand alone or be used in combination with other methods (Barbour 2007). As student experiences of the Clinic had not been explored in depth and were therefore a new field of study, the target participants had shared characteristics and experiences, and the data were to be integrated within a mixed-methods study, focus groups were deemed the most suitable means of collecting data to address research question one.

Individual interviews were used to collect data to explore early-career midwives' and chiropractors' reflections on the Clinic and experiences of practice. Again, data collection methods were considered, including focus groups and questionnaires. Practicality of collecting data from participants who were geographically dispersed and busy in clinical practice were key considerations, a method which would facilitate participation was important. Focus groups were deemed impractical on both of these counts and were disregarded. Interviews were favoured over questionnaires, as they allow for responsive exploration of individuals' perspectives and in-depth understanding including personal context (Lewis and McNaughton Nicholls 2014) in a way that standardised questionnaires would not. Interviews are means of collecting data from a respondent (participant) by asking questions (Polit and Beck 2014). Interviews followed the focus groups, data from which were used to inform the topics covered. A semi-structured approach was taken, utilising a discussion guide to ensure key topics were consistently addressed (Arthur et al. 2014). Key features of semi-structured interviews are being pre-arranged, utilising predetermined questions, allowing emergence of additional questions, and lasting between 30 minutes and several hours (Dicicco-Bloom and Crabtree 2006). Interviews were deemed a practicable means of collecting data from this population of busy clinicians, some of whom would be working shifts, whilst providing means of collecting insightful data. As potential participants were geographically dispersed and busy practitioners, online interviews using live video call (Skype) were offered as an alternative to face-to-face interviews, to facilitate participation (Yeo et al. 2014).

A prospective questionnaire-based study was used to collect mother-baby characteristics and feeding outcomes, using online methods to host and complete the questionnaires (Online Surveys). Online methods were used for several reasons: first, mothers attending the chiropractic teaching clinic preferred completing questionnaires on a tablet device (Hiew et al. 2018); second, electronic forms are more cost- and time-effective than paper-based questionnaires (Ebert et al. 2018) which is an important consideration in PhD research, and finally, the potential pitfalls of online data collection

were readily minimised in this study (4.12.6). The design was observational and prospective, mothers who had already chosen to attend the Clinic were recruited, and their feeding outcomes followed over time. Mother-baby characteristics were captured once at the beginning of the study, this aspect was cross-sectional; feeding outcomes were captured over four time points, this aspect was longitudinal (Creswell and Creswell 2018). This design allowed for reporting of current feeding practices (outcomes) and is often ethically favoured over experimental and randomised designs for assessing breastfeeding support interventions (Binns et al. 2017). This design allowed for characteristics of mothers and babies and their feeding outcomes to be collected, and hence addressed the research questions.

4.3.5.2 Status of the qualitative and quantitative components

In this study, the qualitative and quantitative aspects were deemed of 'equal status' (Johnson and Onwuegbuzie 2004), as shown in the first row of Figure 2 (above). Practically, there was equal status was reflected in the 'weighting' of qualitative and studies, and time intended to be spent on each. The perceived value of the data obtained was also equal, and in this way the 'philosophical level' of pragmatism (Yardley and Bishop 2015) was applied.

4.3.5.3 Sequence of the qualitative and quantitative components

This study used a concurrent design with regards to the qualitative and quantitative elements, as shown in the first column of Figure 2 (above). The concurrent design had an additional 'layer', with sequential qualitative studies: the focus groups with students led to the addition of subsequent interviews with early-career practitioners. This involved collecting and analysing qualitative and quantitative data separately, then merging the data at the 'point of interface' and interpretation with regards to the manner and extent of converge or divergence of the findings (Creswell and Plano Clark 2017).

4.3.5.4 Synthesis of the qualitative and quantitative components

The 'point of interface' occurred after the separate thematic and statistical analyses were completed, and findings were presented as a 'side-by-side' comparison (Creswell and Creswell 2018). This approach involves reporting qualitative and quantitative findings side-by-side and indicating where the findings confirm or contradict each other (Creswell

and Creswell 2018). This aspect of the findings is embedded in the discussion (chapter 7).

4.4 Positionality

4.4.1 Introduction to the researcher

As there are qualitative approaches in this mixed-methods study, it is appropriate to introduce myself as the researcher (DePoy and Gitlin 2020). This builds on the statement about the researcher in the introduction (1.2).

Between June 2014 and December 2016, as a student, I provided care in the Clinic and conducted several research studies. I therefore had experiences, beliefs, and assumptions about the Clinic at the outset of this PhD which are important to acknowledge. My experiences of the Clinic were positive, I enjoyed being part of clinical and research teams and found both aspects rewarding. I learnt about birth, the perinatal period, and breastfeeding from student and registered midwives. Working as part of a team was a novel and positive experience, which was not part of my chiropractic education. I learnt about working in an interprofessional team, and the benefits of broader expertise provided by an interprofessional team in patient care. The emphasis in my chiropractic education around breastfeeding was on the baby and musculoskeletal factors, in the Clinic I gained an appreciation of the importance of the mother and baby as a dyad in a feeding relationship.

My research experience prior to undertaking this PhD was in chiropractic settings and the interprofessional setting of the Clinic, using qualitative, quantitative, and mixed-methods (Miller et al. 2015; Telford et al. 2015; Miller et al. 2016a; Miller and Miller 2017; Miller et al. 2017). Some of this literature was discussed in the previous chapter (3.5). My skills, knowledge, and beliefs at the outset of this PhD were quantitative leaning, mostly due to a focus on quantitative methods in my education and lack of exploration of qualitative approaches. Whilst I had conducted qualitative research, this lacked philosophical and theoretical grounding. I was called to examine my ontological and epistemological positions early in my PhD programme (4.2.3.3). Through exploration, discussion, and reflection, pragmatism was identified as a good ‘fit’ to accommodate my beliefs, which in part were shaped by my clinical background, where flexibility and addressing problems with appropriate tools are important. Diversity in the supervisory

team in terms of clinical experience, research interests, and methodological expertise was highly beneficial in the development of my skills as a researcher and in the evolution and execution of the study.

4.4.2 Which hat have I got on?

Practitioner-researchers have additional considerations in their research due to their dual roles (Ryan et al. 2011). My roles of researcher and registered chiropractor required examination and reflection prior to and during this research, including consideration of the GCC Code (2016) and implications this may have had. It was particularly important when considering potential ethical implications of these roles, which may have conflicted (Ryan et al. 2011). These roles are discussed alongside ethical considerations of the component studies (4.12.4 – 4.12.6).

4.4.3 Insider/outsider

Given the qualitative components of this mixed-methods study, my status as an 'insider' or 'outsider' with the participant groups is relevant. An 'insider' researcher conducts research within a group which they are part of (Kanuha 2000), and hence has elements of shared identity, language, and experiences (Asselin 2003). Having participated in the Clinic as a student, I had a degree of shared identity and experience with both students and early-career practitioners. As highlighted by Corbin Dwyer and Buckle (2009), describing a researcher as only 'insider' or 'outsider' is a false and over-simplified dichotomy, as being a member of a group does need lead to complete 'sameness', just as not being a member of a group does not lead to complete 'otherness'. For example, as a chiropractor, I had a higher degree of insider status with registered chiropractors than I did with the student midwives, to whom I was more of an outsider. However, I had a degree of shared experience with both groups, having participated in the Clinic.

My varying degrees of insider status were used to benefit the studies: in trust and openness of participants, and their willingness to share experiences based on assumed mutual understanding (Dwyer and Buckle 2009). However, it could have also been a source of conflict and confusion, especially when the researcher role is overridden by another of the researcher's perspectives during data collection or analysis (Asselin 2003). Therefore, my dynamic and varied role as more-insider and more-outsider needed consideration through the research processes, including recruitment, data collection, and

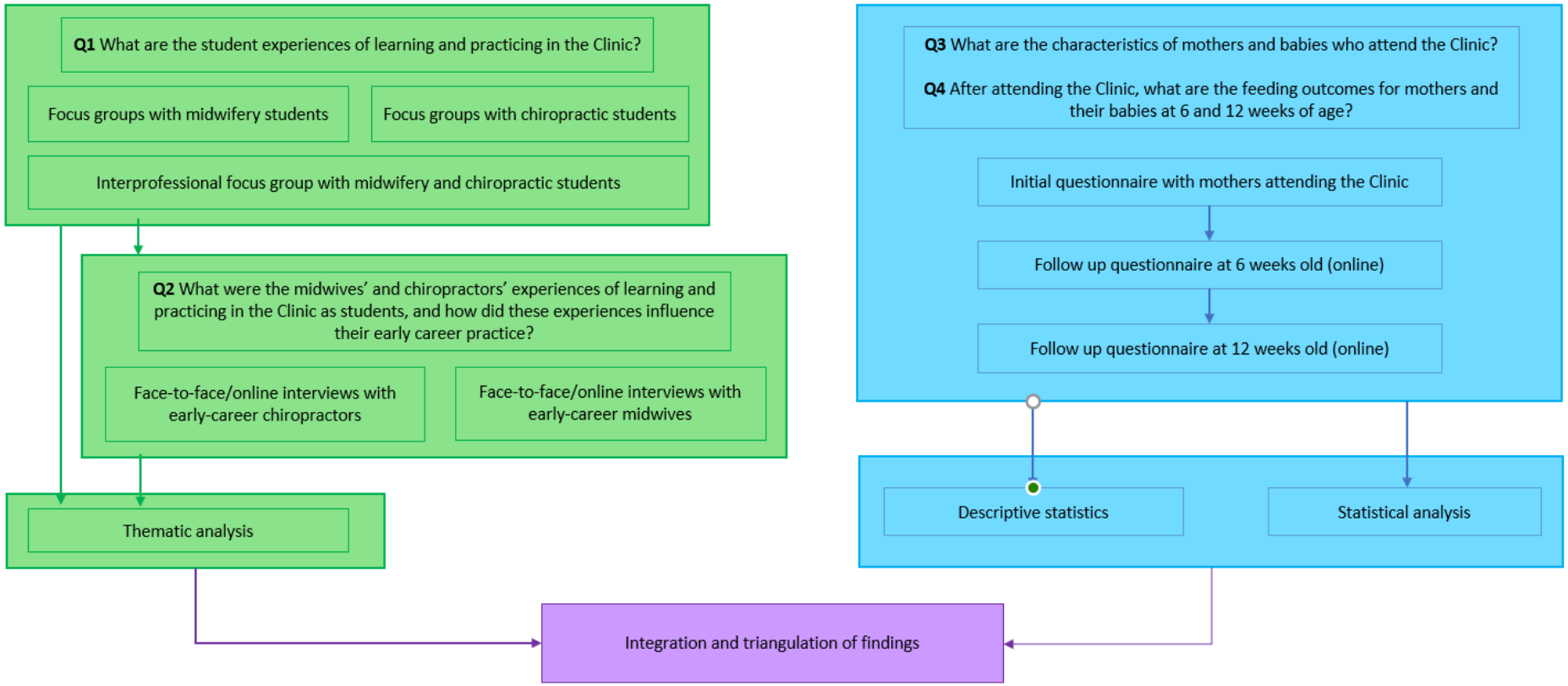
data analysis. Dwyer and Buckle (2009) proposed the ‘space between’ as a useful position for qualitative researchers to adopt, allowing both insider and outsider positions, and acknowledging the influence of being a researcher with extensive knowledge of the literature on these positions. My role as insider and outsider are revisited in the discussion (7.3).

4.5 Overview of the mixed-methods study

As outlined in 4.3.3, this thesis is composed of two sequential qualitative studies, run concurrently with a quantitative study. The data from the two qualitative studies were analysed separately and findings were then integrated. Following both qualitative analysis and statistical analysis, the qualitative and quantitative findings were triangulated. A pragmatic approach was taken throughout (4.2.2).

Figure 3 shows the research questions alongside the methods used to address each question. Focus groups were undertaken with student midwives and student chiropractors to explore their experiences of the Clinic (research question 1). Face-to-face and online interviews, using Skype, were used with early-career midwives and chiropractors to explore their experiences of the Clinic as students, and how these experiences influenced their early career practice (research question 2). A prospective questionnaire survey was used to ascertain characteristics and feeding outcomes of mothers and babies who attended the Clinic (research questions 3 and 4).

Figure 3. A summary of the methods applied in this thesis.



4.6 Qualitative methods

Focus groups with student midwives and student chiropractors preceded and informed the interviews with early-career practitioners. The reflexive addition of interviews with early-career practitioners is discussed alongside the focus groups (4.7.6). Single-profession focus groups were followed by an interprofessional focus group with students from both professions. Individual interviews with early-career midwives and chiropractors, who had participated in the Clinic as students, were held either in-person or using Skype. Data were collected and analysed separately in the two qualitative studies. Thematic analysis, as outlined by Braun and Clarke (2006), was utilised for the focus groups and interviews. NVivo (QSR International 2020) was used for the thematic analysis, as a tool to aid management of data and ideas, run queries on the data, and visualise data (Jackson and Bazeley 2013). The findings from thematic analyses were integrated and compared, to identify convergence and divergence between students and professionals, and midwives and chiropractors.

4.7 Focus groups with student midwives and student chiropractors

4.7.1 Introduction

This section describes the setting (4.7.2), participants (4.7.3), recruitment and sampling (4.7.4), data collection (4.7.5), and data analysis (4.7.6) of the focus groups. General and specific ethical considerations are discussed in section 4.12.4. Seven focus groups were held with a total of 10 student midwives and 22 student chiropractors between December 2017 and June 2019. Focus groups had between three and eight participants. One pilot focus group was held (Breen 2006) and was included in the data analysis, as little was changed in terms of the protocol. The purpose of the pilot was to test practical aspects of the recruitment and enrolment processes and the data collection processes including the discussion guide (Appendix 6), allowing for reflexive amendments to be made prior to starting data collection. Findings are reported in 5.2.

4.7.2 Setting

Focus groups with midwifery students were held on their campus, scheduled during the one-hour lunch break. Focus groups with chiropractic students were also held on their campus. With support of the teaching clinic staff, chiropractic students were able to close their clinic diaries to appointments and meetings to attend the focus groups, which were scheduled during quieter times of the teaching clinic day. Exam periods,

coursework deadlines, and clinical placements were avoided when scheduling focus groups (Breen 2006). Focus groups were held in comfortable rooms with a large square table (Breen 2006) and refreshments were provided (Kitzinger 1995). The interprofessional focus group was held at the beginning of a Clinic shift, before mothers and babies arrived for their appointments. A large treatment room in the Clinic was used for this focus group. Although not an ideal space, it did mitigate the need for one cohort of students to travel to the other campus, provided a shared and familiar space to both cohorts of students, and allowed the focus group to occur without asking students to arrive early or stay late.

4.7.3 Participants

Student midwives in their second or third year, student chiropractors in their fourth or fifth year, who had attended the Clinic at least twice, were invited to participate. Attending the Clinic twice would typically mean that students had had the opportunity to both observe and lead an appointment and provided care to at least four dyads. The demographic profile of participants are reported in 5.2.1.

4.7.4 Recruitment and sampling

Students were emailed to inform them of the study. Once students had registered their interest by return email, they were sent details of the focus group including the date, time, and location, and a copy of the participant information sheet (Appendix 7). Students were informed that they could ask any questions prior to participating in the study. Purposive sampling was used: participants were chosen due to features or characteristics that were central to the area of study, allowing exploration to occur and understanding to be generated (Ormston et al. 2014; Bryman 2015). In this case, participants were students who had experiences of the Clinic. Most students who registered interest in participating took part; one midwifery student did not attend due to illness and one chiropractic student did not attend due to a last-minute diary conflict.

Recruitment of midwifery students was more challenging than the chiropractic students: this is discussed in 7.4.1. Assistance from a student representative, who shared the study information on an informal Facebook page used by the students,

and from a lecturer, who verbally informed the students of the focus group during a class, led to successful recruitment for two focus groups.

4.7.5 Data collection

Seven focus groups were held with 32 students: four with chiropractic students, two with midwifery students, and one interprofessional group, with between three and nine participants each. Focus groups lasted between 25 and 45 minutes. All participants read the information sheet (Appendix 7), signed the participant agreement form (Appendix 8) prior to participating, and had the opportunity to ask questions before commencing the focus group. Participants were introduced to the focus group facilitator (AM) and assistant moderator (EvT) (Krueger and Casey 2002). The assistant moderator attended the first three focus groups to provide support. Following these focus groups, AM and EvT discussed the key points of interest from the focus group, and EvT gave feedback on AM's facilitation (Krueger and Casey 2002). All focus groups were audio recorded and transcribed (Silverman 2017). Facilitators used a field notebook during the focus group to highlight any areas of interest to return to during the focus group, and in future groups, and to aid reflexivity (Arthur et al. 2014; Flick 2014).

The facilitator opened the focus group with an introduction to the topic and ground rules for the group (Finch et al. 2014), such as speaking one at a time. It was verbally noted that a 'realistic' picture of their experiences of the Clinic were key to the study, and that participants were free and encouraged to share all experiences (Krueger and Casey 2002). 'Warming up' questions were used (Flick 2014). As participants knew each other, they did not need to introduce themselves, they were asked instead to share what they had hoped to gain when they joined the Clinic. Focus groups were semi-structured, and a discussion guide was utilised during each focus group (Appendix 6) (Arthur et al. 2014). The discussion guide was developed with input from the supervisory team and centred around learning and practice in the Clinic. Minor amendments were made to the discussion guide when new concepts of interest were raised during discussion, and to clarify questions or topics for discussion.

4.7.6 Data analysis

Focus group audio recordings were used to produce verbatim transcripts for all seven focus groups. The transcripts were completed as soon as was feasible after the focus groups, to allow analysis to begin (Flick 2014). Thematic analysis was used (Braun and Clarke 2006), and my specific application of thematic analysis is presented below.

In **stage one**, data were transcribed, transcripts were printed and read, and I listened back to the audio recordings. This naturally progressed into **stage two**, using the hard copy, where I highlighted and annotated text to generate initial codes. Stages one and two were completed soon after the focus group to allow for reflection and reflexive amendments to be made, for example adding or rewording a question in the discussion guide. Coded transcripts were discussed with members of the supervisory team to aid analysis, and suggestions about additional codes were considered. Coding was completed for all focus groups prior to moving into the next stage of analysis.

At this point, the transcripts were uploaded to NVivo where the initial codes were added, and the analysis continued. In **stage three,** new 'nodes' were created by topic and meaning identified in the codes, identifying potential themes and subthemes. In **stage four,** the potential themes and subthemes were reviewed in the context of the codes, some codes were moved between the new nodes, and nodes were also viewed in the context of other nodes. At the end of this stage, themes, subthemes, and codes were shown as 'nesting nodes' in NVivo. This output was again discussed with members of the supervisory team, including questions about the nuances between themes and respective codes, which was an important feature at this stage of the analysis. **Stage five** was supported by a broader conversation with the supervisory team about the data and findings overall. Themes were defined in NVivo. In **stage six** extracts were sought from a range of the participants, across both the midwifery and chiropractic groups, to ensure representation (White et al. 2014).

Following stages one to five of thematic analysis, the analysis felt simplistic and did not fully capture the data. Whilst it reflected the topics discussed, it presented a superficial and categorical picture of the data, neglecting some of the depth and

nuance available. I therefore returned to stage 2 output (initial codes) and reviewed the coded data. This was continuous with revisiting stage three, where I regrouped the codes, wrote a short summary of the data coded in each group, and renamed the potential themes and subthemes to better reflect the data. Data were reviewed in the fourth stage; further changes were made to increase congruency within themes and subthemes. At this point, I drew a map of the themes and subthemes, and where they were linked. In the fifth stage, new definitions were attributed to the themes in NVivo. This process and the themes which emerged were discussed again with members of the supervisory team after the second round of analysis.

The report of the findings produced in stage six comprises the main body of the findings of this study (5.2).

Following the initial round of data analysis, where students reported extensively about their learning and practice around the Clinic, and hypothesised how they might apply this learning in post-registration practice, a question arose about the utility and relevance this learning in post-registration practice. For this reason, research question two was developed (3.7.3), and interviews were held with early-career midwives and chiropractors who had attended the Clinic as students (4.8).

4.8 Interviews with early-career practitioners

4.8.1 Introduction

This section describes the setting (4.8.2), participants (4.8.3), recruitment and sampling (4.8.4), data collection (4.8.5), and data analysis (4.8.6) of the interviews with early-career midwives and chiropractors. The general and specific ethical considerations are discussed at the end of the chapter (4.12). Seven interviews were held with three midwives and four chiropractors between April and June 2019. Four interviews were held face-to-face and three were held online using Skype video calls. Findings from these interviews are reported in 5.3.

4.8.2 Setting

Due to the potential participants being geographically dispersed, interviews were offered face-to-face or online using Skype (Collard and Van Teijlingen 2016),

whichever the participant preferred. Face-to-face interviews were held at the institution that the participant studied at, in a booked seminar room. When arranging the interview, participants who chose to have their interview via Skype were asked to ensure they had a private and quiet space to complete the interview (British Psychological Society 2017), where they felt happy to speak about their experiences in the Clinic. All participants in the Skype interviews were at their home.

4.8.3 Participants

Midwives and chiropractors who had been registered and practising for at least six months, and had participated in the Clinic as students, were invited to participate. The researcher had previously met several of the potential participants, due to overlapping periods of time as students working in the Clinic. The insider/outsider role was discussed earlier in the chapter (4.4) and is revisited in the discussion (7.3.1) in the context of the findings. Participant demographic data are reported in 5.3.1.

4.8.4 Recruitment and sampling

Recruitment was via social media (Appendix 9), where the participant information sheet was shared. Facebook and Twitter were both used, including chiropractic and midwifery Facebook groups, and assistance was received from institutional alumni groups reposting and retweeting the study information. Midwives and chiropractors who were interested in participating contacted the researcher via the email address included in the study information, where they also had an opportunity to ask questions. For the online interviews, participants were emailed the participants information sheet (Appendix 10) and participant agreement form (Appendix 11) ahead of time, and either signed electronically and emailed back, or printed, signed, and scanned to email back. Paper copies of the participant agreement form were used for the face-to-face interviews.

Purposive sampling was used again in the selection of participants. In this case, participants were registered midwives or chiropractors who had participated in the Clinic as students, hence had experiences of the Clinic as students and of clinical practice as registered professionals. It was hoped that there would be recruitment of midwives from both community- and hospital-based practice, to reflect these rather different practice settings, providing some stratification in the sample (Ritchie et al.

2014). After successfully recruiting midwives who were hospital-based there was an attempt to recruit community midwives, whose role includes a greater degree of breastfeeding support, by specifically adding this to the social media posts for recruitment. This was unsuccessful. Over half of people who expressed interest did participate: five midwives expressed initial interest, of which three participated; seven chiropractors expressed interest, of which two were no longer based in the UK and were therefore ineligible, four participated. Following initial expression of interest, two midwives and one chiropractor did not respond to further emails asking to arrange an interview, it is not known why.

4.8.5 Data collection

Three interviews were held online using Skype video calls and four interviews were held face-to-face at the institutions. Interviews lasted between 19 and 26 minutes. All participants read the information sheet and signed the agreement form prior to the interviews. The interviewer (AM) introduced herself to the participant and reiterated the purpose of the study prior to starting the interview (Finch et al. 2014). It was verbally noted that a 'realistic' picture of their experiences of the Clinic were key to the study, and that participants were free and encouraged to share all experiences they had (Krueger and Casey 2002). As with the focus groups (4.7.5), interviews were audio-recorded and transcribed (Silverman 2017), the interviewer utilised a field notebook, and a discussion guide was used (Arthur et al. 2014; Flick 2014). The discussion guide was developed with input from the supervisory team, and centred around learning and practice in the Clinic, and how these experiences had translated in post-registration practice (Appendix 12). Minor amendments were made to the discussion guide when new concepts of interest were raised during discussion.

4.8.6 Data analysis

The approach to data analysis for the interviews was the same as the approach taken with the focus groups, as described in 4.7.6. This data also underwent a second round of analysis, as described in 4.7.6.2, to address the initially categorical and superficial analysis.

4.9 Quantitative methods

4.9.1 Introduction

A pragmatic approach was taken in the study, this philosophy informed the methods, as discussed in 4.4.3. Mothers who agreed to participate were asked to complete an initial questionnaire upon arrival at the Clinic. As reported in 4.9.3, this included demographic information, past and current feeding practices, and questions from validated instruments regarding breastfeeding self-efficacy and maternal perceptions of infant attributes, including feeding, sleeping, and crying. Mothers received follow-up questionnaires by email, this questionnaire included questions about their current feeding practices, breastfeeding self-efficacy, and perceptions of commonly reported problems in infancy, sent when her baby was six and twelve weeks old. Data were analysed descriptively and statistically using IBM SPSS Statistics (IBM 2019). The methods used in this study are presented in the following section (4.10).

4.9.2 Evolution of the quantitative design

Initially, this study was planned as a two-armed prospective study. The intention was to recruit a comparison group of mothers and babies who had difficulties with breastfeeding and were undergoing usual care, for example routine midwife and health visitor appointments and any additional support sought by the mother, such as from breastfeeding peer supporters. This group would have completed the same three questionnaires over the same time frame and provided some comparison with mother-baby characteristics and feeding outcomes of the dyads attending the Clinic. However, despite considerable work towards this design, the additional time required to establish relationships with hospital and community services, to complete further onerous ethical applications to recruit patients from the NHS, and to recruit in a second setting, was underestimated and ultimately made it unfeasible. The ‘second arm’ was dropped from the design and efforts were focused on recruitment from the Clinic. This is discussed as a limitation of the study (7.4.2)

4.9.3 Development of the questionnaire used to collect mother-baby characteristics and feeding outcomes

4.9.3.1 Introduction

This study sought to describe the characteristics of mothers and babies who attended the Clinic, and to describe the feeding outcomes of these dyads after attending the

Clinic (3.7.4, 3.7.5). Therefore, a quantitative approach was taken in the questionnaires, i.e., categorical and scale data, to allow characteristics, feeding experiences and history, and feeding practices to be specifically and consistently described. Mother-baby characteristics focused on determinants of breastfeeding (2.4), such as maternal age and ethnicity. It was noted from previous research in the Clinic that there was a disproportionately high rate of birth intervention in the dyads that attend (Miller et al. 2017). Data about birth and the perinatal period were therefore also collected. The mother-baby feeding history and experiences collected were comprehensive, including specific feeding problems experienced and sources of breastfeeding support to date.

4.9.3.2 Defining and measuring feeding practices

In this study and in the research question, 'feeding outcomes' refers to what the baby was fed, how the baby was fed, and the realisation of the mother's feeding goal. Definitions of different descriptors of infant feeding are provided in the Glossary.

Challenges and decisions arose when deciding how to describe feeding practices. In the literature and in different organisations, infant feeding practices are defined and measured in ways. For example, the WHO has defined exclusive, predominant, and complementary breastfeeding, and uses these terms (World Health Organization 2008); Public Health England data are described as total, partial, any, and not at all breastfeeding (Public Health England 2020); and other examples are seen in the literature, for which there have been calls to standardise in the UK (Royal College of Paediatrics and Child Health 2019).

Almost all means of measuring feeding practices are concerned with the type of milk or food babies receive, rather than how they receive these milks or foods. By the WHO definition of exclusive breastfeeding, a baby may never be fed at the breast, and receive only expressed breast milk fed in another way, for example from a bottle. Equally, by the WHO definition, a baby is no longer exclusively breastfed if they receive one feed which is not breastmilk, regardless of whether this substitute feed is a one-time or regular occurrence. This approach is important and valid when assessing health outcomes determined by feeding practices, where the feeding practice is the variable. It may not provide clear or responsive data when investigating

an intervention or approach to support breastfeeding, where the intervention or support is the variable, and the feeding practice is the outcome. Whilst almost all data on breastfeeding rates shows that breastfeeding only declines or plateaus over time (McAndrew et al. 2012; Victora et al. 2016), it is not always the case. In a service evaluation undertaken in the Clinic, 'exclusive' breastfeeding increased from 26% at presentation to the Clinic to 86% at follow-up six weeks later (Miller et al. 2016b). It was therefore important to ensure the measure of feeding practices would be responsive to change, including 'improvement' over time.

It was important that the questionnaire allowed for 1) capture of current feeding practices over the three time points, 2) that exclusive breastfeeding status was not 'lost', and 3) that the data collected could be categorised for comparison with Public Health England data. The questions and responses to ascertain what the baby was fed was designed to allow identification of babies that were totally, partially, and not at all breastfed, as used by Public Health England (2020), whilst providing a greater level of detail. This meant that infants who had previously received supplemental feeds and went on to receive only breastmilk would be identified as 'totally breastfed' at that time point. A 48-hour window was used to capture 'current' feeding practices at each of the three time points whilst minimising recall bias, as described in the Lancet series on breastfeeding (Victora et al. 2016). The method or mechanism of feeding, such as from the breast or bottle, was also included in the data collection. The primary reason for this was maternal reports of additional burdens of bottle feeding, which has been stated as a reason for wanting to totally breastfeed by mothers who attended the Clinic (Miller et al. 2015). There have also been calls to differentiate between methods of feeding in research (Miliku and Azad 2018; Royal College of Paediatrics and Child Health 2019).

Another consideration in generating data comparable to other sources was the timing of the questionnaires. This was particularly important with the lack of a comparison group in the study (4.9.2). Given then very low rates of breastfeeding at six months in the UK (McAndrew et al. 2012), and time constraints of a PhD programme, a six-month follow-up was not deemed practical. Public Health England collects and publishes local and national data on breastfeeding at six to eight weeks of age (Public Health England 2020), therefore this age was used as a follow-up point in this study.

Twelve weeks of age was chosen as a second follow-up point despite a lack of comparable data, to see whether feeding practices were sustained beyond six weeks.

4.9.3.3 Maternal feeding goals

The mother's feeding goal was established at intake. Alongside what and how the baby was fed, attainment of the maternal feeding goal was a key outcome. This was to centre the mother and her feeding goals, bringing this research into line with practice recommendations (Hoddinott et al. 2012; Nursing and Midwifery Council 2018a; Royal College of Midwives 2018).

4.9.3.4 Breastfeeding self-efficacy

Breastfeeding self-efficacy is a known predictor of feeding outcomes (Tuthill et al. 2016), and validated tools exist to measure this (Hill and Humenick 1996; Dennis 2003; Cleveland and McCrone 2005; Wells et al. 2006; Nommsen-Rivers and Dewey 2009). Within the conceptual framework of determinants of breastfeeding by Rollins et al. (2016), breastfeeding self-efficacy is included at the individual level (2.4). Practices in healthcare settings which undermine maternal self-efficacy increase the risk of cessation of breastfeeding (Rollins et al. 2016). Breastfeeding self-efficacy is a known modifiable factor, predictive of breastfeeding continuation (Brockway et al. 2017), and is one of few remaining determinants susceptible to change at the point of seeking breastfeeding support.

Existing measures of breastfeeding self-efficacy were deemed too lengthy to include in their entirety, and some questions were not deemed relevant. A 'short-list' of questions was created from the Breastfeeding Self-Efficacy Short-Form (Dennis 2003) and the H&H Lactation Scale (Hill and Humenick 1996). These scales were selected due to their relevance, including their design for use postnatally, and high construct and predictive validity (Hill and Humenick 1996; Dennis 2003). Other available scales were not selected due to poorer construct validity, not being tested for predictive validity, and for being designed for use prenatally (Cleveland and McCrone 2005; Wells et al. 2006; Nommsen-Rivers and Dewey 2009), despite being more contemporary.

The shortlisted items from the two questionnaires were discussed with the supervisory team, the most relevant questions were retained. These questions were later discussed with mothers in a pilot study, as discussed below (4.9.4.2). As 'breastfeeding' was used throughout the verbiage in the two questionnaires which were drawn from, these questions were eliminated by a logic function in Online Surveys in the two follow-up questionnaires if the mother was no longer breastfeeding. This ensured all questions remained relevant to all participants (Gehlbach and Artino 2018) and was part of minimising potential harm (4.12.5). These questions about breastfeeding self-efficacy were included to begin exploration of a yet-to-be investigated, and potentially modifiable, factor in the Clinic context.

4.9.3.5 Infant attributes

The UK Infant Questionnaire is a validated tool which was developed specifically for infants undergoing chiropractic or manual therapy (Miller et al. 2016a) and is used routinely in the chiropractic teaching clinic. A high degree of reliability and validity have been demonstrated (Miller et al. 2016a). As with the questionnaires about self-efficacy, it was deemed too lengthy to include in its entirety. Questions about feeding, crying, consolability, posture, and supine positioning were retained, questions not retained pertained to maternal mental health. Crying and inconsolability are often interpreted by mothers as infant hunger and/or insufficient milk supply and are commonly reported reasons for early cessation of breastfeeding (Rollins et al. 2016). Previous research in the infant population attending the Clinic have identified postural and positional problems in infants, alongside breastfeeding and musculoskeletal problems (Miller et al. 2017). This validated measure was included to measure change in maternal perceptions of infant attributes over time. These questions about infant attributes were included to begin exploration of infant attributes related to feeding, which have been shown to change following chiropractic care alone (Miller et al. 2019), and may be modifiable factors in the Clinic setting.

4.9.4 Finalising the questionnaire

4.9.4.1 Supervisory team involvement

The questionnaire development was discussed in the literature review (3.10). Input and discussion within the supervisory team was sought throughout the development of the questionnaire. This included a final discussion, working through each question and response (AT and SW). AT is the midwifery Clinical lead (see 4.12.6) which was

useful in the development of the questionnaire. One key suggestion from the supervisory team was to reduce the number of questions in the questionnaire and instead collect some data from the standardised clinical forms used in the Clinic (Appendix 2). Shortening questionnaires is one known factor to increase response rate (Rolstad et al. 2011), which was particularly important for the follow-up questionnaires.

4.9.4.2 Pilot study: Questionnaire and research procedures

As recommended as part of good research practice (General Medical Council 2013), participant involvement was sought prior to commencing the study. Feedback was requested on the research processes as well as the questionnaire content. Feedback was sought on the usability of the format, including the use of the tablet device and Online Surveys. Mothers were asked about the questionnaire, specifically about clarity of the questions, available responses of categorical questions, and overall relevance of the questionnaire to them and their feeding challenges. The research process was the final aspect of feedback requested, including the information sheets and agreement forms, and use of a private room to complete the questionnaire. Following feedback from five mothers, minor amendments were made to the questionnaire, no changes were made to the overall process. Mothers reported that the information sheet and agreement forms were clear. One mother in particular was glad to have use of the private room to complete the questionnaire, as she was worried when her baby was crying in the clinic reception that she was disturbing other patients. All were comfortable with using the tablet and online questionnaire, and when asked, affirmed that the questionnaire captured what was important to them about their feeding experiences. There were two sets of two questions which had similar meaning, the option preferred by most mothers in each case was retained. One reason for attending the Clinic was added following suggestion from a mother, 'I would like more support with feeding'.

4.9.4.3 Questionnaires

The final questionnaires, following feedback from the supervisory team and the participant involvement process, were formatted into Jisc Online Surveys (Jisc), and are shown in Appendices 13 and 14. The midwifery feeding history form, used to collect some data, is shown in Appendix 2.

4.10 Prospective study of feeding outcomes with mothers

4.10.1 Introduction

This section describes the setting (4.10.2), participants (4.10.3), recruitment and sampling (4.10.4), data collection (4.10.5), and data analysis (4.10.6) of the prospective questionnaire study with mothers who attended the Clinic. The general and specific ethical considerations are discussed at the end of the chapter (4.12). Data were collected between September 2019 and May 2020. Fifty-four mothers were recruited and completed the initial questionnaire, 32 (59%) completed the first follow-up questionnaire and 28 (52%) completed the second follow-up questionnaire. Findings from this study are reported in sections 5.5 and 5.6.

4.10.2 Setting

This component study was undertaken in the Clinic, as described in 2.9, and follow-up data were collected online using Jisc Online Surveys (Jisc).

4.10.3 Participants

Mothers who presented to the Clinic were invited to participate. Inclusion criteria were mothers of babies aged up to and including 28 days, who were willing to participate, and were able to respond to questions in written English. Twenty-eight days was chosen as the age limit, this is typically the age by which midwifery care ceases; it also gave a window of time before the first follow-up data was collected at six weeks of age. Mothers of singletons and multiple births were included. Each mother-baby dyad was counted as one participant, so mothers of twins were asked to complete the questionnaire twice, once for each feeding relationship. It was assumed by their attending the Clinic that they wanted to breastfeed and had difficulties breastfeeding, as the Clinic administrators screen mothers when they call, to ensure they are accessing the appropriate services (2.9.1). Mothers who had previously attended either the Clinic or the chiropractic teaching clinic with this baby were excluded from the study as they had already commenced care. Inclusion criteria were broad to be as inclusive, and therefore representative, as possible of the mother-baby dyads who attended the Clinic.

4.10.4 Recruitment and sampling

All mothers were informed of the study in the Clinic 'welcome letter', which the Clinic administrators emailed to mothers when they booked an appointment (Appendix 1). The welcome letter was a routine procedure prior to commencing the study and contained information about the Clinic and what to expect at their appointment. A paragraph summarising the study was added, informing mothers that they may be invited to participate. A web link to the full information sheet (hosted on the Clinic web page) was included. Student chiropractors assisted the researcher by identifying the mothers who met the inclusion criteria, using the Clinic electronic medical records to identify babies under four weeks of age. A participant information sheet (Appendix 15) and agreement form (Appendix 16) were included with the usual Clinic registration paperwork of all mothers who met the inclusion criteria. Eligible mothers were also offered a verbal explanation of the study and the opportunity to ask questions, and it was reiterated that participation was optional. Mothers returned all paperwork to the Clinic administrators, who informed the researcher whether the mother had completed the agreement form. Following the explanation of the study and having any questions answered, two mothers declined to participate in the study. The remainder of the eligible mothers consented to participate (n=54).

4.10.5 Data collection

4.10.5.1 Initial questionnaire

Mothers who agreed to participate were shown to a Clinic room by the researcher, to complete the initial questionnaire in private. Where possible, this was the same room that would be used for her appointment, to minimise disruption to mother and baby and to minimise the impact of participation on the Clinic and the appointment time, and is shown in a photograph in Appendix 17. No researcher, students or practitioners were in the room while the questionnaire was completed, to avoid influencing the mother's responses and possible perceived time pressure. The initial questionnaire was online, mothers were given a tablet device to complete the questionnaire on. A paper copy of the questionnaire was available in case any participants preferred this option; none did. Upon completing the questionnaire, mothers returned the tablet device and were given a business card which thanked them for participating and provided contact information for further breastfeeding support, including the Clinic phone number, a national breastfeeding helpline, and an online chat support service, Start4Life Breastfeeding Friend (Appendix 18). As outlined in 4.9.3.1, some

characteristics were obtained from an anonymised copy of the midwifery history form. The midwifery feeding history form was anonymised with all personal data covered, then photocopied and marked with the participant number, to be entered into the data sheet.

4.10.5.2 Follow-up questionnaires

Two follow-up questionnaires were emailed to the mother: one when their baby was six weeks old and one at twelve weeks old. The follow-up schedule was managed using a secure online calendar. The email contained the link to the questionnaire, making the questionnaire easily accessible (Michaelidou and Dibb 2006), and their pseudo participant number, which was required as a response in the questionnaire to allow each case to be followed up for data analysis purposes. Three days after sending the initial email, Jisc Online Surveys was checked for a response. If there was no response, a friendly reminder email was sent. The short space between the initial email and the friendly reminder was for two reasons, first, to capture data as close as possible to the specified age, second, most online surveys are completed within a few days (Granello and Wheaton 2004) hence it may be assumed that non-response within this window justifies a reminder. To minimise the possibility of causing distress to mothers who may have not wanted to continue their participation, a maximum of two emails were sent if there was no response: at six weeks and a six-week reminder. This is discussed further in 4.12.6. Each email also stated that if they no longer wished to participate, they could simply delete the email, and if they did not want to receive any further emails for the study they could respond saying “withdraw”. No mother formally withdrew from the study.

4.10.6 Data analysis

Descriptive and statistical analysis was completed using IBM SPSS Statistics (IBM 2019). Data from the initial questionnaires and anonymised midwifery feeding history form were entered weekly, after recruitment in the Clinic. Prior to entry into the database, data from the two follow-up questionnaires were cross-checked using the pseudo participant number and infant date of birth, which were collected with each follow-up questionnaire to match cases over the three time points. To identify and correct input errors, one hundred per cent of the data entered were checked against the initial data for accuracy using the solo read aloud method (Barchard et al. 2020), minimal errors were detected and corrected. Descriptive data were produced for

mother and baby demographic data and feeding practices at baseline, six weeks, and twelve weeks. Paired samples *t*-tests were used to determine changes in breastfeeding self-efficacy scores and UK Infant Questionnaire scores from baseline to six weeks and baseline to twelve weeks (Field 2018). Findings from this part of the study are presented in 5.5 and 5.6.

4.11 Data integration and triangulation

4.11.1 Introduction

Data from the three component studies were triangulated following analysis. This is standard within a convergent mixed-methods design (Creswell and Plano Clark 2017). First the qualitative findings were integrated and compared. The qualitative findings from students and early-career practitioners were then triangulated with the predominantly quantitative findings from questionnaires completed by mothers. The aims of the triangulation were:

1) Compare the findings, to understand where the experiences of students, early-career practitioners, and mothers align and diverge
2) Compare the findings, with the aim of obtaining a fuller understanding of the Clinic as a whole.

4.11.2 Integration of qualitative data

The themes and subthemes which emerged from the two qualitative data sets were compared alongside each other. As anticipated, there were significant similarities with codes, subthemes, and themes between the two data sets. Differences in the findings and individual views were therefore readily identified for discussion. The similarities in the qualitative data are apparent in the findings (5.2, 5.3), and findings are integrated and explored in the discussion (6.3).

4.11.3 Triangulation of qualitative and quantitative data

As outlined in 4.3.5.4, qualitative and quantitative data were analysed separately, and are presented ‘side-by-side’ within the discussion chapter. This triangulation was a data-led and inductive process.

During the final stages of qualitative analysis, when quantitative data were available but not yet analysed, potential points of triangulation were noted for further consideration. This was led by the qualitative analysis as themes emerged and could be drawn against the quantitative findings. As the questions in the questionnaires were known prior to the completion of data collection and analysis, this triangulation process began as the qualitative findings emerged, and was developed further as data collection and analysis were completed for each of the three questionnaires. The triangulation of the data is predominantly presented and discussed in the discussion (6.3).

4.12 Ethical considerations

4.12.1 Introduction

This section covers the general principles of ethical research practice (4.12.2), including general data protection regulations (GDPR) and internet-mediated research, regulatory and professional considerations in research practice (4.12.3), and specific ethical considerations of each component study: focus groups with students (4.12.4), interviews with professionals (4.12.5), and prospective questionnaire study with mothers (4.12.6).

4.12.2 Principles of ethical research practice

Ethical practice in research generally refers to principlism, which is the basis of ethics that protect human subjects or participants (DePoy and Gitlin 2020). This has four principles: autonomy, beneficence, non-maleficence, and justice (DePoy and Gitlin 2020), borrowed from the principles of biomedical ethics (Beauchamp and Childress 2001). The BU Research Ethics Code of Practice (2017) includes these principles and was considered in the design and execution of the study. Key aspects of the BU Code of Practice (2017) focus on integrity, value, and quality, being of benefit to society, and following standards of good practice including beneficence and non-maleficence.

In each of the component studies, the researcher ensured that participants were fully informed about the research, including their rights not to answer particular questions and withdraw from the study. Individuals' rights to autonomy were upheld and consent to participate was obtained prior to data collection (Kitchener and Kitchener 2013).

Confidentiality of participant information was upheld, whilst acknowledging there may be a situation where professional responsibilities may override this, discussed for each component study (4.12.4 – 4.12.6). Anonymity of participants and anonymisation of data was implemented as early as was feasible, without compromising the integrity of the data and research overall. The use of pseudonyms was carefully considered, particularly in terms of how effectively they would protect participant anonymity, and the nature and level of information given in research outputs was also considered, to avoid inadvertently making any participant identifiable (Sim and Waterfield 2019). All research data were stored in compliance with BU's Research Data Policy, and in accordance with GDPR and the Data Protection Act 2018. Health and safety of both researcher and participants was considered in the research design and execution. Consideration of each of these aspects of ethical research practice, along with additional specific ethical considerations, are detailed for each component study (4.12.4 – 4.12.6).

Internet-mediated research

The ethics guidelines of the British Psychological Society (2017) for internet-mediated research were referred to for the online interviews (4.8.2) and the quantitative study (4.10.2). The key considerations in this thesis based on issues highlighted by the British Psychological Society (2017) were: public-private domain distinctions, confidentiality and security of online data, procedures for obtaining valid consent, procedures for ensuring withdrawal rights and debriefing, levels of researcher control, and implications for scientific value and potential harm.

4.12.3 Regulatory and professional considerations in research practice

There are additional ethical considerations for researchers who are registered healthcare professionals. Houghton et al. (2010) described three main issues for practitioner-researchers: the nature of the relationship (with the participants), maintaining confidentiality when anonymity cannot be upheld, and the dual roles which may conflict. Ryan et al. (2011) also highlighted conflicting roles, confidentiality, and moral and ethical challenges. As suggested by Ryan et al. (2011), foreseeable eventualities were considered where the practitioner-researcher roles may have been challenged. These eventualities were mitigated as far as possible, and plans were made which could be actioned readily, should the need arise. Examples are given in the component study ethical considerations (4.12.4 – 4.12.6).

One member of the supervisory team (AT) is the infant feeding lead at BU, and therefore taught the midwifery students and was a clinical lead in the Clinic. In the qualitative study, AT's role as gatekeeper between the researcher and potential participants, and role as the researcher's supervisor, needed consideration. This was particularly important when considering the potential for pressure, perceived or overt, for student midwives to participate (Ridley 2009). To mitigate this, AT advised and supported the researcher in planning focus groups with midwifery students, for example dates to avoid due to examinations or placements but was not active in the recruitment of students. In this way, benefits of AT's role and knowledge were maximised to aid the study and risks were minimised by removing the potential for students to perceive pressure or expectation to participate from someone in a position of authority.

It was also important to be aware of the potential for conflict between the clinical and supervisory roles in the prospective study; AT again had dual responsibilities to the mothers and babies attending the Clinic and to the researcher who was her student. As mothers were invited to participate prior to meeting anyone from the clinical team providing their care, perceived or overt pressure to participate from the clinical team was not deemed to be a risk. It was beneficial for the study that the staff in the Clinic were supportive of the research and was important in the successful undertaking of the study.

4.12.4 Specific ethical considerations for focus groups with students

Informed consent was obtained prior to participation, the participant information sheet and agreement form are shown in Appendices 7 and 8. As participants were students, it was particularly important to emphasise that participation was voluntary (Ridley 2009), the research was entirely independent of their education and their participation in the Clinic, and the researcher would not share what they said with the Clinic staff or their lecturers. Minimal impact on students was expected, given the research design and topics covered. The distinctions between confidentiality and anonymity in qualitative research were considered, where confidentiality is not sharing what someone said, anonymity is not attributing something someone said to them (Sim and Waterfield 2019). As qualitative data often relies on quotes, anonymity requires

careful attention to avoid inadvertently identifying and participant, breaking confidentiality (Wiles et al. 2008). Given the relatively small numbers of students who participate in the Clinic, anonymity and anonymisation of data required additional attention: whilst demographic data about students were reported, these were not reported as identifiers alongside any specific findings or quotes (van Teijlingen and Pitchforth 2006), which may have provided sufficient context for individual participants to be identified. The audio data were saved as password-protected files, and once transcription was completed the audio files were clipped to remove participant identification. Transcripts were anonymised, using participant numbers throughout the transcript in place of the participant names. Given the research design and setting, risks to the health and safety of the participants and researcher were deemed to be minimal.

Ethical approval was granted by BU (Appendix 19). The GDPR came into effect in May 2018 (Local Government Association 2021), during the course of this study. An ethics amendment was made to ensure compliance, this amendment primarily consisted of the addition of the institutional Research Participant Privacy Notice to the participant information sheet. This amendment was granted by BU (Appendix 20).

4.12.5 Specific ethical considerations for interviews with practitioners

As practitioners were no longer students, there were not the same concerns about perceived pressure to participate. However, it was particularly important to ensure that potential participants did not perceive any pressure or expectation to participate, given that some may have had an existing relationship with the researcher. For this reason, potential participants were not directly approached by the researcher. Information about the study was shared on social media and it was left to potential participants to contact the researcher to register their interest in taking part.

Given the relatively small numbers of students who have ever participated in the Clinic, anonymity and anonymisation of data required additional attention. Anonymity was considered in terms of names, places, and occupation (Saunders et al. 2015). Whilst several participants volunteered the name of the hospital or clinic where they worked during the interview, these were not reported to avoid inadvertently identifying participants (Wiles et al. 2008). A demographic profile of the participants was

reported; however, these were not reported alongside any specific findings or quotes, which may have provided sufficient context for individual participants to be identified (van Teijlingen and Pitchforth 2006). A confidentiality consideration where practitioner-researcher roles may conflict was identified: if in the interview a participant identified a registered healthcare professional or student who was not abiding by their professional standards, the researcher may have had to break confidentiality to report this (General Chiropractic Council 2016). In such a case, anonymity of the participant would have been protected. Given the research design and setting, risks to the health and safety of the participants and researcher were deemed to be minimal. Face-to-face interviews were held onsite at one of the institutions.

Internet-mediated research ethical considerations

With the participants who elected to use Skype for their interview, the following additional considerations were made. Procedures for obtaining informed consent were kept as close as possible to 'real life', participants were asked to e-sign their agreement form, or print, sign, and scan the form. Withdrawal and debriefing were again kept as close as possible to the procedures used in 'real life': participants had an electronic copy of the information sheet, which had detail on withdrawal from the study. The levels of researcher control for the online aspect of the study remained high. As the potential participants who were eligible were known to the researcher or supervisory team, it was clear when someone met the eligibility criteria and it was as unlikely that an ineligible participant was recruited to the online aspect of the study as to the face-to-face aspect. No additional risks of harm were expected when holding the interviews online compared to face-to-face.

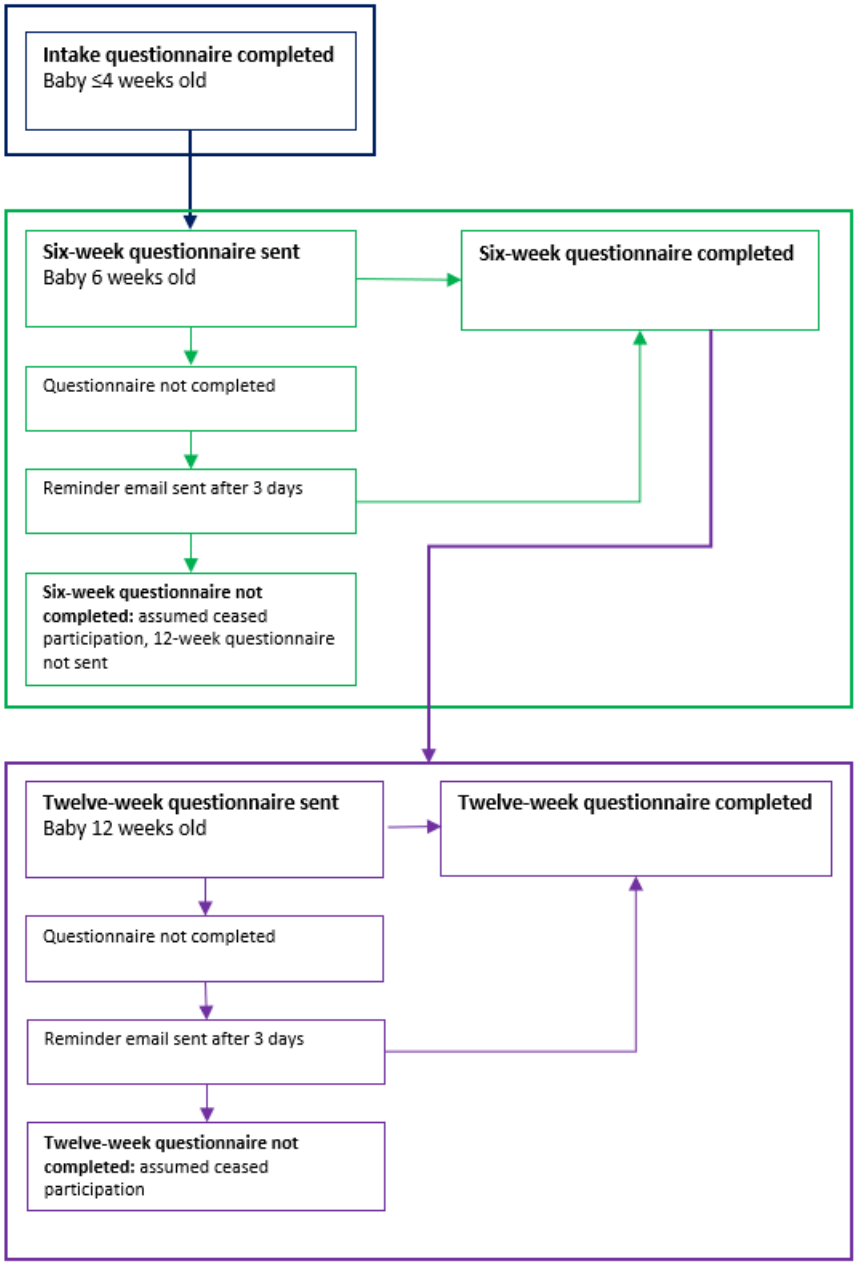
Ethical approval was granted by way of an amendment to the ethical approval obtained for the focus groups with students (Appendix 20).

4.12.6 Specific ethical considerations for prospective questionnaire study with mothers

The process, from informing mothers about the study to inviting them to participate, was designed to minimise any perceived or overt pressure to participate. Mothers were informed that the study was running in their 'welcome email' from the Clinic

when they made an appointment, this included a link to the participant information sheet; mothers were given the information sheet and agreement form with their Clinic registration paperwork by a clinic administrator, who informed the researcher whether the agreement form was signed; most signed the agreement form at this stage. All eligible mothers were invited to ask questions about the study, whether they had signed the agreement form or not, and were offered a short verbal summary of the study and what participation would involve. Participants were not compensated for their participation. The main concern in terms of impact on participants was the emotional and psychological impact of completing the follow-up questionnaires if feeding was not going well. This was mitigated as far as possible by readily assuming mothers had chosen to stop participating. This process is shown in Figure 4. Risk of harm was further minimised where possible, including providing a card with contact information for breastfeeding support services (Appendix 18), and using a logic function within the follow-up questionnaires to remove questions with ‘breastfeeding’ in the verbiage if mothers reported no longer breastfeeding.

Figure 4. Procedure for inferred cessation of participation.



Participant confidentiality was prioritised throughout and is discussed in the context of potential practitioner-researcher conflicts below. Anonymity was protected by assigning participants a research number. Their email address, obtained to send the follow-up questionnaires, was stored separately to all other information provided, with only the corresponding participant number. A pseudo (second) participant number was assigned and provided to mothers with the follow-up questionnaire, to enable each anonymous case to be completed over the three time points. This meant that

the ‘true’ participant number was not shared and therefore further protected anonymity.

4.12.6.1 Internet-mediated research considerations

Ongoing consent was inferred by the continued completion of the follow-up questionnaires. Procedures were implemented to maintain participants rights to withdraw in the follow-up stages of the study: these rights were reiterated in the emails which contained the link to the questionnaire. Figure 4 outlines the approach taken to implied cessation of participation, put in place to mitigate potential harm in the form of distress, should the mother have no longer wished to report her feeding practices. Inferred ceasing of participation was triggered readily as a means of protecting participants and was weighed against the potential cost of incomplete data and the associated scientific implications.

Levels of researcher control remained high, as participants had been recruited face-to-face from a specific setting, and the internet-based phase of the study was only made available to participants. Participants were assigned a pseudo-participant number for three key reasons: to ensure that only responses with a valid number were included in data analysis, to allow for retrospective withdrawal of a participant’s data, and to allow data from each case to be followed over the three time points. The pseudo-participant number was cross-checked against the corresponding participant number and baby date of birth before being entered for analysis. The implications for scientific integrity and value included a high level of researcher control, and a high level of convenience for mothers to complete and return follow-up questionnaires, which was hoped would lead to more complete data.

4.12.6.2 Which hat have I got on?

As discussed in 4.4, the dual role of the practitioner-researcher required consideration. As recommended by Ryan et al. (2011), several foreseeable eventualities were considered and planned for. One foreseen potential conflict of practitioner-researcher roles was the need for the researcher to break confidentiality if a participant was believed to be at risk of harm. With the format and content of the questionnaire, this was deemed unlikely, however each follow-up questionnaire did contain free text space in which mothers were asked to respond to open-ended

questions. Mothers were also asked for feedback on the care they received in the Clinic; if this was used to report that a registered professional or student was not upholding their professional standards, this would have needed to be reported whilst protecting the participant's anonymity.

Ethical approval was granted by BU (Appendix 21). As this study was based at AECC UC, and participants were patients at the institutional teaching clinic, ethical approval was also sought and granted there (Appendix 22).

4.13 Summary of methodology and methods

This chapter has presented the pragmatic, mixed-methods study implemented in this thesis. A concurrent design with sequential qualitative studies was used: focus groups were held with student midwives and student chiropractors to explore their experiences of learning and practice in the Clinic, interviews were held with early-career midwives and chiropractors to explore their experiences of the Clinic as students and subsequent early experiences of practice, and a prospective questionnaire-based study was used to determine mother-baby characteristics and feeding outcomes. The findings from this mixed-methods study are presented in the subsequent chapter and are triangulated in the discussion (chapter 6).

5 Findings

5.1 Introduction and overview

This chapter reports the study findings: thematic analysis of focus groups with students about their experiences of the Clinic (5.2), thematic analysis of interviews with midwives and chiropractors about their experiences of early practice and reflections on the Clinic (5.3), mother-baby demographic data and feeding outcomes (5.4), and statistical analyses of breastfeeding self-efficacy and infant attributes (5.5). The findings are presented separately as component studies in this chapter, and summarised (5.6). In the following chapter, findings are discussed within the context of this mixed-method study and within the context of the literature.

Qualitative data

For the purposes of presenting the qualitative data concisely, the focus is on the key findings with practical implications for practice, learning, and the Clinic. The findings from the focus groups with students and interviews with early career midwives and chiropractors contained some similar themes. For both the student and early-career practitioner participants, themes and subthemes are discussed consecutively in each sub-section (5.2.2 – 5.2.5, 5.3.2 – 5.3.5). Maps of the themes are presented to demonstrate links in the data (5.2.1, 5.3.1) and the findings are summarised (5.2.6, 5.3.6). There were inherent links between the different themes and subthemes; the separation into individual themes serves the purpose of clearly presenting the findings. Where there were notable differences in the findings between midwives and chiropractors, this is noted alongside the theme or subtheme.

Quantitative data

The quantitative data are presented as descriptive data on characteristics of the mother-baby dyads and their feeding outcomes (5.4), followed by the statistical analyses (5.5). Within the questionnaires, mothers were given space to provide written feedback about their experiences of the Clinic, this was summarised and presented alongside the outcomes (5.4.5).

5.2 Thematic analysis: Student experiences of the Clinic

5.2.1 Introduction

Seven focus groups were held with 32 students: 22 student chiropractors and 10 student midwives. Four focus groups were held with student chiropractors, two with student midwives, and one with an interprofessional group of students. The focus groups were held between December 2017 and May 2019. Demographic data are shown in Table 6. In the presentation of the themes and subthemes, only the profession of the participant is given, as providing the gender and nationality may have made student chiropractors identifiable. Within the single-profession focus groups, the samples were homogenous with regards to shared profession and institution, there was greater heterogeneity in the demographic profile of student chiropractors, where a large proportion of students were not British, and some students were men.

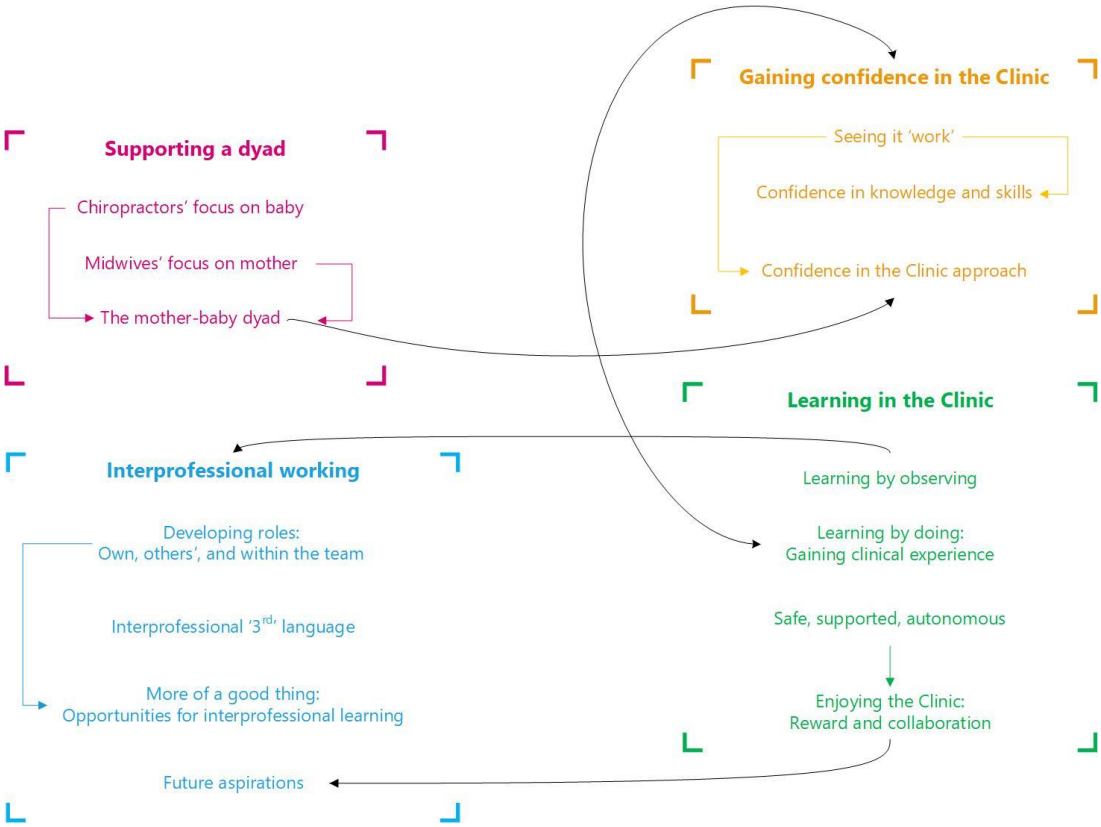
Table 6: Student participant demographic data.

	Student midwives (n=10)	Student chiropractors (n=22)
Gender	10 women	18 women 4 men
Nationality	10 British	The majority of participants were British (n=5) and Norwegian (n=5), and the remaining participants came from a range of other European countries (n=9, five countries), and non-European countries (n=3, two countries). These countries were not named, as they could enable identification of the individual participants.

The themes were supporting the dyad (5.2.2), gaining confidence in the Clinic (5.2.3), interprofessional working (5.2.4), and learning in the Clinic (5.2.5). Themes and their respective subthemes are presented sequentially, the links between themes and subthemes are shown in a map of themes is presented below in Figure 5, and the findings are summarised at the end of the section (5.2.6). Supporting quotes

throughout the subthemes reflect the ratio of student chiropractors to student midwives.

Figure 5. A map of the findings following analysis of focus groups with student midwives and student chiropractors.



5.2.2 Theme 1: Supporting the dyad

This theme centred around contributions from student chiropractors, who noted that chiropractors generally focused on the baby, (5.2.2.1) and midwives generally focused on the mother (5.2.2.2), when addressing breastfeeding difficulties. This was attributed to their respective education and training prior to attending the Clinic. In the Clinic, students broadened their perspectives around supporting breastfeeding to consider the mother and baby as a dyad (5.2.2.3).

5.2.2.1 Chiropractors' focus on the baby

Student chiropractors highlighted their focus on the baby when addressing breastfeeding difficulties, in the Clinic and in the chiropractic teaching clinic, which

they related to the emphasis of their education around breastfeeding. They talked about having a lack of understanding and awareness of the mother with regards to breastfeeding and addressing breastfeeding difficulties, prior to attending the Clinic. Their focus on the baby was discussed in the context of broadening their perspective and approach after working alongside midwives in the Clinic, learning from the midwives' support which was focused on the mother. The transition to a dyad-focused approach is discussed in 5.2.2.3.

> "Before I started in the feeding clinic it's like 'oh I'm treating the **baby** today', so I focus just on the baby, didn't really care about... too much about the mum" (Student chiropractor)

5.2.2.2 Midwives' focus on the mother

While student midwives did not discuss their focus on the mother, it was noted by the student chiropractors in contrast to their own prioritisation of the baby. Supporting the mother was discussed as being the midwives' domain. The midwives' approach to supporting the mother was seen as very useful and effective, and student chiropractors talked about adopting aspects of this approach in their own practice outside of the Clinic.

> "Not that they don't care about the baby, but their focus is more kind of on the mother and the whole experience (...) learning that that is a **thing** then gets your rapport better when you're over in the [teaching] clinic with patients." (Student chiropractor)

5.2.2.3 Mother and baby: an inextricable dyad

In combining their own focus on the baby and the midwives' focus on the mother, student chiropractors talked about a widening perspective and approach to breastfeeding support. They had increased awareness and consideration of the mother while treating babies, in the Clinic and in their chiropractic practice. This subtheme has links to 'confidence in the Clinic approach' (5.2.3.3), as students saw the value in the dyad-focused, interprofessional approach to breastfeeding support taken in the Clinic.

> "Feeding Clinic has given us an opportunity to be close to mum **and** baby, and not just one of them, which we mainly do in [the teaching clinic]" (Student chiropractor)

> "The overall care that you can provide for the mother **and** the baby, not just the baby (...) it's different, you can have a whole united kind of overall look, you can help both at the same time, because breastfeeding takes cooperation of both" (Student chiropractor)

5.2.3 Theme 2: Gaining confidence in the Clinic

Students from both professions talked about the confidence they gained in the Clinic, which related to supporting breastfeeding (midwives) and treating babies (chiropractors), and more generally to their clinical practice. The first subtheme, 'seeing it work' (5.2.3.1), contributed to student chiropractors gaining confidence in their knowledge and skills (5.2.3.2), and in the approach taken in the Clinic (5.2.3.3). This theme was linked to a subtheme related to learning in the Clinic, 'learning by doing: gaining clinical experience' (5.2.5.2).

5.2.3.1 Seeing it 'work'

Student chiropractors talked about their contributions to supporting breastfeeding in the Clinic and seeing this 'work'. Seeing the often-rapid improvement in breastfeeding in the Clinic contributed to their confidence in providing breastfeeding support and treating babies. This often related to feeling they had helped mothers and babies, and a sense of reward in that.

> "I didn't think I would want to treat babies (...) I've gotten a big interest for it now and I see how much it helps babies and the mums" (Student chiropractor)

> "I didn't know that we could help babies this much, so it's something I want to take back to [home country] and I would like to work with a midwife in [home country], because I think there's so many people that could get help" (Student chiropractor)

5.2.3.2 Confidence in knowledge and skills

Alongside 'seeing it work', students talked about the confidence gained in their knowledge and skills to support breastfeeding. This related to gaining clinical experience (5.2.5.2). Student chiropractors gained confidence in treating babies, and from the 'breastfeeding general knowledge' which they accumulated by observing student midwives and used to improve their communication with mothers. Student

midwives valued their time in the Clinic to focus on breastfeeding, and this focus helped them to develop their breastfeeding knowledge and skills. Student midwives also talked about their confidence in relation to placement, where they may see reason to disagree with a registered midwife about advice or information given to mothers regarding breastfeeding.

> "I think generally it's just made us a lot more confident in treating babies, assessing them, talking to mums, talking to midwives, just being in the baby environment" (Student chiropractor)

> "It's a confidence thing, like it's quite difficult to be like 'you're doing this right' or 'no, there might be something you can tweak', like saying that to a woman, or saying that when another midwife has been in and like 'oh that's fine' (...) I don't think I would have had the confidence unless I had the reassurance from the Clinic" (Student midwife)

5.2.3.3 Confidence in the Clinic approach

'Seeing it work' added to students' confidence in the overall approach taken in the Clinic. The approach included reference to interprofessional working, which they discussed as useful for problem-solving, the focus on the mother's experience, and time available for mothers, which facilitated problem-solving and building a relationship with the mother. Student midwives often contrasted these elements of the Clinic with single-profession practice, where they described a lack of time available to support breastfeeding in other settings.

Problem solving

> "It's nice to have that backup cos sometimes you feel like you're giving breastfeeding support and you're like 'I don't know what else to suggest' and then sometimes the chiropractors can pick something up and you feel like you're giving the woman an answer" (Student midwife)

The mother's experience

> "I think the midwives do an excellent job when the mum comes in, they just start off the whole atmosphere really calm (...) they talk really smoothly and

nicely to the mum, it just starts the whole meeting off in a really good, calm way" (Student chiropractor)

Time for mothers

"I've seen mothers getting way more vulnerable in feeding clinic than they were in the [chiropractic clinic], so they've actually opened up very differently because they felt like there was time and space to and time to as well (...) I've really learnt that in the feeding Clinic" (Student chiropractor)

5.2.4 Theme 3: Interprofessional working

Interprofessional working was a widely discussed topic and included aspects of learning, communication, and practice. Students from both professions discussed challenges of interprofessional working in the Clinic (5.2.4.1), which included lack of clarity about roles and sharing time. Despite these challenges, students reported developing skills in interprofessional practice including interprofessional communication (5.2.4.2), identified opportunities for further interprofessional learning (5.2.4.3), and discussed wanting to continue working interprofessionally in post-registration practice (5.2.4.4).

5.2.4.1 Interprofessional challenges

Interprofessional challenges were raised by student midwives and student chiropractors and varied between professions. Student midwives felt that they initially lacked knowledge about chiropractic and the role it had in the Clinic. Student chiropractors also perceived this lack of knowledge as a problem, especially when student midwives were new to the Clinic. Barriers to building interprofessional relationships were described by the student chiropractors, with potential solutions. Student chiropractors found it difficult to manage time during the appointment, with perceived pressures from the midwifery team not to rush, from the chiropractic team to move the appointment along, and ensuring they had time to adequately examine the baby and explain any problems to the mother/family.

Professional roles

> "When I first went, this chiropractor was just doing things to the baby, and I was like 'what on earth is she doing? How is this... what is she doing to help? I don't understand what the problem is that she's trying to fix'" (Student midwife)

Interprofessional relationships

> "The [student] midwives come in (...) they go sit in a room while we're doing all our stuff, so it gets a little bit separated, so I think we can be a lot better at just meeting them, our students, saying hello and then actually just engaging with them a little bit more" (Student chiropractor)

Shared time

> "The midwives, I've found, they're not worried about the time, they're like 'let's sit down and chill and talk and chat', and whilst that's really great for the mum (...) we're the ones told 'if it's taking too long you need to hurry it along', but we're not in that position where we can... tell them" (Student chiropractor)

5.2.4.2 Interprofessional '3rd language'

Student chiropractors talked about their communication with the student midwives, particularly about chiropractic practice, where they used a blended approach of technical and lay explanations. This communication style gave student chiropractors' confidence in communicating what they do, which they related to potential future opportunities to initiate interprofessional relationships.

> "We don't use purely chiropractic terms like you maybe would with a chiropractic tutor, and you don't use like really really basic terms like you would with a mum, you can kind of throw in some anatomy, some scientific terms, erm but maybe not the same level that you would with a chiropractor" (Student chiropractor)

> “I wouldn’t be as nervous if I moved to a different area and had to go and talk to midwives or you know go and do a presentation at an antenatal group or something like that (...) I don’t think I would feel as nervous kind of stepping into their world and interacting with them” (Student chiropractor)

5.2.4.3 More of a good thing: opportunities for interprofessional learning

This subtheme was predominantly related to student chiropractors wanting to maximise opportunities for interprofessional learning in and around the Clinic. These potential opportunities included maximising the time available in the Clinic, for example an interprofessional meeting at the start or end of the day and discussing cases they had seen together. Students also considered learning opportunities beyond the Clinic day, such as an introductory lecture about the Clinic. They saw and suggested opportunities to build relationships with student midwives, further facilitating interprofessional learning and working, which they felt may also benefit mothers and babies in the care provided.

Additional opportunities for interprofessional learning

> “I think a lot of students have gone there and been like ‘who are the people in white?’, we’re like ‘they’re chiropractors’... ‘well why are they here?’ (...) so I think certainly something to explain what it is, why it’s there, who is there, who’s doing what, and the format (...) would be hugely beneficial” (Student midwife)

> “I know that some of the midwives do a briefing with the midwife before they start, like a five minute one, but we’re not involved in that (...) so maybe if it was a group meeting with everyone before we started.” (Student chiropractor)

Opportunities for improved interprofessional relationships

> “I think the rapport and sort of the communication between, it would be so much easier cos you’d get to know people rather than being thrown in and being like ‘oh my name’s this by the way’ and crack on, it’s a little bit disjointed” (Student chiropractor)

> “It would be helpful that each of us had a fixed midwife to work this (...) I think it would be nice, also for the mum and the baby not to feel that they have two detached professions in front of them (...) to give the impression we know each other, and we can help you together” (Student chiropractor)

5.2.4.4 Future aspirations

Several student chiropractors talked about plans to work alongside midwives in post-registration practice, this related to the benefits of the interprofessional approach for mothers and babies. They felt they had gained valuable experience in communicating with midwives, which would facilitate future collaboration. Some students were actively seeking post-registration positions in clinics where they would be supported in initiating interprofessional and collaborative relationships, especially for infant care, and some who already had a position agreed were seeking out the local breastfeeding support networks to initiate conversations about collaboration.

> “Being in the feeding clinic with the midwives makes it easier to engage with them cos we know how to talk to them, how they work, what they know, then it’s gonna be easier to kind of form a bond from there” (Student chiropractor)

5.2.5 Theme 4: Learning in the Clinic

Students discussed their learning in the Clinic in direct and general terms, providing examples of specific things they had learnt as well as broad and reflective observations of their practice. Students from both professions reported learning from observing peers and registered clinicians, within and between professions. Learning by doing and gaining clinical experience was highly valued and was unique to the clinic with regards to supporting breastfeeding and treating babies. Students felt they had autonomy to practice in the Clinic, which was a novel experience, and aided by clinician support. Throughout this theme, there was a sense that students enjoyed the Clinic and found it rewarding.

5.2.5.1 Learning by observing

Much of the learning by observing was interprofessional. Chiropractic students talked about the value of observing different student midwives to experience different approaches. Student midwives and student chiropractors reported that some of their learning led them to ask additional questions when supporting mothers and babies in

other settings, incorporating this learning into practice. Students from both professions reported that most learning by observing occurred ‘in the room’. Both professions valued time observing the practitioner from their own and other professions. Student chiropractors talked about gaining ‘breastfeeding general knowledge’ in the Clinic from watching and listening to the student midwives.

Learning inside and outside of the room

> “In the room you are more observing and listening and then outside the room I find myself asking the tutor, midwife tutor, a lot of questions (...) just to have a clearer understanding of what she was saying” (Student chiropractor)

Learning by observing students

> “[student midwives] all ask the questions differently, and the way they come at it is different and the way they explain feeding is different, so I think you learn more from how different people understand (Student chiropractor)

Learning by observing practitioners

> “I think it’s really good for students to see [midwife] in practice actually walking the, yeah, she doesn’t practice ‘do as I say, not as I do’, she actually follows through with what she says” (Student midwife)

‘Chiropractic’ questions in midwifery practice

> “I just think the little spiel that you guys have in terms of ‘do they look a certain way, or do you do this’ and I tend to incorporate that into my practice in asking them, and then obviously if it does look like they need to go down the AECC route then I’m like ‘let’s book you in” (Student midwife)

5.2.5.2 Learning by doing: gaining clinical experience

Students highly valued the opportunity to gain clinical experience in the Clinic, particularly around breastfeeding support. They talked about ‘doing’ as a way of learning, distinct from didactic teaching, which was relevant to their future practice as

registered professionals. The approach in the Clinic in terms of students taking the lead was important to student midwives, as was the current, evidence-based information shared with mothers. Student chiropractors found experience important to know when to be 'involved' versus referring on to different services.

Seeing problems through in the Clinic

> "You've got a designated amount of time, got an opportunity to talk about all of their issues to get to the bottom of it, so I think that is good for helping the students learn as well (...) it gives us an opportunity to break it down and find the solution for ourselves" (Student midwife)

Applying contemporary knowledge in practice

> "At the [Clinic] you know that the information you're giving is right up-to-date and accurate (...) I think in terms of learning as a student, I feel like you're getting the **best** learning from the Clinic" (Student midwife)

When to seek further help

> "And to know when it's getting dangerous, not that we've seen that many babies that, you know, are at that (...) to know when, you know, enough is enough and they need to get some help, it's beneficial as well" (Student chiropractor)

When and how to help

> "We have more of an understanding of 'this is appropriate at this point; or 'this is not appropriate at this point' [when to treat a baby]" (Student chiropractor)

5.2.5.3 Safe, supported, autonomous

Students from both professions talked about autonomy in the Clinic, whilst feeling safe and supported by their supervising midwife and chiropractor. This combination of autonomy and support was unique to the Clinic and was contrasted against placement (student midwives) and the teaching clinic (student chiropractors).

Students enjoyed ‘leading’, being the primary source of support and knowledge in the Clinic. The students felt able to ask for help from the midwife or chiropractor when they were unsure, without fear of being judged or ‘told off’ for not knowing something or lacking confidence. Student midwives contrasted this ability to ask for help against their experiences in practice and felt supported in their practice and decisions in the Clinic. Student chiropractors felt supported and motivated by the trust and confidence that the Clinic chiropractor had in them.

Autonomy in the Clinic

> “I like the autonomy of it as well, I like having, that it’s just the students, and you feel like you’re making a difference without having... I know [midwife] and [chiropractor] come in, but nine times out of ten you’ve done, sort of, the groundwork” (Student midwife)

Asking for help

> “It makes your comfort zone bigger but still allows you to be in your comfort zone, so if you’re not comfortable with doing something you can just say so and observe someone else do it” (Student chiropractor)

Supporting students

> “You’re only working with [placement mentor] for that short amount of time (...) you don’t want to piss them off, with [Clinic midwives] it’s different (...) if we say something and they disagree with it, the way that they go about things isn’t like undermining what we’ve said and done” (Student midwife)

Trust in students

> “We had an amazing team and amazing supervision, so that like you were always really trusted with what you were doing, and it was like ‘no you can do this [name], no of course, have a look at this’” (Student chiropractor)

5.2.5.4 Clinic community: learning and practice

The student chiropractors highlighted the 'community' feel of the Clinic, especially with their fellow chiropractic students, who they engaged with for learning and support with practice in the Clinic. This was contrasted against the large teaching Clinic, where this 'community' was absent. The closeness of the group was attributed to being a smaller group, with a sole point of focus (breastfeeding).

> "You're much more supported by like the tutors and your fellow feeding clinic members (...) I didn't even necessarily go straight to [chiropractor] but went out and was like 'do you have any ideas?' (...) and work as a team" (Student chiropractor)

> "And [learn] from each other, as you said, it's so good we actually have time to discuss cases after, which we don't do in the [teaching clinic] because you see that someone has a baby, but you wouldn't be in this closed-off sort of setting, asking how it went" (Student chiropractor)

5.2.5.5 Enjoying the Clinic: collaboration and learning

Students from both professions discussed the Clinic in an overall positive light, especially the interprofessional collaboration and learning experienced in the Clinic. They discussed the relevance of their learning to practice, including developing understanding and empathy for mothers struggling with breastfeeding. This contributed to chiropractors' 'future aspirations' (5.2.4.4) for interprofessional working, especially with midwives. Student midwives enjoyed being able to focus solely on breastfeeding in the Clinic and found this focus helpful for their learning.

Enjoying collaboration

> "It's been amazing to work with the midwives especially, and just see how they talk and interact with the mum, and how important that is" (Student chiropractor)

Enjoying learning and developing empathy

> "I really like feeding clinic and one thing, there are a few things I've learnt, but mainly it's given me an incredible opportunity to understand what a mother is going through" (Student chiropractor)

Enjoying learning about breastfeeding

> "It's enjoyable, and I think it's because you don't have so much pressure (...) I feel like I've probably learnt more about breastfeeding itself at the Clinic rather than in practice" (Student midwife)

5.2.6 Summary of the four themes

The focus groups with student midwives and student chiropractors centred around their experiences of learning and practice in the Clinic. This is reflected in the findings, throughout the themes and subthemes. Students from both professions found their time in the Clinic beneficial for learning about breastfeeding, supporting breastfeeding, and working collaboratively to support breastfeeding. Students learnt by observing other students and the registered professional, within and between professions. Learning by 'doing' was discussed by student midwives and student chiropractors as the most important and applicable aspect of the Clinic when it came to developing their own practice, particularly for supporting breastfeeding. Attributed to learning and practice in the Clinic was increased confidence in their ability and role in supporting breastfeeding, either by supporting the mother with positioning, attachment, and information, or by treating the baby for musculoskeletal dysfunction affecting their feeding. Students felt supported by their peers and the registered professionals, which enabled their more autonomous practice in the Clinic. The combination of the learning, support, making a difference to mothers and babies, and the interprofessional nature of the Clinic made it enjoyable for students, which created and reinforced a positive learning environment.

The interprofessional aspect of the Clinic was deemed to be important, both in terms of students' learning and the support provided to mothers and babies. Students felt better equipped to work collaboratively, with interprofessional communication skills noted as a further benefit of the Clinic. Chiropractic students in particular identified

further opportunities for interprofessional learning and interprofessional relationship building and suggested a range of approaches which they may have found useful and enjoyable. Some chiropractic students planned to recreate an interprofessional breastfeeding clinic in post-registration practice, citing the benefits for the mother and baby. Several challenges were associated with the interprofessional nature of the Clinic, mostly centred around lack of clarity of professional roles and practice, and lack of relationship with the other student professional they were collaborating with. This created some challenges and tension when providing care, but were not seen as impassable barriers, with students proposing simple strategies which would overcome these challenges.

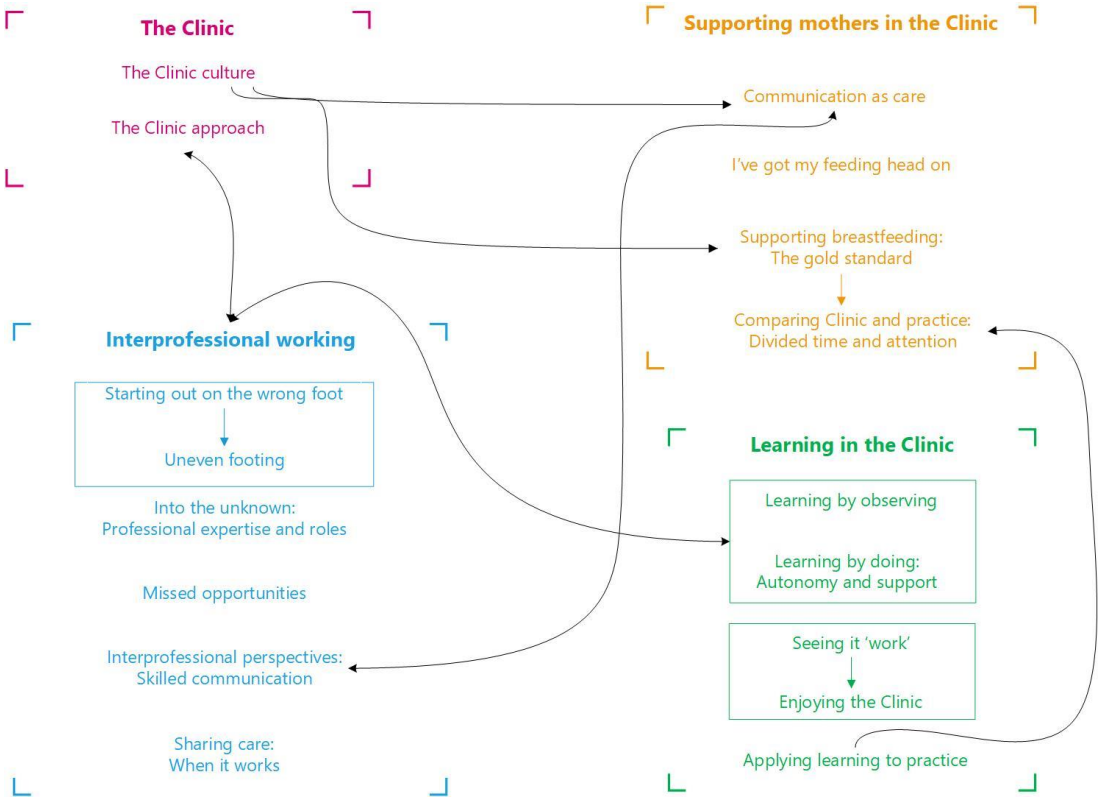
5.3 Thematic analysis: Practitioner reflections on the Clinic

5.3.1 Introduction

Prior to the interviews, all interviewees had been registered and practising in the UK for one to two years. Of the four interviews held with chiropractors, two were face-to-face and two were online, using live video calls (Skype); of the three interviews with midwives, two were face-to-face and one was online. All participants were British women. The three midwives were employed in the NHS and were hospital based, working on labour and delivery wards; all four chiropractors were self-employed in private practice as associates, one chiropractor also owned and worked in her own clinic. Interviews were held between April and July 2019.

The themes which emerged following thematic analysis (4.7.6) were the Clinic (5.3.2), interprofessional working (5.3.3), supporting mothers in the Clinic (5.3.4), and learning in the Clinic (5.3.5). The findings from this element of the study are summarised at the end of the section (5.3.6). A map is presented below which shows the connections across the themes and subthemes (Figure 6).

Figure 6. A map of the findings following analysis of interviews with midwives and chiropractors.



5.3.2 Theme 1: The Clinic

This theme related to the early-career practitioners' sense of the Clinic, in conceptual and practical terms. The Clinic was discussed as a unique entity for learning about breastfeeding support, working interprofessionally, and providing and receiving breastfeeding support. This theme was divided into two subthemes, the Clinic culture and the Clinic approach. Midwives and chiropractors discussed the Clinic in terms of the culture and the overall approach and were consistently positive about these aspects. This theme sets the context of the following three themes and was important to draw out and highlight separately.

5.3.2.1 The Clinic culture

This subtheme about the Clinic culture drew on attitudes and practices. The culture included positive attitudes towards breastfeeding and breastfeeding support, centring the mother when providing support, and the consistency of care (for mothers) and of

practice (for students). There was a sense of collaboration and cohesion within the Clinic team.

Practitioners talked about the positive and supportive attitudes of the students and of the professionals overseeing the Clinic, and the impact this had on mothers. Some chiropractors expressed frustration with lack of punctuality in the Clinic related to the amount of time given to mothers, but time remained an important facet for enabling woman-centred care. Midwives valued the consistent approach taken to support women and felt this benefited the mothers' care and their own learning. There was a sense of teamwork when midwives discussed continuity and consistency in the Clinic, which was lacking when they compared this to their experience in clinical practice (5.3.4.4).

Positive attitudes towards breastfeeding

> "There are people that are passionate and committed to breast feeding so I can see how good that is for the woman" (Midwife, participant 5)

Patient-centred care

> "Even though it's frustrating running late sometimes, it is what the patient needed and at the end of the day that's what we're about" (Chiropractor, participant 2)

Continuity

> "[In the Clinic] you have still got the continuity of the advice that's being given, whereas sometimes you know on the ward or in the community midwifery you (…) get a lot of conflicting opinions or advice which I know that we weren't giving, we were all singing from the same sheet" (Midwife, participant 5)

5.3.2.2 The Clinic approach

The Clinic approach consisted of more practical aspects to support breastfeeding. The overall approach was described as the 'gold standard' of breastfeeding support,

and comprised of providing time to mothers, which allowed for ‘enhanced listening’ and ‘getting to the root of the problem’. Persisting in collaborative problem solving to support breastfeeding was another important aspect of the approach.

Midwives described the Clinic as the ‘gold standard’ of breastfeeding support (5.3.4.3) and drew comparisons between the approaches in Clinic and practice (5.3.4.4). Midwives and chiropractors emphasised the importance of time in the Clinic, which was prioritised, and facilitated other important aspects of support for mothers (5.3.4). Midwives and chiropractors both commented on the length and depth of the breastfeeding history form. Whilst chiropractors found this a burden at times, because of the time it took, both professions saw it as an important aspect of the Clinic. As students, both professions reported feeling comfortable asking for help in the Clinic and related this to sharing care (5.3.3.5) and being supported by overseeing practitioners (5.3.5.2). Midwives found the additional expertise of the chiropractors beneficial in problem solving, particularly when supporting more complex cases where positioning and attachment advice did not resolve the problem. The midwives and chiropractors recalled the Clinic as a positive place to provide breastfeeding support and for mothers to receive that support. This theme linked strongly to other subthemes, including communication as care (5.3.4.1), supporting breastfeeding: the gold standard (5.3.4.3), and comparing care in practice: divided time and attention (5.3.4.4).

The gold standard

> “It’s just always like the gold standard though isn’t it, it’s like I wish it was always like that” (Midwife, participant 6)

Time for mothers and babies

> “The amazing benefit and privilege of having time with mother and baby and just letting them have that full hour to explain everything” (Chiropractor, participant 2)

Detailed history taking

> "If you're trying to find the root of the problem you have to ask a few questions" (Midwife, participant 7)

Interprofessional problem solving

> "it was really good to work with the chiropractors, so you had a different view from both sides… if I can't solely solve the problem then it's okay to ask for help" (Midwife, participant 5)

5.3.3 Theme 2: Interprofessional working

Interprofessional working was widely discussed from a range of perspectives, including the care they provided to mothers and babies, what they learned in the Clinic, and the benefits and challenges of an interprofessional approach. In this theme, chiropractors raised more 'negative' aspects related to interprofessional working. However, this predominantly related to wanting more collaborative and interprofessional working, and negative comments were often followed by suggested solutions to the barriers and challenges they described (5.3.3.4).

5.3.3.1 Starting out on the wrong foot

Three of the four chiropractors raised the start-of-day 'midwifery meeting' between the registered midwife and student midwives. Whilst some chiropractors explained the important role it had for student midwives, they all felt that the midwifery meeting in a closed room started the Clinic day off as 'separate cohorts' or 'us and them', which was exacerbated by a lack of shared space in the Clinic. The 'midwifery meeting' was not raised by the midwives. The chiropractors independently suggested an interprofessional start-of-day meeting, where students and overseeing clinicians could introduce themselves, decide who would be working together, or discuss cases where the mother and baby were already known to the Clinic or chiropractic team. This interprofessional start-of-day meeting was presented as a simple solution to initiate better interprofessional relationships.

Us and them

> "The midwives got a briefing at the beginning, but we were not part of that, it was in a closed room with um the tutor (…) so that set us up as different, erm and we were on our own patch, so you know it was us and them" (Chiropractor, participant 1)

Solutions to 'us and them'

> "Maybe we should huddle together, you know, because we're **doing** it together, erm, I mean it has to be done because they've got a lot to cover and they've got a lot to learn and, but, but there's definitely a 'them and us'" (Chiropractor, participant 3)

5.3.3.2 Uneven footing

After 'starting off on the wrong foot', chiropractors described this separation of the midwifery and chiropractic students persisting to an extent for the rest of the Clinic day. Chiropractors felt that this lack of integration was a barrier to developing interprofessional relationships with the student midwives, which they saw as a 'missed opportunity' (5.3.3.4). Lack of collaboration sometimes led to challenges for chiropractors in providing care, as time in the Clinic was unevenly distributed and they found it difficult to get 'their time' with the baby.

> "I just don't think that the chiro students and the midwife students gelled that well, and likewise I don't think that the erm, the, the midwife tutor really, she, they would huddle together, we would huddle together" (Chiropractor, participant 4)

> "There wouldn't be a lot of time, but we could be watching and going 'goodness me there's something that really needs sorting out here' and if we're short on time at the end it was, we had to sort of fight for our time with the baby a little bit" (Chiropractor, participant 1)

5.3.3.3 Into the unknown: professional expertise and roles

Chiropractors raised the issue of student midwives not knowing what chiropractors did or what their role was in the Clinic. This sometimes translated into chiropractors

feeling like a ‘spare part’ rather than an equal part of a team, which they found difficult to address in the Clinic. Although this was challenging for the chiropractors as students, they acknowledged that it was lack of understanding that drove the problem. Some chiropractors felt that the lack of understanding about chiropractic and their role in the Clinic was in part due to their profession being less well known.

Sharing care

> “The midwife would never refer to the chiropractor being able to do something, but I think as chiropractors we would always (…) refer to a midwife about what they could do” (Chiropractor, participant 1)

Lack of understanding of the chiropractors’ role

> “I would guess it’s just ‘cos they didn’t know what we did (…) I don’t think they’re trying to take the limelight I think it’s because they don’t know what we do” (Chiropractor, participant 1)

Lesser-known profession

> “I think they probably found it harder than us (…) midwifery is a profession that everyone knows what they do whereas chiropractic is something where not really many people know what we do” (Chiropractor, participant 2)

5.3.3.4 Missed opportunities

Following on from the first three subthemes, chiropractors gave examples of ways in which interprofessional learning, working, and relationships could have been improved. It was noted by most chiropractors that much of the learning and collaboration happened ‘in the room’, and there were opportunities ‘outside of the room’ for interprofessional discussions, either formally about a shared case or informally ‘chatting’. Case discussions were proposed as a missed opportunity for interprofessional learning, which could have been easily implemented. Case discussions were also seen as a potential opportunity for each profession to learn about the other and to address the perceived lack of understanding about chiropractic (5.3.3.3). Another suggestion to maximise interprofessional learning was an end-of-day ‘wrap up’ to share relevant information related to the care provided that day.

Creating opportunities

> "We would have been able to have a conversation, we would have understood each other, I'm sure, if we'd had the opportunity to, so maybe some difficult cases, or just you know, something that we can just **learn** off each other" (Chiropractor, participant 4)

Case discussions

> "To look at the file together you know (…) the tutors sort of going 'yeah, maybe what's missing? What else? Where can we go with this together?' Look at it as a little team, that would have been brilliant" (Chiropractor, participant 1)

Broader discussions of professional roles

> "If I've seen a baby with that student midwife (…) wouldn't it be nice for us to have got together and have a bit of a chat about it? Erm and for me to learn some more things from them (…) for them to ask, you know, have the opportunity to say: 'So what sort of things would a chiropractor do?' (Chiropractor, participant 1)

End-of-day wrap-up

> "I think it would really useful just to have like a half hour chat, just kind of, it wouldn't even, I don't think even it would need to be kind of specific, specifically like planned" (Chiropractor, participant 2)

5.3.3.5 Sharing care: when it works

Midwives and chiropractors both highlighted benefits of interprofessional working, including for their learning, and for mothers and babies attending the Clinic. Despite the challenges highlighted in the three previous subthemes, all participants described interprofessional working in a positive light and gave examples of it 'working' during their interview. This subtheme links to 'seeing it work' (5.3.5.3). Interviewees highlighted the benefits of a broader skillset being available, and midwifery and chiropractic being complementary. The practical benefits included the mother having

help in one place, and receiving the care required immediately. This was contrasted against making referrals which took time and involved additional appointments.

Complementary professions

> "The skill set around you, like having the combination of a chiropractor, well trainee, and trainee midwife, the skills are actually quite sort of interchangeable (…) it's really useful" (Chiropractor, participant 2)

Prompt solutions

> "Being with the chiropractor actually was very beneficial so they [the mother] didn't have to run around, but it was actually a team effort erm to get something done then and there" (Midwife, participant 7)

5.3.3.6 Interprofessional perspectives: skilled communication

Midwives and chiropractors each remarked on the communication used by the other profession, including the information shared, touch and non-verbal communication, and the style in which other students spoke with mothers. In both directions, these observations were positive and were novel experiences related to the Clinic. This subtheme links strongly to the subtheme 'communication as care' (5.3.4.1) and had implications in the subtheme 'applications to practice' (5.3.5.5). Chiropractors highlighted the skill involved in the midwives' history taking and communication with the mother, particularly the authentic presence they embodied. Several midwives noted the mother relaxing during their baby's chiropractic treatment. Midwives talked about the 'gentle' approach to chiropractic treatment and to explaining the problems.

Midwives' communication style

> "I remember yeah being impressed with their history taking (…) and I remember one of them, she just sat there, didn't even pick up a pen and paper and just chatted to them and I remember being like: 'Oh you're really good'" (Chiropractor, participant 3)

Chiropractors' touch and explanations

> "The chiropractors have very gentle hands, and just the way that they are gentle with the baby and you know the women can tell that they're calming the baby (…) and acknowledging their issues, erm not as you know, strange, but as quite normal" (Midwife, participant 7)

5.3.4 Theme 3: Supporting mothers in the Clinic

Midwives made significant contributions within this theme, and chiropractors made observations of the midwifery team. Supporting mothers in the Clinic included communication with mothers and having a 'sole focus' on breastfeeding, and the support provided was described as the 'gold standard'. These positive aspects were then drawn in comparison against the support provided in post-registration practice.

5.3.4.1 Communication as care

This subtheme has two main elements: listening to mothers and communication style with mothers. Midwives referred to a style of communication with mothers that included 'letting them get it off their chest' and 'enhanced listening', and communication as a means of working collaboratively with mothers to understand and resolve their breastfeeding problems. Chiropractors took notice of the specific way that midwives listened and talked to mothers and observing this in the Clinic had implications for some of them in practice. A facilitative style, focused on collaboration with the woman, was described by all midwives. The relationship between ample time available in the Clinic and the use of a facilitative style was noted. Chiropractors initially felt frustrated with the focus midwives placed on the mother talking. They came to realise how important talking could be, both for the mother's wellbeing and for addressing the breastfeeding problem.

Listening to women

> "I think it's you know, really enhanced kind of listening, the woman getting everything off her chest first, that's probably the main thing" (Midwife, participant 6)

Collaborating with women

> "Yeah, solving the problem with the woman rather than just talking **at** her and telling her what to do, but finding a way together that's going to be effective" (Midwife, participant 7)

Time with women

> "Giving women time to allow them to tell you what their problems were, using open questions, that was really helpful and just allowing them to talk rather than butting in all the time" (Midwife, participant 5)

Evolving perspective on time and talking

> "Mums have that opportunity to talk, which is really emphasised in the midwives and really and at first I thought 'oh yeah, blah, blah,' you know, erm, I think if mums can talk and they can be more relaxed then their breastfeeding will improve" (Chiropractor, participant 1)

5.3.4.2 I've got my feeding head on

Midwives noted the sole focus on breastfeeding in the Clinic, in contrast to placements and post-registration practice (5.3.4.4). This subtheme was predominantly related to practice, rather than learning, and was seen as a positive aspect of the Clinic. The Clinic was contrasted against a busy ward, where other priorities often came before breastfeeding support.

Breastfeeding focused

> "I've got my feeding head on today, not trying to juggle all of the other balls you need when you are on like a post-natal ward, you can solely concentrate on feeding" (Midwife, participant 5)

> "You don't have all those sort of outside pressures, so you can actually focus on what you're doing, you know, you're kind of there for one reason which is nice, and you don't have to worry about the other stuff that you normally worry about" (Midwife, participant 6)

5.3.4.3 Supporting breastfeeding: the gold standard

The breastfeeding support in the Clinic was described as the 'gold standard' and midwives talked about the Clinic as an environment where women felt safe and supported. There was a sense of pride in the support they provided in the Clinic. This subtheme contrasts with the following subtheme, 'comparing the Clinic and practice: divided time and attention' (5.3.4.4). The context of the Clinic providing support to mothers who are having significant breastfeeding difficulties was adjacent to some of the coding in this subtheme, and there was a sense of looking after women at a vulnerable time. Midwives all stated that the Clinic had a positive and rapid impact on mothers and their breastfeeding difficulties, and that the women's perspectives changed as their breastfeeding improved.

The gold standard

> "It's just always like the gold standard though isn't it, it's like I wish it was always like that, you get all that time, and you feel like you're doing everything really thoroughly and that's the care you want to give all of the time and so often you're not able to" (Midwife, participant 6)

A safe environment

> "We made them comfortable… they felt safe, erm and cos it is a bit of a vulnerable situation, but I think that most of them felt that they were in a, a good atmosphere… I think that they felt like we were there to help them" (Midwife, participant 7)

Making a difference

> "The difference it makes to women and their feeding (…) they would quite often walk in with you know, however many problems and the main one feeding, and they would then come out and be totally different women cos they felt their problem had been changed" (Midwife, participant 5)

5.3.4.4 Comparing the Clinic and practice: divided time and attention

In this subtheme, midwives drew comparisons between the Clinic and post-registration practice, highlighting the lack of time and one-to-one attention available to support mothers postnatally in the hospital setting. This was often directly contrasted to the care provided in the Clinic, where time was one of the greatest benefits and where mothers were supported one-to-one (5.3.2). Midwives felt they were unable to provide the same standard of breastfeeding support and described how they supported women in this context. They expressed frustration and sometimes upset associated with the impact the setting had on the support they gave.

Divided attention

> "I think from being on ward in the hospital you don't have the time when you've got one midwife to say 10,11,12 women, you don't have the time to sit with them" (Midwife, participant 5)

Lack of time

> "I feel like I'm apologising a lot for running off and coming back, and as long as I'm you know, not just avoiding the problem (…) identifying where they you know, need to make changes or identifying what they need to work on as opposed to just saying yeah that's fine or I'll look in a minute" (Midwife, participant 6)

5.3.5 Theme 4: Learning in the Clinic

Interviewees reflected extensively on what and how they had learnt in the Clinic, and how this related to their experiences in practice. Midwives and chiropractors both discussed their learning in the Clinic, with different emphasis. As students, they learnt by observing and by 'doing'. Seeing it 'work' reinforced their learning and gave them confidence in their approach and ability to support breastfeeding. Enjoying their time in the Clinic was an important related subtheme, which was both facilitated by and facilitative of their learning. Applying what they had learnt to practice was discussed by both professions, with different applications between professions.

5.3.5.1 Learning by observing

Interviewees from both professions discussed learning by observing students and the overseeing practitioners, from both their own and the other profession. Learning by observing was the main way that interprofessional learning occurred. Chiropractors reported that the opportunity to observe student midwives provided them with new information, and the interprofessional nature of this was noted as a unique experience for chiropractic students. The opportunity to observe fellow student midwives at the beginning of their time in the Clinic was helpful and inspiring for midwives, and 'eased them in' to practice in this new setting. The opportunity to learn and practice alongside specialised chiropractors one-to-one was noted by all chiropractors, and this particularly related to learning about chiropractic treatment of babies with breastfeeding difficulties. The midwives equally valued the time they had with their overseeing midwife, and particularly focused on 'soft' aspects of care including communication style.

Chiropractors observing midwives

> "A lot of learning from just watching midwives (…) yeah that was a totally new sort of learning experience, just being able to watch a midwife" (Chiropractor, participant 1)

Inspiring peers

> "I didn't have to lead, I just sat and watched, and I just remember watching a third year and thinking 'wow I hope I'm going to be like that'" (Midwife, participant 6)

Specialist supervision and practice

> "You could watch that tutors who did specialise in [paediatrics], and they did, or showed us more than what we learnt just generally in the AECC clinic" (Chiropractor, participant 4)

> "That's make or break really (…) how you talk to people, and [midwife] I mean you've met her, the way she talks to people, it's really good, cos we did watch her do it a lot, that was really, really quite nice" (Midwife, participant 7)

5.3.5.2 Learning by doing: autonomy and support

Midwives and chiropractors reported autonomy in their practice in the Clinic, which was balanced by a feeling of support and ability to ask for help from the midwife or chiropractor. This was linked with building confidence in their ability to support breastfeeding (midwives) and chiropractic treatment of babies (chiropractors). A midwife contrasted the support from the midwife and autonomy in the Clinic against a placement setting. Three of the chiropractors talked about the responsibility associated with treating babies, and the relative independence they had in Clinic compared to the chiropractic teaching clinic. Like the midwives, this responsibility was in the context of support from their supervising clinician.

Support close at hand

> "It was nice because you've got that, you haven't got your mentor right next to you or hovering outside, but you know you've got help, you've got back up, as soon as you know you're out of your depth" (Midwife, participant 6)

> "I mean the responsibilities there are, I mean it's scary and you are on your own, but it's not as if you're completely on your own, like if you need help it is there" (Chiropractor, participant 2)

5.3.5.3 Seeing it work

Midwives and chiropractors talked about seeing the support and treatment 'work'. This observation was made within and between professions and was discussed in parallel with gaining confidence in their own abilities and in the approach taken in the Clinic, particularly with complex cases. Chiropractors talked about discovering the role of chiropractic treatment in the Clinic and gaining confidence from 'seeing it work'. Midwives emphasised consistency and continuity when talking about the support 'working' and gained confidence from seeing immediate improvements in breastfeeding.

> "I didn't know how much we could help (…) from a personal front, it's given me confidence as well that actually it is amazing what can be achieved" (Chiropractor, participant 2)

> "You could see it was consistent, that it was **working** and that was what was quite encouraging and then you could just follow what the clinic does" (Midwife, participant 7)

5.3.5.4 Enjoying the Clinic

Midwives and chiropractors reported enjoying their time in the Clinic. This related to feeling they had made a difference and an associated sense of reward, and to learning about and gaining confidence in practice. One midwife reported a change in her attitude towards breastfeeding support after attending the Clinic, related to her ability to positively support women. Chiropractors talked about treating babies being gratifying, again related to their ability to make a positive difference. The enthusiasm of the overseeing chiropractor for students' learning was described by several chiropractors. They found this close, consistent contact motivating and rewarding. Midwives felt better able to support women, in the Clinic and in practice, having attended the Clinic. Midwives described enjoying providing support when they had developed more skills.

Making a difference

> "I used to hate breastfeeding support until I went and did the clinic, and I was then like, I actually enjoy it, I can make a difference for women here and I know that they've gone away and feel like they've had a positive experience" (Midwife, participant 6)

> “I think the reward was so much more as well, what I like about babies is that you know what you’re doing physically is helping” (Chiropractor, participant 2)
> “Having done the clinic, [breastfeeding support] became much more enjoyable cos you knew that you could, you’ve got a few extra tools in your pocket, erm to help them” (Midwife, participant 7)

Enthusiastic supervision

> “It was just so much contact with [chiropractor] actually, cos you know, she’s amazing, and she really really wanted us to learn so she was like you know ‘come and watch this and learn this’ and that alone was just you know, really good” (Chiropractor, participant 4)

5.3.5.5 Applying learning to practice

Midwives and chiropractors related what they learnt from the Clinic to their current practice in different ways.

Midwives

Midwives talked about transferring their approach to breastfeeding support when the breastfeeding culture and practices were conflicting. The facilitative style used in the Clinic was something midwives discussed using with women in practice, partly in attempt to mitigate the conflicting practices in the hospital setting (5.3.4.4). Midwives reported that they considered the need for another professional when they struggled to resolve the breastfeeding problem with positioning and attachment advice. This included the possibility of the baby having a musculoskeletal problem.

Confidence to support breastfeeding in settings with conflicting feeding cultures

> “I think if I hadn’t done or spent time in the feeding clinic, I wouldn’t feel confident in breast feeding support, I would back away and say I’ll get you someone who can” (Midwife, participant 5)

Facilitative style in practice

> "Watching a feed, letting them take the lead you know, show them what they're doing rather than not letting them have the chance to think" (Midwife, participant 6)

Broadened perspectives on breastfeeding support

> "It's now something I would now think about like you know (...) you think it's all looking great on paper and it's looking good at the breast, but the baby is still unsettled or yeah, it's then you think maybe they need to see someone else" (Midwife, participant 6)

Chiropractors

Chiropractors talked about the Clinic with pregnant women to initiate conversations about feeding and their feeding intentions. Communicating chiropractic to mothers and to other professionals was another skill that chiropractors felt they gained during their time in the Clinic. Their confidence in treating babies was attributed to their time in the Clinic, and this was raised by all chiropractors. One interviewee discussed her early practice career and feedback she had received from the clinic owner and peers about her confidence. Most chiropractors raised witnessing breastfeeding difficulties for the first time, and seeing these difficulties were resolvable. They gained understanding of how difficult breastfeeding was for some mothers and that effective support was crucial for continuation of breastfeeding.

Initiating infant feeding conversations

> "I've felt more equipped to have those conversations with [pregnant patients] and I feel I understand more (…) I've got a lot more knowledge than I would have done had I not been to the Feeding Clinic" (Chiropractor, speaker 1)

Communicating chiropractic

> "I think working in the clinic really helped me feel confident in explaining actually what we can do and how it can help" (Chiropractor, speaker 2)

Confidence in paediatric practice

> "So many people now have even said like: 'how are you so confident with babies?' and I think it was the Feeding Clinic, definitely" (Chiropractor, participant 3)

Support for breastfeeding difficulties

> "I think it has [changed practice] in that erm, chiropractic **can** help, and mothers **can** do it if they want to, **if** they get the right help, whereas before I would not have known that" (Chiropractor, participant 4)

5.3.6 Summary of the four themes

The interviews with midwives and chiropractors focused on their reflections of learning and practising in the Clinic, and applications of this learning to their early practice career. Encapsulating all themes and subthemes were the Clinic culture and Clinic approach to supporting breastfeeding, with the Clinic described as a unique setting. Key aspects of the Clinic culture were positive attitudes towards breastfeeding and support, patient-centredness, and continuity and consistency of care; the Clinic approach included time for mothers and babies, detailed history taking, and interprofessional problem solving, and was described as the 'gold standard' for breastfeeding support.

Although there were some barriers to interprofessional working, from the chiropractors' perspectives, these were seen as resolvable and did not sway their overall positive experience of the Clinic. Issues centred around lack of clarity on the role of the chiropractors in the Clinic and sharing time during the appointment. Each issue was countered by possible solutions, which chiropractors would have liked implemented as a means of extending opportunities for interprofessional learning and relationship building. The main advantages of an interprofessional approach for professionals was a broader range of expertise to call upon, and for mothers was perceived to be immediate access to support from the relevant professional(s). Chiropractors learnt from the midwives' communication style, and applied elements of this to their practice. Midwives valued the relaxing effect of chiropractic treatment

for babies on the mother, and the explanations that chiropractors offered, which were perceived to reduce mothers' feelings of guilt around their breastfeeding difficulties.

Supporting mothers in the Clinic relied on the communication style used by midwives, which focused on allowing mothers to talk, listening to mothers, and collaborating with mothers to find a way forward with the breastfeeding difficulty. Midwives found the sole focus on breastfeeding beneficial for consolidating their learning and supporting their practice, and described transferring this way of supporting breastfeeding into different practice settings. The breastfeeding support provided in the Clinic was described as the 'gold standard', which midwives were proud of. This was contrasted against current practice where key facilitators of the support in the Clinic, including time, sole focus, and a positive breastfeeding culture, were lacking. Students learnt by observing and 'doing' in the Clinic, where they gained confidence in their own abilities and the Clinic approach. 'Seeing it work' was important validation and gave them a sense of reward. In terms of application of learning from the Clinic to practice, midwives and chiropractors described using the knowledge gained in the Clinic in very different settings. Both professions found the confidence gained in the Clinic useful in practice, including confidence in communication about breastfeeding. The importance of support for mothers and babies with breastfeeding difficulties was highlighted, with a positive message about breastfeeding difficulties being resolvable in this and other supportive settings.

5.4 Mother-baby characteristics and feeding outcomes

5.4.1 Introduction

In this section, the mother-baby demographic data and feeding practices at the four time points are presented. Data include information about birth and the perinatal period (5.4.2) and the mother-baby feeding journey from birth, including maternal concerns and goals (5.4.3). Feeding practices at the following four time points are presented: since birth, in the two days prior to attending the Clinic, and in the two days prior to completing the follow-up questionnaires at six and twelve weeks of age (5.4.4). Feeding practices at follow-up are compared with the maternal feeding goal (5.4.4). Mothers' feedback on their experiences of the Clinic are summarised (5.4.5). Fifty-four mothers agreed to participate in the study, 32 (59%) completed the first follow-up questionnaire sent when their baby was six weeks old, and 28 (52%) completed the final questionnaire sent when their baby was twelve weeks old.

Recruitment of mothers to this study ceased when the Clinic was closed from 23rd March 2020, alongside many other non-urgent clinical services, due to the Covid-19 pandemic. Online collection of the six- and twelve-week follow-up questionnaires continued for all mothers recruited by this date.

5.4.2 Mother-baby demographic data

The demographic profile of the mothers and babies who attended the Clinic are shown in Table 7. Fifty-three babies were singletons and there was one set of twins, whose mother completed the questionnaire twice to report her feeding with each baby. This means that data relating to babies shows 55 participants and data relating to mothers shows 54. Data collected from the anonymised midwifery feeding history were less complete than data collected from questionnaires, hence lower numbers are shown for a few items.

Table 7: Mother and baby demographic data.

Mother and baby demographic data	
Baby's age in days (n=55)	
≤7 days old	5 (9.1%)
8-14 days old	12 (21.8%)
15-21 days old	16 (29.1%)
22-28 days old	22 (40.0%)
Mother's age in years (n=54)	
25-29 years old	15 (27.8%)
30-34 years old	17 (31.5%)
≥35 years old	22 (40.7%)
Mother's ethnicity (n=54)	
White British	52 (96.3%)
White (any other background)	1 (1.9%)
Any other ethnic background	1 (1.9%)
Mother's age at completing full-time education (n=54)	
≤16 years old	2 (3.7%)
17-18 years old	10 (18.5%)
>18 years old	42 (77.8%)
Mother's marital status (n=54)	
Partnered, living together	15 (27.8%)
Married or civil partnership	39 (72.2%)
Birth order of this baby (n=43)	
First	26 (60.5%)
Second	10 (23.3%)
Third	4 (9.3%)
Fourth	1 (2.3%)
Fifth	2 (4.7%)

Labour and birth

Birth type and medication in labour were collected from the midwifery history form, where the categories for birth were not mutually exclusive, and a small amount of data were incomplete. This is summarised below in Table 8. One case had more than one type of birth reported: a water birth at home. Normal vaginal birth (n=25, 50.0%) included home birth and water birth. Caesarean section (n=15, 30.0%) included elective and emergency Caesarean section. Other assisted/instrumental birth (n=10, 20.0%) included forceps and ventouse.

Medication in labour included induction and augmentation of labour, various forms of pain relief and anaesthetic, and management of the third stage of labour. Pain relief (n=42, 84.0%) included gas and air, epidural, spinal block, and pethidine. Induction or augmentation of labour (n=17, 34.0%) included any form of induction, and augmentation of labour with oxytocin. Mothers who had an induction of labour (n=15, 30.0%) accounted for seven of the nine mothers who went on to receive oxytocin to augment labour. Other medications reported (n=8) included remifentanil, terbutaline, and paracetamol.

Table 8: Information about labour and birth

Birth	
Birth type (n=50)	
Home birth	6 (12.0%)
Water birth	2 (4.0%)
Normal vaginal birth	18 (36.0%)
Forceps	5 (10.0%)
Ventouse	5 (10.0%)
Emergency Caesarean section	10 (20.0%)
Planned Caesarean section	5 (10.0%)
Medication in labour (n=50)	
None	4 (8%)
Induction of labour	15 (30%)
Augmentation with oxytocin	9 (18%)
Gas and air (Entonox)	24 (48%)
Pethidine	13 (26%)
Spinal block or epidural	20 (40%)
Managed third stage of labour	9 (18%)
Other	8 (16%)

*As it was possible to give more than one answer, percentages do not add up to 100%

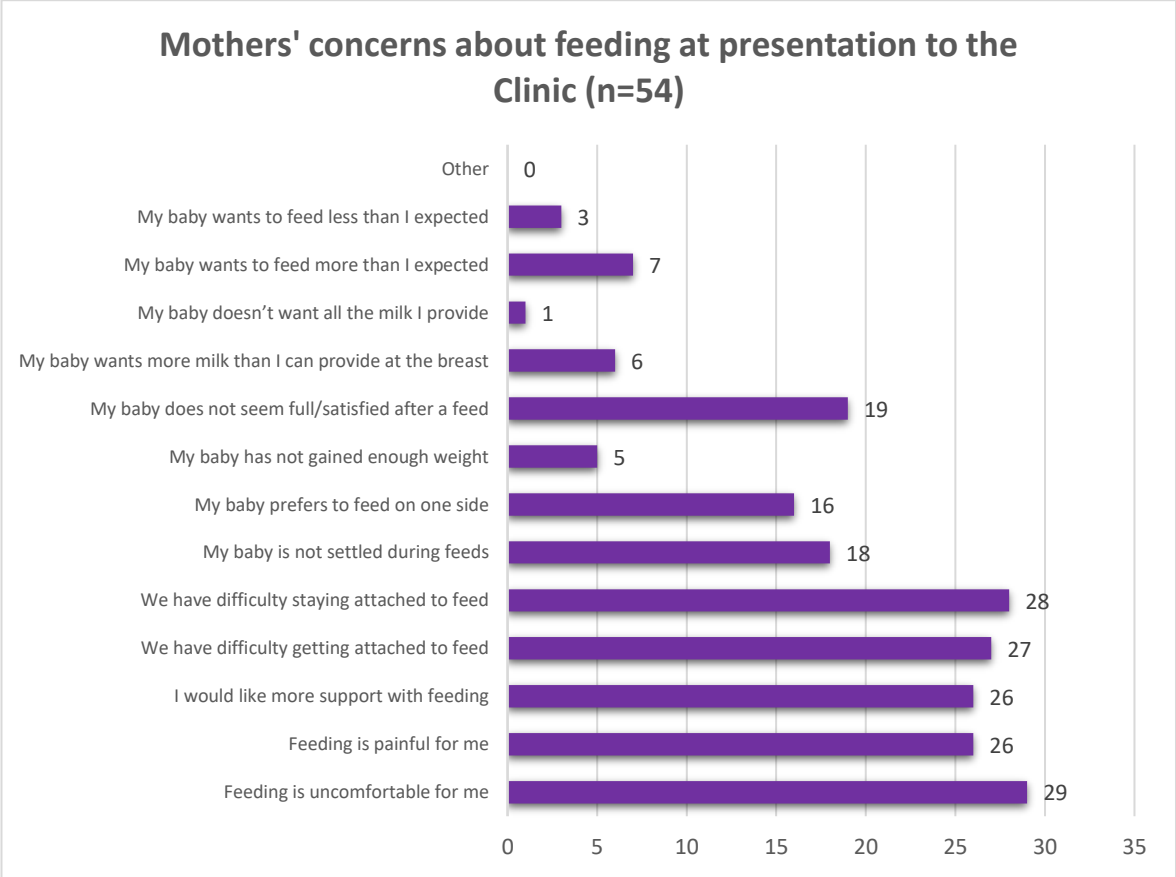
5.4.3 Feeding journey from birth to presentation at the Clinic

This subsection presents data reported at baseline about their feeding journey from birth to date, including their concerns about feeding, support they had received prior to the Clinic, support they hoped to receive at the Clinic, and their goals for feeding their baby.

5.4.3.1 Feeding concerns

Mothers' concerns about their feeding at presentation to the Clinic are shown in Figure 7.

Figure 7: Mothers' concerns about feeding at presentation to the Clinic*.



*It was possible to give more than one answer.

The mean number of specific feeding concerns reported per mother was 3.9, the range was 1-9. The most common concerns were around feeding being uncomfortable or painful, having difficulty getting attached and staying attached to feed, and wanting more support.

5.4.3.2 Support with feeding prior to presentation at the Clinic

Most mothers reported receiving support with feeding from a midwife soon after birth (n=36, 66.7%) or in the first few days after birth (n=42, 77.8%). Twenty-four (44.4%) mothers reported support from their partner and 16 (29.6%) from family or friends.

Professional breastfeeding support was sought from health visitors (n=29, 53.7%), lactation consultants (n=13, 24.1%), and breastfeeding counsellors (n=3, 5.6%). Lay support was sought from breastfeeding peer supporters (n=6, 11.1%) and breastfeeding groups (n=6, 11.1%). Two mothers received support from their General Practitioner or other doctor (3.7%). Two mothers sought support from the Families and Babies (FAB) social media groups (3.7%). The mean number of breastfeeding support sources was 3.3, the range was 0-7.

5.4.3.2 Maternal feeding goals at presentation to the Clinic

All mothers were seeking support with breastfeeding (n=53, 100%). A small minority also wanted support with combination feeding (n=5, 9.4%), expressing breast milk (n=2, 3.8%), and feeding their baby using a bottle (n=2, 3.8%).

All mothers had the goal of breastfeeding their baby to some extent (n=53, 100%). The majority wanted to only breastfeed (n=43, 81.1%), some wanted to combination feed (including breastfeeding) (n=8, 15.1%), and two (3.8%) described a specific goal of initial exclusive breastfeeding, transitioning to mixed feeding after a few months.

5.4.4 Feeding outcomes

Mothers reported what and how their baby had been fed since birth and in the 48 hours preceding their appointment at the Clinic. This data demonstrated a change in feeding over this short time, prior to their appointment.

5.4.4.1 Feeding prior to the Clinic

Since birth, all babies had been fed their mother's breastmilk, either directly from the breast or expressed. One mother was exclusively feeding expressed breast milk.

In the 48 hours preceding their appointment in the Clinic, all babies were still receiving their mother's breastmilk, either from the breast or expressed. Fewer babies were fed expressed breast milk and formula milk. Donor breast milk and oral sugars were no longer being fed. Table 9 summarises what the baby was fed prior to attending the Clinic.

Table 9: What the babies were fed prior to attending the Clinic*

What has your baby been fed? (n=53)	Since birth	At presentation to the Clinic
Breast milk (from the breast)	52 (98.1%)	50 (94.3%)
Expressed breast milk	32 (60.4%)	21 (39.6%)
Donor breast milk	1 (1.9%)	0 (0.0%)
Formula milk	23 (43.4%)	11 (20.8%)
Prescription formula milk	1 (1.9%)	1 (1.9%)
Oral glucose/dextrose	2 (3.8%)	0 (0.0%)

*As it was possible to give more than one answer, percentages do not add up to 100%

In addition to what the baby was fed, mothers reported the mechanism of how their baby was fed, showing a wide range of approaches (Table 10). The feeding mechanism simplified by the time they attended the clinic compared to the mechanisms families had ever used since birth. Nasogastric tubes and spoon, syringe, and finger feeding were no longer being used, and use of nipple shields and cup feeding had reduced. However, fewer babies were feeding directly from the breast by this time: most babies who were not being fed directly from the breast were fed at the breast with nipple shields.

Table 10: How the babies were fed prior to attending the Clinic*

How has your baby been fed? (n=53)	Since birth	At presentation to the Clinic
Directly from the breast	50 (94.3%)	43 (81.1%)
From the breast with nipple shields	20 (37.7%)	9 (17.0%)
From the breast with a supplemental feeder	1 (1.9%)	1 (1.9%)
Bottle	26 (49.1%)	24 (45.3%)
Cup	19 (36.5%)	1 (1.9%)
Spoon	3 (5.7%)	0 (0.0%)
Syringe	25 (47.2%)	0 (0.0%)
Finger fed	4 (7.5%)	0 (0.0%)
Tube fed (nasogastric tube)	3 (5.7%)	0 (0.0%)

*As it was possible to give more than one answer, percentages do not add up to 100%

5.4.4.2 Follow-up at six weeks of age

Thirty-two (59%) mothers completed and returned the online questionnaire when their baby was six weeks old. Twenty-nine mothers completed the questionnaire when first sent, three completed the questionnaire following a reminder, and 22 did not complete the questionnaire.

One interesting functionality of the Online Surveys was the time stamps, which gave the time that participants opened the questionnaire and time it took them to complete. Excluding two outliers, mothers spent between three and eleven minutes completing the questionnaire, four minutes and fifty-two seconds on average. Mothers most often completed the questionnaire between six and nine PM (n=12) or nine AM and noon (n=11). All but two of the six-week questionnaires were sent prior to the national lockdown of the COVID-19 pandemic, which began on 23rd March 2020.

Support after attending the Clinic

Following their appointment at the Clinic, thirteen dyads (41.9%) had no further care, seventeen (54.8%) returned to the chiropractic clinic for treatment for the baby, and one dyad (3.2%) returned to both the Clinic and the chiropractic clinic. The mean number of appointments for those who returned to the chiropractic clinic was three, the range was one to five. Other sources of feeding support following their appointment in the Clinic were reported. Eleven mothers (35.5%) received no further support, four (12.9%) received support from their partner, and one (3.2%) from family

or friends. In terms of professional support, two (6.5%) saw their midwife, four (12.9%) a lactation consultant, and six (19.4%) a health visitor. Peer support was sought by one mother (3.2%) and from a breastfeeding peer supporter by four mothers (12.9%) from a breastfeeding support group.

Feeding at six weeks

At six weeks, all but one of the babies were fed breastmilk from the breast. A similar proportion of babies were receiving expressed breast milk compared to baseline, and there was a small increase in the proportion of babies receiving formula milk. Table 11 shows what babies were fed at six weeks of age.

Table 11: What the babies were fed in the 48 hours preceding completion of the six-week questionnaire.

What has your baby been fed in the past two days? (n=31)	
Breast milk (from the breast)	30 (96.8%)
Expressed breast milk	12 (38.7%)
Donor breast milk	0 (0.0%)
Formula milk	9 (29.0%)
Prescription formula milk	2 (6.5%)

*As it was possible to give more than one answer, percentages do not add up to 100%

Compared to baseline, there was a small increase in the proportion of babies feeding directly from the breast and from a bottle, and a small decrease in the use of nipple shields. Table 12 shows how babies were fed at six weeks of age.

Table 12: How the babies were fed in the 48 hours preceding completion of the six-week questionnaire.

How has your baby been fed in the past two days? (n=31)	
Directly from the breast	28 (90.3%)
From the breast with nipple shields	3 (9.7%)
Bottle	17 (54.8%)

*As it was possible to give more than one answer, percentages do not add up to 100%

On a global impression of change, adapted from the UK Infant Questionnaire, all but two mothers (7.4%) reported some improvement in their baby's feeding since their appointment at the Clinic. Change ratings are shown in Table 13.

Table 13: Global impression of change in feeding at six weeks.

Since your appointment at the Newborn Feeding Clinic, how would you describe the change (if any) in your baby's feeding? (n=27)	
No change	2 (7.4%)
A little better	5 (18.5%)
Moderately better	6 (22.2%)
Better and a definite improvement	12 (44.4%)
Completely better, like a different baby	2 (7.4%)

5.4.4.3 Follow-up at twelve weeks of age

Twenty-eight (52%) mothers completed and returned the final online questionnaire, sent when their baby was twelve weeks old. Twenty mothers completed the questionnaire when first sent, eight mothers completed the questionnaire after the reminder, and 27 either did not complete the questionnaire or were not sent the questionnaire following non-response to the six-week reminder email. Unlike the six-week questionnaire, there was no pattern to the time that mothers completed the questionnaire, with even distribution throughout the day from six AM to nine PM. Mothers spent between three and ten minutes completing the questionnaire, three minutes and forty-one seconds on average. There was a slight increase in response rate from 46% before the national Covid-19 lockdown on 23rd March to 54% during the lockdown.

Of the mothers who completed the twelve-week questionnaire, 10 (35.7%) had no further care, seventeen (60.7%) returned to the chiropractic teaching clinic for treatment for the baby, and one (3.6%) returned to both the Clinic for further feeding support and the chiropractic teaching clinic. Of the babies who received further chiropractic care, the mean number of appointments was three, the range was one to six. Further feeding support was reported: nine (32.1%) reported no further support, nine (32.1%) had support from their partner and six (21.4%) from family or friends. Professional support included health visitors (n=8, 28.6%), midwives (n=5, 17.9%), lactation consultants (n=3, 10.7%), and General Practitioner or another doctor (n=2,

7.1%). Peer support was sought from breastfeeding peer supporters (n=4, 14.3%) and breastfeeding groups (n=4, 14.3%).

At twelve weeks, all babies who were still receiving breastmilk were feeding at the breast. The proportion of babies receiving expressed breastmilk had reduced compared to six weeks, and the proportion of babies receiving formula milk was similar. One baby had started to receive water and solid foods. Table 14 shows what babies were fed at twelve weeks of age.

Table 14: What the babies were fed in the 48 hours preceding completion of the twelve-week questionnaire.

What has your baby been fed in the past two days? (n=28)	
Breast milk (from the breast)	24 (85.7%)
Expressed breast milk	7 (25.0%)
Formula milk	8 (28.6%)
Prescription formula milk	1 (3.6%)
Water	1 (3.6%)
Solids	1 (3.6%)

*As it was possible to give more than one answer, percentages do not add up to 100%

Compared to at six weeks, there was a slight decrease in the proportion of babies feeding directly from the breast, from the breast with nipple shields, and from a bottle. Four mothers had stopped breast and breastmilk feeding by twelve weeks, and five mothers had transitioned from mixed feeding at six weeks to totally breastfeeding at twelve weeks. The one baby who was fed water and solids was reported to be cup and finger fed. Table 15 shows how babies were fed at twelve weeks of age.

Table 15: How the babies were fed in the 48 hours preceding completion of the twelve-week questionnaire.

How has your baby been fed in the past two days? (n=28)	
Directly from the breast	23 (82.1%)
From the breast with nipple shields	1 (3.6%)
From the breast with a supplemental feeder	1 (3.6%)
Bottle	13 (46.4%)
Cup	1 (3.6%)
Finger fed	1 (3.6%)

*As it was possible to give more than one answer, percentages do not add up to 100%

On the global impression of change (Table 16), all but three mothers (10.7%) reported some improvement in their baby's feeding since their appointment at the Clinic. Of the two mothers who reported worsening, one had stopped breast and breastmilk feeding, the other had one of the most complex feeding pictures that mothers reported at 12 weeks: breastfeeding, expressed breast milk feeding, formula feeding, and bottle feeding.

Table 16: Global impression of change in feeding at twelve weeks.

Since your appointment at the Newborn Feeding Clinic, how would you describe the change (if any) in your baby's feeding? (n=28)	
Worsened	2 (7.1%)
No change	1 (3.6%)
A little better	3 (10.7%)
Moderately better	7 (25.0%)
Better and a definite improvement	12 (42.9%)
Completely better, like a different baby	3 (10.7%)

5.4.4.4 Feeding over the four time points

What the baby was fed

A dummy variable was created to categorise each case into one of the following three categories:

1) Totally breast fed (breast milk (from the breast), expressed breast milk, and donor breast milk)
2) Partially breast fed (any combination of feeding types, including at least one form of breast milk feeding)

3) Not at all breastfed.

This categorisation was completed for each case at each of the four time points. This is shown in Table 17 alongside the rate of exclusive breastfeeding, infants who had only ever received breastmilk, demonstrating the differences between 'exclusively breastfed' and 'totally breastfed at this time'. The use of 'totally breastfed' as a category, instead of 'exclusively breastfed' was justified in 4.9.3.2.

Table 17: Categorised feeding type over the four time points.

	Exclusively breastfed	Totally breastfed	Any breastfeeding	Not at all breastfed
Since birth (n=53)	30 (56.6%)	30 (56.6%)	53 (100%)	0 (0.0%)
At baseline (≤4 weeks) (n=53)	30 (56.6%)	41 (77.4%)	53 (100%)	0 (0.0%)
At six-week follow-up (n=31)	13 (41.9%)	21 (67.7%)	31 (100%)	0 (0.0%)
At twelve-week follow-up (n=28)	10 (35.7%)	19 (67.9%)	24 (85.7%)	4 (14.3%)

Figure 8 shows the total numbers of dyads totally, partially, and not at all breastfeeding. The number of babies totally breastfed increased notably from birth to baseline, and the decline between six and twelve weeks was small. At the six-week follow-up, all babies were receiving some breastmilk, just over two thirds were totally breastfed. By twelve weeks, four mothers had stopped breastfeeding. These mothers had stopped breastfeeding after between eight and eleven weeks.

These data are shown below in both stacked columns by number (Figure 8) and 100% stacked columns (Figure 9) to show the proportion at each time point, and to encompass the wider context of the 59% and 52% response rate at six and twelve weeks, respectively.

Figure 8: Type of feeding from birth to twelve weeks of age, total number stacked columns.

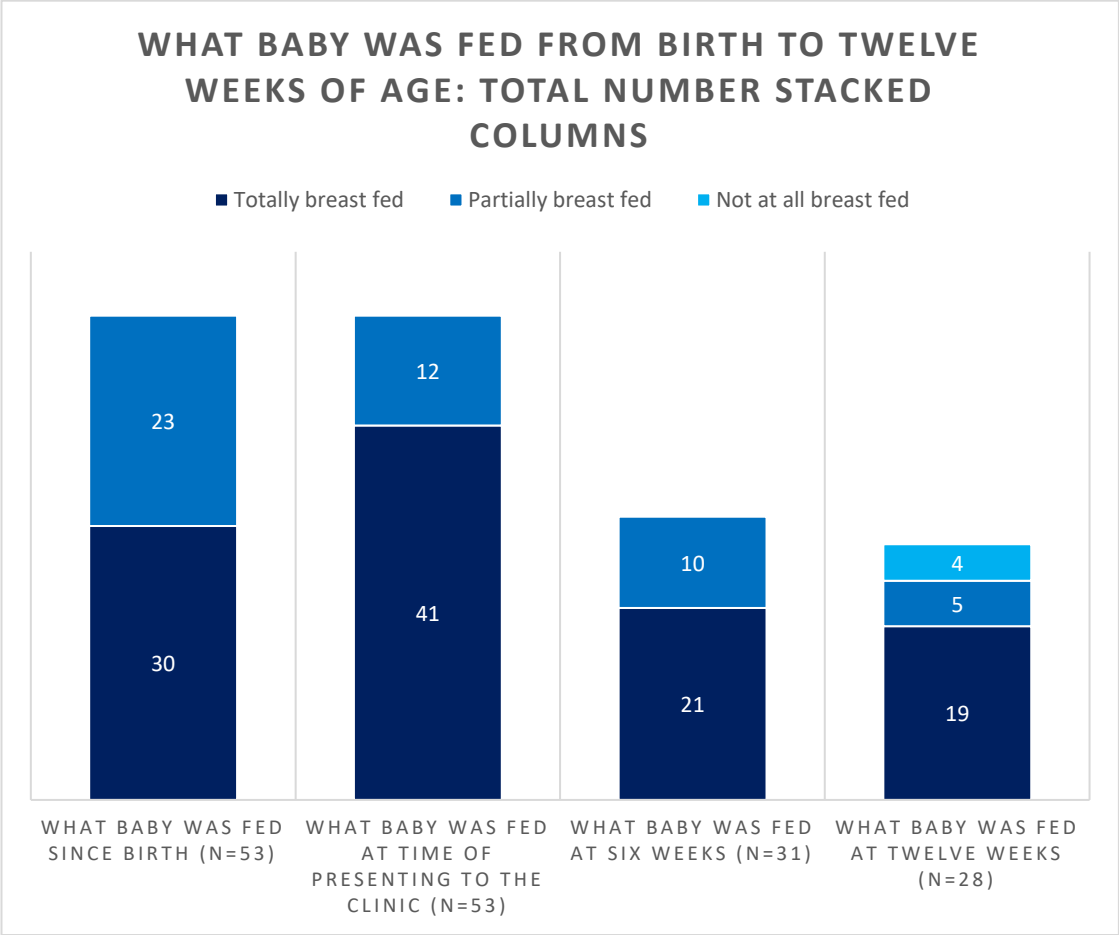
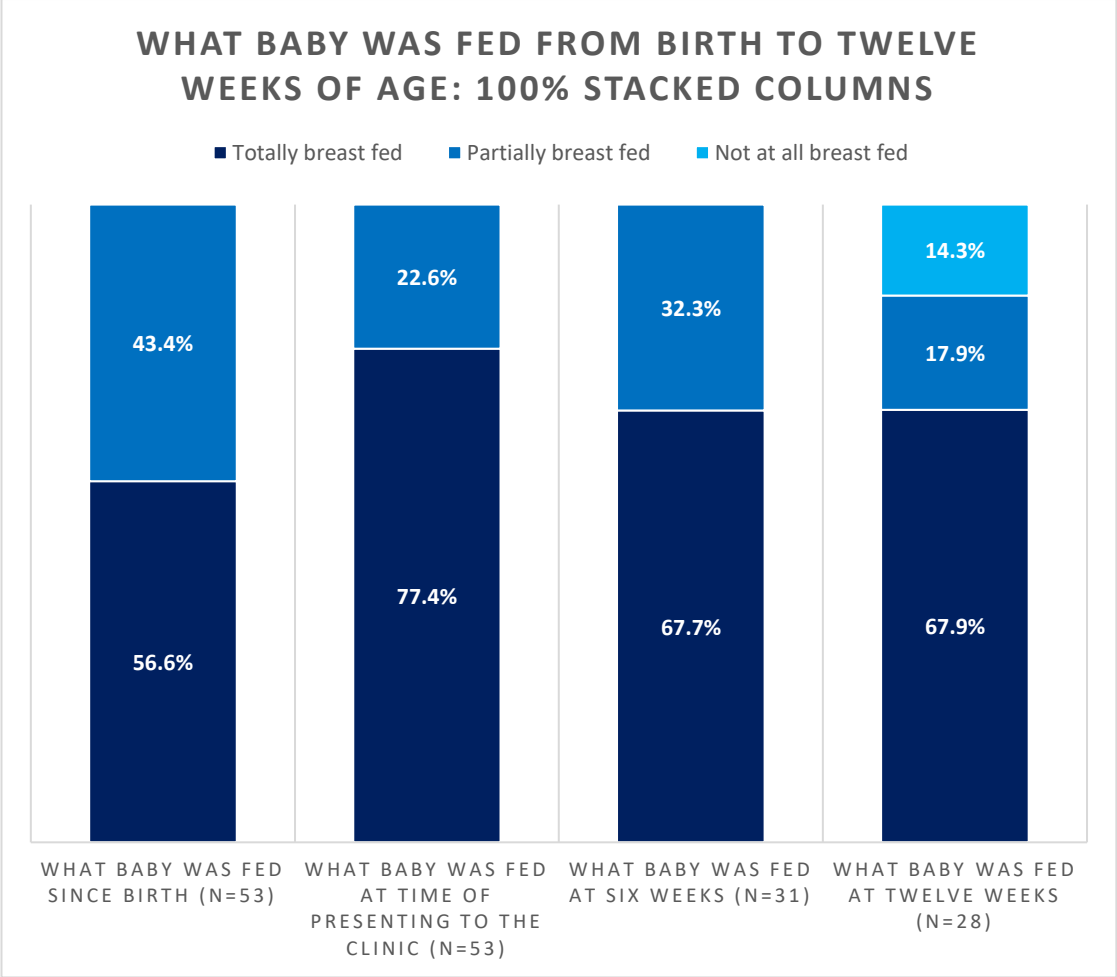


Figure 9 shows the same data, presented as the percentage of infants totally, partially, and not at all breastfed over the four time points. The percentage of totally breastfed babies was sustained over the six- and twelve-week time frames.

Figure 9: Type of feeding from birth to twelve weeks of age, 100% stacked columns.



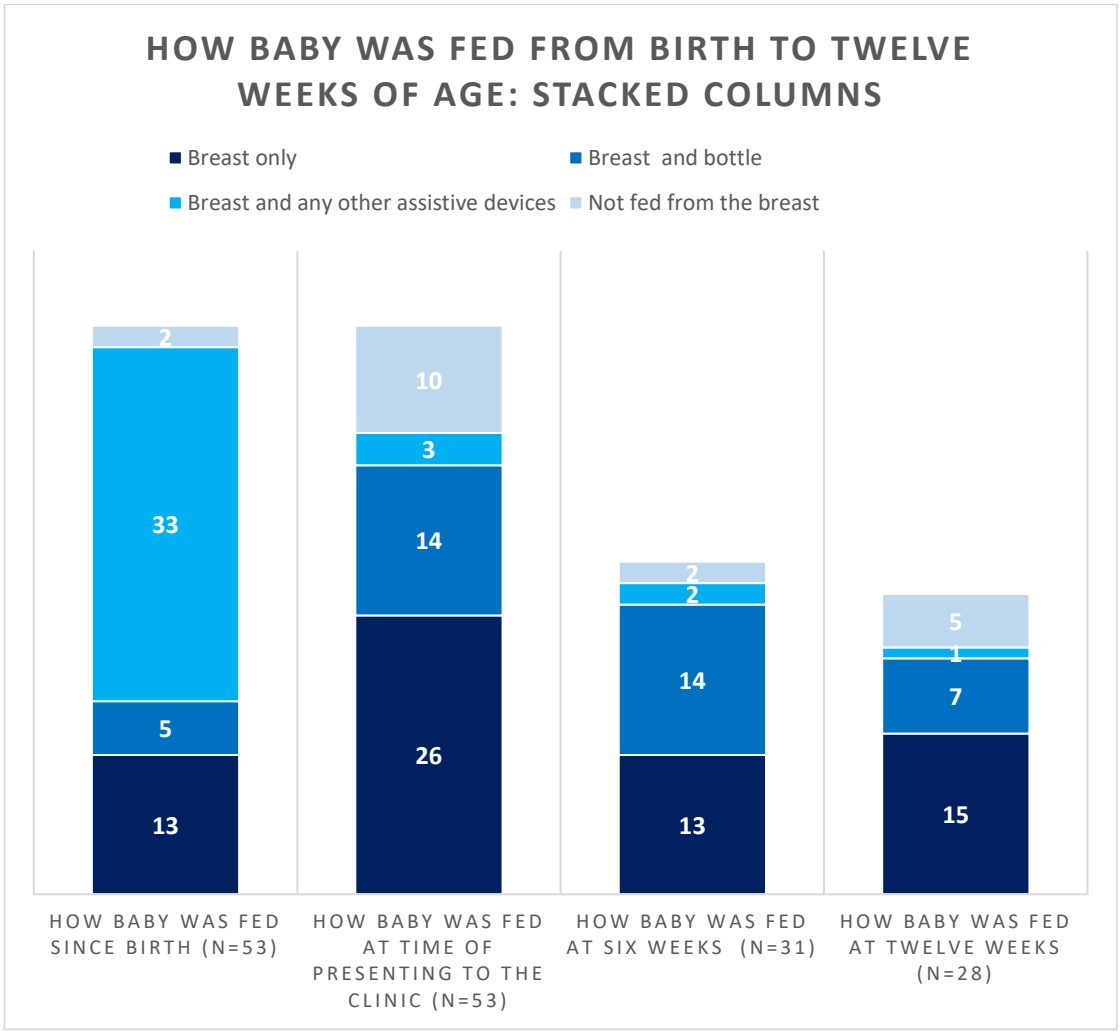
How the baby was fed

A dummy variable was created in SPSS to categorise each case into one of the following four categories to describe the mechanism of feeding:

1) Breast only (directly from the breast)
2) Breast and bottle (directly from the breast, and bottle)
3) Breast and any other assistive devices (directly from the breast, and one or more of the following: from the breast with nipple shields, from the breast with a supplemental feeder, cup, spoon, syringe, finger fed, tube fed (nasogastric tube))
4) Not fed from the breast (any feeding mechanism or combination, except for directly from the breast).

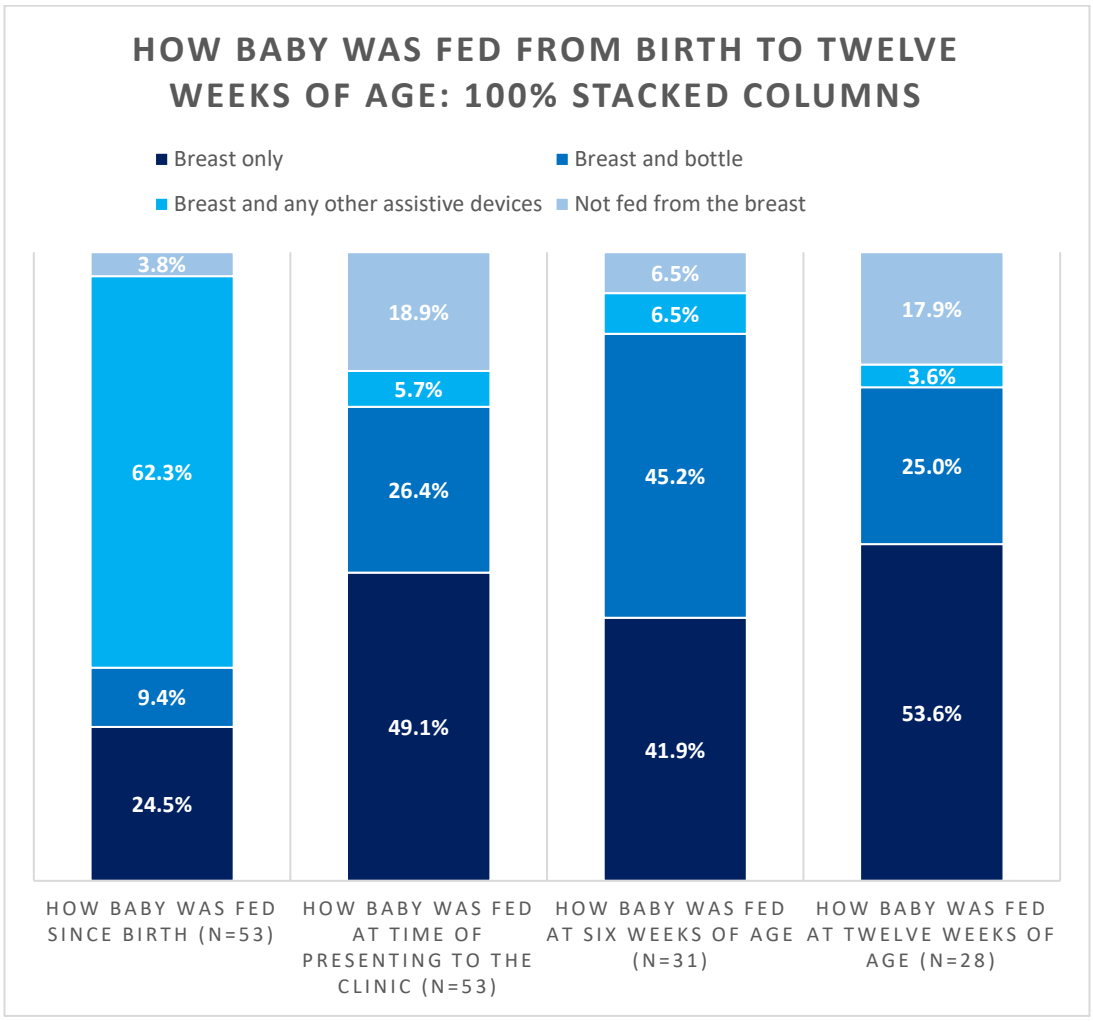
Again, these data are shown in both stacked columns by number (Figure 10) and 100% stacked columns (Figure 11).

Figure 10: Mechanism of feeding from birth to twelve weeks of age, total number stacked columns.



This figure shows the total number in each category at each time frame. Although four mothers had stopped breastfeeding at twelve weeks, there was in increase in the number of mothers only breastfeeding, who had been mixed feeding (breast and bottle) at six weeks (n=5).

Figure 11: Feeding mechanism from birth to twelve weeks of age, 100% stacked columns.



This bar chart shows the high proportion of mothers and babies who used assistive devices to feed their babies in the early weeks (n=33, 62.3%), which had reduced at presentation to the Clinic and remained low at six- and twelve-week follow-up. Of note was the relatively low proportion of babies who had been only breastfed since birth (n=13, 24.5%). At presentation to the clinic, 18.9% (n=10) of babies were not directly feeding from the breast. At six weeks, babies were predominantly either breastfed only or breastfed and bottle fed, in almost equal proportions. At twelve weeks, the proportion of babies feeding only from the breast peaked at 53.6% (n=15).

5.4.4.5 Maternal feeding goals

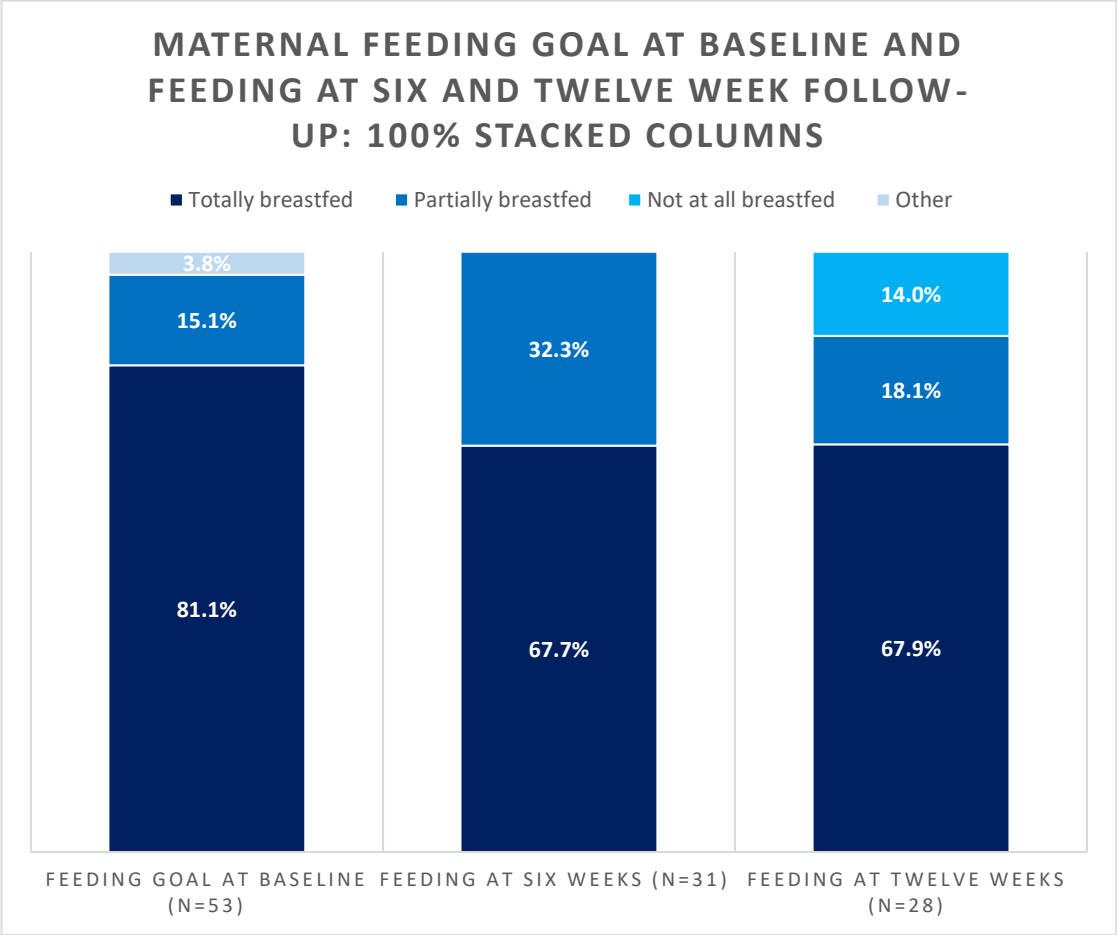
At intake, mothers reported their feeding goals (5.4.3). These goals were compared with their feeding as reported at six and twelve weeks, to determine whether this goal had been met. Attainment of these individual goals is reported in Table 18. At twelve weeks, two mothers had 'exceeded' their goal of mixed feeding and were totally breastfeeding.

Table 18: Mothers' attainment of their feeding goal at six and twelve weeks

Mother's feeding goal attained	Yes	No
At six weeks (n=30)	22 (73.3%)	8 (26.7%)
At twelve weeks (n=28)	20 (71.4%)	8 (28.6%)

For context, Figure 12 shows the maternal feeding goals at intake in the first column, alongside the actual feeding type at six- and twelve-week follow-up. Most mothers (81.1%) wanted to totally breastfeed their baby: 67.7% (n=21) and 67.9% (n=19) had attained this goal at six and twelve weeks, respectively.

Figure 12: Maternal feeding goals at baseline, and the feeding outcome at six and twelve weeks, 100% stacked columns.



5.4.5 Mothers' feedback on their experiences of the Clinic

In the six-week follow-up questionnaire, mothers were provided space to give written feedback about their experience at the Clinic, thirty-one mothers did so. Feedback was almost exclusively positive, with recurring comments about having plenty of time, and feeling supported, reassured, and informed. Most mothers reported the Clinic to be 'helpful'. There was one mother who described her negative experience.

Dissatisfied

> "Very disappointing as we were mostly there to get our daughter checked by the chiropractor regarding her jaw and we spend two hours talking about breastfeeding and then the clinic was closing so we didn't actually get her jaw checked not very happy"

Time in the Clinic

> "Lots of time and support given, really felt cared for and reassured"
>
> "Nothing felt rushed, and they had time to help you and ensure you left with something to work on"

Caring environment and staff

> "Fantastic, felt really valued and that getting me comfortable with feeding my baby was an absolute priority"
>
> "Far exceeded my expectations with lots of help, both the midwives and chiropractors were approachable, professional and kind"

Breastfeeding support

> "Really impressed with the level of support. Very comprehensive and really helped us with new positions and techniques which have had a positive impact and have kept us on our breastfeeding journey"
>
> "We had a really positive experience at the feeding clinic. Before treatment baby was only feeding on one side, a little after treatment she began to feed equally on both sides in any position!"

5.4.6 Summary of the section

The data in sections 5.4 addressed research questions three and four, presenting demographic data about the mother-baby dyads who use the Clinic, and their feeding outcomes after attending the Clinic at six and twelve weeks of age. These data are discussed in the context of the wider literature in Chapter 7.

5.5 Statistical analyses

5.5.1 Introduction

In this section, the statistical analyses are presented. IBM SPSS Statistics 26 (2019) was utilised to complete the analyses, and the primary source of statistical information

was Field (2018). This analysis was not the planned analysis: statistical tests used were adapted to accommodate the smaller than anticipated sample size, due to halted recruitment following closure of the Clinic in March 2020. Sample size and recruitment challenges are discussed in 7.4.2.

Two key areas were addressed in the statistical analysis: 1) change in mothers' breastfeeding self-efficacy and 2) change in their baby's attributes. Paired samples *t*-tests are presented, measuring differences in breastfeeding self-efficacy (5.5.2) and infant attributes (5.5.3) from baseline to six weeks and baseline to twelve weeks.

As discussed in 4.9.3.4, breastfeeding self-efficacy and infant attributes are two potentially modifiable factors in continuation of breastfeeding. These statistical analyses were undertaken to provide context around the primary outcomes of this part of the study: infant feeding outcomes and maternal feeding goal attainment.

5.5.2 Change in breastfeeding self-efficacy

5.5.2.1 Paired samples t-tests

The paired samples *t*-test was run twice: first comparing scores at baseline, when the baby was four weeks or younger, with scores from the six-week questionnaire, and second comparing scores at baseline with scores from the twelve-week questionnaire. In preparation for the paired-samples t-test, error bars of adjusted means were created to determine differences between means. As the sample of mothers who completed the six-week (n=32) and twelve-week (n=28) questionnaire were not the same, adjusted means at baseline were calculated separately for each group. These error bar charts are shown in Appendix 23. Errors bars for the five paired items from baseline to six weeks and baseline to twelve weeks had no overlap of the 95% CI. The significance level was set at 0.05.

5.5.2.2 Baseline to six weeks: Breastfeeding self-efficacy

Paired samples statistics and paired samples correlations are shown in Appendix 24. Table 19 shows the paired-samples *t*-tests from baseline to six weeks, where all five items demonstrated statistically significant improvement.

Table 19: Paired-samples test: Breastfeeding self-efficacy from baseline to six weeks.

Paired Samples Test: Breastfeeding self-efficacy from baseline to six weeks									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Overall, I would describe breastfeeding as a relaxing activity: Intake - 6 weeks	1.125	1.408	.249	.617	1.633	4.518	31	.000
Pair 2	I can always cope successfully with breastfeeding like I have with other challenging tasks: Intake - 6 weeks	-.594	1.012	.179	-.958	-.229	-3.320	31	.002
Pair 3	I can always be satisfied with my breastfeeding experience: Intake - 6 weeks	-.781	1.099	.194	-1.178	-.385	-4.020	31	.000
Pair 4	I can always manage the breastfeeding situation to my satisfaction: Intake - 6 weeks	-.812	1.061	.188	-1.195	-.430	-4.333	31	.000
Pair 5	I can always manage to keep up with my baby's breastfeeding demands: Intake - 6 weeks	-.844	1.547	.274	-1.402	-.286	-3.085	31	.004

Question one used a positive to negative scale, i.e. ‘strongly agree’ to ‘strongly disagree’, on a 7-point Likert scale. Questions two to five used a negative to positive scale, i.e. ‘not sure at all’ to ‘completely sure all of the time’, on a 5-point Likert scale. All five items demonstrated improvement in how mothers felt about their feeding and specifically breastfeeding, with increased relaxation, coping, satisfaction, and managing breastfeeding reported.

5.5.2.3 Baseline to twelve weeks: Breastfeeding self-efficacy

Paired samples statistics and paired samples correlations are shown in Appendix 25. Table 20 shows the paired-samples *t*-tests from baseline to twelve weeks, where all five items demonstrated statistically significant improvement.

Table 20: Paired samples test: Breastfeeding self-efficacy from baseline to twelve weeks.

Paired Samples Test: Maternal self-efficacy from baseline to twelve weeks									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Overall, I would describe breastfeeding as a relaxing activity: Intake - 12 weeks	2.000	1.351	.276	1.429	2.571	7.251	23	.000
Pair 2	I can always cope successfully with breastfeeding like I have with other challenging tasks: Intake - 12 weeks	-1.125	1.154	.236	-1.612	-.638	-4.776	23	.000
Pair 3	I can always be satisfied with my breastfeeding experience: Intake - 12 weeks	-1.292	1.042	.213	-1.732	-.852	-6.075	23	.000
Pair 4	I can always manage the breastfeeding situation to my satisfaction: Intake - 12 weeks	-1.304	1.185	.247	-1.817	-.792	-5.281	22	.000
Pair 5	I can always manage to keep up with my baby's breastfeeding demands: Intake - 12 weeks	-1.250	1.511	.308	-1.888	-.612	-4.053	23	.000

The questionnaire utilised a logic function, which meant that questions one to five were not asked to mothers who were no longer breastfeeding. As shown in Table 20, all five *t*-tests showed statistical significance. As with the follow-up at six weeks, the biggest difference was in question one: 'overall, I would describe breastfeeding as a relaxing activity'. Across all five items, there was further improvement in mothers' experiences of breastfeeding, with greater *t* scores for each item from baseline to twelve weeks than baseline to six weeks.

5.5.3 Change in UK Infant Questionnaire scores

5.5.3.1 Paired samples t-tests

Per 5.5.2.1, the paired samples *t*-tests for the UK Infant Questionnaire scores were run twice: first, from baseline to six weeks, and second from baseline to twelve weeks. Error bars of the adjusted means showed no overlap in the 95% CI, both from baseline to six weeks and baseline to twelve weeks, for all six items. These error bars are shown in Appendix 26.

5.5.3.2 Baseline to six weeks: UK Infant Questionnaire

Paired samples statistics and paired samples correlations are shown in Appendix 27. Table 21 shows the paired-samples *t*-tests from baseline to six weeks, where all six items demonstrated statistically significant improvement.

Table 21: Paired samples tests: UK Infant Questionnaire from baseline to six weeks.

Paired Samples Test: UK Infant Questionnaire baseline to six weeks									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Over the past few days, on average, have you considered your baby's feeding to be a problem? Intake - 6 weeks	3.500	2.782	.492	2.497	4.503	7.116	31	.000
Pair 2	Over the past few days, on average, have you considered your baby's sleeping to be a problem? Intake - 6 weeks	1.125	2.324	.411	.287	1.963	2.738	31	.010
Pair 3	Over the past few days, on average, have you considered your baby's crying to be a problem? Intake - 6 weeks	1.469	2.527	.447	.558	2.380	3.288	31	.003
Pair 4	Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he/she cried? Intake - 6 weeks	1.531	2.615	.462	.588	2.474	3.313	31	.002
Pair 5	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? Intake - 6 weeks	1.469	2.962	.524	.401	2.537	2.805	31	.009
Pair 6	Over the past few days, on average, has your baby turned his/her head freely to both sides? Intake - 6 weeks	2.613	3.201	.575	1.439	3.787	4.545	30	.000

All questions on the UK Infant Questionnaire used a positive to negative 11-point Likert scale, i.e. “no problem” to “serious problem” for questions one to three, “very easy” to “very difficult” for questions four, “very comfortable” to “very uncomfortable” on question five, and “baby looks both sides equally” to “baby strongly prefers one side” on question six. As shown in Table 21, all six items showed significance. The largest *t* was found for item one: ‘over the past few days, on average, have you considered your baby’s feeding to be a problem?’ (*t* = 7.116). A reduction in the mean scores was seen across all six items, with mothers reporting improvement in their baby’s feeding, sleeping, crying, consolability, supine positioning and postural preference.

5.5.3.3 Baseline to twelve weeks: UK Infant Questionnaire

Table 22 shows the paired-samples *t*-tests from baseline to twelve weeks, where all six items demonstrated statistically significant improvement.

Table 22: Paired samples tests: UK Infant Questionnaire from baseline to six weeks.

Paired Samples Test: UK Infant Questionnaire baseline to twelve weeks									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Over the past few days, on average, have you considered your baby's feeding to be a problem? Intake - 12 weeks	5.630	2.574	.495	4.611	6.648	11.363	26	.000
Pair 2	Over the past few days, on average, have you considered your baby's sleeping to be a problem? Intake - 12 weeks	2.259	2.490	.479	1.274	3.244	4.715	26	.000
Pair 3	Over the past few days, on average, have you considered your baby's crying to be a problem? Intake - 12 weeks	2.296	3.440	.662	.936	3.657	3.469	26	.002
Pair 4	Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he/she cried? Intake - 12 weeks	2.037	3.311	.637	.727	3.347	3.197	26	.004
Pair 5	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? Intake - 12 weeks	3.000	3.351	.645	1.674	4.326	4.652	26	.000
Pair 6	Over the past few days, on average, has your baby turned his/her head freely to both sides? Intake - 12 weeks	3.346	3.358	.659	1.990	4.702	5.081	25	.000

As shown in Table 22, all six items demonstrated significance. As with the six-week data, the largest *t* was found for item one: 'over the past few days, on average, have you considered your baby's feeding to be a problem?' (*t* = 11.363). Table 22 shows reduction in the mean scores across all six items, with mothers reporting improvement in their baby's feeding, sleeping, crying, consolability, supine positioning and postural preference at twelve weeks. Except for item four, about consolability, the *t* scores at twelve weeks increased compared to the *t* scores for the same items at six weeks.

5.6 Summary of the findings

This chapter has presented the findings of the three component studies in this mixed-methods study, which are summarised below. These findings are triangulated and discussed in the wider context of the literature in the following chapter.

Students found their time in the Clinic beneficial for learning about breastfeeding, supporting breastfeeding, and working collaboratively to support breastfeeding. Learning occurred by observing and by 'doing', both of which aided their confidence supporting breastfeeding. Support from peers and supervising clinicians was facilitative of autonomous practice and made the Clinic enjoyable for students. Students felt better equipped to work collaboratively, including enhanced interprofessional communication skills. Challenges were raised, most of which centred around a lack of clarity of professional roles and practice, and lack of relationship with the other student they were working with. These were not seen as impassable barriers, and students proposed simple strategies to overcome these challenges.

Early-career midwives and chiropractors reflected on their experiences of the Clinic and how these had translated to post-registration practice. The Clinic culture and approach was central to discussions, with positive attitudes towards breastfeeding, patient-centred care, continuity of care time, detailed history taking, and interprofessional problem solving being central pillars of the 'gold standard' care provided in the Clinic. Barriers to interprofessional working were identified, including lack of clarity on the chiropractors' role in the Clinic, and sharing time. Solutions focused on extending opportunities for interprofessional learning and relationship building. Both professions learnt from each other, and particularly noted the other

professions' communication with mothers. As students, they learnt by observing and 'doing' in the Clinic, gaining confidence in their own abilities and the Clinic approach. 'Seeing it work' was important validation and gave them a sense of reward. In terms of application of learning from the Clinic to practice, midwives and chiropractors described using the knowledge gained in the Clinic in very different settings. Both professions found the confidence gained in the Clinic useful in practice, including confidence in communication about breastfeeding. The importance of support for mothers and babies with breastfeeding difficulties was highlighted, with a positive message about breastfeeding difficulties being resolvable in this and other supportive settings.

Mother-baby dyads attending the Clinic were fairly homogeneous in sociodemographic: almost 70% of mothers were aged 30 or older, 95% of mothers were white British, over 75% had continued education after the age of 18, and all were cohabitating or married. The most common reasons for seeking support in the Clinic were related to maternal pain and discomfort, difficulty getting attached and staying attached to feed, and wanting more support. All mothers attended the Clinic for support with breastfeeding, and 81% wanted to totally breastfeed their baby. A wide range of feeding methods had been employed prior to attending the Clinic and 43% of babies had received breastmilk substitute. After their appointment, 58% of babies returned for chiropractic treatment at the AECC UC teaching clinic. Thirty-two mothers (59%) completed the six-week questionnaire. At six weeks of age, all babies had continued to be fed breastmilk at the breast, in a few cases with nipple shields, 68% (n=21) were totally breastfed. Twenty-eight mothers (52%) completed the twelve-week questionnaire. At twelve weeks of age, 85% (n=24) had continued to be fed breastmilk at the breast, 68% (n=19) were totally breastfed. Mothers' breastfeeding self-efficacy improved at six and twelve weeks; this improvement was statistically significant. Mothers' report of infant attributes associated with breastfeeding cessation and musculoskeletal health improved at six and twelve weeks; again, this was statistically significant.

6 Triangulation of qualitative and quantitative findings

6.1 Overview of chapter

This chapter provides a discussion of the findings from this thesis, in the context of the mixed-methods approach taken. Section 6.2 provides a brief discussion of the studies, including the methodology and methods. In section 6.3, the findings from each of the three component studies are integrated, and points of convergence and divergence are highlighted and explored. The following chapter discusses the findings in the wider context of the literature.

6.2 Discussion of the studies

6.2.1 Focus groups with students

Fewer student midwives participated than expected, this is discussed as a limitation (7.4.1). Whilst this may mean that student midwives' views were underrepresented in this study, the aim was to assess experiences of students overall, and data saturation was achieved. During data collection, students were generally active and enthusiastic about sharing their experiences of the Clinic, and engaged in conversations about their experiences, including where these experiences were similar and different to those of other students. This contributed to the depth of the data and findings and is a strength of this study (7.5.1).

6.2.2 Interviews with early-career midwives and chiropractors

Data saturation was achieved across the interviews with early-career practitioners. As with the students, practitioners were open about their experiences of the Clinic and their early-career practise, including the difficulties associated with learning and practise in the Clinic and the challenges of supporting breastfeeding in a conflicting wider context. This is discussed further in the strengths of the study (7.4.1).

6.2.3 Mother-baby characteristics and feeding outcomes

Despite mothers being very willing to take part in the study, with only two declining to participate, lower than expected recruitment was achieved. This was due to 1) a higher-than-expected proportion of babies aged over 28 days presented to the Clinic,

hence not within the inclusion criteria, and 2) recruitment was stopped earlier than anticipated due to the Covid-19 pandemic and closure of the Clinic, ceasing recruitment. The smaller sample size meant that assumptions for the planned statistical analysis (loglinear analysis) were not met; this would have allowed for assessment of the impact of demographic variables on feeding outcomes, providing a richer understanding of the impact of specific determinants of breastfeeding in this setting. This is discussed further in the limitations (7.4.2). Loss to follow-up at six and twelve weeks was higher than anticipated based on previous post-intervention data collection in the Clinic, this is discussed further in the limitations (7.4.2). Significant work went into designing the questionnaire and outcomes, this has produced insightful findings despite the small sample size.

Following research planning discussions with the supervisory team, Clinic team, AECC UC teaching clinic reception, and the pilot study where mothers provided feedback, the logistics of recruitment and data collection were successful and straightforward. The use of the tablet device for collecting data at baseline was also successful, all mothers opted to complete the questionnaire online, none took the offer of a paper copy. This made data collection more efficient. One problem arose with the tablet device when the internet connection was lost during completion of the questionnaire. This was restored and the mother completed the questionnaire.

6.3 Integration of the findings

The findings from the qualitative studies of student experiences and practitioner reflections of the Clinic are integrated first (6.3.1). This is followed by a wider discussion of the qualitative and quantitative findings. Points of convergence (6.3.2) and divergence (6.3.3) within the findings are presented below, followed by a summary of the new knowledge obtained in this mixed-methods study (6.3.4).

6.3.1 Integration of qualitative findings: students and early-career practitioners

In this subsection, it is relevant to acknowledge that there were notable changes to the Clinic between the time-period when early-career practitioners left the Clinic and students started. These included a change of staffing in the chiropractic lead, the Clinic being moved from a campus building at AECC UC to their main teaching Clinic, and scheduling all local student midwives to the Clinic, rather than relying on students

to volunteer. This means that there were some objective differences the student experiences of these two groups.

In both studies, themes of interprofessional working and learning in the Clinic emerged, with some similar and some different subthemes; common subthemes were learning by observing, learning by doing, seeing it 'work', and enjoying the Clinic. Unique themes to students were supporting a dyad and gaining confidence in the Clinic; unique themes to early-career practitioners were the Clinic and supporting mothers in the Clinic.

6.3.1.1 Interprofessional working

Similar subthemes within 'interprofessional working' related to professional roles within the Clinic and opportunities to further interprofessional learning. Student and registered chiropractors reported challenges in practice in the Clinic related to the perceived lack of understanding student midwives had for the role of chiropractic in the Clinic, this lack of clarity was reflected by student midwives in the focus groups. This lack of role recognition was one of the key challenges student and registered chiropractors identified, and sometimes led to further issues in providing care, where student chiropractors felt able to help but unable to 'interrupt' the student midwife. Student and registered midwives did not discuss the impact of their uncertainty about the role of chiropractors in the care that they provided.

Across the student and early-career practitioner groups, solutions to the identified challenges of interprofessional working were proposed, usually by chiropractors. These included means of clarifying the role of chiropractors in the Clinic, such as a student-led teaching session where student midwives and student chiropractors each explained their role in the Clinic (suggested by student midwives and student chiropractors), an interprofessional meeting at the start of the day (suggested by student midwives, and student and registered chiropractors), and interprofessional case discussions and informal conversations (suggested by registered chiropractors).

6.3.1.2 Learning in the Clinic

Within ‘learning in the Clinic’, common subthemes included learning by observing, learning by doing, and enjoying the Clinic. The learning reported in the Clinic was similar across the professions, and between students and early-career practitioners. For both students and early-career professionals, the opportunity to learn by observing the practise of students and registered professionals from both professions was a key means of learning in the Clinic. Both groups also stated the relevance and importance of learning by ‘doing’, playing an active role in the provision of breastfeeding support. For student and registered chiropractors, this included the ‘hands-on’ time examining and treating babies, and for student and registered midwives, working through the breastfeeding problem from start to finish was important. Students and early-career practitioners from both professions also described the ‘supported autonomy’ they experienced in the Clinic, where they took the lead in care for mothers and babies, whilst their supervising clinicians were available and approachable.

6.3.2 Convergence

6.3.2.1 Introduction

There were six key areas where findings converged. The first two relate to the common themes of interprofessional working (6.3.1.1) and learning in the Clinic (6.3.1.2), shared by students and early-career practitioners, discussed above. The remaining points of convergence relate to findings across the qualitative and quantitative studies.

6.3.2.2 Running out of time: chiropractic

Student and registered chiropractors reported the challenge they sometimes faced in getting ‘their time’ with the baby in the Clinic (5.2.4.1, 5.3.3.2), which was particularly challenging when they felt they had possible solutions to the problem. This was largely attributed to the perception that student midwives did not understand the role of chiropractic in the Clinic (5.3.3.3). The only mother who was disappointed with her appointment highlighted an example of this problem (5.4.5). She reported spending two hours talking about breastfeeding, then running out of time to have the baby assessed by the chiropractic team, which was her primary reason for attending the Clinic. The specific reason for the baby not being assessed by the chiropractic team is not known.

6.3.2.3 Supporting mothers who want to breastfeed

Student and registered midwives compared mothers who attended the Clinic with mothers they cared for in placement and practice settings. Midwives described their certainty that mothers at the Clinic wanted breastfeeding support, giving the midwives motivation and conviction when supporting mothers in the Clinic (5.2.3.2, 5.3.4.4). This was contrasted against mothers in other settings, who they felt may have been 'going along' with breastfeeding to appease the midwife, as highlighted in this quote:

> "At the clinic I feel like that weight is taken off your shoulders because it's a breastfeeding clinic, she's come with a breastfeeding problem, the information she wants from you is **breastfeeding (…)** whereas in the hospital you've got to tread quite carefully, even if the woman is saying she wants to breastfeed, it might not actually be her intention, it might just be what (…) she thinks you want to hear" (Student midwife)

As demonstrated by mothers' feeding goals (5.4.3.2), wanting to breastfeed and wanting support with breastfeeding was indeed shown to be the case, as 100% of mothers were seeking support with breastfeeding at the Clinic, 100% intended to breastfeed their baby and 81% had a goal of exclusive breastfeeding.

6.3.2.4 Care in the Clinic: time, listening, providing information

The Clinic culture and approach (5.3.2) were described by the midwives and chiropractors as mother-centred, having positive attitudes towards breastfeeding and breastfeeding support, and giving mothers time. Although the mothers' reports of their experiences of the Clinic were brief, (5.4.5), they broadly aligned with this theme and the components highlighted within it.

Mother-centredness was demonstrated:

> "Felt really valued and that getting me comfortable with feeding my baby was an absolute priority"

Positive attitudes towards breastfeeding and support for breastfeeding were highlighted:

> "Far exceeded my expectations with lots of help, both the midwives and chiropractors were approachable, professional, and kind"

Time in the Clinic was mentioned by several mothers in their feedback:

> "Nothing felt rushed, and they had time to help you and ensure you left with something to work on"

6.3.2.5 Seeing it 'work'

Seeing it 'work' was a subtheme in findings from both students and practitioners and related to seeing rapid resolutions to breastfeeding difficulties immediately after providing support and treatment in the Clinic. This theme related to the sustained rates of breastfeeding seen at six and twelve weeks, as discussed previously (6.3.3.2), and to the mothers' written feedback, where several mothers reported improvement or resolution of their feeding difficulties following their appointment.

> "Before treatment, baby was only feeding on one side, a little after treatment she began to feed equally on both sides"

6.3.3 Divergence

The primary areas of divergence were seen within the qualitative findings, where student chiropractors and student midwives reported different experiences. Although midwives and chiropractors did not state contradicting views or experiences, differences were seen in the absence of discussion in some areas by one profession, compared to significant emphasis on a topic by the other profession. This included student and registered chiropractors' emphasis on the lack of role clarity and the impact this had on sharing care, and on chiropractors' emphasis on missing, and facilitating, opportunities to further interprofessional relationships with midwives. As student and registered midwives did not raise this as an issue, and chiropractors spent significant time in the focus groups and interviews discussing this and the impact it had on other aspects of their Clinic experience, there appeared to be different value placed on interprofessional relationship building between the professions. Student chiropractors also raised the different professions focussing

more on the mother (midwives) or baby (chiropractors) and working towards a more dyad-focused approach (5.2.2). Again, this theme was not discussed by student or registered midwives.

It may be that this is due to fewer student midwives participating and be a limitation of the data. However, the students' wider experiences of team and collaborative working may have influenced their apparently different emphasis on professional relationships. Student midwives are accustomed to working alongside mentors and within a team during placements, particularly in the hospital setting. This was in contrast to student chiropractors, who almost exclusively work on a one-to-one basis with patients, with limited opportunities to form relationships or collaborate with chiropractic or interprofessional colleagues. This suggestion is somewhat supported by the value student chiropractors placed on the 'community feel' of the Clinic, where they engaged with peers for learning and support (5.2.5.4), something that they reported as unique in the Clinic setting.

6.3.4 Summary of findings

Congruent findings suggest this Clinic has beneficial roles in student learning about breastfeeding support and collaborative practice, which is applicable to post-registration practice, despite the contrasting settings. The Clinic also appears to be beneficial for preserving breastfeeding with mothers and babies who have experienced breastfeeding difficulties and is a positive environment to receive breastfeeding support. Students, early-career practitioners, and mothers' experiences of the Clinic broadly aligned, strengthening confidence in the findings.

The following chapter presents these findings in the context of the wider literature.

7 Discussion

In this chapter, the findings are discussed in the context of the wider literature (7.1), and then related back to the initial aims of the Clinic (7.2). The researcher's role and reflexivity are discussed in 7.3. The chapter concludes with the limitations and strengths of the study (7.4 and 7.5).

7.1 Discussion of the findings in the context of the literature

7.1.1 Interprofessional education and student-led clinics

7.1.1.1 Education standards

Nursing and Midwifery Council requirements

The Clinic fulfils the NMC education standards surrounding interprofessional education and practice. The Clinic culture and approach (5.3.2) demonstrated a culture of interprofessional learning, called for in the Standards for Pre-Registration Midwifery Programmes (Nursing and Midwifery Council 2019a). As described in findings about learning in the Clinic (5.2.5, 5.3.4) and interprofessional working (5.2.4, 5.3.3), the Clinic provided students with learning opportunities to achieve proficiency in interprofessional working, which empowered students to become capable of interprofessional teamwork, as required in the Standards for Pre-Registration Midwifery Programmes (Nursing and Midwifery Council 2019a).

The Clinic also provides a strategy to address the challenge of student placements. Marsh et al. (2015), highlighted student-led clinics as a potential solution to meet student placement requirements for registration. The addition of an interprofessional element to student-led clinics appears to be beneficial for the development of interprofessional and collaborative practice competencies (7.1.1.2) and could be considered in the development of such services.

General Chiropractic Council recommendations

The GCC makes recommendations, rather than requirements, for programmes regarding interprofessional provision (General Chiropractic Council 2017), which were met for student chiropractors participating in the Clinic (5.2.4, 5.3.3). In the provision of this practice-based learning environment, the Clinic arguably surpassed

the GCC requirements of an ‘interdisciplinary approach’ to education to give students an understanding of the wider healthcare sector.

7.1.1.2 Interprofessional Education Collaborative competencies (2016)

Caratelli et al. (2020), Sevin et al. (2016), and Timm and Schnepper (2021) demonstrated significant improvement in Interprofessional Education Collaborative (2016) competencies after participation in interprofessional student-led clinics. The student-led clinic described by Caratelli et al. (2020) included lecture-based learning and student reflection sessions alongside service provision; Sevin et al. (2016) described a Clinic which used student reflection workshops; and one clinic used pre-briefs and de-briefs before and after the clinic shift (Timm and Schnepper 2021). From these studies, the extent of competency development which could be attributed to the didactic teaching, reflective workshops, and briefings, compared to competency development in the practise setting, was not clear.

Findings from the focus groups and interviews (5.2-5.3) were compared with the Interprofessional Education Collaborative competencies (2016), where some areas are more clearly and fully addressed than others. The competencies are:

1. “Work with individuals of other professions to maintain a climate of mutual respect and shared values”
2. “Use the knowledge of one’s own role and those of other professions to appropriately assess and address the heath care needs of patients and to promote and advance the health of populations”
3. “Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease”
4. “Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centred care and population health programmes and policies that are safe, timely, efficient, effective, and equitable” (Interprofessional Education Collaborative 2016, p.10)

In the Clinic, competency one was demonstrated in the development of skills in interprofessional working and communication (5.2.4.2). The ‘common goal’ of supporting mothers and babies to breastfeeding brought students together (5.2.5.4). Mutual respect was demonstrated in each professions’ recognition of and respect for the other profession, for example in their discussions of skilled communication and clinical skills including history taking and explanations of the causes of breastfeeding difficulties (5.3.3.6). However, it was challenged somewhat by the chiropractors’ perception that they were not always seen as an equal part of the team (5.3.3.3), which related to role recognition and is explored further with competency two, below.

Competency two was also developed to an extent within the Clinic, evidenced by students and early-career practitioners discussion of their roles, again this competency was mostly discussed by student and registered chiropractors. Student chiropractors talked about gaining understanding for when they should and should not be involved in a baby’s care, and when to apply specific treatment approaches (5.2.5.2). Registered chiropractors suggested reasons for student midwives lack of understanding of the role chiropractors had in the Clinic (5.3.3.3), and proposed solutions to this challenge (5.3.3.4). Midwives reported identifying cases in practice where the knowledge and skills of a different profession may have been beneficial (5.3.5.5).

The third competency was broadly addressed, and midwives and chiropractors both described their development related to this competency. Midwives emphasised the importance of their communication skills with mothers, which included ‘enhanced listening’ and ‘letting them get it off their chest’ (5.3.4.1). A facilitative style was adopted, focused on collaboration with the mother in identifying and resolving her breastfeeding difficulties (5.3.4.1). Chiropractors recognised the importance and value of the midwives’ communication style and adopted elements of this style in their practice in the teaching clinic and in post-registration practice (5.2.4.4, 5.3.3.6). Student chiropractors described an interprofessional ‘third language’ which they used to discuss cases and chiropractic more broadly with student midwives, and felt confident in using outside of the Clinic and in future post-registration practice (5.2.4.2).

The fourth competency was an area broadly identified for improvement by the student and registered chiropractors. Relationship building as a facilitator to improved learning and care was highlighted by students (5.2.4.3), who proposed an interprofessional team meeting at the start of the Clinic day and working with the same student midwife for a shift or series of shifts to enable a relationship to develop. Registered chiropractors also expressed a desire for more developed relationships with the midwives and proposed informal conversations and case discussions as a means of facilitating this (5.3.3.4).

7.1.1.3 Understanding of professional roles

One barrier identified to interprofessional learning and practice in the Clinic was clarity on professional roles (5.2.4.1, 5.3.3.3). This was one of the most widely discussed topics in the literature on interprofessional student-led clinics, and was evidently not a unique challenge faced, or benefit realised. The student value on identifying their own role in the clinic was shown by Lee et al. (2018), where the likelihood of students to recommend participation in an interprofessional student-led clinic was significantly associated with clarity about their own role. In other interprofessional student-led clinics, professional role discovery and identification was cited as a major element of student learning attributed to participation in an interprofessional student-led clinic (Gustafsson et al. 2016; Housley et al. 2018).

Practitioners learnt about the roles and expertise of the other profession in the Clinic. Midwives reported considering the expertise of other professions when supporting breastfeeding, especially when they were not able to identify a problem or a solution to the problem presented (5.3.5.5). This correlates with findings related to students developing knowledge of other professions when working together in an interprofessional student-led clinic (Dubouloz et al. 2009; O'Brien et al. 2013; Kent et al. 2014), as well as application of this knowledge in post-registration practice.

7.1.1.4 Learning and practising in interprofessional student-led clinics

Student and registered chiropractors highlighted opportunities and strategies to further interprofessional learning and practice in and around the Clinic (5.2.4.3, 5.3.3.4), some of which have been evidenced in the literature around interprofessional student-led Clinics and appear to be useful. Students and registered chiropractors

suggested an interprofessional team meeting or ‘huddle’ at the start of the Clinic day, where students could introduce themselves and roles could be summarised. Lie et al. (2016) described a ‘learning continuum’ in the clinic which started at the ‘team huddle’ and continued through the provision of care and student interactions. This may be a useful addition to the Clinic to address perceived barriers associated with lack of identification of the chiropractors’ role and be an initiation point for interprofessional relationships.

7.1.1.5 Interprofessional student-led clinics as a gateway to collaborative practice

Student and registered midwives and chiropractors gained confidence in their abilities to collaborate interprofessionally (5.2.3.3, 5.3.3.5), and chiropractors in particular described applying interprofessional communication skills or a ‘third language’ (5.2.4.2) in post-registration practice (5.3.5.5). This broadly reflects findings from other interprofessional student-led clinics, where students learnt to collaborate and communicate within the team (Hu et al. 2018), developed enhanced interprofessional communication skills (Kent et al. 2014), and were reported to feel comfortable working in interprofessional teams (Ng et al. 2020).

7.1.2 Interprofessional education and breastfeeding support

The literature about interprofessional education and breastfeeding support (3.4) consisted of recommendations for pre- and post-registration education about breastfeeding support, some original research regarding the impact of post-registration training on breastfeeding support in practice and barriers to collaborative practice in infant feeding. No original research featured pre-registration interprofessional education for breastfeeding support, and as such, the findings presented in this thesis are a novel contribution in this area.

Renfrew et al. (2006) and Dykes (2006) called for an integrated and interdisciplinary collaborative approach to post-registration breastfeeding education, which is provided by the Clinic to pre-registration students. These authors advocated for practice-based learning, with observations with, and mentorship from, skilled practitioners. The Clinic meets this recommendation; students describe the autonomy they experienced as a unique feature of their placement in the Clinic (5.2.5.3, 5.3.5.2) which reinforced their knowledge, skills, and confidence in breastfeeding support, and the support they

received from the overseeing clinicians (5.2.5.3, 5.3.5.4). Whilst the mothers and babies who access the Clinic are broadly from less disadvantaged backgrounds, learning to support disadvantaged and diverse mothers and families was a skill need identified by Renfrew et al. (2006), which may not be occurring in the Clinic due to the patient population. As this Clinic is free to access and located within one of the poorest areas in the region, attempts to broaden access to the Clinic may benefit mothers and babies by providing free and comprehensive breastfeeding support, and may benefit students by providing an opportunity to develop skills to support a wider demographic of mothers and babies. This integrated and interdisciplinary approach was posited as a means of providing coherent and cohesive care (Renfrew et al. 2006), which midwives described as an important feature of the Clinic (5.3.2.1).

Registered midwives and chiropractors each described the application of their learning from the Clinic (5.3.5.5), described as a unique setting and the 'gold standard' for breastfeeding support (5.3.2.2), into post-registration practice settings, which were contrasting in many ways to the Clinic (5.3.4.4). Application of learning about breastfeeding support and collaborative practice was described by participants who attended an interprofessional training workshop (Olander et al. 2018), suggesting that a range of approaches to education in interprofessional and collaborative breastfeeding support may be beneficial. The lack of 'shared space' in the Clinic was identified by registered chiropractors as a barrier to interprofessional communication and relationships in the Clinic (5.3.3.1). This practical, physical barrier to communication was also noted in a post-registration hospital setting (Wieczorek et al. 2016), suggesting that a common area for students and practitioners, outside of patient care, may be a readily-implemented strategy to improve interprofessional communication.

7.1.3 Student-led clinics and breastfeeding support

There were no other student-led breastfeeding support services or clinics identified in the literature review, or in additional extensive searches. A student-midwife led post-natal clinic, also affiliated with BU, provides drop-in breastfeeding support (Marsh 2013), a PhD study is also being undertaken in this clinic. Once available, findings from the Clinic and the student-midwife led postnatal clinic should be considered side-by-side. This setting may provide opportunities for future research, such as

comparison of feeding outcomes following student midwife-led care and interprofessional student-led care.

The practice-based learning for supporting breastfeeding, as recommended by Renfrew et al. (2006) and (Dykes 2006), was an important aspect of the Clinic. The findings demonstrate that students developed knowledge and skills to support breastfeeding, including a communication style which focused on listening to mothers and facilitating collaboration with mothers to resolve their breastfeeding problems (5.3.4.1). This finding addresses a need highlighted in the BFI Theory of Change document (2019b), which highlighted the importance of a skilled and supportive workforce, including the ability of practitioners to communicate with mothers in a clear, helpful, and mother-centred way.

NMC Standards of Proficiency

Following participation in the Clinic, student and early-career midwives described skills which met proficiencies set out by the NMC for supporting infant feeding (Nursing and Midwifery Council 2019b). These included working in partnership with women and families (5.3.4.1) and collaborating with an interdisciplinary team to plan and implement care when feeding problems arise (5.3.3.5).

7.1.4 Mother-baby characteristics and feeding outcomes

7.1.4.1 Mother-baby characteristics

As outlined in 6.3.1, the mothers attending the Clinic were fairly homogeneous in terms of sociodemographic factors, most of which are associated with a higher initiation and continuation of breastfeeding. In large studies, McAndrew et al. (2012) and Oakley et al. (2013) demonstrated the impact of sociodemographic factors on breastfeeding initiation and continuation. McAndrew et al. (2012) and Oakley et al. (2013) present these factors as social determinants of health; Rollins et al. (2016) also refer to these determinants as personal attributes, affecting breastfeeding on the individual level. Although the data presented by McAndrew et al. (2012) is arguably no longer contemporaneous, large population-based data around determinants of breastfeeding are no longer collected in the UK, and this is the most recent and extensive data available.

Oakley et al. (2013) and McAndrew et al. (2012) reported maternal age as a determinant of breastfeeding, mothers aged under 20 had the lowest rates of breastfeeding, mothers aged 35 or older had the highest rates. In the Clinic, the youngest age group (25-29 years) was the smallest of the three age groups represented (28%), and the oldest group (≥35 years) was the largest group (41%) (5.4.2). This may reflect that more mothers in the older age groups were breastfeeding and hence seeking support, or that these mothers were more active in seeking support.

Mothers who are white British are less likely to breastfeed than mothers from any other ethnic background (McAndrew et al. 2012; Oakley et al. 2013). Almost all mothers in this study identified as white British (96%). This is an overrepresentation compared to the population within the Local Authority of Bournemouth, Christchurch, and Poole, where 88% of people are white British (BCP Insight 2020). In previous research in the Clinic, mothers' ethnicity has been more reflective of the local area with 85% of mothers reported to be White British (Miller et al. 2016b). It is not clear why this reduction in the diversity of mothers accessing the Clinic has occurred. Unfortunately, data on the demographics of patients accessing the AECC UC teaching clinic are not available, this would make for interesting comparison. Undertaking adult education is also associated with higher incidence of breastfeeding in the UK (McAndrew et al. 2012). Seventy-eight per cent of mothers attending the Clinic had undertaken education beyond the age of 18, only 4% had stopped education at or before 16 years of age. Again, it is not clear why this discrepancy was so marked, and the lack of available data to provide context to this limits the interpretation of this finding.

As highlighted in 2.4.2.1, areas with the highest levels of deprivation have the lowest rates breastfeeding (McAndrew et al. 2012; Oakley et al. 2013). The Clinic is located close to an area of high deprivation, and hence could serve an important local need. As deprivation was not measured in the data collected for this thesis, this could be a valuable addition in future research in the Clinic.

Advice and practices in health systems and services can undermine mothers' confidence and breastfeeding self-efficacy (Brown et al. 2014), which is an individual factor in breastfeeding. Following an appointment in the Clinic, all measured items pertaining to breastfeeding self-efficacy improved significantly at both six and twelve weeks (5.5.2). Measures of breastfeeding self-efficacy had not been used in the Clinic setting before and should be further explored to gain understanding of the role the Clinic has, if any, on improving self-efficacy. Inadequate support in the early weeks is a common reason women give for stopping breastfeeding (Rollins et al. 2016). Interestingly, this concept of support arose in the pilot study of the questionnaire (4.9.4.2) and 'I would like more support with feeding' was added as a response to the question about mothers' concerns about feeding and was given as a response by 48% of mothers (5.4.3.1).

Infant attributes known to influence feeding practices are crying, fussiness, inability to settle, and perceived hunger, which can be assumed to be insufficient milk supply by mothers, and lead to the introduction of breastmilk substitutes (Howard et al. 2006b; Wasser et al. 2011). The UK Infant Questionnaire (Miller et al. 2016a) is routinely used in the AECC teaching clinic but had not been used in research in the Clinic before. This questionnaire was developed for use in chiropractic settings, however items included in the questionnaire align well with infant attributes which influence feeding practices. Items regarding the baby's feeding, crying, consolability, and sleep all improved significantly from baseline to six and twelve weeks. It is important to note that 58% of babies returned to the AECC UC teaching Clinic for chiropractic treatment following their appointment in the Clinic, with an average of three treatments completed by six weeks of age (5.4.4.2).

Miller et al. (2019) reported outcomes using the UK Infant Questionnaire following student-led treatment of babies in the AECC UC teaching clinic, with improvements of 68% for feeding problem scores, 60% for crying, 57% for sleep, 62% for being comfortable sleeping supine, and 55% for head and neck postural preference. This followed an average of four treatments over the course of six weeks. Given that the babies in the Clinic were under four weeks at intake, were likely to have received their initial treatment during the Clinic appointment, and went on to have an average of three treatments before six weeks of age, the number and frequency of chiropractic treatments in this study and Miller et al. (2019) was approximately equivalent. The

largest changes in infant attribute scores in this study at six and twelve weeks were related to feeding and head and neck postural preference. The UK Infant Questionnaire has not been used to compare outcomes between the Clinic and the AECC teaching clinic before, this may be an insightful area for future study.

7.1.4.2 Mother-baby feeding outcomes

Given the demographic profile, which presented an optimistic profile for continuation of breastfeeding, and the personal attributes, which presented a pessimistic profile for risk of cessation, the feeding outcomes of this subgroup of mothers were difficult to predict.

The study of feeding outcomes was designed to allow comparison between the data collected in the Clinic and local data collected and published by Public Health England on breastfeeding rates at six to eight weeks of age. This included using descriptors of feeding practices which were comparable with Public Health England measures, and the timing of the first questionnaire, sent when the baby was six weeks old (4.9.3.2). The use of Public Health England data for comparison was to account for the loss of a comparison group recruited to the study (4.9.2). However, since 2019, breastfeeding data collected for the local area (Bournemouth, Christchurch, and Poole) has not met data validation requirements, and hence has not been published in full. Therefore, this comparison data was also lost. This is a limitation of the study and is discussed further in section 7.3.2.

The most recent available Public Health England data which reached validation was from 2018: in Bournemouth, 61.5% of babies were breastfed to some extent, 45.3% were exclusively breastfed at six weeks of age. In this study, at six weeks, 100% of babies were breastfed to some extent, and 68% were exclusively breastfed. Limited conclusions can be drawn from this comparison, however, mothers and babies who attended the Clinic had notably higher rates of any and exclusive breastfeeding than in the local area. In future research investigating the Clinic, recruitment of a comparison group should be prioritised. The student midwife-led postnatal clinic affiliated with Bournemouth University may be a practicable and useful source of comparison data in future research, which would allow for exploration of student-midwife-only vs. interprofessional student-led care. The AECC UC teaching clinic

may also be a source of comparable data, which would allow for exploration of chiropractic only vs. interprofessional student-led care.

In research investigating breastfeeding support and interventions, breastfeeding rates are only seen to decline. This may partly reflect the measures and definitions used in the research, which as shown in section 5.4.4.4, can give notably different findings depending on the definitions applied. In large studies which do not account for specific support or interventions, such as the National Infant Feeding Survey, a precipitous decline is seen between birth and one week of age, with continued decline from one to six weeks, at which point the decline is less precipitous (McAndrew et al. 2012). These two age brackets (birth to one week, one week to six weeks) may reflect a critical 'window' to protect and support breastfeeding. An unexpected finding from the study of feeding outcomes was the 'recovery' of total breastfeeding at twelve weeks, after combination feeding at six weeks. This was reported by four of the 28 mothers who completed the twelve-week questionnaire.

The loss to follow-up and the smaller than anticipated sample size, with implications for data analysis, limited the conclusions which can be drawn about feeding outcomes after attending the Clinic. Along with the design of the study, these factors mean that causation has not been determined, only associations. This is discussed further as a limitation (7.3.2). Means of improving completion of follow-up data, such as SMS messaging, should be considered in future research in the Clinic, and in breastfeeding outcomes research more generally. SMS messaging has been used very successfully for completing parent-reported outcomes of children in Denmark (Franz et al. 2014), despite the intensity and duration of the study. Other means of improving follow-up data may include consideration of the time of day that questionnaires are sent. As seen in this study, mothers of younger babies tended to reply between 9am and 12pm, and 6pm and 9pm, irrespective of the time the questionnaire was sent (5.4.4.2).

As reported at six weeks, 58% of babies underwent further chiropractic care in the AECC teaching clinic after their consultation in the Clinic (5.4.4.2). On average, three further treatments were undertaken, mirroring findings from Miller et al. (2019) in a chiropractic-only setting. Although the chiropractic teaching clinic may not be an

obvious source of breastfeeding support, continued care in this setting does meet some of the descriptors of support suggested to be protective of exclusive breastfeeding: delivered face-to-face and a schedule of four to eight contacts (McFadden et al. 2017). Particularly when continuing care for problems deemed to be affecting breastfeeding, mothers may perceive the treatment in the Clinic as a form of breastfeeding support.

7.1.5 Previous literature in the Clinic

This section returns to the existing literature about the Clinic (3.5) to highlight where the findings aligned, diverged, and built upon previous understanding of this setting.

7.1.5.1 Student experiences of the Clinic

The findings from focus groups with students and interviews with early-career practitioners show similarities with the findings summarised by Heritage and Miller (2017) in their analysis of student chiropractors' experiences of the Clinic. Common concepts included gaining knowledge and skills from midwives which were relevant and applicable to their own practice (5.2.5.1, 5.3.5.1), including history taking (5.3.3.6), appreciation of the emotional strain mothers experience associated with breastfeeding difficulties and better understanding of the needs of this population (5.2.2.3). This suggests that common experiences are shared by student chiropractors, and that core elements of these experiences have been similar over time, strengthening the findings of this study.

7.1.5.2 Mother-baby demographic data

The demographic profile of mothers and babies presented information about birth type, breastfeeding difficulties, and infant problems postulated to be related to musculoskeletal issues (Miller et al. 2017). This data was also collected in this study and has been compared.

The mode age of babies presented to the Clinic in 2015-16 was three weeks, this was also the case in the study of mother-baby characteristics (5.4.2). A small difference was noted in the use of forceps (21% in 2015-16 to 10% in 2019-20). Rates of Caesarean section (26% in 2015-16 to 30% in 2019-20), induction (28% in 2015-16

to 30% in 2019-20) and use of ventouse (8% in 2015-16 to 10% in 2019-20) remained similar. In terms of the mother's report of specific feeding difficulties, similarities were also shown. Difficulty with attachment was reported by 54% of mothers in 2015-16 and 52% in 2019-20, painful feeding by 44% in 2015-16 and 48% in 2019-20, and one-sided feeding preference (of the baby) was reported by 35% in 2015-16 and 30% in 2019-20. Forty-three per cent of babies had problems with supine sleep and 45% with postural preference in 2015-16. In the study completed for this thesis, these problems were measured using the UK Infant questionnaire, and mothers' perceptions of these problems were shown to significantly decrease at follow-up. These similarities in the demographic data suggest that there has been a degree of consistency in the population of mothers and babies accessing the Clinic, and their motivations for attending the Clinic i.e., the specific feeding problems they are experiencing.

One difference which was noted between earlier research and the findings in this study is the mothers' ethnicity, which has become less diverse. This was discussed in 7.1.4.1.

7.1.5.3 Mothers' experiences of care in the Clinic

Previous exploration of mothers' experiences of care in the Clinic highlighted the value they placed on contextualised reassurance and advice which was specific to them and their baby, and time to address their concerns and questions (Miller et al. 2015). Although mothers' experiences of care were not a focus of the research undertaken in this thesis, some data are available for comparison in the written feedback provided (5.4.5). Feedback about the Clinic in both studies was broadly positive, and included aspects of time and not feeling rushed, the staff and students being friendly, helpful, and supportive, and having their specific problems and questions addressed. This feedback also aligned with findings from the students and early-career practitioners who participated in the Clinic, who noted the Clinic culture and approach included time for mothers and babies (5.3.2.2), student and staff having positive attitudes towards breastfeeding support (5.2.3.3, 5.3.2.1), and taking a patient-centred approach (5.3.2.1).

7.1.5.4 Mother-baby feeding outcomes

The mother-baby feeding outcomes after attending the Clinic were previously collected as part of a service evaluation. This evaluation utilised postal follow-up, with a return rate of 85%, a notably higher return than achieved in the follow-up study for this thesis (59% at six weeks, 52% at twelve weeks). In the service evaluation, an exclusive breastfeeding rate of 26% was reported at presentation to the Clinic, increasing to 86% at follow-up six to twelve weeks later (Miller et al. 2016b). These exclusive breastfeeding rates are markedly different to the data collected for this thesis, with 77% of babies totally breastfed at presentation, and 68% at both six- and twelve- week follow up. Reasons for this discrepancy are not clear, particularly given the otherwise consistent demographic mothers who presented to the Clinic over these timeframes. When considered alongside the limitations of both studies (3.5.5, 7.3.2), including the lack of comparison data, these discrepant findings require further study.

7.2 Aims of the Clinic

As discussed at the beginning of this thesis (1.1), two key aims of the Clinic were the provision of a practice-based learning environment, centred around supporting breastfeeding in an interprofessional context, and a provision of a clinical service. These aims are revisited here, in the context of the findings.

7.2.1. The Clinic as a practice-based learning environment for students

During their time in the Clinic, student midwives gained knowledge and skills to support breastfeeding, and gained confidence in their abilities to support breastfeeding autonomously and in contrasting settings, including post-registration practice. Student chiropractors gained confidence, knowledge, and skills to provide some breastfeeding information and support, and to assess and treat musculoskeletal complaints in infants. The Clinic approach and culture (5.3.2) were important aspects of the learning environment, particularly with regards to ‘how to’ support breastfeeding and were seen as the ‘gold standard’ for breastfeeding support (5.3.4.3). The balance between autonomy and support were valuable to both groups of students (5.2.5.3, 5.3.5.2) and were unique to the Clinic as a student placement, contributing to their learning to support breastfeeding. The specific style of supervision provided by the registered midwife and registered chiropractor was vital in the students’ ‘supported autonomy’ in the Clinic, this contrasted with the students’ description of their supervision in other placement settings.

Alongside learning to support breastfeeding, students also gained knowledge, skills, and confidence in interprofessional, collaborative practice. Of particular note was the value students placed on the knowledge and skills of the students from the other profession when solving and resolving the breastfeeding difficulties (5.2.2, 5.3.3.6), and the students' development of interprofessional communication skills (5.2.4.2).

7.2.2 The Clinic as a breastfeeding support service for mothers and babies

The Clinic provided support to mothers who wanted to breastfeed, with a large proportion who wanted to exclusively breastfeed (5.4.3.2), therefore the Clinic did reach people who were seeking breastfeeding support. However, there was a lack of diversity in those accessing the Clinic, and mothers who were in sociodemographic groups that are less likely to continue breastfeeding did not access the Clinic. Within the limitations of the findings (7.4.2), there was evidence of feeding improving over the time frame of the study, with continuation of breastfeeding at higher-than-expected rates at six- and twelve-week follow-up (5.4.4). Most mothers met their personal goals for feeding their baby (5.4.4.5), suggesting that the care provided was individualised, as intended (2.9.3). Maternal self-efficacy around breastfeeding improved (5.5.2), suggesting that mothers' wider experiences of breastfeeding also improved, which has been shown in the literature to be associated with continuation of breastfeeding (Tuthill et al. 2016). Feedback from mothers on their experience of receiving care in the Clinic was broadly positive and reflected several of the intentional approaches taken in the Clinic (2.9.3), such as authentic presence and facilitative style (Schmied et al. 2011).

In summary, the Clinic met its own aims, as demonstrated by the findings from the research undertaken for this thesis. Students benefitted from learning and practicing in the Clinic, developing the ability to support breastfeeding and work interprofessionally; mothers and babies benefitted from the Clinic as a positive source of breastfeeding support, which appeared to support continuation of breastfeeding.

7.3 The role of the researcher

7.3.1 Insider/outsider

The anticipated challenges associated with my varied insider/outsider position with each of the four subgroups in the qualitative studies (student midwives, registered midwives, student chiropractors, registered chiropractors) were evident to varying degrees throughout the data collection process, and most notably with the recruitment of student midwives, which is discussed in the limitations of the study (7.3.1).

I felt the strongest 'insider' role with the registered chiropractors, whom I knew and, in some cases, had worked alongside in the Clinic. There was an ease throughout the recruitment and data collection process with them that was notably different to the process with student midwives. This was likely due to our shared professional identities and roles (Asselin 2003), in addition to the shared experience of working in the Clinic as students. However, my insider role did present a challenge when chiropractors assumed shared knowledge and were not explicit in their initial explanations, for which I needed to ask for clarification (Dwyer and Buckle 2009). With student chiropractors and registered midwives, a more equal insider/outsider position was experienced. I had worked alongside some of the midwives, and I was known to some of the student chiropractors. With student midwives, I had the least connection and was the most 'outsider'. This related to not sharing professional roles and having not met the student midwives before. It was assumed that this was at least part of the reason for the recruitment challenges with student midwives. When facilitating focus groups with student midwives, it took longer to 'warm up' than with the other three subgroups, and most students started sharing more openly and fully later in the discussion. I utilised more 'warm-up' questions (Flick 2014) with student midwives and initially used more prompting within topics to encourage further discussion within the group.

7.3.2 Reflexivity

Reflexivity was implemented throughout the qualitative studies, from the design stages to data analysis and reporting (Arthur et al. 2014). Key points at which reflexive changes were made in the qualitative studies included:

- Adapting the recruitment approach with student midwives after several attempts were made with no students volunteering to participate, employing

assistance from student midwives and a midwifery lecturer to share information about the focus groups, which led to two successfully recruited focus groups

- Minor changes were made to the wording of the questions in focus groups and interviews after listening back to audio recordings, primarily aimed at clarifying the question and topic intended for discussion
- During analysis, I was cognisant of my prior experiences in the Clinic as a student, particularly where students discussed experiences that were similar and different to my own. For example, I noted where student and practitioner experiences were similar and different from my own during the initial coding, and cross-checked for a range of in stage four of the thematic analysis, 'reviewing themes', ensuring that I hadn't overrepresented experiences which I recognised from my time as a student in the Clinic. Where possible, I ensured that a range of quotes from both student chiropractors, with whom my experiences were broadly similar, and student midwives, were used to support the presentation of the findings.
- Following analysis, I reviewed the themes, which were deemed to be simplistic and neglected some of the depth and nuance available in the data. The process of returning to the analysis was discussed in 4.7.6.

Throughout the process, discussions with supervisors were utilised to aid insight and reflexivity, and gain other perspectives, including perspectives of different backgrounds (midwifery and sociology) and areas of expertise (methodological, breastfeeding, and interprofessional education). Over the course of this PhD, I found myself identifying more as a practitioner-researcher, and less as a chiropractor who does research. This related to increasingly identifying with other practitioner-researchers in conversations and reading about their experiences. I found less in common with chiropractors, most of whom work in practice, away from academia and research.

Accumulating topic-specific knowledge through the research process, including reviewing the literature, influenced my role as the researcher (Dwyer and Buckle 2009). The naming of themes and subthemes included some terminology used in the literature; however, data were analysed inductively and were not intentionally or

deductively linked to existing concepts. An example of this is ‘into the unknown: professional expertise and roles’ (5.3.3.3), where the use of ‘roles’ was extensively identified in the literature.

7.4 Limitations

Every study has its own strengths and limitations. Some strengths and limitations were inherent to the methods selected, whilst others were more specific to the circumstances of this particular PhD project. Here, the limitations are presented, followed by the strengths. Section 7.4.1 focuses on the limitations related to the qualitative components, 7.4.2 the quantitative component, and 7.4.3 the mixed-methods.

7.4.1 Qualitative components: student experiences and practitioner reflections

As the exploration of the students’ and early-career practitioners’ experiences of the Clinic utilised qualitative methodologies, some of the limitations relate to the inherent limitations of qualitative research approaches. The findings from the interviews and focus groups are not representative of a wider population, and are not necessarily applicable in other settings, and causality was not determined, i.e. whether it was participation in the Clinic that led to the knowledge, skills, and attitudes of students and early-career practitioners described. That said, this was not the intention of the study, and the particularity of the findings from this setting are discussed as a strength of the study (7.5.2).

Recruitment issues are often a limiting factor in a time-limited PhD study, and in mixed-methods research. Student midwives were not recruited as successfully as student chiropractors to the focus groups, meaning that student midwife views and experiences may not have been fully represented. Despite this, data saturation was achieved (5.1.2). Further assistance of ‘insiders’ within the midwifery programme may have been helpful in recruitment and should be considered in future research across professions. Having AT as both my supervisor and the infant feeding lead for student midwives was a somewhat limiting factor with regards to recruitment, as caution was required when utilising her influence on students’ participation, for ethical reasons (4.12.4).

An ethnographic component in the qualitative study, for example combining detailed interviews and observations with students and staff providing care in the Clinic, could have been a valuable approach to generate greater depth of insight into the views and actions of those providing care. However, given the time and resource limitations of a PhD study, particularly the lengthy collection and analysis of data typical of ethnography (Reeves et al. 2008), this was not deemed to be feasible alongside the identified research priorities (3.7). The additional time required to learn about and develop skills in ethnography in order to implement this approach meaningfully was a further barrier to its use within the constraints of this mixed-methods study. The implications of not including an ethnographic approach include the lack of representation of staff who provide care and supervise students in the Clinic, and the reliance on participant recollection and what participants choose to share with the researcher in the focus groups and interviews, which may have been mitigated by a more observational approach. An ethnographic approach to explore the views and actions of students and practitioners in the Clinic would be a valuable area of future study, providing additional depth to the findings in this thesis.

7.4.2 Quantitative components: mother-baby characteristics and feeding outcomes

A limitation of the study of mother-baby characteristics and feeding outcomes which related to the research design was the lack of opportunity to explore mothers' responses to quantitative-oriented questions. This is an inherent feature of quantitative designs and methods, and again was not the aim of this study. The features of quantitative data are also discussed below as a strength of the study (7.4.3). Due to the research design, causation is not known. Randomised controlled trials for breastfeeding support interventions are ethically challenging, and prospective designs are often preferred. However, this leaves questions about the role the intervention had on the outcomes and requires further study to support or question the findings in relation to the intervention.

The key limitation of the study of characteristics and feeding outcomes was the smaller-than-anticipated sample size. This was related to older babies presenting to the Clinic who did not meet the inclusion criteria, and the closure of the Clinic due to Covid-19. The impact of the smaller sample size included changes to the data analysis plan, as discussed in 6.3.

The loss to follow-up was higher than anticipated and was a further limitation of the study of feeding outcomes. At six and twelve weeks, 59% and 52% follow-up were achieved, respectively. This was notably less than a previous service evaluation in the Clinic which utilised a single postal follow-up (85%) (Miller et al. 2016b). Successful use of SMS follow-up for collecting parent-reported outcomes for children has been reported in Denmark (96%) for collecting weekly outcomes over the course of nine months (Franz et al. 2014), and could be considered in future research in the Clinic. Follow-up completion of data collection using different collection strategies (post, email, SMS) should be compared to optimise future longitudinal research. Although the reasons for non-completion of follow-ups were not known, mothers' reasons for not completing or returning the 6- and 12- week questionnaires have been considered. The main consideration in terms of the findings is whether mothers did not complete the follow-up questionnaires due to stopping breastfeeding and not wanting to report this.

Both planned means of providing comparison data related to feeding outcomes were lost: first, the planned comparison group recruited from the community (4.9.2), and second, data published by Public Health England, which did not meet validation during the study period or the two years prior. A comparison group should be prioritised in future research. However, given the specific demographic of mothers and babies who attend this Clinic, careful consideration is required to achieve meaningful comparison.

All but two mothers who were invited agreed to participate. Therefore, the population sampled in the study of feeding outcomes was highly likely to be representative of the population who chose to attend the Clinic. However, given that there was a specific demographic profile of mothers who attended the Clinic, the study population was not representative of the local or national population of breastfeeding mothers. Previous research identifying characteristics of mothers who sought additional breastfeeding support found that free, group-based support was predominantly accessed by mothers who were older and had a higher income (Hoddinott et al. 2009). Just as older, more educated women are more likely to breastfeed (McAndrew et al. 2012), so are they more likely to seek and access breastfeeding support (Hoddinott et al. 2009). Whilst there is limited research on the demographic factors associated with

seeking additional breastfeeding support, similarities are shown between mothers attending the Clinic and attending other free, additional breastfeeding support services. This may, in part, have contributed to the specific demographic profile of mothers seen in the Clinic, and further investigation of other sociodemographic factors associated with seeking additional breastfeeding support should be undertaken, in this Clinic as well as more broadly in the UK.

The population of mothers who attended the Clinic were predominantly white British. Whilst it was beyond the scope of this thesis to investigate why this particular demographic accessed the Clinic and mothers from other ethnic backgrounds did not, previous research has shown that barriers to accessing maternity care include the mother's ethnic background. Higginbottom et al. (2019) reported that women who were immigrants to the UK often accessed antenatal care later than recommended and had mixed experiences of maternity care. Those who had negative experiences of care cited encountering healthcare professionals who were discriminatory and insensitive to social and cultural needs (Higginbottom et al. 2019). Reasons for later access to antenatal care included lack of awareness of available services and purposes of appointments, limited English language proficiency, immigration status, and financial barriers (Higginbottom et al. 2019). These factors could plausibly have contributed to the lack of ethnic diversity in the Clinic, particularly lack of awareness of the service, given it is outside of the 'mainstream' NHS maternity services. It is also possible that potential services users assume that there is a cost associated with the Clinic, despite it being free, given its association with chiropractic which is not widely available through the NHS.

As there is limited evidence on improving access to maternity services for immigrant women in the UK (Higginbottom et al. 2020), there is not a clear path for the Clinic to follow to widen access to the Clinic, particularly on the basis of ethnic background. It would be important for staff and students to remain cognisant of social and cultural norms and needs when providing care to immigrant women, should the Clinic successfully widen access.

7.4.3 Limitations related to the mixed-methods approach

As anticipated, challenges arose related to common pitfalls of mixed-methods research, namely the time and resources required for data collection and analysis, with knock-on impact on sample size. The sample size in the quantitative study was discussed above (7.4.2). The time taken to recruit, and collect and analyse data, for the qualitative aspect of the study delayed the start of the quantitative study, which then had to be stopped prematurely and the sample size could not be recovered.

7.5 Strengths

A key strength of this PhD project is that it is the first of its kind in the world. The individuality of the Clinic and the PhD study mean that all findings are novel contributions, as they relate specifically to this unique interprofessional student-led breastfeeding clinic. Within the Clinic, this study was the first detailed exploration of student experiences of learning and practice and the first exploration of early-career practitioner reflections on the Clinic and experiences of post-registration practice. The prospective study and mothers and babies included demographic data which had not previously been collected and was the first research-based investigation of feeding outcomes following care in the Clinic.

7.5.1 Stakeholder and participant engagement

The support of the two institutions for participant recruitment and data collection were instrumental and spanned several teams, including support from teaching teams to identify suitable dates for student focus groups, allowing students to take time out of providing clinical services at AECC UC to participate in focus groups, and a dedicated member of administrative staff in the Clinic to assist with recruitment.

The willingness and motivation of students, midwives, chiropractors, and mothers to participate across the three studies was high, and greatly benefited the strength of the data, findings, and conclusions.

7.5.2 Qualitative components: student experiences and practitioner reflections

Data saturation was achieved in the focus groups with students and interviews with midwives and chiropractors. The findings from these studies successfully addressed

research questions one and two (3.7). Student and early-career practitioners were active and engaged participants. They shared a range of experiences including differences between participants' experiences, and positive and negative experiences of the Clinic and practice settings.

The 'particularity' of the findings to this setting are a strength of this study, as they provide insight into the experiences of participants which were specific to the Clinic.

Several validity procedures specific to qualitative research, as described by (Creswell and Creswell 2018) were employed. These strengthen the findings and subsequent conclusions from the qualitative aspects of the research. Data from different sources, i.e. students and early-career practitioners, were triangulated, providing corroboration (6.3). A rich description was used to convey findings and the setting, including the description of the Clinic (2.9) which included photographs, and demonstrating different perspectives within themes (5.2, 5.3). The bias that I brought as the researcher were highlighted (4.4) and revisited, including comments on reflexivity (7.3). Peer debriefing was undertaken with members of the supervisory team during data collection and analysis (4.7.6).

Reliability procedures specific to qualitative research were also employed (Creswell and Creswell 2018). This included checking transcripts for accuracy and cross-checking codes with members of the supervisory team.

7.5.3 Quantitative components: mother-baby characteristics and feeding outcomes

Detailed, standardised collection of mother-baby characteristics and feeding outcomes were obtained and addressed research questions three and four (3.7).

Means of improving validity of the quantitative data were employed, as described by Creswell and Creswell (2018). This included formatting of the questionnaires to include headings and explanations, pilot testing of the questionnaire was undertaken, and feedback integrated, and existing measures with high validity and reliability were

utilised where possible. The Breastfeeding Self-Efficacy Scale (Short Form) and H&H Lactation Scale were selected in part due to their construct validity (4.9.3.4) and the UK Infant Questionnaire selected for high reliability and validity (4.9.3.5). Administration of the questionnaires included reminders to increase the response rate, improving the completeness of the data.

This mixed-methods study provided an overall understanding of the Clinic from students' and mothers' perspectives, which was an overarching aim of the study (3.7.5).

7.5.4 Strengths related to the mixed-methods approach

The following intended benefits of using mixed-methods approaches, as outlined by Johnson and Onwuegbuzie (2004), were realised in this study. Convergence and corroboration of findings between participant groups strengthened assertions from each component study and provided new and more complete insights into the Clinic. As a researcher, I developed new skills in qualitative, quantitative, and mixed-methods approaches, a benefit noted by Creswell and Plano Clark (2017).

The following chapter presents the conclusions for this thesis.

8 Conclusions

8.1 Introduction

The importance of breastfeeding for the health of mothers and babies in all settings has been clearly demonstrated, yet breastfeeding rates in the UK are amongst the poorest in the world. My experiences as a student chiropractor and researcher in the Clinic fuelled my curiosity about the role of the Clinic in supporting mothers to breastfeed, and in practitioners learning to support mothers, particularly given the relative paucity of research undertaken in this setting. The objectives of this thesis were to gain understanding of student experiences of learning and practice in the Clinic, early-career practitioner reflections of the Clinic and experiences of practice, the characteristics of mothers and babies accessing the Clinic, and their feeding outcomes after receiving care (3.7). The findings from this thesis have relevance to and applications within education, policy, practice, and research, with recommendations for these settings made in the subsequent and concluding chapter (9).

Aims of the Clinic

The aims of the Clinic (1.1) related to the provision of a breastfeeding support service for mothers and babies and interprofessional practice-based learning for students. Overall, the findings from this research demonstrated attainment of these two aims, with multiple and varied benefits for students, mothers, and babies. For students, the Clinic provided the opportunity to develop interprofessional working capabilities (5.2.4, 5.3.3), and their knowledge, skills, and confidence to support breastfeeding (5.2.2, 5.2.3, 5.3.4). In terms of service provision, the Clinic provided a positive experience of breastfeeding support for mothers (5.4.5), with multiple positive outcomes, particularly high rates of attainment of individual mothers' feeding goals (5.4.4).

8.2 Findings

Utilising a range of methodologies and methods within a pragmatic mixed-method approach, each research question was addressed in turn. There was an overarching aim to gain an understanding of the Clinic from a range of perspectives, this was obtained in the findings of the component studies and in the integration and triangulation of these findings. Whilst some findings from the component studies

demonstrated some consistency with other settings, other findings provide novel insight, and as the first in-depth investigation of this unique Clinic, all findings offer a degree of new knowledge.

8.2.1 The Clinic as a place of learning

Participation in the Clinic as students was found to be beneficial for the development of midwives' and chiropractors' knowledge and skills to support breastfeeding and work interprofessionally. Learning in the Clinic was facilitated by observing peers and registered practitioners, and by 'doing', providing support and treatment for mother-baby dyads in the Clinic. The support available to students from their peers and registered practitioners facilitated the students' autonomous practice in the Clinic, which in turn contributed to learning. The knowledge and skills developed in the Clinic were applied in post-registration practice, despite contrasting settings.

The opportunity to provide mother-centred and evidence-based breastfeeding support in pre-registration practise may bolster midwives' ability to support breastfeeding in practice, even when the culture and practices are not enabling. Opportunities for students to support breastfeeding in a protected and supportive environment may be a means of further supporting a changing breastfeeding culture in healthcare settings.

The interprofessional nature of the Clinic was deemed to be useful for students' learning and for the care they provided to mothers and babies. Their ability to work collaboratively with other professions was developed in the Clinic, and this included interprofessional communication skills. Challenges faced within the interprofessional setting included lack of role clarity and lack of relationship building between the professions, and chiropractors in particular made suggestions to improve interprofessional relations in the Clinic.

8.2.2 The Clinic as a breastfeeding support service

Fifty-four mothers participated in a prospective study of feeding outcomes: 59% completed the follow-up questionnaire at six weeks and 52% completed the follow-up questionnaire at twelve weeks. Women seeking breastfeeding support in this study

were a fairly homogeneous group, the reason for this homogeneity across age, ethnic background, and education level is not known. This may be related to improved health literacy and the knowledge and skills to access this service.

Mothers reported a range of challenges with breastfeeding, including factors at the individual level known to pose a risk of early cessation of breastfeeding. These included breastfeeding self-efficacy and infant attributes. Breastfeeding self-efficacy is predictive of continuation of breastfeeding, and in this study, it improved significantly from baseline to six and twelve weeks. Infant attributes including crying and fussiness can be perceived as hunger and poor breastmilk supply, and lead to the introduction of breastmilk substitutes. Mothers reported challenges with their baby's feeding, sleeping, crying, consolability, supine positioning, and postural preference, all of which improved significantly from baseline to six weeks and twelve weeks.

Feeding outcomes in this thesis included what the baby was fed, how the baby was fed, and attainment of the mothers' goals. This reflected the centring of the individualised and mother-centred approach taken in the Clinic. At six weeks of age, 100% of babies were breastfed to some extent, 68% were exclusively breastfed, 90% were fed directly at the breast, and 73% of mothers had achieved their goal for feeding their baby. At twelve weeks of age, 86% of babies were breastfed to some extent, 68% were exclusively breastfed, 82% were fed at the breast, and 71% of mothers had achieved their feeding goal.

Mothers' feedback about the Clinic was almost exclusively positive. Key points drawn from this feedback included recurring comments about having plenty of time, and feeling supported, reassured, and informed. Overall, mothers reported their appointment in the Clinic as a positive and helpful experience.

8.2.3 The Clinic

As described above (8.2.1-8.2.2), this Clinic serves multiple functions, and has benefits beyond the immediate practice-based learning and breastfeeding support. These include benefits to the future health workforce in terms of interprofessional and

collaborative practice competencies; knowledge, skills, attitudes, and resilience of future healthcare professionals to provide breastfeeding support which is mother-centred and evidence-based; and lasting improvements in mother and baby attributes known to influence breastfeeding continuation and cessation.

This unique interprofessional student-led Clinic is currently the only one of its kind. The benefits demonstrated in this thesis provide support for the continuation and expansion of this approach to practice-based and interprofessional learning for students, and breastfeeding support provision for mothers and babies.

8.2.4 Contributions to knowledge

As the first study of a student-led clinic providing breastfeeding support, novel contributions were made relating to student learning and breastfeeding outcomes in this setting.

This thesis has contributed to the body of knowledge surrounding interprofessional education and student-led clinics. The literature review did not identify any existing research on interprofessional student-led clinics which included midwives or chiropractors (3.3.1). In this thesis, student midwives and student chiropractors were studied in the context of an interprofessional, student-led clinic. The inclusion of the individual professions of midwifery and chiropractic, and their combination, was therefore a novel area of study. Some of the previously highlighted benefits of interprofessional student-led clinics were demonstrated with these two professions, and within the Clinic, for the first time. These benefits included the development of interprofessional and collaborative practice competencies, as described by the Interprofessional Education Collaborative.

The contributions of this thesis to the evidence about interprofessional and collaborative practice for provision of breastfeeding support are notable, particularly in pre-registration healthcare students, where no existing evidence was identified. In research identified in the literature review, there were examples of multiple professions providing breastfeeding support, but not simultaneously, as was the case in this Clinic. The literature review only identified collaborative breastfeeding support

provided by registered professionals, and not pre-registration health professions students. In the study of simultaneous interprofessional breastfeeding support, provided by pre-registration health care professions students, the study and findings in this thesis (5.2, 5.3) were original.

The findings from this thesis demonstrated that several of the recommendations for post-registration healthcare professionals' education around breastfeeding support were effectively implemented in this Clinic, with pre-registration healthcare students. The findings were broadly positive in terms of student learning and breastfeeding support provided in this setting, which reinforces the education recommendations.

Aspects of the mixed-methods, concurrent research design were unique, both in this setting and in the wider literature. Previous research in the Clinic (3.5) did not seek triangulation or corroboration of findings using mixed methods. The inclusion of common research outcomes for breastfeeding, alongside how the baby was fed, attainment of the mothers' feeding goal as an outcome, and validated measures of breastfeeding self-efficacy and infant attributes, provided a unique set of outcomes which were diverse and mother-centred. The UK Infant Questionnaire, designed primarily for use in a chiropractic setting, had not been used in an interprofessional or breastfeeding context before.

Each of the novel aspects of the research highlighted above stand alone in their contribution to knowledge, and also demonstrate originality in the context of this unique, and previously under-researched, Clinic. Findings from each study, and the integration of these findings, were all innovative and contributed to the knowledge and understanding of the Clinic as a place of learning, practice, and breastfeeding support provision.

Recommendations based on these conclusions are presented in the following chapter.

9 Recommendations

This final chapter makes recommendations for education, policy makers, research, and practice, including in the Clinic. Each recommendation is distilled from the findings and conclusions in this thesis.

9.1 Recommendations for education

9.1.1 Breastfeeding support in midwifery education

Opportunities for student midwives to support breastfeeding mothers in an environment which is protected and supportive for their learning and practice should be considered by all pre-registration midwifery programmes. This practice-based learning approach to breastfeeding support can be considered a means of developing a skilled, supportive workforce, and further promoting a changing breastfeeding culture in healthcare settings.

9.1.2 Student-led clinics in midwifery education

Pre-registration midwifery programmes should use student-led clinics to provide placements for student midwives. Student-led clinics can be autonomous learning environments for students and strengthen local maternity services, for example with postnatal or breastfeeding clinics. Opportunities for interprofessional collaboration within student-led clinics should be sought, identified, and implemented wherever feasible.

9.1.3 Interprofessional education and student-led clinics in chiropractic education

Pre-registration chiropractic programmes should identify opportunities for interprofessional education and interprofessional student-led services to be developed and integrated into the programme. Interprofessional collaboration could be sought within and between institutions. Interprofessional opportunities may be particularly relevant for new courses undergoing accreditation and existing courses undergoing reaccreditation, to demonstrate an interprofessional approach as required by the General Chiropractic Council Education Standards.

9.2 Recommendations for policy makers

9.2.1 General Chiropractic Council: interprofessional education

The General Chiropractic Council should review its 'recommendations' for interprofessional opportunity provision, and instead consider 'requirements' for pre-registration chiropractic programmes. Given the contemporary healthcare landscape, with interprofessional and collaborative working identified within the standards of proficiency by the Health and Care Professions Council (2013), this is a notable discrepancy between chiropractic and other registered health professions. This would bring chiropractic education standards in line with those of other similar professions, including physiotherapy, and in turn could further interprofessional and collaborative opportunities for pre- and post-registration chiropractors.

9.2.2 Clinical Commissioning Groups

In line with existing evidence, which demonstrates that all additional breastfeeding support improves continuation of breastfeeding, Clinical Commissioning Groups should seek opportunities to further their provision of breastfeeding support. These community services should consider local needs and innovative approaches. Student-led clinics may be a practicable and cost-effective means of providing breastfeeding support in communities, with immediate benefits in the breastfeeding support service provision, and delayed, longer-term benefits in the development of future health professionals' skills to support breastfeeding.

9.3 Recommendations for Research

9.3.1 Measuring breastfeeding 'success'

In research on breastfeeding interventions, where the outcomes relate to breastfeeding 'success', consider the use of mother-centred outcomes as an indicator of success, including attainment of maternal feeding goals. This would bring research into line with practice recommendations, such as the Royal College of Midwives' Position Statement on Infant Feeding (2018), which highlights that feeding support should take account of the individual mother's choices.

9.3.2 Comparing outcomes in the Clinic and 'routine care'

A two-armed prospective study should be conducted to compare outcomes in the Clinic with outcomes in 'routine care', to establish effectiveness of the Clinic in supporting breastfeeding. Outcomes should include what the baby is fed, how the baby is fed, and attainment of maternal feeding goal. The student-midwife led postnatal clinic affiliated with Bournemouth University and the AECC University College chiropractic teaching clinic may be practicable and meaningful sources of comparable data.

9.3.3 Outcome collection

In future research in the Clinic, trial SMS messaging as a means of collecting primary outcomes. This approach should be compared with other means of follow-up data collection previously used in research in the Clinic, such as post and email, to identify which approach yields the highest response rate. Consideration should be given to combining means of data collection and giving participants choice in how they provide follow-up data. The most effective approach data collection can then be used to improve follow-up rate and strengthen future outcomes-based research.

9.4 Recommendations for practice

9.4.1 Breastfeeding self-efficacy

In breastfeeding support settings, routinely screen mothers' breastfeeding self-efficacy, and when indicated provide interventions to improve breastfeeding self-efficacy. Self-efficacy is one of few modifiable factors remaining at the time mothers seek breastfeeding support, and there are interventions which have been demonstrated as effective at improving self-efficacy and subsequently preserving breastfeeding. Therefore, a concerted effort should be made to address breastfeeding self-efficacy in breastfeeding support settings.

9.4.2 Recommendations for the Clinic

Due to the ongoing Covid-19 pandemic, some recommendations may not be feasible to implement immediately. These recommendations relate to face-to-face appointments.

9.4.2.1 Continued provision of this beneficial service

The benefits to students, early-career practitioners, and mothers and babies were extensive and varied, with the Clinic providing multiple benefits for those providing and receiving care. Therefore, Bournemouth University and AECC University College should continue to provide this interprofessional student-led Clinic as a learning environment for student midwives and student chiropractors, and as a breastfeeding support service to mother-baby dyads.

9.4.2.2 Widening access to the Clinic

The Clinic should widen access to this free service among the local community, particularly among demographic groups at increased risk of early cessation of breastfeeding, for example younger mothers and mothers who have not undertaken adult education. Consideration should also be given to increasing awareness of and access to the Clinic for mothers from a broader range of ethnic backgrounds. This widening of access may be through advertising locally, discussion with local healthcare professionals who refer mothers to the Clinic, and other means.

9.4.2.3 Starting out on the right foot

To maximise the benefits of interprofessional relationships, including education for students and support provided to mothers, students and staff providing care in the Clinic each week should have the opportunity to meet and be introduced prior to the arrival of mothers and babies. This could be in the form of a brief introductory meeting.

9.4.2.4 Expanding interprofessional education opportunities

There are opportunities for further interprofessional education to occur alongside the Clinic, outside of service provision, focused on facilitating interprofessional relationships between student midwives and student chiropractors. This may be most usefully implemented early in the academic year and include information about the Clinic and the roles of midwives and chiropractors in breastfeeding support. Shared space in the Clinic for student midwives and student chiropractors may provide opportunities for further interprofessional communication.

References

Agency for Healthcare Research and Quality, 2014. *Teamwork Attitudes Questionnaire (T-TAQ)* [online]. Agency for Healthcare Research and Quality. Available from: https://www.ahrq.gov/teamstepps/instructor/reference/teamattitude.html [Accessed 19 November].

Angell, C. and Taylor, A. M., 2013. Alien knowledge: preparing student midwives for learning about infant feeding--education practice at a UK university. *Nurse Education Today* [online], 33 (11), 1411-1415.

Archibald, D., Trumpower, D. and MacDonald, C. J., 2014. Validation of the interprofessional collaborative competency attainment survey (ICCAS). *Journal of Interprofessional Care* [online], 28 (6), 553-558.

Arthur, S., Mitchell, M., Lewis, J. and McNaughton Nicholls, C., 2014. Designing Fieldwork. *In:* Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative research practice: a guide for social science students and researchers.* Second edition. Los Angeles, California: SAGE, 147-176.

Asselin, M. E., 2003. Insider Research: Issues to Consider When Doing Qualitative Research in Your Own Setting. *Journal for Nurses in Staff Development* [online], (2), 99.

Avery, A., Zimmermann, K., Underwood, P. W. and Magnus, J. H., 2009. Confident commitment is a key factor for sustained breastfeeding. *Birth* [online], 36 (2), 141-148.

Ballard, O. and Morrow, A. L., 2013. Human milk composition: nutrients and bioactive factors. *Pediatric Clinics of North America* [online], 60 (1), 49-74.

Bar-Yam, N. B. and Darby, L., 1997. Fathers and breastfeeding: a review of the literature. *Journal of Human Lactation* [online], 13 (1), 45-50.

Barbour, R. S., 2007. *Doing Focus Groups*. Los Angeles, California: SAGE.

Barchard, K. A., Freeman, A. J., Ochoa, E. and Stephens, A. K., 2020. Comparing the accuracy and speed of four data-checking methods. *Behavior Research Methods* [online], 52 (1), 97-115.

Barr, H., 2002. *Interprofessional education: today, yesterday and tomorrow: a review* [Online]. London, UK.

BCP Insight, 2020. *BCP Diversity* [online]. Tableau Public Available from: public.tableau.com/profile/bcpinsight#!/vizhome/BCPDiversity_1/Introduction [Accessed 29 December 2020].

Beauchamp, T. L. and Childress, J. F., 2001. *Principles of biomedical ethics*. Oxford University Press, USA.

Biesta, G., 2010. Pragmatism and the Philosophical Foundations of Mixed Methods Research. *In:* Tashakkori, A. and Teddlie, C., eds. 2021/03/14. *SAGE Handbook of Mixed Methods in Social and Behavioral Research* [online]. Second edition. Thousand Oaks, California: SAGE Publications, Inc., 95-118.

Binns, C., Lee, M. K. and Kagawa, M., 2017. Ethical Challenges in Infant Feeding Research. *Nutrients* [online], 9 (1), 59.

Bostick, G., Hall, M. and Miciak, M., 2014. Novel clinical learning from a student-led clinic. 11 (7), 512-515.

Bournemouth Borough Council, 2016. *Ward Profile for Boscombe West*. Bournemouth, UK: Bournemouth Borough Council

Bournemouth University, 2017. *Research Ethics Code of Practice: Policy and Procedure* [Online]. Bournemouth, UK: Bournemouth University. 8B.

Bournemouth University, 2021. *BSc (Hons) Midwifery (with Foundation Year option)* [online]. Bournemouth, UK: Bournemouth University. Available from: https://www.bournemouth.ac.uk/study/courses/bsc-hons-

midwifery#:~:text=UNICEF%20UK%20Baby%20Friendly%20Initiative%20(BFI)%20accreditation&text=Programmes%20are%20externally%20assessed%20every,UNICEF%20UK%20BFI%20since%202011. [Accessed 12 December 2020].

Bowatte, G., Tham, R., Allen, K. J., Tan, D. J., Lau, M., Dai, X. and Lodge, C. J., 2015. Breastfeeding and childhood acute otitis media: a systematic review and meta-analysis. *Acta Paediatrica* [online], 104 (467), 85-95.

Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* [online], 3 (2), 77-101.

Breen, R. L., 2006. A Practical Guide to Focus-Group Research. *Journal of Geography in Higher Education* [online], 30 (3), 463.

British Psychological Society, 2017. *Ethics Guidelines for Internet-Mediated Research* [Online]. Leicester, UK: British Psychological Society

Brockway, M., Benzies, K. and Hayden, K. A., 2017. Interventions to Improve Breastfeeding Self-Efficacy and Resultant Breastfeeding Rates: A Systematic Review and Meta-Analysis. *Journal of Human Lactation* [online], 33 (3), 486-499.

Brown, A., Rance, J. and Bennett, P., 2016. Understanding the relationship between breastfeeding and postnatal depression: the role of pain and physical difficulties. 72 (2), 273-282.

Brown, C. R., Dodds, L., Legge, A., Bryanton, J. and Semenic, S., 2014. Factors influencing the reasons why mothers stop breastfeeding. *Canadian Journal of Public Health* [online], 105 (3), e179-185.

Bryman, A., 2015. *Social Research Methods*. 5th ed. edition. Oxford: Oxford University Press, Incorporated.

Bunik, M., Dunn, D. M., Watkins, L. and Talmi, A., 2014. Trifecta approach to breastfeeding: clinical care in the integrated mental health model. *Journal of Human Lactation* [online], 30 (2), 143-147.

Cacho, N. T. and Lawrence, R. M., 2017. Innate Immunity and Breast Milk. *Frontiers in Immunology* [online], 8 (584).

Caratelli, L. A., Bostwick, J. R., Templin, T., Fitzgerald, M., Filter, M. S. and Ginier, E., 2020. Development and evaluation of an interprofessional seminar pilot course to enhance collaboration between health professions at a student-run clinic for underserved populations. *Journal of Interprofessional Care* [online], 34 (3), 422-426.

Chamberlain-Salaun, J., Mills, J. and Usher, K., 2013. Terminology used to describe health care teams: an integrative review of the literature. *Journal of Multidisciplinary Healthcare* [online], 6, 65-74.

Chowdhury, R., Sinha, B., Sankar, M. J., Taneja, S., Bhandari, N., Rollins, N., Bahl, R. and Martines, J., 2015. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatrica* [online], 104 (467), 96-113.

Cleveland, A. P. and McCrone, S., 2005. Development of the Breastfeeding Personal Efficacy Beliefs Inventory: a measure of women's confidence about breastfeeding. *Journal of Nursing Measurement* [online], 13 (2), 115-127.

Collard, S. and Van Teijlingen, E., 2016. Internet-based focus groups: New approaches to an 'old' research method. *Health Prospect* [online], 15, 4-7.

Corso, M., Cancelliere, C., Mior, S., Taylor-Vaisey, A. and Côté, P., 2020. The safety of spinal manipulative therapy in children under 10 years: a rapid review. *Chiropractic & Manual Therapies* [online], 28 (1), 12.

Creswell, J. W. and Creswell, J. D., 2018. *Research design: qualitative, quantitative & mixed methods approaches*. International student edition. Los Angeles: SAGE.

Creswell, J. W. and Plano Clark, V. L., 2017. *Designing and conducting mixed methods research*. International student edition. Los Angeles: SAGE.

Dennis, C. L., 2003. The breastfeeding self-efficacy scale: Psychometric assessment of the short form. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* [online], 32 (6), 734-744.

DePoy, E. and Gitlin, L. N., 2020. *Introduction to research: understanding and applying multiple strategies*. Sixth edition. Saint Louis, Missouri: Elsevier.

Dicicco-Bloom, B. and Crabtree, B. F., 2006. The qualitative research interview. *Medical Education* [online], 40 (4), 314-321.

DiGirolamo, A., Thompson, N., Martorell, R., Fein, S. and Grummer-Strawn, L., 2005. Intention or Experience? Predictors of Continued Breastfeeding. *Health Education and Behaviour* [online], 32 (2), 208-226.

Dow, A. W., DiazGranados, D., Mazmanian, P. E. and Retchin, S. M., 2014. An exploratory study of an assessment tool derived from the competencies of the interprofessional education collaborative. *Journal of Interprofessional Care* [online], 28 (4), 299-304.

Doyle, L., Brady, A.-M. and Byrne, G., 2016. An overview of mixed methods research – revisited. *Journal of Research in Nursing* [online], 21 (8), 623-635.

Dubouloz, C. J., Savard, J., Burnett, D. and Guitard, P., 2009. An Interprofessional University Clinic in Primary Health Care in Rehabilitation: A Collaborative Learning Model for Physical Therapy Students in a clinical placement. *Journal of Physical Therapy Education* [online], 24, 19-24.

Dwyer, S. C. and Buckle, J. L., 2009. The Space Between: On Being an Insider-Outsider in Qualitative Research. *International Journal of Qualitative Methods* [online], 8 (1), 54-63.

Dykes, F., 2006. The education of health practitioners supporting breastfeeding women: time for critical reflection. *Maternal and Child Nutrition* [online], 2 (4), 204-216.

Ebert, J. F., Huibers, L., Christensen, B. and Christensen, M. B., 2018. Paper- or Web-Based Questionnaire Invitations as a Method for Data Collection: Cross-Sectional Comparative Study of Differences in Response Rate, Completeness of Data, and Financial Cost. *Journal of Medical Internet Research*, 20 (1), e24.

Entwistle, F. M., 2013. *The Evidence and Rationale for the UNICEF UK Baby Friendly Initiative Standards.* [Online]. London, UK: UNICEF UK

Farlow, J. L., Goodwin, C. and Sevilla, J., 2015. Interprofessional education through service-learning: lessons from a student-led free clinic. 29 (3), 263-264.

Feilzer, M. Y., 2010. Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm. *Journal of Mixed Methods Research* [online], (1), 6.

Fetters, M. D., Curry, L. A. and Creswell, J. W., 2013. Achieving integration in mixed methods designs-principles and practices. *Health Services Research* [online], 48 (6 Pt 2), 2134-2156.

Field, A. P., 2018. *Discovering statistics using IBM SPSS statistics*. Fifth edition. Los Angeles: SAGE.

Finch, H., Lewis, J. and Turley, C., 2014. Focus Groups. *In:* Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative Research Practice* Second edition. Los Angeles, California: SAGE, 211-242.

First Steps Nutrition Trust, 2021. *Costs of infant formula, follow-on formula and milks marketed as foods for special medical purposes available over the counter in the UK* [Online]. First Steps Nutrition Trust.

Flick, U., 2014. *An Introduction to Qualitative Research*. Fifth edition. Los Angeles: SAGE.

Frakes, K.-A., Brownie, S., Davies, L., Thomas, J., Miller, M.-E. and Tyack, Z., 2014. Experiences from an interprofessional student-assisted chronic disease clinic. *Journal of Interprofessional Care* [online], 28 (6), 573-575.

Franz, C., Wedderkopp, N., Jespersen, E., Rexen, C. and Leboeuf-Yde, C., 2014. Back pain in children surveyed with weekly text messages - a 2.5 year prospective school cohort study. *Chiropractic and Manual Therapies* [online], 22, 35.

Fuller, J. J. and White, A. A., 1998. The Effects of Support Networks on the Choice of Infant Feeding Method. *Journal of the American Dietetic Association* [online], 98 (9), A61.

Furber, C., Hickie, J., Lee, K., McLoughlin, A., Boggis, C., Sutton, A., Cooke, S. and Wakefield, A., 2004. Interprofessional education in a midwifery curriculum: the learning through the exploration of the professional task project (LEAPT). *Midwifery* [online], 20 (4), 358-366.

Gehlbach, H. and Artino, A. R., Jr., 2018. The Survey Checklist (Manifesto). *Academic Medicine* [online], 93 (3), 360-366.

General Chiropractic Council, 2016. *The Code* [Online]. London, UK.

General Chiropractic Council, 2017. *Education standards: Criteria for chiropractic programme content and structure* [https://www.gcc-uk.org/assets/publications/Education_Standards_060818.pdf]. London, UK: General Chiropractic Council.

General Chiropractic Council, 2021a. *Annual Monitoring* [online]. General Chiropractic Council. Available from: https://www.gcc-uk.org/education-and-registration/degree-approval-quality-assurance/annual-monitoring [Accessed 06 September 2020].

General Chiropractic Council, 2021b. *Studying Chiropractic* [online]. General Chiropractic Council. Available from: https://www.gcc-uk.org/education-and-registration/studying-chiropractic [Accessed 06 September 2020].

General Chiropractic Council, 2021c. *What We Do* [online]. General Chiropractic Council. Available from: https://www.gcc-uk.org/about-us/what-we-do [Accessed 06 September 2020].

General Chiropractic Council, 2021d. *Why see a registered Chiropractor?* [online]. General Chiropractic Counil. Available from: https://www.gcc-uk.org/chiropractic-standards/why-see-a-registered-chiropractor [Accessed 01 January].

General Medical Council, 2013. *Good Practice in Research and Consent in Research* [Online]. General Medical Council

Gibson-Davis, C. M. and Brooks-Gunn, J., 2007. The association of couples? Relationship status and quality with breastfeeding initiation. *Journal of Marriage and Family* [online], 69 (5), 1107-1117.

Gillanders, R., Connell, B., Reid, J., Durr, M. R. and Kennedy, W., 2018. *Developing and Sustaining Student-Led Clinics: A Toolkit* [Online].

Godlee, F., 2020. Covid-19: weathering the storm. *The British Medical Journal* [online], 368, m1199.

Gorrindo, P., Peltz, A., Ladner, T. R., Reddy, I., Miller, B. M., Miller, R. F. and Fowler, M. J., 2014. Medical students as health educators at a student-run free clinic: improving the clinical outcomes of diabetic patients. *Academic Medicine* [online], 89 (4), 625-631.

Granello, D. H. and Wheaton, J. E., 2004. Online Data Collection: Strategies for Research. *Journal of Counseling and Development* [online], 82 (4), 387-393.

Grant, M. J. and Booth, A., 2009. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Info Libr J*, 26 (2), 91-108.

Guba, E. G. (Ed.). 1990. *The paradigm dialog*. Newbury Park, CA: Sage

Guenther, K. M., 2009. The politics of names: rethinking the methodological and ethical significance of naming people, organizations, and places. *Qualitative Research* [online], 9 (4), 411-421.

Guirguis, L. and Sidhu, K., 2011. An Exploration of Pharmacist Preceptors' and Pharmacy Students' Experiences at an Interprofessional Student-Run Clinic. *Canadian Pharmacists Journal / Revue des Pharmaciens du Canada* [online], 144 (4), 179-185.

Gustafsson, L., Hutchinson, L., Theodoros, D., Williams, K., Copley, A., Fagan, A. and Desha, L., 2016. Healthcare students' experiences of an interprofessional, student-led neuro-rehabilitation community-based clinic. *Journal of Interprofessional Care* [online], 30 (2), 259-261.

Haroon, S., Das, J. K., Salam, R. A., Imdad, A. and Bhutta, Z. A., 2013. Breastfeeding promotion interventions and breastfeeding practices: a systematic review. *BMC Public Health* [online], 13 (3), S20.

Hawk, C., Minkalis, A., Webb, C., Hogan, O. and Vallone, S., 2018. Manual Interventions for Musculoskeletal Factors in Infants With Suboptimal Breastfeeding: A Scoping Review. *Journal of Evidence-Based Integrative Medinice* [online], 23, 2515690X18816971.

Health and Care Professions Council, 2013. *The Standards of Proficiency for Physiotherapists* [hcpc-uk.org/standards/standards-of-proficiency/physiotherapists]. London, UK: Health and Care Professions Council.

Health and Care Professions Council, 2018. *Standards of Education and Training* [https://www.hcpc-uk.org/standards/standards-relevant-to-education-and-training/set/].

Heritage, D. and Miller, J., 2017. Chiropractic student perceptions of learning in inter-professional education: a qualitative study [Poster]. *European Chiropractors' Union* Limassol, Cyprus May 2017. Chiropractic and Manual Therapies. Available from: https://chiromt.biomedcentral.com/articles/10.1186/s12998-017-0166-7 [Accessed 18 November 2020].

Hiew, M., Lo Tiap Kwong, D. S., Mok, Z., Yun Han, T. and Miller, J., 2018. Portable pad or pen and paper? Preference of mothers completing an outcomes instrument: a cross-sectional survey. *Journal of Clinical Chiropractic Paediatrics* [online], 17 (2), 1441-1443.

Hill, P. D. and Humenick, S. S., 1996. Development of the H & H Lactation Scale. *Nursing Research* [online], 45 (3), 136-140.

Hoddinott, P., Britten, J., Prescott, G. J., Tappin, D., Ludbrook, A. and Godden, D. J., 2009. Effectiveness of policy to provide breastfeeding groups (BIG) for pregnant and breastfeeding mothers in primary care: cluster randomised controlled trial. 338, a3026.

Hoddinott, P., Craig, L. C. A., Britten, J. and McInnes, R. M., 2012. A serial qualitative interview study of infant feeding experiences: idealism meets realism. *BMJ Open* [online], 2 (2), e000504.

Holman, R. C., Stoll, B. J., Curns, A. T., Yorita, K. L., Steiner, C. A. and Schonberger, L. B., 2006. Necrotising enterocolitis hospitalisations among neonates in the United States. *Paediatric and Perinatal Epidemiology* [online], 20 (6), 498-506.

Horta, B. L., Loret de Mola, C. and Victora, C. G., 2015. Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: a systematic review and meta-analysis. *Acta Paediatr* [online], 104 (467), 30-37.

Horta, B. L. and Victora, C. G., 2013. *Short-term effects of breastfeeding: a systematic review on the benefits of breastfeeding on diarrhoea and pneumonia mortality*. Geneva: World Health Organization. 9789241506120.

Houghton, C. E., Casey, D., Shaw, D. and Murphy, K., 2010. Ethical challenges in qualitative research: examples from practice. *Nurse Research* [online], 18 (1), 15-25.

Housley, C. L., Neill, K. K., White, L. S., Tedder, A. T. and Castleberry, A. N., 2018. An evaluation of an interprofessional practice-based learning environment using student reflections. *Journal of Interprofessional Care* [online], 32 (1), 108-110.

Howard, C. R., Lanphear, N., Lanphear, B. P., Eberly, S. and Lawrence, R. A., 2006a. Parental responses to infant crying and colic: the effect on breastfeeding duration. *Breastfeed Medicine* [online], 1 (3), 146-155.

Howard, C. R., Lanphear, N., Lanphear, B. P., Eberly, S. and Lawrence, R. A., 2006b. Parental responses to infant crying and colic: the effect on breastfeeding duration. *Breastfeeding Medicine* [online], 1 (3), 146-155.

Hu, T., Cox, K. A. and Nyhof-Young, J., 2018. Investigating student perceptions at an interprofessional student-run free clinic serving marginalised populations. *Journal of Interprofessional Care* [online], 32 (1), 75-79.

IBM, 2019. *IBM SPSS Statistics*. 26 [Computer programme]. Portsmouth, UK: IBM.

International Confederation of Midwives, 2005. *ICM Definitions* [online]. International Confederation of Midwives. Available from: https://www.internationalmidwives.org/our-work/policy-and-practice/icm-definitions.html#:~:text=A%20midwife%20is%20a%20person,who%20has%20acquired%20the%20requisite [Accessed 03 June 2019].

Interprofessional Education Collaborative, 2016. *Core competencies for interprofessional collaborative practice: 2016 update.* [Online]. Washington, D.C.: Interprofessional Education Collaborative.

Ip, S., Chung, M., Raman, G., Chew, P., Magula, N., DeVine, D., Trikalinos, T. and Lau, J., 2007. Breastfeeding and maternal and infant health outcomes in developed countries. *Evidence Reports/Technology Assessment* [online], (153), 1-186.

Jackson, K. and Bazeley, P., 2013. *Qualitative data analysis with NVivo*. Second edition. London: SAGE.

Jick, T. D., 1979. Mixing qualitative and quantitative methods: triangulation in action *Administrative Science Quarterly* [online], 24 (4), 602-611.

Jisc, *Online Surveys*. Computer programme]. Bristol, UK: Jisc.

Johnson, R. B. and Onwuegbuzie, A. J., 2004. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher* [online], 33 (7), 14-26.

Kanuha, V. K., 2000. "Being" Native versus "Going Native": Conducting Social Work Research as an Insider. *Social Work* [online], 45 (5), 439-447.

Kavannagh, J., Kearns, A., McGarry, T. J. T. J. o. P. T. and Learning, 2014. The benefits and challenges of student-led clinics within an Irish context. *The Journal of Practice Teaching and Learning* [online], 13 (2-3), 58-72.

Kent, F., Drysdale, P., Martin, N. and Keating, J. L., 2014. The mixed-discipline aged-care student clinic: an authentic interprofessional learning initiative. *Journal of Allied Health* [online], 43 (1), 51-56.

Kervin, B. E., Kemp, L. and Pulver, L. J., 2010. Types and timing of breastfeeding support and its impact on mothers' behaviours. *Journal of Paediatrics and Child Health* [online], 46 (3), 85-91.

King, G., Shaw, L., Orchard, C. A. and Miller, S., 2010. The interprofessional socialization and valuing scale: a tool for evaluating the shift toward collaborative care approaches in health care settings. *Work* [online], 35 (1), 77-85.

Kitchener, K. S. and Kitchener, R. F., 2013. Social Science Research Ethics: Historical and Philosophical Issues. *In:* Mertens, D. M. and Ginsberg, P. E., eds. *The Handbook of Social Research Ethics.* Thousand Oaks, California SAGE, 5-22.

Kitzinger, J., 1995. Introducing Focus Groups. *British Medical Journal* [online], 311 (7000), 299-302.

Kopansky-Giles, D., Vernon, H., Steiman, I., Tibbles, A., Decina, P., Goldin, J. and Kelly, M., 2007. Collaborative community-based teaching clinics at the Canadian Memorial Chiropractic College: addressing the needs of local poor communities. *Journal of Manipulative and Physiologic Therapeutics* [online], 30 (8), 558-565.

Kovalskiy, A., Ismail, R., Tran, K., Desai, A., Imran, A. and Hernandez, C., 2017. Evaluating Student Attitudes: Perceptions of Interprofessional Experiences Following Participation in a Student-Run Free Clinic. *Cureus* [online], 9 (2), e1053.

Krueger, R. A. and Casey, M. A., 2002. Designing and conducting focus group interviews (pp. 4-23). Washington, D.C.: Citeseer.

Labbok, M. H. and Taylor, E., 2008. *Achieving Exclusive Breastfeeding in the United States: Findings and Recommendations* [Online]. Washington, D.C.: United States Breastfeeding Committee.

Labbok, M. H., Wardlaw, T., Blanc, A., Clark, D. and Terreri, N., 2006. Trends in Exclusive Breastfeeding: Findings From the 1990s. *Journal of Human Lactation* [online], 22 (3), 272-276.

Lawton, R., Ashley, L., Dawson, S., Waiblinger, D. and Conner, M., 2012. Employing an extended Theory of Planned Behaviour to predict breastfeeding intention, initiation, and maintenance in White British and South-Asian mothers living in Bradford. *British Journal of Health Psychology* [online], 17 (4), 854-871.

Leboeuf-Yde, C. and Hestbæk, L., 2010. Chiropractic and children: Is more research enough? *Chiropractic & Osteopathy* [online], 18 (1), 11.

Leboeuf-Yde, C., Innes, S. I., Young, K. J., Kawchuk, G. N. and Hartvigsen, J., 2019. Chiropractic, one big unhappy family: better together or apart? *Chiropractic & Manual Therapies* [online], 27 (1), 4.

Lee, S., Valtis, Y. K., Jun, T., Wang, D., Zhang, B., Chung, E. H., Yu, A., Williams, R. and Cohen, M. J., 2018. Measuring and improving student engagement in clinical training. *Education for Primary Care* [online], 29 (1), 22-26.

Leviniene, G., Petrauskiene, A., Tamuleviciene, E., Kudzyte, J. and Labanauskas, L., 2009. The evaluation of knowledge and activities of primary health care professionals in promoting breast-feeding. *Medicina* [online], 45 (3), 238-247.

Lewis, J. and McNaughton Nicholls, C., 2014. Design issues *In:* Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative Research Practice.* Second edition. London, UK: SAGE, 47-76.

Lie, D. A., Forest, C. P., Walsh, A., Banzali, Y. and Lohenry, K., 2016. What and how do students learn in an interprofessional student-run clinic? An educational framework for team-based care. *Medical Education Online* [online], 21, 31900-31900.

Local Government Association, 2021. *General Data Protection Regulation (GDPR)* [online]. London, UK: Local Government Association Available from: https://www.local.gov.uk/our-support/guidance-and-resources/general-data-protection-regulation-gdpr#:~:text=New%20rules%20relating%20to%20how,UK%20on%2025%20May%202018 [Accessed 22 November 2020].

Luecht, R. M., Madsen, M., Taugher, M. and Petterson, B. J. J. A. H., 1990. Assessing professional perceptions: Design and validation of an interdisciplinary education perception scale. 19 (2), 181-191.

Marchand, A. M., 2015. A Proposed Model With Possible Implications for Safety and Technique Adaptations for Chiropractic Spinal Manipulative Therapy for Infants and Children. *Journal of Manipulative Physiologic Therapeutics*, 38 (9), 713-726.

Marsh, W., 2013. Giving you every reason to SMiLE. *The Practising Midwife* [online], 16 (9), 38, 40-31.

Marsh, W., Colbourne, D. M., Way, S. and Hundley, V. A., 2015. Would a student midwife run postnatal clinic make a valuable addition to midwifery education in the UK?--a systematic review. *Nurse Education Today* [online], 35 (3), 480-486.

McAllister, M. and McKinnon, J. J. N. e. t., 2009. The importance of teaching and learning resilience in the health disciplines: a critical review of the literature. 29 (4), 371-379.

McAndrew, F., Thompson, J., Fellows, L., Large, A., Speed, M., Renfrew, M. J. J. L. h. and Centre, s. c. i., 2012. *Infant Feeding Survey 2010*.

McCann, M. F. and Bender, D. E., 2006. Perceived insufficient milk as a barrier to optimal infant feeding: examples from Bolivia. *Journal of Biosocial Science* [online], 38 (3), 341-364.

McFadden, A., Gavine, A., Renfrew, M. J., Wade, A., Buchanan, P., Taylor, J. L., Veitch, E., Rennie, A. M., Crowther, S. A., Neiman, S. and et al., 2017. Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Database of Systematic Reviews* [online], (2).

Meyerink, R. O. and Marquis, G. S., 2002. Breastfeeding initiation and duration among low-income women in Alabama: the importance of personal and familial experiences in making infant-feeding choices. *Journal of Human Lactation* [online], 18 (1), 38-45.

Michaelidou, N. and Dibb, S., 2006. Using email questionnaires for research: Good practice in tackling non-response. *Journal of Targeting, Measurement and Analysis for Marketing* [online], 14 (4), 289-296.

Miliku, K. and Azad, M. B., 2018. Breastfeeding and the Developmental Origins of Asthma: Current Evidence, Possible Mechanisms, and Future Research Priorities. *Nutrients* [online], 10 (8), 995.

Miller, A. S., Huizinga, B., Pinkster, M., Telford, A. C. J., ten Heggeler, J. M. and Miller, J. E., 2016a. Development and testing of a multidimensional parent reported outcome measure for commonpresenting complaints of infancy: The UK Infant Questionnaire. *Journal of Clinical Chiropractic Paediatrics* [online], 15 (3), 1292-1300.

Miller, A. S. and Miller, J. E., 2017. Is tongue-tie really the problem? Incidence of ankyloglossia in an infant population presented with suboptimal feeding: A cross-sectional survey. *Journal of Clinical Chiropractic Paediatrics* [online], 16 (1), 1350-1354.

Miller, A. S., Miller, J. E., Taylor, A. M. and Way, S., 2017. Demographic profile of 266 mother-infant dyads presenting to a multidisciplinary breast-feeding clinic: a descriptive study. *Journal of Clinical Chiropractic Pediatrics* [online], 16 (1), 1344-1349.

Miller, A. S., Telford, A. C. J., Huizinga, B., Pinkster, M., ten Heggeler, J. and Miller, J. E., 2015. What Breastfeeding Mothers Want: Specific Contextualised Help. *Clinical Lactation* [online], 6 (3), 117-123.

Miller, J., Beharie, M. C., Taylor, A. M., Simmenes, E. B. and Way, S., 2016b. Parent Reports of Exclusive Breastfeeding After Attending a Combined Midwifery and Chiropractic Feeding Clinic in the United Kingdom: A Cross-Sectional Service Evaluation. *Journal of Evidence-Based Complementary & Alternative Medicine* [online], 21 (2), 85-91.

Miller, J. E., Hanson, H. A., Hiew, M., Lo Tiap Kwong, D. S., Mok, Z. and Tee, Y. H., 2019. Maternal Report of Outcomes of Chiropractic Care for Infants. *Journal of Manipulative and Physiologic Therapeutics* [online], 42 (3), 167-176.

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., Stewart, L. A. and Group, P.-P., 2015. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews*, 4 (1), 1.

Namir, H. M. A. A., Brady, A.-M. and Gallagher, L., 2017. Fathers and breastfeeding: Attitudes, involvement and support. 25 (7), 426-440.

Ng, E., Hu, T., McNaughton, N. and Martimianakis, M. A. T., 2020. Transformative learning in an interprofessional student-run clinic: a qualitative study. *Journal of Interprofessional Care* [online], 1-9.

NHS England, 2017. *Maternity and Breastfeeding* [online]. Available from: https://www.england.nhs.uk/statistics/statistical-work-areas/maternity-and-breastfeeding/ [Accessed 20 September].

NHS UK, 2019. *Breastfeeidng help and support* [online]. NHS UK. Available from: https://www.nhs.uk/conditions/baby/breastfeeding-and-bottle-feeding/breastfeeding/help-and-support/ [Accessed 03 October 2019].

Nicole, M., Raymond, J., Penman, M. and McAllister, L., 2016. 12 Tips for establishing a hospital based student led service. *MedEdPublish* [online], 5 (3).

Nommsen-Rivers, L. A. and Dewey, K. G., 2009. Development and validation of the infant feeding intentions scale. *Maternal and Child Health Journal* [online], 13 (3), 334-342.

Nuckley, D. J. and Ching, R. P., 2006. Developmental biomechanics of the cervical spine: Tension and compression. *Journal of Biomechanics* [online], 39 (16), 3045-3054.

Nursing and Midwifery Council, 2009. *Standards for pre-registration midwifery education* [Online]. London, UK: Nursing and Midwifery Council.

Nursing and Midwifery Council, 2018a. *The Code. Professional standards of practice and behaviour for nurses, midwives and nursing associates* [https://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/nmc-code.pdf]. London, UK: Nursing and Midwifery Council.

Nursing and Midwifery Council, 2018b. *Part 1: Standards framework for nursing and midwifery education* [Online]. Nursing and Midwifery Council.

Nursing and Midwifery Council, 2019a. *Part 3: Standards for pre-registration midwifery programmes* [Online]. Nursing and Midwifery Council

Nursing and Midwifery Council, 2019b. *Standards of proficiency for midwives* [Online]. Nursing and Midwifery Council.

Nursing and Midwifery Council, 2020. *The NMC register* [Online]. London, UK: Nursing and Midwifery Council.

Nursing and Midwifery Council, 2021. *Practising as a Midwife in the UK* [Online]. Nursing and Midwifery Council

O'Brien, D., McCallin, A. and Bassett, S., 2013. Student perceptions of an interprofessional clinical experience at a university clinic. *New Zealand Journal of Physiotherapy* [online], 41 (3), 81-87.

Oakley, L. L., Renfrew, M. J., Kurinczuk, J. J. and Quigley, M. A., 2013. Factors associated with breastfeeding in England: an analysis by primary care trust. *BMJ Open* [online], 3 (6), e002765.

Odom, E. C., Li, R., Scanlon, K. S., Perrine, C. G. and Grummer-Strawn, L., 2013. Reasons for earlier than desired cessation of breastfeeding. *Pediatrics* [online], 131 (3), e726-732.

Olander, E., Coates, R., Brook, J., Ayers, S. and Salmon, D., 2018. A multi-method evaluation of interprofessional education for healthcare professionals caring for women during and after pregnancy. *Journal of Interprofessional Care* [online], 32 (4), 509-512.

Ormston, R., Spencer, L., Barnard, M. and Snape, D., 2014. The Foundations of Qualitative Research. *In:* Ritchie, J., lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative research practice: a guide for social science students and researchers.* Second edition. Los Angeles, California: SAGE, 1-26.

Parsell, G. and Bligh, J., 1999. The development of a questionnaire to assess the readiness of health care students for interprofessional learning (RIPLS). *Medical Education* [online], 33 (2), 95-100.

Passmore, A., Persic, C., Countryman, D., Rankine, L., Henderson, M., Hu, T., Nyhof-Young, J. and Cott, C., 2016. Student and Preceptor Experiences at an Inter-Professional Student-Run Clinic: A Physical Therapy Perspective. *Physiotherapy Canada. Physiotherapie Canada* [online], 68 (4), 391-397.

Peres, K. G., Cascaes, A. M., Nascimento, G. G. and Victora, C. G., 2015. Effect of breastfeeding on malocclusions: a systematic review and meta-analysis. *Acta Paediatrica* [online], 104 (467), 54-61.

Pohlman, K. A., Carroll, L., Tsuyuki, R. T., Hartling, L. and Vohra, S., 2020. Comparison of active versus passive surveillance adverse event reporting in a paediatric ambulatory chiropractic care setting: a cluster randomised controlled trial. *BMJ Open Quality* [online], 9 (4), e000972.

Pokhrel, S., Quigley, M. A., Fox-Rushby, J., McCormick, F., Williams, A., Trueman, P., Dodds, R. and Renfrew, M. J., 2015. Potential economic impacts from improving breastfeeding rates in the UK. *Archives of Disease in Childhood* [online], 100 (4), 334-340.

Polit, D. F. and Beck, C. T., 2014. *Essentials of nursing research: appraising evidence for nursing practice*. Eighth edition. Philadelphia: Lippincott Williams & Wilkins.

Pope, C. and Mays, N., 1993. Opening the black box: an encounter in the corridors of health services research. *British Medical Journal* [online], 306 (6873), 315-318.

Professional Standards Authority for Health and Social Care, 2020. *Performance Review 2019/2020 General Chiropractic Council* [Online]. Professional Standards Authority for Health and Social Care.

Public Health England, 2020. *Breastfeeding prevalence at 6-8 weeks after birth (Experimental Statistics)* [Online]. London, UK: Public Health England.

QSR International, 2020. *NVivo*. 12 [Computer programme]. Doncaster, Australia: QSR International.

Radoff, K. and Forman, R., 2019. Lactation Education for Resident Obstetricians: Promoting Breastfeeding Advocates for the Future. *Journal of Midwifery and Women's Health* [online], 64 (6), 754-762.

Reeves, S., Kuper, A. and Hodges, B. D., 2008. Qualitative research methodologies: ethnography. *British Medical Journal*, 337 (a1020).

Reeves, S., Perrier, L., Goldman, J., Freeth, D. and Zwarenstein, M., 2013. Interprofessional education: effects on professional practice and healthcare outcomes (update). *The Cochrane Database of Systematic Reviews* [online], 2013 (3), CD002213-CD002213.

Renfrew, M. J., McFadden, A., Bastos, M. H., Campbell, J., Channon, A. A., Cheung, N. F., Silva, D. R. A. D., Downe, S., Kennedy, H. P., Malata, A., McCormick, F., Wick, L. and Declercq, E., 2014. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *The Lancet* [online], 384 (9948), 1129-1145.

Renfrew, M. J., McFadden, A., Dykes, F., Wallace, L. M., Abbott, S., Burt, S. and Anderson, J. K., 2006. Addressing the learning deficit in breastfeeding: strategies for change. *Maternal and Child Nutrition* [online], 2 (4), 239-244.

Renfrew, M. J., Pokhrel, S., Quigley, M., McCormick, F., Fox-Rushby, J., Dodds, R., Duffy, S., Trueman, P. and Williams, A., 2012. *Preventing disease and saving resources: the potential contribution of increasing breastfeeding rates in the UK* [Online]. UNICEF UK.

Ridley, R. T., 2009. Assuring ethical treatment of students as research participants. *J Nurs Educ*, 48 (10), 537-541.

Ritchie, J., Lewis, J., Elam, G., Tennant, R. and Rahim, N., 2014. Designing and selecting samples. *In:* Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative Research Practice* Second edition. Los Angeles, California: SAGE, 111-146.

Rollins, N. C., Bhandari, N., Hajeebhoy, N., Horton, S., Lutter, C. K., Martines, J. C., Piwoz, E. G., Richter, L. M. and Victora, C. G., 2016. Why invest, and what it will take to improve breastfeeding practices? *The Lancet* [online], 387 (10017), 491-504.

Rolstad, S., Adler, J. and Rydén, A., 2011. Response burden and questionnaire length: is shorter better? A review and meta-analysis. *Value Health* [online], 14 (8), 1101-1108.

Royal College of Midwives, 2014. *Infant Feeding Supporting parent choice* [Online]. Royal College of Midwives.

Royal College of Midwives, 2018. *Position Statement Infant Feeding* [Online]. London, UK: Royal College of Midwives.

Royal College of Paediatrics and Child Health, 2019. *Breastfeeding in the UK - Position Statement* [Online]. Royal College of Paedatrics and Child Health.

Royeen, C., Mu, K., Barrett, L. and Luebben, A., 2001. Pilot investigations: Evaluation of a clinical reflextion and reasoning before and after workshop intervention. *In:* Crist, P., ed. *Innovations in occupational therapy education.* Bethesda, MD: American Occupational Therapy Association, 107-114.

Ryan, K., Brown, S., Wilkins, C., Taylor, A., Arnold, R., Angell, C. and Van Teijlingen, E., 2011. Which hat am I wearing today? Practising midwives doing research. *Evidence Based Midwifery* [online], 9, 4-8.

Sankar, M. J., Sinha, B., Chowdhury, R., Bhandari, N., Taneja, S., Martines, J. and Bahl, R., 2015. Optimal breastfeeding practices and infant and child mortality: a systematic review and meta-analysis. *Acta Paediatrica* [online], 104 (467), 3-13.

Saunders, B., Kitzinger, J. and Kitzinger, C., 2015. Anonymising interview data: challenges and compromise in practice. *Qualitative Research* [online], 15 (5), 616-632.

Schmied, V., Beake, S., Sheehan, A., McCourt, C. and Dykes, F., 2011. Women's perceptions and experiences of breastfeeding support: a metasynthesis. *Birth* [online], 38 (1), 49-60.

Schutte, T., Tichelaar, J., Donker, E., Richir, M. C., Westerman, M. and van Agtmael, M. A., 2018. Clarifying learning experiences in student-run clinics: a qualitative study. *BMC Medical Education* [online], 18 (1), 244.

Seif, G., Coker-Bolt, P., Kraft, S., Gonsalves, W., Simpson, K. and Johnson, E., 2014. The development of clinical reasoning and interprofessional behaviors: service-learning at a student-run free clinic. *Journal of Interprofessional Care* [online], 28 (6), 559-564.

Sevin, A. M., Hale, K. M., Brown, N. V., Nicole, V. and McAuley, J. W., 2016. Assessing Interprofessional Education Collaborative Competencies in Service-Learning Course. *American Journal of Pharmaceutical Education* [online], 80 (2), 32.

Shrader, S., Thompson, A. and Gonsalves, W., 2010. Assessing Student Attitudes as a Result of Participating in an Interprofessional Healthcare Elective Associated with a Student-Run Free Clinic. *Journal of Research in Interprofessional Practice and Education* [online], 1 (3), 23.

Sick, B., Sheldon, L., Ajer, K., Wang, Q. and Zhang, L., 2014. The student-run free clinic: an ideal site to teach interprofessional education? *Journal of Interprofessional Care* [online], 28 (5), 413-418.

Silverman, D., 2017. *Doing qualitative research*. Fifth edition. Los Angeles: SAGE.

Sim, J. and Waterfield, J., 2019. Focus group methodology: some ethical challenges. *Quality & Quantity* [online], 53 (6), 3003-3022.

Simpson, S. A. and Long, J. A., 2007. Medical student-run health clinics: important contributors to patient care and medical education. *Journal of General Internal Medicine* [online], 22 (3), 352-356.

Sinha, B., Chowdhury, R., Sankar, M. J., Martines, J., Taneja, S., Mazumder, S., Rollins, N., Bahl, R. and Bhandari, N., 2015. Interventions to improve breastfeeding outcomes: a systematic review and meta-analysis. *Acta Paediatrica* [online], 104 (467), 114-134.

Taylor, A., Chowdhury, S., Gao, Z., Van Nguyen, H., Midodzi, W., Gill, N., Halfyard, B., Newhook, L. A. A. and Twells, L., 2020. Infant feeding mode predicts the costs of healthcare services in one region of Canada: a data linkage pilot study. *BMC Research Notes* [online], 13 (1), 385.

Teddlie, C. and Tashakkori, A., 2010. *Sage handbook of mixed methods in social & behavioral research*. Second edition. London: SAGE.

Telford, A. C. J., Miller, A. S. and Miller, J. E., 2015. Patient-centered health care for infants: a qualitative analysis of mothers' experiences and preferences. *Journal of Clinical Chiropractic Paediatrics* [online], 15 (1), 1211-1216.

Timm, J. R. and Schnepper, L. L., 2021. A mixed-methods evaluation of an interprofessional clinical education model serving students, faculty, and the community. *Journal of Interprofessional Care* [online], 35 (1), 92-100.

Tremmel, M., Gerdtham, U.-G., Nilsson, P. M. and Saha, S., 2017. Economic Burden of Obesity: A Systematic Literature Review. *International journal of environmental research and public health* [online], 14 (4), 435.

Tsu, L., Buckley, K., Early, N. and Jackowski, R., 2018. Evaluation of multidisciplinary and pharmacy-only student-run clinics on student's perceptions of interprofessional roles. *Currents in Pharmacy Teaching and Learning* [online], 10 (6), 785-794.

Tuthill, E. L., McGrath, J. M., Graber, M., Cusson, R. M. and Young, S. L., 2016. Breastfeeding Self-efficacy: A Critical Review of Available Instruments. *Journal of Human Lactation* [online], 32 (1), 35-45.

Unicef, 1990. *The United Nations Convention on the Rights of the Child* [Online]. London, UK: Unicef UK.

Unicef, 2007. *1990-2005 Celebrating the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding: Past achievements, present challenges and priority actions for infant and young child feeding*.

Unicef UK Baby Friendly Initiative, 2016. *Protecting health and saving lives: A call to action* [Online]. Unicef UK Baby Friendly Initiative.

Unicef UK Baby Friendly Initiative, 2017. *Removing barriers to breastfeeding: A call to action* [Online]. Unicef UK: The Baby Friendly Initiative.

Unicef UK Baby Friendly Initiative, 2019a. *Guide to the Unicef UK Baby Friendly Initiative university standards* [Online]. Unicef UK Baby Friendly Initiative.

Unicef UK Baby Friendly Initiative, 2019b. *Unicef UK Baby Friendly Initiative Theory of Change* [Online].

Unicef UK Baby Friendly Initiative, 2020a. *About Baby Friendly* [online]. Unicef UK Baby Friendly Initiative. Available from: https://www.unicef.org.uk/babyfriendly/about/ [Accessed 15 September 2020].

Unicef UK Baby Friendly Initiative, 2020b. *Accreditation statistics and awards table* [online]. Unicef UK Baby Friendly Initiative. Available from: https://www.unicef.org.uk/babyfriendly/about/accreditation-statistics-and-awards-table-2/ [Accessed 21 September 2020].

van Teijlingen, E. and Pitchforth, E., 2006. Focus group research in family planning and reproductive health care. *Journal of Family Planning and Reproductive Health Care* [online], 32 (1), 30-32.

VanderWielen, L. M., Enurah, A. S., Osburn, I. F., LaCoe, K. N. and Vanderbilt, A. A., 2013. The development of student-led interprofessional education and collaboration. *Journal of Interprofessional Care* [online], 27 (5), 422-423.

Victora, C. G., Bahl, R., Barros, A. J. D., França, G. V. A., Horton, S., Krasevec, J., Murch, S., Sankar, M. J., Walker, N. and Rollins, N. C., 2016. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet* [online], 387 (10017), 475-490.

Wall, V. and Glass, R., 2006. Mandibular asymmetry and breastfeeding problems: experience from 11 cases. *Journal of Human Lactation* [online], 22 (3), 328-334.

Wasser, H., Bentley, M., Borja, J., Davis Goldman, B., Thompson, A., Slining, M. and Adair, L., 2011. Infants perceived as "fussy" are more likely to receive complementary foods before 4 months. *Pediatrics* [online], 127 (2), 229-237.

Watkins, S., Meltzer-Brody, S., Zolnoun, D. and Stuebe, A., 2011. Early breastfeeding experiences and postpartum depression. *Obstetrics and Gynecology* [online], 118 (2 Pt 1), 214-221.

Weinstein, A. R., Dolce, M. C., Koster, M., Parikh, R., Hamlyn, E., E, A. M., Carlson, A. and DiVall, M. V., 2018. Integration of systematic clinical interprofessional training in a student-faculty collaborative primary care practice. *Journal of Interprofessional Care* [online], 32 (1), 104-107.

Wells, K. J., Thompson, N. J. and Kloeblen-Tarver, A. S. J. A. J. o. H. B., 2006. Development and psychometric testing of the prenatal breast-feeding self-efficacy scale. *American Journal of Health Behavior* [online], 30 (2), 177-187.

White, C., Woodfield, K., Ritchie, J. and Ormston, R., 2014. Writing up qualitative analysis. *In:* Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative Reseach Practice.* Second edition. London, UK: SAGE, 367-400.

Wieczorek, C. C., Marent, B., Dorner, T. E. and Dür, W., 2016. The struggle for inter-professional teamwork and collaboration in maternity care: Austrian health professionals' perspectives on the implementation of the Baby-Friendly Hospital Initiative. *BMC Health Services Research* [online], 16, 91.

Wiles, R., Crow, G., Heath, S. and Charles, V., 2008. The Management of Confidentiality and Anonymity in Social Research. *International Journal of Social Research Methodology* [online], 11 (5), 417-428.

Witt, A. M., Witt, R., Lasko, L. and Flocke, S., 2019. Translating Team-Based Breastfeeding Support into Primary Care Practice. *Journal of the American Board of Family Medicine* [online], 32 (6), 818-826.

World Alliance for Breastfeeding Action, 2020. *Supporting Breastfeeding for a Healthier Planet* [Online]. Penang, Malaysia: World Alliance for Breastfeeding Action.

World Federation of Chiropractic, 2009. *Definition of Chiropractic* [online]. World Federation of Chiropractic. Available from: https://www.wfc.org/website/index.php?option=com_content&view=article&id=90 [Accessed 18 Novemeber 2019].

World Federation of Chiropractic, 2019. *WFC Principles* [Online]. World Federation of Chiropractic

World Health Organization, 1981. *International Code of Marketing of Breast-milk Substitutes* [Online]. Geneva, Switzerland: World Health Organization.

World Health Organization, 2008. *Indicators for assessing infant and young child feeding practices* [Online]. Geneva, Switzerland: Wolrd Health Organization.

World Health Organization, 2010. *Framework for action on interprofessional education and collaborative practice* [Online]. Geneva, Switzerland: World Health Organization.

World Health Organization, 2020. *Infant and young child feeding* [online]. Available from: https://www.who.int/en/news-room/fact-sheets/detail/infant-and-young-child-feeding [Accessed 22 September 2020].

World Health Organization and Unicef, 2009. *Baby-Friendly Hospital Initiative: Revised, Updated and Expanded for Integrated Care* [Online]. Geneva, Switzerland: World Health Organization and Unicef.

Yardley, L. and Bishop, F. L., 2015. Using mixed methods in health research: benefits and challenges. *British Journal of Health Psychology* [online], 20 (1), 1-4.

Yeo, A., Legard, R., Keegan, J., Ward, K., McNaughton Nicholls, C. and Lewis, J., 2014. In-depth interviews. *In:* Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R., eds. *Qualitative Research Practice* Second edition. Thousand Oaks, California SAGE 177-210.

Appendix 1: Clinic welcome letter

AECC University College
Chiropractic Clinic

Dear Parent(s)/Care providers,

Welcome to the AECC University College and Bournemouth University New-born Feeding clinic.

This email outlines who we are and what to expect on your first visit. The AECC University College is a teaching clinic and we work together with Bournemouth University midwifery department to run a free breastfeeding support clinic on Thursday afternoons. This clinic is aimed at those who are either breastfeeding exclusively or mixed feeding their babies up to 8 weeks of age. If you are exclusively formula feeding, have an older baby or don't have a feeding problem then we can help support you at our main Chiropractic clinic. Please call 01202 436 222 or email clinicappointsments@aecc.ac.uk to re-arrange your appointment. This clinic if free of charge, however should you choose to continue with any chiropractic care beyond the initial session, there will be a cost of £14 per session there after.

The Feeding Clinic team consists of student midwives, supervised by a qualified midwife and final year chiropractic interns, supervised by a qualified chiropractor with paediatric experience, to help mothers and their babies achieve their breastfeeding goals.

With your consent, a student midwife and chiropractic intern will take a full history of your pregnancy, birth and any feeding concerns you may have. You will have the opportunity to breastfeed your baby to enable the student midwife to provide you with individual support. This may be followed by an examination of your baby by a chiropractic intern which will focus on breastfeeding. Where appropriate, a chiropractic treatment for your baby may be offered. This consultation is overseen by experienced clinic tutors in both Midwifery and Chiropractic and can last for approximately one to two hours.

As we are a teaching clinic, there may be two student midwives and a midwifery tutor in the room with you. There may also be a chiropractic intern and a chiropractic tutor present at times. If at any time you feel uncomfortable about the number of people in the room with you, please mention this to us. We want to be as supportive and helpful to your needs as possible.

Our primary goal is to help you in every way we can as a collective team of experienced professionals using the most up to date research. A recent evaluation has shown that this approach, where midwives and chiropractors work together, has been helpful in supporting mothers to breastfeed their babies more successfully.

If you have any questions please do contact us by email clinicappointsments@aecc.ac.uk.

Best wishes

Emily Norton

Lead Infant Feeding Clinic Tutor

Clinical Science Lecturer

clinicappointsments@aecc.ac.uk

www.aecc.ac.uk

Appendix 2: Midwifery breastfeeding history form

Bournemouth University

Support for women with breastfeeding problems

Breastfeeding History Form

AECC File reference no:	**Date of consultation:**	
Baby's full name:	**Date of birth/ Age of baby:**	
Mother's full name		
Reason for consultation:		
What is the mother's goal?		
Emotional wellbeing?		
Support to date – who from? Please circle all that apply		
Midwife Health Visitor Breastfeeding Support Worker Peer Supporter/Group Breastfeeding Counsellor Lactation Consultant Other (please specify)	**Information/advice given so far:** **How did you hear about us/referred you?**	
Birth History		
How was pregnancy?	**How was labour?**	
Type of birth: Please circle	**Medication in labour:** Please circle all that apply	
Home birth Water birth Forceps delivery Normal birth Ventouse delivery Emergency caesarean section Elective caesarean section	Pethidine Epidural Gas and air ($N_2O + O_2$) IOL or augmented with syntocinon Managed third stage of labour None Other: please specify	
Gestation at birth:		
Did baby need resuscitation at birth? Please circle		Yes No
Perineal trauma /wound - comfort & healing?		
Blood loss:	**Placenta complete?** Circle	Yes No

Skin to skin / First feed				
When did skin-to-skin commence after birth?	**How long did the first skin to skin last?**		**Age at first breastfeed:**	**How long was the first feed?**
Immediately Within 1 hour 1-2 hours 2-6 hours 6-12 hours 12-24 hours 24-48 hours After 48 hours Never	<10 mins 10-29 mins 30 – 59 mins 1-2 hours >2 hours None		Immediately Within 1 hour 1-2 hours 2-6 hours 6-12 hours 12-24 hours 24-48 hours After 48 hours Never	<10 mins 10-29 min30 – 59 mins 1-2 hours >2 hours None
Current feeding situation: Please circle				
Approximate number of breastfeeds in 24 hours	**Shortest gap between breastfeeds**	**Longest gap between breastfeeds:**	**Average length of breastfeeds**	**What behaviour during breastfeed?**
<7 8-10 10-12 >12	<1 hour 2 hours 3 hours 4 hours 5 hours 6 hours >6 hours	<1 hour 2 hours 3 hours 4 hours 5 hours 6 hours >6 hours	<5 mins 5-40 mins 41-60 mins >1hour	Alert Sleepy Fussy Tense or fidgety Unhappy Settles
Does mother offer both breasts at each feed? Please circle				Yes No
Does baby come off breast spontaneously? Please circle				Yes No
Is mother responsive feeding? Please circle				Yes No
Does mother feed at night? Please circle				Yes No
Milk Transfer: Please circle				
Number of wet nappies in 24 hrs	**Number of stools in 24 hrs**		**Colour of stool**	**Consistency of stool**
<6 specify number >6	<2 specify number >2		Meconium Changing Yellow Brown Green	Runny Soft Formed
Birth weight **Weight now**			**Any concerns re weight gain?**	
Any jaundice? Please circle	Yes No		**Jaundice resolving/resolved?**	Yes No
How do breasts feel before feed	Full soft		**How do breasts feel after feed?**	Full soft
Baby's behaviour after feed:	Content Sleepy Irritable		**Other behaviour**, please specify	

Supplements			
Supplements given?	Yes No	**Age when started?**	
How many supplements in 24 hrs?		**Quantity of each supplement?**	
What supplements are being given?	Formula EBM Water Solids	**When are supplements given in relation to breastfeeds?**	Before Replacement After
How are supplements given?	Bottle Syringe Cup Other	**Whose suggestion/advice?**	
Dummies			
Using dummies?	Yes No	**Age when started?**	
Frequency of use			
Nipple shields			
Using nipple shields	Yes No	**Age when started?**	
Reason for use			
Whose suggestion?			
Both breasts	Yes No	**One breast only?**	Left Right
How frequently are they used? Circle		Rarely Occasionally Frequently Every feed	
Milk expression			
Expressing milk?	Yes No	**Reason?**	
Method used? Circle	Hand	Hand Pump	Electric Pump
Frequency in 24 hrs		**Quantities obtained**	
Separation of mother and baby			
Ever separated?	Yes No	**how long?**	
Where does baby sleep?	Day?	Night?	
Baby's general health			
Any illness?	Yes No	Please specify:	
Any abnormalities?	Yes No	Please specify:	
Tongue tie checked previously	Yes No	Date/age of baby	
Frenulotomy	Yes No	Date/ age of baby:	
Mother's general health			
Any medical conditions (e.g. diabetes, thyroid deficiency, polycystic ovary)	Yes No	Please specify:	
Current medication	Yes No	Please specify:	
Breast surgery?	Yes No	Please specify:	
Smoking?	Yes No	Number	
Alcohol consumption?	Yes No	Units per day:	
Previous infant feeding experiences?			
Number and ages of previous babies:		**Nature of previous breastfeeding experience**	
Breastfed before?	Yes No		
Family Support			
Family and social support	Yes No	Please specify:	

Breastfeeding observation

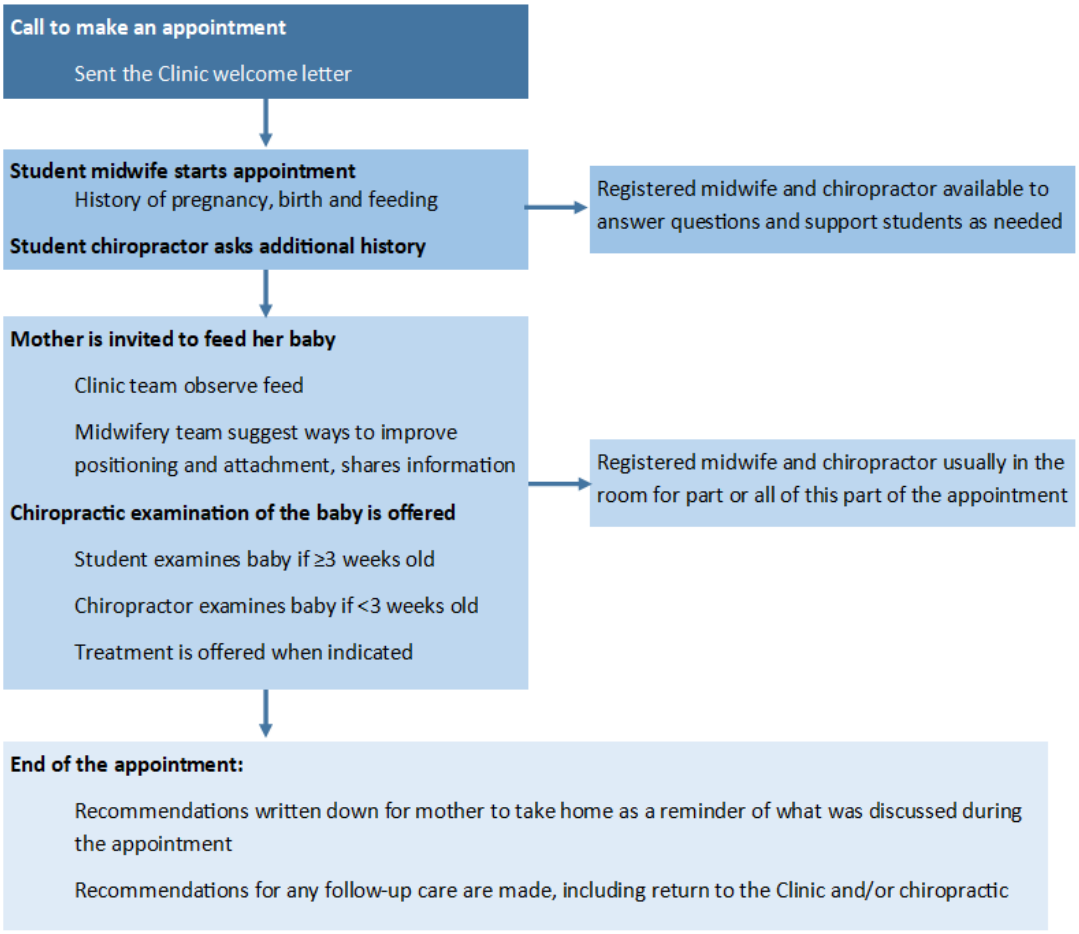
Mother's position	✓	Mother's position	✓
Mother relaxed and comfortable -sustainable		Mother not relaxed, e.g. shoulders tense	
Breast hanging or lying naturally		Breast squashed or restricted	
Easy access to nipple/areola		Access to nipple/areola restricted	
Hair/clothing do not restrict mother's view		Hair/clothing is restricting mother's view	
Baby's position		**Baby's position**	
[C] Baby held close		Baby not held close e.g. arm or clothes in way	
[H] Head is free to tilt back, no helping with hand		Head is restricted with mother's hand or arm	
[I] Baby's head and body in straight line		Baby has to twist head and neck to feed	
[N] Baby's nose starts opposite nipple		Baby's mouth/chin starts opposite nipple	
[S] Sustainable position for mother (Newborn- whole body supported)		Uncomfortable mother (Newborn- shoulders supported only)	
Attaching to the breast		**Attaching to the breast**	
Baby reaches or roots for breast		Baby does not respond to breast	
Mother waits for baby's mouth to open wide		Mother does not wait for baby to 'gape'	
Baby opens mouth wide (tongue down)		Baby does not open mouth wide (tongue up)	
Mother brings baby swiftly to breast		Mother does not move baby swiftly to breast	
Baby's head tilts back and chin is leading		Baby's head bends forward/nose diving	
Baby's chin/lower lip touches breast first		Baby nose dives into breast	
Baby's lower lip touches breast well away from base of nipple		Baby's lower lip touches breast near to base of nipple	
Signs of effective attachment		**Signs of effective attachment**	
Baby's mouth remains wide open		Baby's mouth is semi open/closed	
If visible, more areola above baby's top lip		More areola below baby's bottom lip or equal	
Baby's chin is indenting breast		Baby's nose indenting/touching breast	
Baby's cheeks are full and rounded		Baby's cheeks tense and pulled in	
Pain free for mother		Painful for mother	
Rhythmical swallow pattern - 1:1 or 2:1		Rapid shallow sucks, poor suck swallow pattern	
No noises other than swallowing		Smacking or clicking noises	
Baby stays on the breast		Baby fusses at breast	
At end of feed		**At end of feed**	
Baby releases breast spontaneously		Mother takes baby off breast	
Breasts appear softer		Breasts hard or inflamed	
Nipple is same shape as before feed		Nipple is wedge shaped or squashed	
Skin of nipple and areola appear healthy		Nipple/areola is sore or cracked	
No pain after feed		Pain after feed	

Information given including care plan:

Appendix 3: A photograph of the Clinic

This photograph shows the Clinic, with students supporting a mother and her baby.

Appendix 4: Flow diagram of a typical appointment in the Clinic



Appendix 5: Search terms used in each database in the systematised review of the literature

Search terms used for each topic in PubMed.

Topic	MeSH headings	Title/Abstract	Number of results
Interprofessional education and collaborative practice	Interprofessional relations Patient care team	Interprofessional relations Patient care team Interprofessional education Interprofessional care Collaborative practice Interdisciplinary education Interdisciplinary care Multidisciplinary education Multidisciplinary care	134,203
Student-led clinics	Student run clinic	Student run clinic Student run free clinic Student clinic Student led clinic Student placement	386
Breastfeeding	Breast feeding Lactation Human milk	Breast feeding Lactation Human milk Breastfeeding Breastfed Breast fed	120,801

When combined using the ‘AND’ function, the following number of studies were identified.

PubMed	Interprofessional education and collaborative practice	Student-run clinics	Breastfeeding
Interprofessional education and collaborative practice		66	207
Student-run clinics			0

Search terms used for each topic in CINAHL.

Topic	CINAHL subject headings	Title/Abstract	Number of results
Interprofessional education and collaborative practice	Interprofessional relations Interdisciplinary education Collaboration Multidisciplinary care team	Interprofessional relations Interdisciplinary education Collaboration Multidisciplinary Interprofessional education Interdisciplinary education Collaborative practice	138,923
Student-led clinics	None	Student led clinic Student led clinic Student run clinic Student run clinic	213
Breastfeeding	Breast feeding Lactation Human milk	Breast feeding Lactation Human milk Breastfeeding Breast feeding Breastfed	34,574

When combined using the 'AND' function, the following number of studies were identified.

CINAHL	Interprofessional education and collaborative practice	Student-run clinics	Breastfeeding
Interprofessional education and collaborative practice		51	521
Student-led clinics			1

Search terms used for each topic in EMBASE.

Topic	Subject headings	Title/Abstract	Number of results
Interprofessional education and collaborative practice	Collaborative care team Collaborative learning Interdisciplinary education Multidisciplinary team	Collaborative care team TI, AB, KW, SH Collaborative learning TI, AB, KW, SH Interdisciplinary education TI, AB, KW, SH Multidisciplinary team TI, AB, KW, SH	38,145
Student-led clinics	Student-run clinic Student-led clinic Student-run free clinic	Student-run clinic TI, AB, KW, SH Student-led clinic TI, AB, KW, SH Student-run free clinic TI, AB, KW, SH	269
Breastfeeding	Breastfeeding Lactation Breast milk	Breast feeding TI, AB, KW, SH Lactation TI, AB, KW, SH Breast milk TI, AB, KW, SH	141,562

When combined using the 'AND' function, the following number of studies were identified.

EMBASE	Interprofessional education and collaborative practice	Student-run clinics	Breastfeeding
Interprofessional education and collaborative practice		9	187
Student-led clinics			1

Search terms used for each topic in AMED.

Topic	Subject headings	Title/Abstract	Number of results
Interprofessional education and collaborative practice	Interprofessional relations Patient care team	TI/AB Interprofessional relations TI/AB Patient care team TI/AB interprofessional education TI/AB interprofessional care TI/AB collaborative practice TI/AB interdisciplinary education TI/AB interdisciplinary care TI/AB multidisciplinary education TI/AB multidisciplinary care	1,091
Student-led clinics	Student run clinic	TI/AB Student run clinic TI/AB Student run free clinic TI/AB Student clinic TI/AB Student led clinic TI/AB Student placement	221
Breastfeeding	Breast feeding Lactation Human milk	TI/AB Breast feeding TI/AB Lactation TI/AB Human milk TI/AB Breastfeeding TI/AB Breastfed TI/AB Breast fed	171

Functions used in the search were:

AMED	Interprofessional education and collaborative practice	Student-run clinics	Breastfeeding
Interprofessional education and collaborative practice		13	1
Student-led clinics			1

Search terms used for each topic in ICL.

Topic	Subject headings	Title/Abstract	Number of results
Interprofessional education and collaborative practice		AB Interprofessional AB Interdisciplinary AB Multidisciplinary AB Collaborative AB Collaboration	289
Student-led clinics		Student led clinic Student run clinic Student clinic Intern clinic	86
Breastfeeding		Breastfeeding Breast feeding Lactation Human milk Breastfed Breast fed	63

As the number of returns on breastfeeding were low, and inherently related to chiropractic, no combined searching was undertaken; all were included for sifting. Much of the literature returned for “interprofessional” etc. was not related to students, and much of the literature for “students” was related to non-clinical aspects of student experience, these two searches were combined using the “AND” function, and 69 articles were identified and included for sifting. “Intern run clinic” was included as a search term, as historically and still to an extent, final year chiropractic students have been referred to as “interns”.

Appendix 6: Student focus group discussion guide

V2 Apr 2018

Discussion guide

Focus group students

Opening

Thank you all for taking the time to be here and share your thoughts

Before we start, I just would like to mention a few things

I am keen to get a really true picture of your experiences in the NFC, please share as honestly as possible, positives/neutral/negatives

From my end what you say will be anonymous, as we are in a group I can't promise that on other people's behalf, but do ask that you are respectful of each other and of the focus group

From a research perspective, it is good to hear all sides of things. If someone talks about an experience which you have a different view on, then please do share that

Please speak one at a time, for the sake of the recording, we will make sure everyone has chance to share their thoughts on each topic before moving on

We will start recording in a minute. Before I do, does anyone have any questions?

Questions/topics

Just to get started, if we can go around and introduce ourselves

- name, where you are from, and 1 thing that comes to mind/stands out when you think about the feeding clinic

Differences/similarities between the Clinic and other placements

Affect HOW and WHAT you learn?

Affect the care you give/families receive?

Breastfeeding focus of Clinic vs. wider focus of other placements/practice

Affect HOW and WHAT you learn?

Affect care you give/families receive?

Dynamics of interprofessional setting:

In what ways does it work? (learning and care)

In what ways is it challenging? (learning and care)

How/could you see a similar approach working for:

Qualified practitioners

Other problems (beyond breast/feeding)

How do you see this working FOR YOU in the future? What do you keep and what do you change?

More abstract: able to apply some of the things you have learnt once you are in practice? What would be your main 'take home?'

Having talked about your learning and the care you give in Clinic, the IP nature, are there any aspects that you think could be improved/changed?

Learning

Practice

Close

To summarise:

Main points for learning, +ve / -ve

Main points for care/families, +ve / -ve

Changes to try in Clinic

Wider application of learning/experience in Clinic

Is there anything else that you wanted to share that we have not covered?

Thank you all very much. I really appreciate your time and contributions

Appendix 7: Student focus groups information sheet

Ref and Version: Stu FG, 1.0
Ethics ID number: [16932]
Date: 08 March 2019

Bournemouth University

Participant Information Sheet

The title of the research project
Does an interprofessional breastfeeding clinic enhance student education?

Invitation to take part
You are being invited to take part in research. Before you decide it is important for you to understand why the research is being done and what it will involve. Please read the following carefully and discuss with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Who is organising/funding the research?
Bournemouth University have provided a funded studentship to support this study.

What is the purpose of the project?
Little investigation has been undertaken into the role of this interprofessional clinic in student education. Current students who have provided care in the interprofessional breastfeeding clinic are being invited to participate in focus groups. This part of the study will last approximately 12 months.

Why have I been chosen?
You have been invited to take part because you have been involved in the Newborn Feeding Clinic. We are interested in your experiences in this clinic and want to hear directly from you. In total we are hoping to hear from around 20 students.

Do I have to take part?
It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a participant agreement form. You can withdraw from participation during the focus groups at any time and without giving a reason. If you decide to withdraw we will usually remove any data collected about you from the study. Once the focus group has finished you may still be able to withdraw your data up to the point where the data is analysed and incorporated into the research findings or outputs. At this point your data will usually become anonymous, so your identity cannot be determined, and it may not be possible to identify your data within the anonymous dataset. Withdrawing your data at this point may also adversely affect the validity and integrity of the research. Deciding to take part or not will not impact upon your education or studies at BU/AECC UC.

What would taking part involve?
You will be asked to provide signed consent to participate. The focus groups will be held at AECC or Bournemouth University at convenient times for the students. They will be audio recorded and are expected to last 45 minutes. Once the focus group is complete, your participation in this study is complete and nothing further will be asked of you.

What are the advantages and possible disadvantages or risks of taking part?
Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will be useful in informing future running of this clinic, ultimately supporting education of future students.

What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?
During the focus groups, you will be asked questions about your experiences in this clinic, particularly around any learning and your clinical skills. You will be expected to discuss with the interviewer and other participants.
You will not need to do anything to prepare before or debrief after your participation.

Will I be recorded, and how will the recorded media be used?
The audio recordings of your activities made during this research will be used only for analysis and the transcription of the recording(s) for illustration in conference presentations and lectures. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings.

How will my information be kept?
All the information we collect about you during the course of the research will be kept strictly in accordance with current data protection legislation. Research is a task that we perform in the public interest, as part of our core function as a university. Bournemouth University (BU) is a Data Controller of your information which means that we are responsible for looking after your information and using it appropriately. BU's Research Participant Privacy Notice sets out more information about how we fulfil our responsibilities as a data controller and about your rights as an individual under the data protection legislation. We ask you to read this Notice so that you can fully understand the basis on which we will process your information.

Publication
You will not be able to be identified in any reports or publications about the research without your specific consent. Otherwise your information will only be included in these materials in an anonymous form, i.e. you will not be identifiable. Research results will be published within approximately 3 years from completion.

Security and access controls
BU will hold the information we collect about you in hard copy in a secure location and on a BU password protected secure network where held electronically.
Except where it has been anonymised your personal information will be accessed and used only by appropriate, authorised individuals and when this is necessary for the purposes of the research or another purpose identified in the Privacy Notice. This may include giving access to BU staff or others responsible for monitoring and/or audit of the study, who need to ensure that the research is complying with applicable regulations.

Sharing and further use of your personal information

The information collected about you may be used in an anonymous form to support other research projects in the future and access to it in this form will not be restricted. It will not be possible for you to be identified from this data.

Retention of your data

All personal data collected for the purposes of this study will be held for five years from the date of the award of the degree. Although published research outputs are anonymised, we need to retain underlying data collected for the study in a non-anonymised form for a certain period to enable the research to be audited and/or to enable the research findings to be verified.

Contact for further information

If you have any questions or would like further information, please contact:

Researcher:	Amy Miller	amiller1@bournemouth.ac.uk
Research supervisor:	Prof Edwin van Teijlingen	evanteijlingen@bournemouth.ac.uk

In case of complaints

Any concerns about the study should be directed to Prof Edwin van Teijlingen. If you concerns have not been answered by Prof Edwin van Teijlingen, you should contact Prof Vanora Hundley, Acting Dean for Research and Professional Practice, Faculty of Health and Social Sciences at Bournemouth University by email to researchgovernance@bournemouth.ac.uk.

Finally

If you decide to take part, you will be given a copy of the information sheet and a signed participant agreement form to keep.

Thank you for considering taking part in this research project.

Appendix 8: Student focus groups agreement form

Ref & Version: Stu FG, 1.0
Ethics ID number: [16932]
Date: 08 March 2019

Participant Agreement Form

Full title of project: A novel approach to enhancing clinical education, improving breastfeeding rates and supporting the feeding experience: A mixed-methods investigation of a student-led interprofessional breastfeeding clinic ("the Project")

Name, position and contact details of researcher: Amy Miller, PhD student: amiller1@bournemouth.ac.uk

Name, position and contact details of supervisor: Prof Edwin van Teijlingen, Professor of Reproductive Health: evanteijlingen@bournemouth.ac.uk

To be completed prior to data collection activity

Agreement to participate in the study

You should only agree to participate in the study if you agree with all of the statements in this table and accept that participating will involve the listed activities.

I have read and understood the Participant Information Sheet (Stu FG, 1.0) and have been given access to the BU Research Participant Privacy Notice which sets out how we collect and use personal information (https://www1.bournemouth.ac.uk/about/governance/access-information/data-protection-privacy).
I have had an opportunity to ask questions
I understand that my participation is voluntary. I can stop participating in research activities at any time without giving a reason and I am free to decline to answer any particular question(s)
I understand that taking part in the research will include the following activity/activities as part of the research:
• being audio recorded during the project
• my words may be quoted in publications, reports, web pages and other research outputs, without using my real name
I understand that, if I withdraw from the study, I will also be able to withdraw my data from further use in the study **except** where my data has been anonymised (as I cannot be identified) or it will be harmful to the project to have my data removed
I understand that my data may be used in an anonymised form by the research team to support other research projects in the future, including future publications, reports or presentations

	Initial box to agree
I consent to take part in the project on the basis set out above	

Name of participant (BLOCK CAPITALS)	Signature	Date (dd/mm/yyyy)
Name of researcher (BLOCK CAPITALS)	Signature	Date (dd/mm/yyyy)

Once a Participant has signed, **please sign 1 copy** and take 2 photocopies:

- Original kept in the local investigator's file
- 1 copy to be kept by the participant (including a copy of PI Sheet)

Appendix 9: Social media recruitment for practitioner interviews

Calling AECC chiropractors who provided care in the Newborn Feeding Clinic!

Dear all
As part of my PhD study into the Newborn Feeding Clinic I am looking to interview some chiropractors who provided care in this clinic as students. The interviews (via Skype) will be about your experiences in the Clinic and if/how these transferred to practice once you graduated. If you attended the clinic, please read the attached information sheet and consider participating.

Please get in touch if you have any questions and/or are interested in participating, either via Messenger or email: amiller1@bournemouth.ac.uk

Many thanks in advance,
Amy Miller (Bournemouth University PhD student)

Participant Information Sheet

A novel approach to enhancing clinical education, improving breastfeeding rates and supporting the feeding experience: A mixed-methods investigation of a student-led interprofessional breastfeeding clinic

Does participation in an interprofessional breastfeeding clinic affect later practice?
The aim of this part of the study is to understand the impact of the Newborn Feeding Clinic on education and understand how this may have influenced your later practice.

Invitation
You are being invited to take part in a research project. It is important for you to understand why the research is being done and what it would involve before you decide to take part. Please take time to read the following information carefully and discuss it with others before deciding. Ask us if there is anything that is not clear or if you would like any more information. Take time to decide whether or not you wish to take part.
The researcher running this study is a PhD student at Bournemouth University.

What is the purpose of the project?
Little investigation has been undertaken into the role of this Newborn Feeding Clinic in student education and later practice. Graduates who provided care in the clinic as students are being invited to participate in interviews. This is because we are interested in your experiences in this clinic and subsequent practice and want to hear directly from you.

Why have I been chosen?
Anyone who provided care in the clinic twice or more, who has been in practice for a year or longer is invited to take part in this study. It is important to hear from a range of graduates, of both midwifery and chiropractic, as no experience will have been exactly the same. Overall around 8-12 interviews with graduates are expected to be undertaken.

Do I have to take part?
It is entirely your choice whether or not to take part. If you do decide to take part you will be given this information sheet to keep, and be asked to sign a Participation Agreement Form. You may stop taking part at any time, and it would not change any current or future relationship you have with Bournemouth University or AECC University College. You do not have to give a reason if you wish to stop taking part. You are able to withdraw up to the point where data is put into analysis, when the data becomes anonymous.

What do I have to do? What will happen to me if I take part?
You will be asked to provide signed consent to participate. Most participants will be invited to give an interview by phone or Skype; if you are still local to the area and are happy to do so, we could hold a face-to-face interview at Bournemouth University or AECC University College. Interviews will be arranged at a time convenient to you. The interview will be audio recorded and expected to last around 30 minutes. Once the interview is completed your participation in the study will be complete and you will not need to do anything else.

Will I be recorded, and how will the recorded media be used?
The interviews will be audio recorded, so that all data can be used later in analysis. The recording will be kept confidential. Once the data is transcribed it will be anonymous, and the recording deleted. No other uses will be made without your written permission, and no one outside the project will have access to the original recordings.

What are the advantages and possible disadvantages or risks of taking part?
Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will be useful in informing future running of this clinic, ultimately supporting education of future students.

Will my taking part in this project be kept confidential?
All of the information that you provide during the research will be kept confidential. You will not be able to be identified in any reports or publications. Publication of this study is likely to occur 1-3 years after data collection. All data relating to this study will be kept for a minimum of 5 years on a BU password protected secure network (electronic) or in a locked filing cabinet (paper).

What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?
During the interview, you will be asked questions about your experiences in this clinic. The main focus will be around any learning and your clinical skills in this clinic, and your current practice. You will not need to do anything to prepare before or debrief after your participation.

Who is organising/funding the research?
Bournemouth University have provided a funded studentship to support this study.

Contact for further information

Researcher contact: Amy Miller amiller1@bournemouth.ac.uk
Research Supervisor contact: Edwin van Teijlingen evteijlingen@bournemouth.ac.uk

If you have substantial concerns about this research having spoken to Amy Miller or Prof Edwin van Teijlingen, please contact
Prof Vanora Hundley, Deputy Dean for Research in FHSS researchgovernance@bournemouth.ac.uk

Thank you
Thank you for taking the time to read this information. You will be given a copy of this information sheet to keep.]

Appendix 10: Practitioner interviews information sheet

Bournemouth University

Ref & Version: Grad, 1.0
Ethics ID number: [16932]
Date 08 March 2019

Participant Information Sheet

Does an interprofessional breastfeeding clinic enhance student education?

Invitation to take part

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Who is organising/funding the research?

Bournemouth University have provided funding for this PhD study.

What is the purpose of the project?

Little investigation has been undertaken into the role of this interprofessional clinic in student education. Graduates who have provided care in the interprofessional breastfeeding clinic are being invited to participate in focus groups. This is because we are interested in your experiences in this clinic and want to hear directly from you. We want to understand how your time in the Newborn Feeding Clinic as a student may have affected your practice.

Why have I been chosen?

You have been invited to take part in this study because you were involved in the Newborn Feeding Clinic as a student in the past. In total, we are hoping to hear from 6-8 past students for this aspect of the study.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a participant agreement form. You can withdraw from participation during the interview at any time and without giving a reason. If you decide to withdraw we will usually remove any data collected about you from the study. Once the interview has finished you may still be able to withdraw your data up to the point where the data is analysed and incorporated into the research findings or outputs. At this point your data will become anonymous, so your identity cannot be determined, and it may not be possible to identify your data within the anonymous dataset. Withdrawing your data at this point may also adversely affect the validity and integrity of the research. Deciding to take part or not will not impact upon your current or future relationship with Bournemouth University.

What would taking part involve?

You would be asked to give an interview, either at AECC University College or Bournemouth University, or via telephone/Skype, whichever is most convenient to you. You will be asked to discuss your time in the Newborn Feeding Clinic, your experiences of learning in this setting, and your practice after attending this Clinic. This interview would last approximately 20-30 minutes. After the interview is over, no further participation will be requested.

What are the advantages and possible disadvantages or risks of taking part?

Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will help us to understand more about the longer-term impact that the Newborn Feeding Clinic may have on student learning and practice.

What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?

During the interview, you will be asked questions about your experiences in this clinic, particularly around any learning, and how you may use this now in practice. You will not need to do anything to prepare before or debrief after your participation.

Will I be recorded, and how will the recorded media be used?

The audio recordings of your interview will be used only for transcription and then analysis (when you will become anonymous). This anonymised data may then be used for illustration in conference presentations, lectures and publications. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings. The audio recordings will be deleted once the transcription is completed.

How will my information be kept?

All the information we collect about you during the course of the research will be kept strictly in accordance with current data protection legislation. Research is a task that we perform in the public interest, as part of our core function as a university. Bournemouth University (BU) is a Data Controller of your information which means that we are responsible for looking after your information and using it appropriately. BU's Research Participant Privacy Notice sets out more information about how we fulfil our responsibilities as a data controller and about your rights as an individual under the data protection legislation. We ask you to read this Notice so that you can fully understand the basis on which we will process your information.

Publication

You will not be able to be identified in any reports or publications about the research without your specific consent. Otherwise your information will only be included in these materials in an anonymous form, i.e. you will not be identifiable. Research results will be published within approximately three years.

Security and access controls

BU will hold the information we collect about you in hard copy in a secure location and on a BU password protected secure network where held electronically.

Except where it has been anonymised your personal information will be accessed and used only by appropriate, authorised individuals and when this is necessary for the purposes of the research or another purpose identified in the Privacy Notice. This may include giving access to BU staff or others responsible for monitoring and/or audit of the study, who need to ensure that the research is complying with applicable regulations.

Sharing and further use of your personal information

The information collected about you may be used in an anonymous form to support other research projects in the future and access to it in this form will not be restricted. It will not be possible for you to be identified from this data.

Retention of your data

All personal data collected for the purposes of this study will be held for five years from the date of the award of the degree. Although published research outputs are anonymised, we need to retain underlying data collected for the study in a non-anonymised form for a certain period to enable the research to be audited and/or to enable the research findings to be verified.

Contact for further information

If you have any questions or would like further information, please contact the researcher in the first instance:

Researcher: Amy Miller amiller1@bournemouth.ac.uk

In case of complaints

Any concerns about the study should be directed to Prof Edwin van Teijlingen evanteijlingen@bournemouth.ac.uk. If you concerns have not been answered by Prof van Teijlingen, you should contact Prof Vanora Hundley, Deputy Dean – Research and Professional Practice, Faculty of Health and Social Sciences, Bournemouth University by email to: researchgovernance@bournemouth.ac.uk.

Finally

If you decide to take part, you will be given a copy of the information sheet and a signed participant agreement form to keep.

Thank you for considering taking part in this research project.

Appendix 11: Practitioner interviews agreement form

Ref & Version: 1.0
Ethics ID number: [16932]
Date: 08 March 2019

Participant Agreement Form

Full title of project: A novel approach to enhancing clinical education, improving breastfeeding rates and supporting the feeding experience: A mixed-methods investigation of a student-led interprofessional breastfeeding clinic ("the Project")

Name, position and contact details of researcher: Amy Miller, PhD student: amiller1@bournemouth.ac.uk

Name, position and contact details of supervisor: Prof Edwin van Teijlingen, Professor of Reproductive Health: evanteijlingen@bournemouth.ac.uk

To be completed prior to data collection activity

Agreement to participate in the study

You should only agree to participate in the study if you agree with all of the statements in this table and accept that participating will involve the listed activities.

I have read and understood the Participant Information Sheet (Grad, 1.0) and have been given access to the BU Research Participant Privacy Notice which sets out how we collect and use personal information (https://www1.bournemouth.ac.uk/about/governance/access-information/data-protection-privacy).
I have had an opportunity to ask questions
I understand that my participation is voluntary. I can stop participating in research activities at any time without giving a reason and I am free to decline to answer any particular question(s)
I understand that taking part in the research will include the following activity/activities as part of the research:
• being audio recorded during the project
• my words may be quoted in publications, reports, web pages and other research outputs, without using my real name
I understand that, if I withdraw from the study, I will also be able to withdraw my data from further use in the study **except** where my data has been anonymised (as I cannot be identified) or it will be harmful to the project to have my data removed
I understand that my data may be used in an anonymised form by the research team to support other research projects in the future, including future publications, reports or presentations

	Initial box to agree
I consent to take part in the project on the basis set out above	

Name of participant (BLOCK CAPITALS)	Signature	Date (dd/mm/yyyy)
Name of researcher (BLOCK CAPITALS)	Signature	Date (dd/mm/yyyy)

Once a Participant has signed, **please sign 1 copy** and take 2 photocopies:

- Original kept in the local investigator's file
- 1 copy to be kept by the participant (including a copy of PI Sheet)

Appendix 12: Practitioner interviews discussion guide

Discussion guide

Grad interviews

Opening

Thank you for making time to take part in this interview

Before we start, a few things:

- I am keen to get a really true picture of your experiences in the clinic, please share honestly and openly about your experiences – the good/bad/neutral
- What you say will be anonymous, although your words and thoughts will be shared in the data reporting, it won't be attributed to you
- I will start recording in a minute, do you have any questions before I do?

Questions/topics

Introduction – name, where you work/setting

Main take-away from the clinic

Differences/similarities between the clinic and other placements

- Affect HOW you learnt, WHAT you learnt?
- Affect the care you gave/mothers and babies received?

Focus on breastfeeding in the Clinic vs. wider focus of other settings

- Learning
- Practice/care

Interprofessional setting:

- What worked? What didn't work? (learning and practice/care)

What/how have you applied from Clinic to post-registration practice?

- What is transferable?
- Does this work in a different setting?
- Interprofessional working in practice

V1 March 2019

Anything you would change/improve about the Clinic?

Summarise

Is there anything else you want to add that we haven't covered?

Thank you very much for your time and taking part – I really appreciate it

Appendix 13: Example of Online Surveys – initial questionnaire, showing logic function.

12. What are you hoping to get from your appointment at the Feeding Clinic today? *Please tick all that apply*

- ☐ Help with breastfeeding
- ☐ Help with expressing
- ☐ Help with bottle feeding
- ☐ Help with combination feeding (mixed feeding)
- ☐ Help with stopping breastfeeding
- ☑ Other

a. If you selected Other, please specify: **Required**

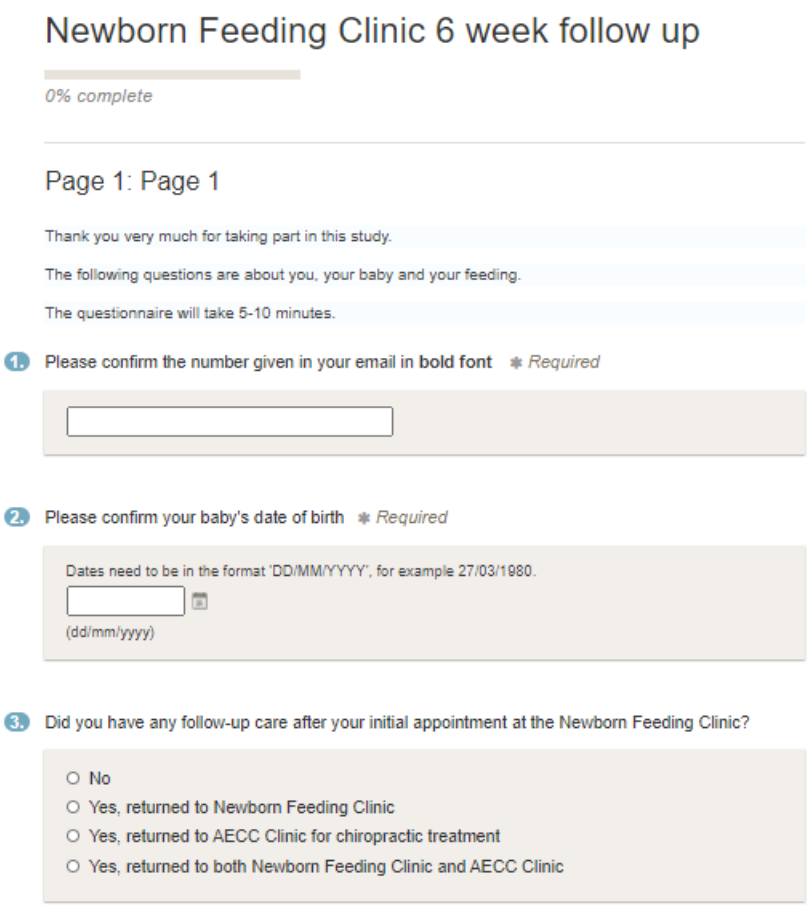
13. What has your baby been fed **since birth?** *Please tick all that apply*

- ☐ Breast milk (directly from breast)
- ☐ Expressed breast milk
- ☐ Donor breast milk
- ☐ Formula milk
- ☐ Prescription formula milk
- ☐ Oral glucose/dextrose
- ☐ Water
- ☐ Solids
- ☐ Other

14. How has your baby been fed **since birth?** *Please tick all that apply*

- ☐ Directly from the breast
- ☐ From the breast with nipple shields
- ☐ From the breast with a supplemental feeder
- ☐ Bottle
- ☐ Cup
- ☐ Spoon
- ☐ Syringe
- ☐ Finger fed
- ☐ Tube fed (nasogastric tube)
- ☐ Other

Appendix 14: Example of Online Surveys – follow-up questionnaire



Newborn Feeding Clinic 6 week follow up

0% complete

Page 1: Page 1

Thank you very much for taking part in this study.

The following questions are about you, your baby and your feeding.

The questionnaire will take 5-10 minutes.

1. Please confirm the number given in your email in **bold font** * *Required*

2. Please confirm your baby's date of birth * *Required*

Dates need to be in the format 'DD/MM/YYYY', for example 27/03/1980.

(dd/mm/yyyy)

3. Did you have any follow-up care after your initial appointment at the Newborn Feeding Clinic?

- ○ No
- ○ Yes, returned to Newborn Feeding Clinic
- ○ Yes, returned to AECC Clinic for chiropractic treatment
- ○ Yes, returned to both Newborn Feeding Clinic and AECC Clinic

Appendix 15: Prospective questionnaire study information sheet

Version 1 PIS-Q
Ethics ID: 24058
01 07 2019

Bournemouth University

Participant Information Sheet

Title of project: Breastfeeding outcomes and experiences after attending an Interprofessional Student-Led Breastfeeding Clinic

Invitation to take part

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Who is organising/funding the research?

Bournemouth University are funding this PhD study.

What is the purpose of the project?

We want to find out how mothers feed their babies after attending the Newborn Feeding Clinic, and mothers' experiences of feeding their babies. It is important for us to hear directly from mothers, as you are the experts of your own experiences.
This study may be used to make suggestions to improve the Clinic for families in the future.
Overall the study will be running for about 6 months.

Why have I been chosen?

All mothers of babies aged 4 weeks or younger who come to the Newborn Feeding Clinic are being invited to take part. It is important to hear from lots of mothers as no feeding journey or experience is the same. Overall around 100 mothers will be included in this study.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a participant agreement form. You may stop taking part at any time without giving a reason. Once the questionnaire data is anonymous, we won't be able to delete the questionnaire responses you provided.
Deciding to take part or not will not affect the care you receive at the Newborn Feeding Clinic or AECC Clinic in any way, now or in the future.

What would taking part involve?

If you decide to take part you will be asked to complete three questionnaires; one when you arrive at the clinic, one when your baby is six weeks old, and one when your baby is twelve weeks old. Each questionnaire will take around 10 minutes to complete. You will also be asked to give permission for your notes from your appointment in the Newborn Feeding Clinic to be used in the study. The notes will be anonymous. This is to avoid repeating questions as much as possible. For the second and third questionnaires, we will email you a link to the electronic copy of the questionnaire so you can complete it at a convenient time.
You may also be invited to take part in a one-to-one interview with the researcher. If you decide to be interviewed, the researcher will meet you at a convenient time and place, for example your home or a place local to you, or by telephone. The interview will last around 20 minutes. You will be given a separate information sheet with more details if you decide to take part in an interview.

What are the advantages and possible disadvantages or risks of taking part?

There are no risks associated with taking part in this study. You would need to spend some of your time completing the questionnaires; otherwise there are no disadvantages to taking part.

Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will be used to improve care for families with feeding difficulties in the future.

What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?

The questionnaires are about how you feed your baby and your experiences of feeding your baby, which will help us to understand more about the mothers and babies who come to the clinic, and what happens next in your feeding journey. You will be asked to answer each question honestly. You do not need to share or discuss your answers with anyone.

How will my information be kept?

All the information we collect about you during the course of the research will be kept strictly in accordance with current Data Protection Regulations. You will not be able to be identified in any reports or publications. Research results will be published 1-3 years after the completion of the study.

All personal data relating to this study will be held for 5 years from the award of the degree. BU will hold the information we collect about you in hard copy in a secure location and on a BU password protected secure network where held electronically.

Except where it has been anonymised, we will restrict access to your personal data to those individuals who have a legitimate reason to access it for the purpose or purposes for which it is held by us. Only the BU student researcher and BU staff working on the research project will have access to your personal data.

The information collected about you may be used in an anonymous form to support other research projects in the future and access to it in this form will not be restricted. It will not be possible for you to be identified from this data.

If you have any questions about how we manage your information or your rights under the data protection legislation, please contact the BU Data Protection Officer on dpo@bournemouth.ac.uk.

Contact for further information

If you have any questions or would like further information, please contact the researcher, Amy Miller at amiller1@bournemouth.ac.uk

In case of complaints

Any concerns about the study should be directed to Prof Edwin van Teijlingen at evanteijlingen@bournemouth.ac.uk

If you concerns have not been answered by Professor Edwin van Teijlingen, you should contact Prof Vanora Hundley, Deputy Dean for Research in Faculty of Health and Social Sciences at Bournemouth University researchgovernance@bournemouth.ac.uk.

Finally

If you decide to take part, you will be given a copy of the information sheet and a signed participant agreement form to keep. Thank you for considering taking part in this research project.

Appendix 16: Prospective questionnaire study agreement form

Ref & Version: PAF-Q, version 1
Ethics ID number: 24058
Date: 01/07/2019

Participant Agreement Form

Full title of project: ("the Project") Breastfeeding outcomes and experiences after attending an Interprofessional Student-Led Breastfeeding Clinic

Name, position and contact details of researcher: Amy Miller, Bournemouth University PhD student, amiller1@bournemouth.ac.uk

Name, position and contact details of supervisor: Prof Edwin van Teijlingen, Professor of Reproductive Health, evanteijlingen@bournemouth.ac.uk

To be completed prior to data collection activity

Section A: Agreement to participate in the study

You should only agree to participate in the study if you agree with all of the statements in this table and accept that participating will involve the listed activities.

I have read and understood the Participant Information Sheet (Version 1, PIS-Q) and have been given access to the BU Research Participant Privacy Notice which sets out how we collect and use personal information (https://www1.bournemouth.ac.uk/about/governance/access-information/data-protection-privacy).
I have had an opportunity to ask questions.
I understand that my participation is voluntary. I can stop participating in research activities at any time without giving a reason and I am free to decline to answer any particular question(s).
I agree that BU researchers may access information from my medical records from the Newborn Feeding Clinic, as described in the Participant Information Sheet
I understand that taking part in the research will include the following activity as part of the research:
• my words will be quoted in publications, reports, web pages and other research outputs without using my real name.
I understand that, if I withdraw from the study, I will also be able to withdraw my data from further use in the study **except** where my data has been anonymised (as I cannot be identified) or it will be harmful to the project to have my data removed.
I understand that my data may be used in an anonymised form by the research team to support other research projects in the future, including future publications, reports or presentations.

	Initial box to agree
I consent to take part in the project on the basis set out above (Section A)	

Section B: The following part of the study is optional

You can decide about this activity separately. Even if you do not agree to this activity you can still take part in the study. If you do not wish to give permission for an activity, do not initial the box next to it.

We are also interested in hearing more about your experiences of feeding and the care you have received. If you are open to giving an interview once you have completed the questionnaire, please select 'yes' below so that we may contact you. We will email the Participant Information Sheet about the interviews to you when your baby is 12 weeks old, and you can make a final decision about the interview at that time.

By selecting 'yes' now, you are only agreeing to receive more information about the interview when you baby is 12 weeks old, not agreeing to take part in the interviews at this time.

	Initial box to agree
I agree to be contacted about giving an interview after my baby is 12 weeks old	

I confirm my agreement to take part in the project on the basis set out above.				
Name of participant (BLOCK CAPITALS)		Date (dd/mm/yyyy)		Signature
Name of researcher (BLOCK CAPITALS)		Date (dd/mm/yyyy)		Signature

Once a Participant has signed, **please sign 1 copy** and take 2 photocopies:

- Original kept in the local investigator's file
- 1 copy to be kept by the participant (including a copy of PI Sheet)

Appendix 17: A mock participant

This photograph shows a mock participant in the Clinic setting, with the participant agreement form, and the tablet device used to complete the first questionnaire.

Appendix 18: Thank you card with contact information for further support

This business card was given to mothers who participated in the prospective questionnaire study, to say thank you and to provide contact details for further breastfeeding support.

Appendix 19: Bournemouth University Ethical approval for student focus groups

Bournemouth University

Research Ethics Checklist

Reference Id	16932
Status	Approved
Date Approved	25/10/2017

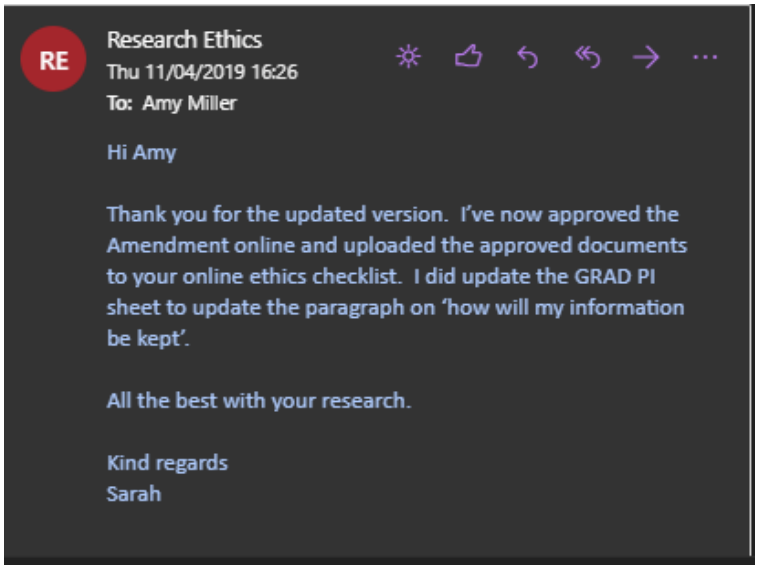
Researcher Details

Name	Amy Miller
Faculty	Faculty of Health & Social Sciences
Status	Postgraduate Research (MRes, MPhil, PhD, DProf, DEng)
Course	Postgraduate Research - HSC
Have you received external funding to support this research project?	No
Please list any persons or institutions that you will be conducting joint research with, both internal to BU as well as external collaborators.	Supervisors:Edwin van Teijlingn, Sue Way, Alison Taylor

Project Details

Title	Does an interprofessional breastfeeding clinic enhance student education?
Proposed Start Date of Data Collection	01/11/2017
Proposed End Date of Project	30/04/2018
Supervisor	Edwin van Teijlingen
Approver	Martin Hind

Appendix 20: Bournemouth University Ethical amendment – interviews with midwives and chiropractors



RE

Research Ethics
Thu 11/04/2019 16:26
To: Amy Miller

Hi Amy

Thank you for the updated version. I've now approved the Amendment online and uploaded the approved documents to your online ethics checklist. I did update the GRAD PI sheet to update the paragraph on 'how will my information be kept'.

All the best with your research.

Kind regards
Sarah

Appendix 21: Bournemouth University Ethical approval – prospective questionnaire study

Bournemouth University

Research Ethics Checklist

About Your Checklist	
Reference Id	24058
Date Created	05/12/2018 10:34:00
Status	Approved
Date Approved	25/07/2019 09:40:33
Date Submitted	04/06/2019 13:06:07

Researcher Details	
Name	Amy Miller
Faculty	Faculty of Health & Social Sciences
Status	Postgraduate Research (MRes, MPhil, PhD, DProf, EngD, EdD)
Course	Postgraduate Research - HSC
Have you received external funding to support this research project?	No
Please list any persons or institutions that you will be conducting joint research with, both internal to BU as well as external collaborators.	AECC University College

Project Details	
Title	Breastfeeding outcomes and experiences after attending an Interprofessional Student Led Breastfeeding Clinic
Start Date of Project	20/06/2019
End Date of Project	19/12/2019
Proposed Start Date of Data Collection	20/06/2019
Original Supervisor	Edwin van Teijlingen
Approver	Research Ethics Panel
Summary - no more than 500 words (including detail on background methodology, sample, outcomes, etc.)	

Appendix 22: AECC University College Ethical approval – prospective questionnaire study

AECC
University College

Parkwood Campus
Parkwood Road
Bournemouth
Dorset
BH5 2DF

info@aecc.ac.uk
admissions@aecc.ac.uk
+44 (0)1202 436200
www.aecc.ac.uk

29 January 2019

Amy Miller
c/o AECC University College

Dear Amy

Re: A novel approach to enhancing clinical education, improving breast feeding rates and supporting the feeding experience. A mixed methods investigation of a student-led inter-professional breastfeeding clinic

Thank you for submitting an application for ethics approval for conducting the above study which has been approved by the Ethics Sub-committee.

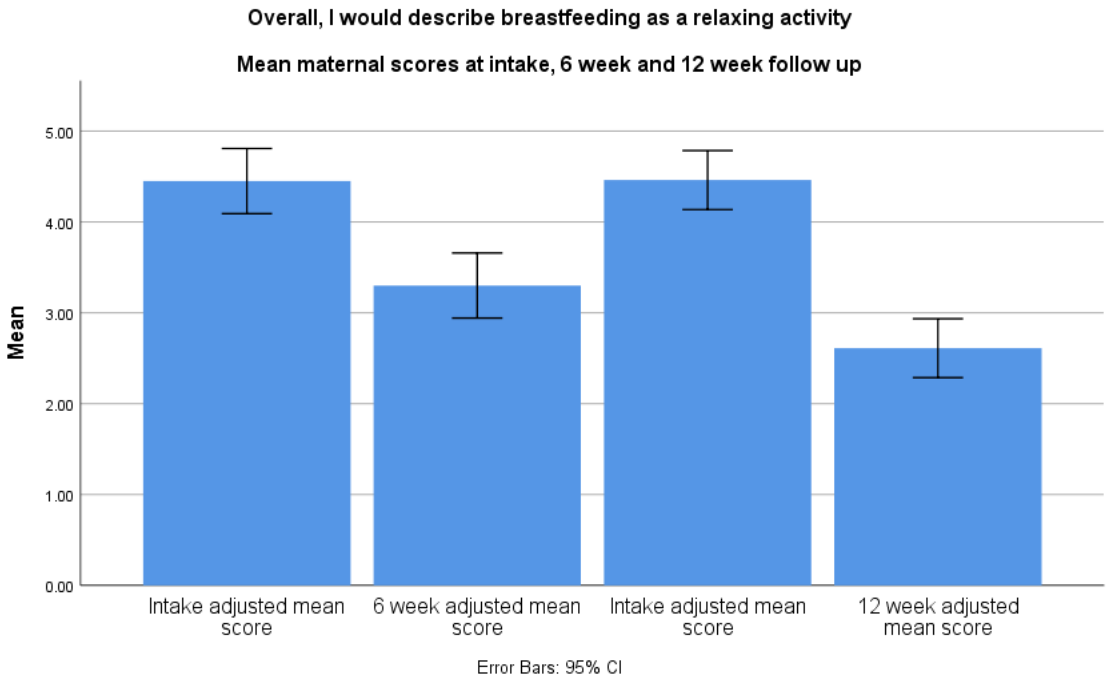
May I take this opportunity to wish you every success in the study.

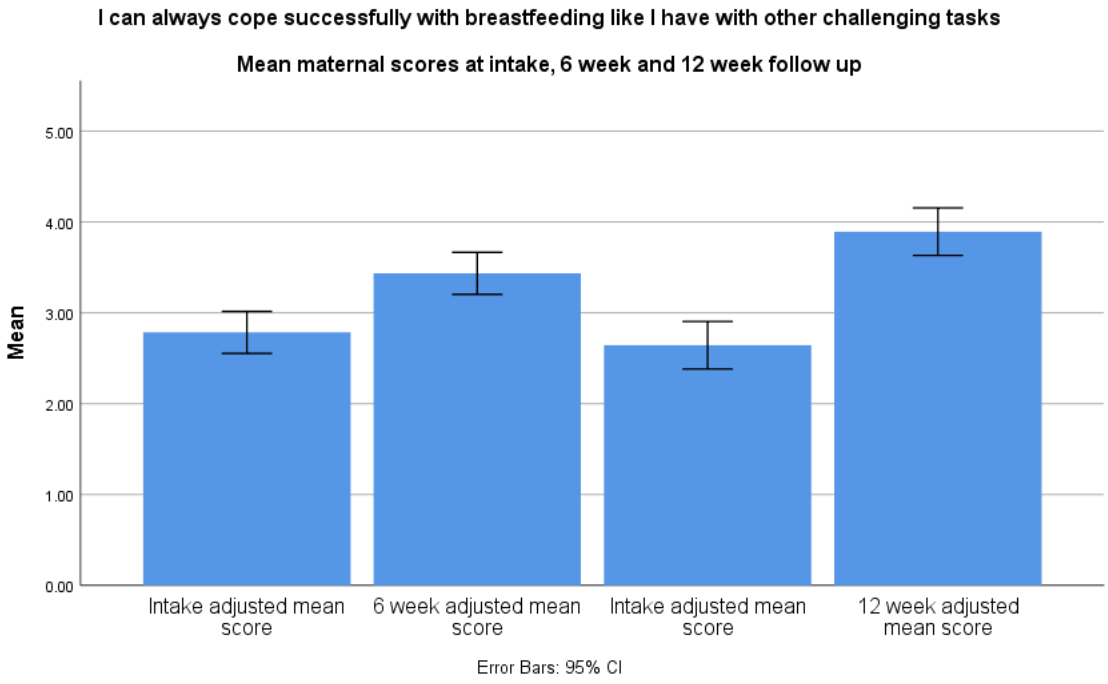
Yours sincerely

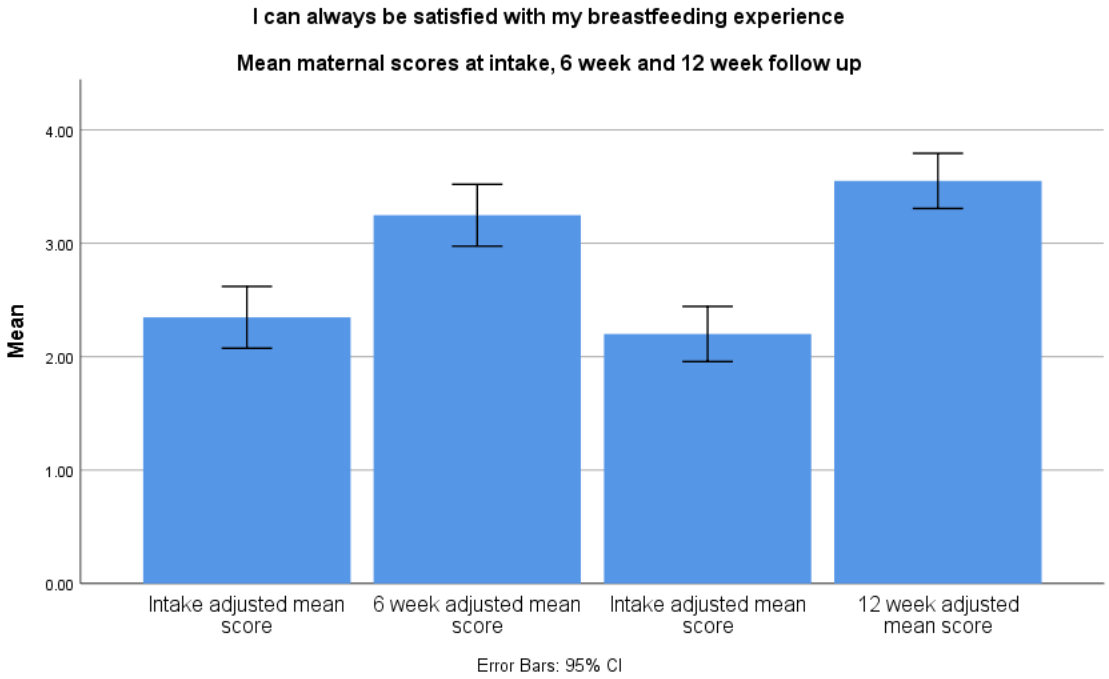
Dave Newell

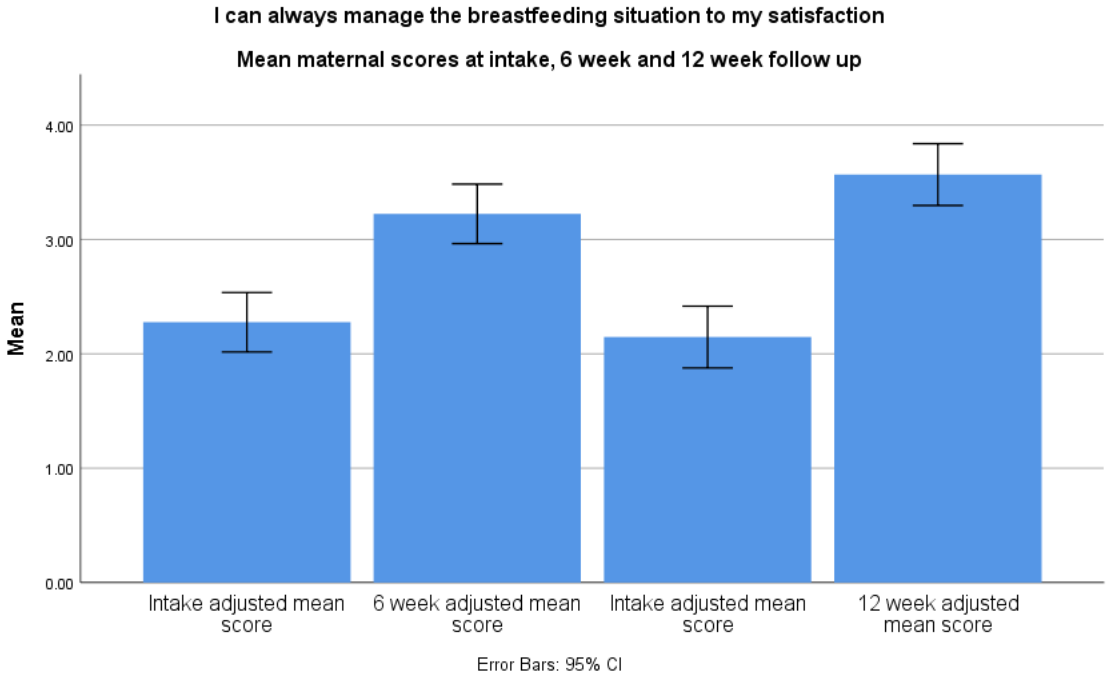
Professor Dave Newell
Chair, AECC Research Ethics Sub-Committee
Director of Research
BSc (Hons), PGCert, PhD, FRCC (Hon), FEAC, FBCA

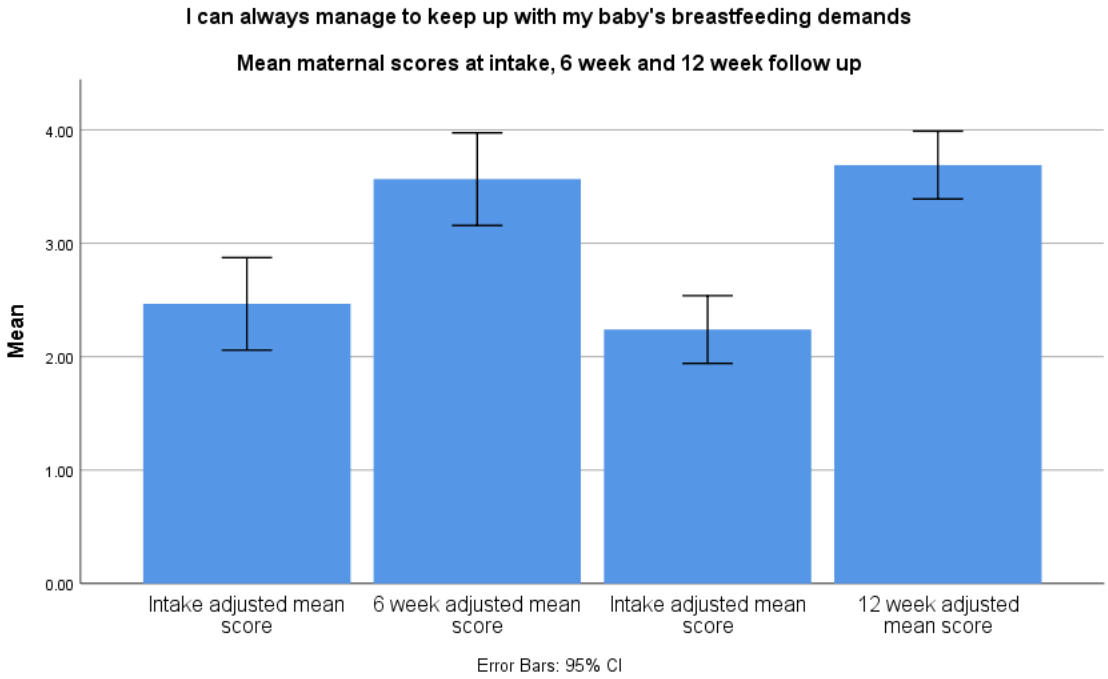
Appendix 23. Error bars showing adjusted means between baseline and six weeks, and baseline and twelve weeks, for breastfeeding self-efficacy






I can always be satisfied with my breastfeeding experience
Mean maternal scores at intake, 6 week and 12 week follow up
Mean
4.00
3.00
2.00
1.00
0.00
Intake adjusted mean score
6 week adjusted mean score
Intake adjusted mean score
12 week adjusted mean score
Error Bars: 95% CI


I can always manage the breastfeeding situation to my satisfaction
Mean maternal scores at intake, 6 week and 12 week follow up
Mean
4.00
3.00
2.00
1.00
0.00
Intake adjusted mean score
6 week adjusted mean score
Intake adjusted mean score
12 week adjusted mean score
Error Bars: 95% CI


I can always manage to keep up with my baby's breastfeeding demands
Mean maternal scores at intake, 6 week and 12 week follow up
Mean
4.00
3.00
2.00
1.00
0.00
Intake adjusted mean score
6 week adjusted mean score
Intake adjusted mean score
12 week adjusted mean score
Error Bars: 95% CI

Appendix 24: Paired samples statistics and correlations: breastfeeding self-efficacy from baseline to six weeks

Paired Samples Statistics: Breastfeeding self-efficacy from baseline to six weeks					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Overall, I would describe breastfeeding as a relaxing activity: Intake	4.44	32	1.645	.291
	Overall, I would describe breastfeeding as a relaxing activity: 6 weeks	3.31	32	1.533	.271
Pair 2	I can always cope successfully with breastfeeding like I have with other challenging tasks: Intake	2.81	32	1.061	.188
	I can always cope successfully with breastfeeding like I have with other challenging tasks: 6 weeks	3.41	32	.979	.173
Pair 3	I can always be satisfied with my breastfeeding experience: Intake	2.41	32	1.073	.190
	I can always be satisfied with my breastfeeding experience: 6 weeks	3.19	32	1.061	.188
Pair 4	I can always manage the breastfeeding situation to my satisfaction: Intake	2.34	32	1.096	.194
	I can always manage the breastfeeding experience to my satisfaction: 6 weeks	3.16	32	1.081	.191
Pair 5	I can always manage to keep up with my baby's breastfeeding demands: Intake	2.59	32	1.241	.219
	I can always manage to keep up with my baby's breastfeeding demands: 6 weeks	3.44	32	1.523	.269

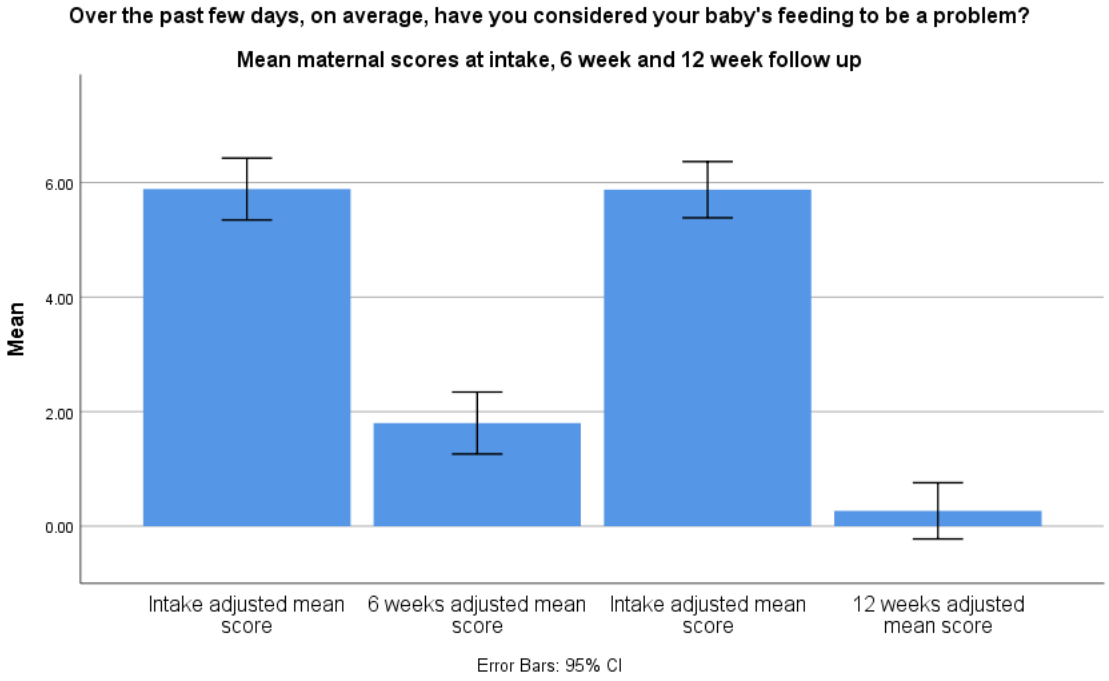
Paired Samples Correlations: Breastfeeding self-efficacy from baseline to six weeks				
		N	Correlation	Sig.
Pair 1	Overall, I would describe breastfeeding as a relaxing activity: Intake & 6 weeks	32	.609	.000
Pair 2	I can always cope successfully with breastfeeding like I have with other challenging tasks: Intake & 6 weeks	32	.511	.003
Pair 3	I can always be satisfied with my breastfeeding experience: Intake & 6 weeks	32	.469	.007
Pair 4	I can always manage the breastfeeding situation to my satisfaction: Intake & 6 weeks	32	.525	.002
Pair 5	I can always manage to keep up with my baby's breastfeeding demands: Intake & 6 weeks	32	.387	.028

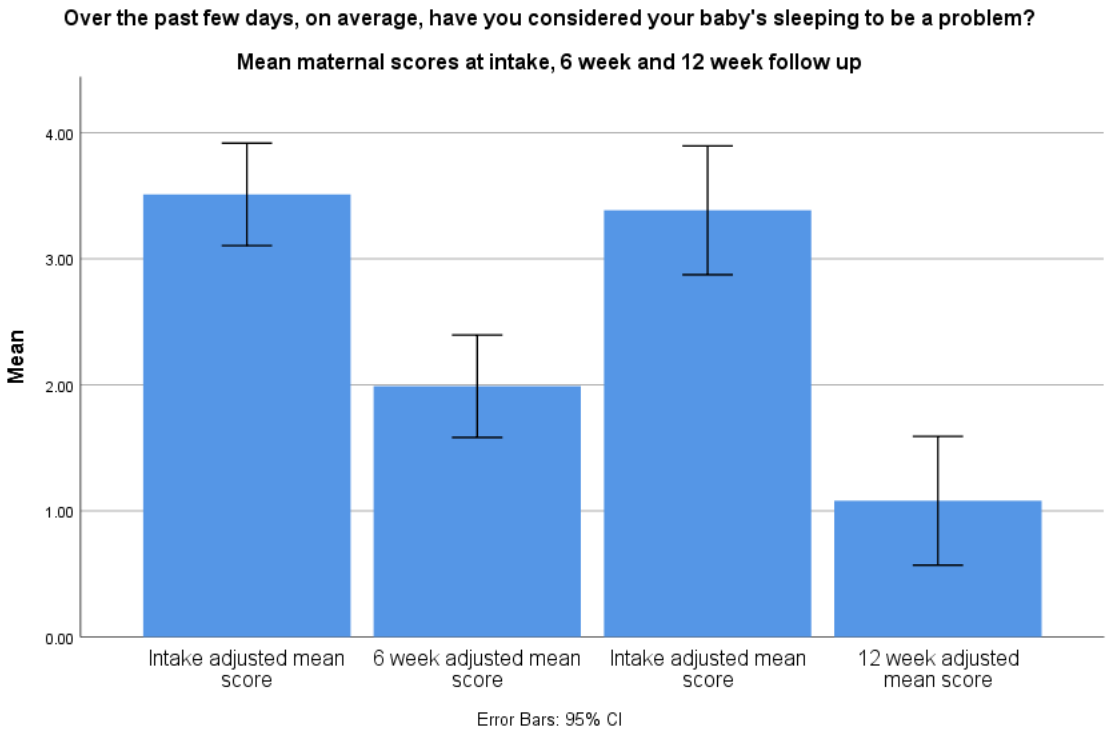
Appendix 25: Paired samples statistics and correlations: breastfeeding self-efficacy from baseline to twelve weeks

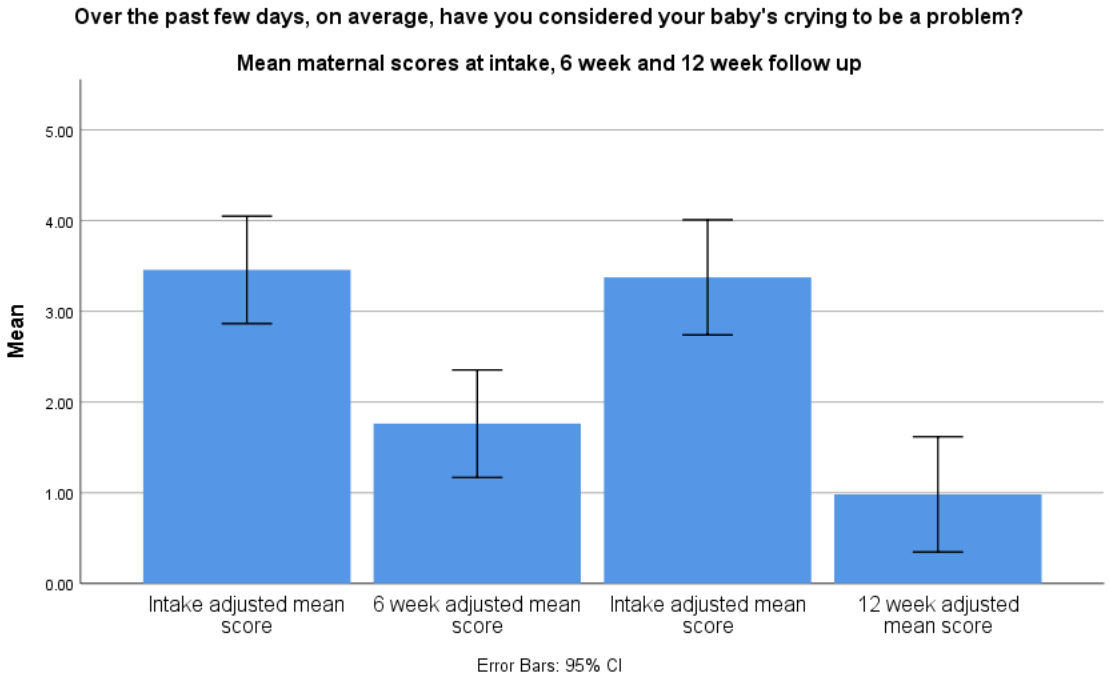
Paired Samples Statistics: Breastfeeding self-efficacy from baseline to twelve weeks					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Overall, I would describe breastfeeding as a relaxing activity: Intake	4.38	24	1.555	.317
	Overall, I would describe breastfeeding as a relaxing activity: 12 weeks	2.38	24	1.013	.207
Pair 2	I can always cope successfully with breastfeeding like I have with other challenging tasks: Intake	2.83	24	.917	.187
	I can always cope successfully with breastfeeding like I have with other challenging tasks: 12 weeks	3.96	24	1.122	.229
Pair 3	I can always be satisfied with my breastfeeding experience: Intake	2.29	24	.955	.195
	I can always be satisfied with my breastfeeding experience: 12 weeks	3.58	24	1.060	.216
Pair 4	I can always manage the breastfeeding situation to my satisfaction: Intake	2.30	23	1.020	.213
	I can always manage the breastfeeding situation to my satisfaction: 12 weeks	3.61	23	1.118	.233
Pair 5	I can always manage to keep up with my baby's breastfeeding demands: Intake	2.46	24	1.141	.233
	I can always manage to keep up with my baby's breastfeeding demands: 12 weeks	3.71	24	1.268	.259

Paired Samples Correlations: Breastfeeding self-efficacy from baseline to twelve weeks				
		N	Correlation	Sig.
Pair 1	Overall, I would describe breastfeeding as a relaxing activity: Intake & 12 weeks	24	.514	.010
Pair 2	I can always cope successfully with breastfeeding like I have with other challenging tasks: Intake & 12 weeks	24	.373	.072
Pair 3	I can always be satisfied with my breastfeeding experience: Intake & 12 weeks	24	.469	.021
Pair 4	I can always manage the breastfeeding situation to my satisfaction: Intake & 12 weeks	23	.389	.067
Pair 5	I can always manage to keep up with my baby's breastfeeding demands: Intake & 12 weeks	24	.217	.309

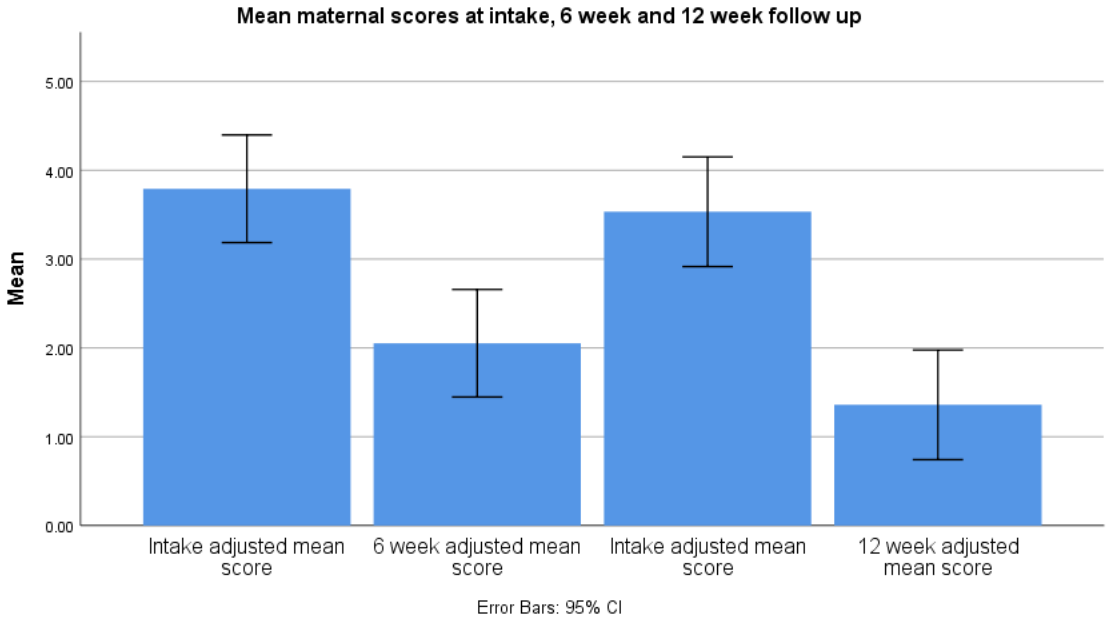
Appendix 26. Error bars showing adjusted means between baseline and six weeks, and baseline and twelve weeks, for UK Infant Questionnaire scores related to infant attributes



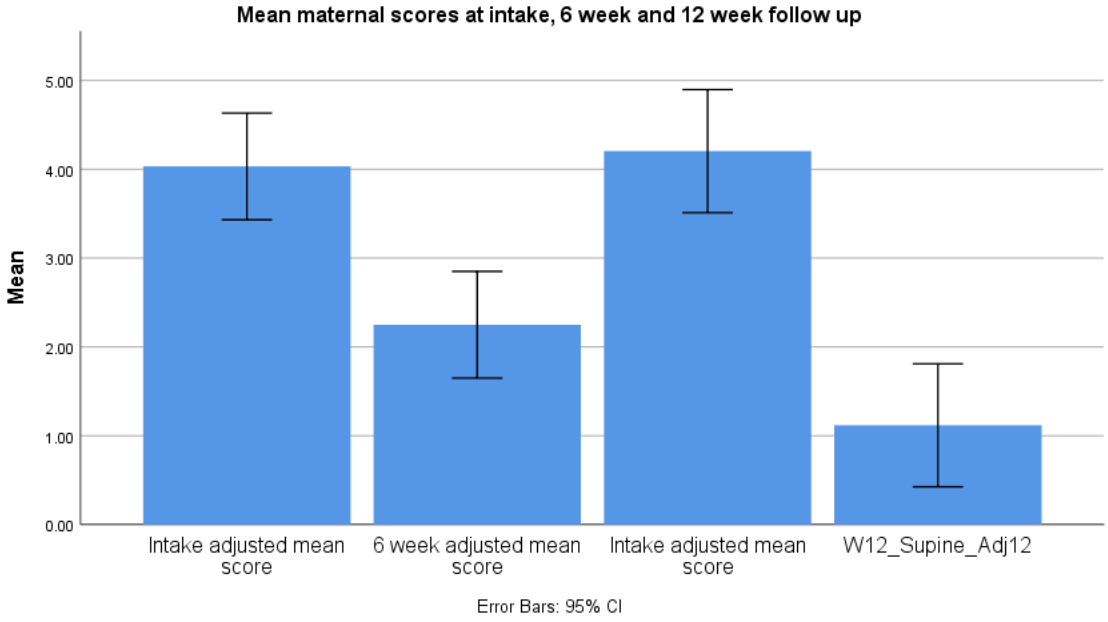

Over the past few days, on average, have you considered your baby's sleeping to be a problem?
Mean maternal scores at intake, 6 week and 12 week follow up
Mean
4.00
3.00
2.00
1.00
0.00
Intake adjusted mean score
6 week adjusted mean score
Intake adjusted mean score
12 week adjusted mean score
Error Bars: 95% CI

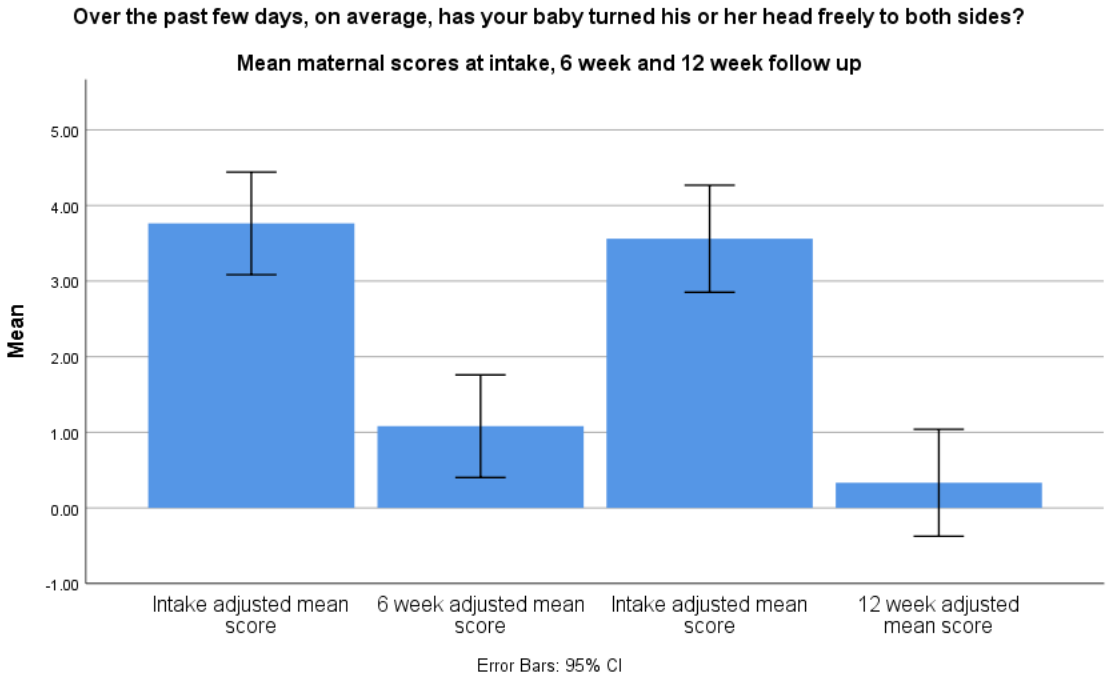

Over the past few days, on average, have you considered your baby's crying to be a problem?
Mean maternal scores at intake, 6 week and 12 week follow up
Mean
5.00
4.00
3.00
2.00
1.00
0.00
Intake adjusted mean score
6 week adjusted mean score
Intake adjusted mean score
12 week adjusted mean score
Error Bars: 95% CI

Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he or she cried?



Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his or her back?




Over the past few days, on average, has your baby turned his or her head freely to both sides?
Mean maternal scores at intake, 6 week and 12 week follow up
Mean
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
Intake adjusted mean score
6 week adjusted mean score
Intake adjusted mean score
12 week adjusted mean score
Error Bars: 95% CI

Appendix 27: Paired samples statistics and correlations: UK Infant Questionnaire scores from baseline to six weeks

Paired Samples Statistics: UK Infant Questionnaire baseline to six weeks					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Over the past few days, on average, have you considered your baby's feeding to be a problem? Intake	5.59	32	2.448	.433
	Over the past few days, on average, have you considered your baby's feeding to be a problem? 6 weeks	2.09	32	2.115	.374
Pair 2	Over the past few days, on average, have you considered your baby's sleeping to be a problem? Intake	3.31	32	2.375	.420
	Over the past few days, on average, have you considered your baby's sleeping to be a problem? 6 weeks	2.19	32	2.264	.400
Pair 3	Over the past few days, on average, have you considered your baby's crying to be a problem? Intake	3.34	32	2.647	.468
	Over the past few days, on average, have you considered your baby's crying to be a problem? 6 weeks	1.88	32	2.268	.401
Pair 4	Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he/she cried? Intake	3.69	32	2.788	.493
	Over the past few days, on average, how easy or diffuclt has it been to console (comfort, calm) your baby when he/she cried? 6 weeks	2.16	32	2.216	.392
Pair 5	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? Intake	3.88	32	2.575	.455
	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? 6 weeks	2.41	32	2.340	.414
Pair 6	Over the past few days, on average, has your baby turned his/her head freely to both sides? Intake	3.81	31	2.903	.521
	Over the past few days, on average, has your baby turned his/her head freely to both sides? 6 weeks	1.19	31	1.682	.302

Paired Samples Correlations: UK Infant Questionnaire baseline to six weeks				
		N	Correlation	Sig.
Pair 1	Over the past few days, on average, have you considered your baby's feeding to be a problem? Intake & 6 weeks	32	.263	.146
Pair 2	Over the past few days, on average, have you considered your baby's sleeping to be a problem? Intake & 6 weeks	32	.499	.004
Pair 3	Over the past few days, on average, have you considered your baby's crying to be a problem? Intake & 6 weeks	32	.480	.005
Pair 4	Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he/she cried? Intake & 6 weeks	32	.473	.006
Pair 5	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? Intake & 6 weeks	32	.276	.126
Pair 6	Over the past few days, on average, has your baby turned his/her head freely to both sides? Intake & 6 weeks	31	.104	.579

Appendix 28: Paired samples statistics and correlations: UK Infant Questionnaire scores from baseline to twelve weeks

Paired Samples Statistics: UK Infant Questionnaire baseline to twelve weeks					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Over the past few days, on average, have you considered your baby's feeding to be a problem? Intake	6.00	27	2.434	.468
	Over the past few days, on average, have you considered your baby's feeding to be a problem? 12 weeks	.37	27	.742	.143
Pair 2	Over the past few days, on average, have you considered your baby's sleeping to be a problem? Intake	3.44	27	2.407	.463
	Over the past few days, on average, have you considered your baby's sleeping to be a problem? 12 weeks	1.19	27	2.617	.504
Pair 3	Over the past few days, on average, have you considered your baby's crying to be a problem? Intake	3.33	27	2.801	.539
	Over the past few days, on average, have you considered your baby's crying to be a problem? 12 weeks	1.04	27	2.028	.390
Pair 4	Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he/she cried? Intake	3.44	27	2.764	.532
	Over the past few days, on average, how easy or difficult has it been to console (comfort, calm) your baby when he/she cried? 12 weeks	1.41	27	1.886	.363
Pair 5	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? Intake	4.19	27	2.527	.486
	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? 12 weeks	1.19	27	1.819	.350
Pair 6	Over the past few days, on average, has your baby turned his/her head freely to both sides? Intake	3.77	26	3.141	.616
	Over the past few days, on average, has your baby turned his/her head freely to both sides? 12 weeks	.42	26	.987	.194

Paired Samples Correlations: UK Infant Questionnaire baseline to twelve weeks				
		N	Correlation	Sig.
Pair 1	Over the past few days, on average, have you considered your baby's feeding to be a problem? Intake & 12 weeks	27	-.043	.833
Pair 2	Over the past few days, on average, have you considered your baby's sleeping to be a problem? Intake & 12 weeks	27	.511	.006
Pair 3	Over the past few days, on average, have you considered your baby's crying to be a problem? Intake & 12 weeks	27	.011	.955
Pair 4	Over the past few days, on average, how easy or difficult has it been to console (calm, comfort) your baby when he/she cried? Intake & 12 weeks	27	.023	.910
Pair 5	Over the past few days, on average, how comfortable (settled, relaxed) has your baby been while lying on his/her back? Intake & 12 weeks	27	-.167	.406
Pair 6	Over the past few days, on average, has your baby turned his/her head freely to both sides? Intake & 12 weeks	26	-.070	.732

Glossary

Glossary of terms used in this thesis, followed by abbreviations.

The Clinic: an interprofessional student-led clinic which provides midwifery and chiropractic care to support mothers and babies with breastfeeding, supervised by a midwife-lecturer and chiropractor-lecturer.

Midwife: a registered healthcare professional who provides care during pregnancy, birth, and the postnatal period (International Confederation of Midwives 2005)

Chiropractor: a registered health professionals who provide treatment for problems with bones, joints and muscles; the 'musculoskeletal system' (General Chiropractic Council 2021d).

AECC University College chiropractic teaching clinic: an out-patient clinic where final year chiropractic students provide chiropractic treatment and rehabilitation supervised by faculty chiropractors.

Interprofessional education: healthcare students and professionals learning about, from, and with each other to enable effective collaboration and improve quality of care.

Collaborative practice: multiple healthcare students and professionals working with each other, patients, their families, carers, and the wider healthcare community to deliver the highest quality of care.

Student-led clinic: a healthcare setting where students lead care under the supervision of registered professionals (Gillanders et al. 2018)

Breastfeeding: feeding an infant breastmilk at the breast.

Expressed breast milk: the mother's milk expressed from the breast, fed to the baby via another means, such as a bottle.

Donor breast milk: breast milk expressed by a donor who is not the baby's mother, to feed the baby.

Combination feeding: feeding a baby a combination of breast milk (breastfeeding, expressed breast milk, donor breast milk) and formula milk.

Formula milk: also called baby formula or infant formula, a breastmilk substitute which has been specifically formulated for feeding infants.

Prescription formula milk: a type of formula milk which has been formulated with specific properties to meet an infant's health need, often cow's milk protein intolerance.

Nipple shields: a thin silicone teat which fits over the nipple, with holes in the tip of the teat which allow breastmilk to pass through.

Supplemental feeder/supplemental feeding system: use of a thin tube taped to the breast and nipple, used to provide supplemental milks to the baby whilst sucking/feeding at the breast.

Bottle feeding: use of a bottle to feed a baby expressed or donor breast milk, or formula milk.

Cup feeding: use of a small cup to feed a baby expressed or donor breast milk, or formula milk.

Spoon feeding: use of a spoon to feed a baby expressed or donor breast milk, or formula milk.

Syringe feeding: use of a syringe to feed a baby, usually very small quantities of expressed or donor breastmilk, or formula milk.

Finger feeding: use of a thin tube taped to the finger, used to provide milk while the baby sucks on the finger.

Nasogastric tube (NGT) feeding: use of a thin tube, which has been inserted via the nose to the stomach, to provide milks to the baby.

Abbreviations

UK: United Kingdom

LMIC: Low- and middle-income countries

HIC: High-income countries

BFI: Baby Friendly Initiative

NMC: Nursing and Midwifery Council

NHS: National Health Service

BU: Bournemouth University

GCC: General Chiropractic Council

AECC UC: AECC University College

CINAHL: Cumulative Index to Nursing and Allied Health Literature

EMBASE: Excerpta Medica Database

AMED: Allied and Complementary Medicine Database

ICL: Index to Chiropractic Literature

WHO: World Health Organization

USA: United States of America

GDPR: General Data Protection Regulations

COVID-19: Coronavirus disease