In Good Hands: Lead Maternity Carer Midwives and Fetal Growth Assessment in Aotearoa New Zealand

Sheryl Morris

A thesis submitted in fulfilment of the degree Master of Midwifery

at Otago Polytechnic, Dunedin, New Zealand

14/8/2020

Declaration Concerning Thesis Presented for the Degree of Master of Midwifery

I, Sheryl Morris, solemnly and sincerely declare, in relation to the thesis entitled:

In Good Hands: Lead Maternity Carer Midwives and Fetal Growth Assessment in Aotearoa New Zealand.

(a) That work was done by me, personally and

(b) The material has not previously been accepted in whole, or in part, for any other degree or diploma

Signature:

Date: 14/08/ 2020

Abstract

Primary maternity care in Aotearoa New Zealand is largely delivered by community based, autonomous, case-loading, lead maternity care or LMC midwifery practitioners. In Aotearoa New Zealand, lead maternity care midwives work in a unique setting, providing continuity of care for women antenatally, intrapartum, and postnatally. This practice ethos benefits both women and their babies by ensuring women are seen regularly by the same midwife, or group of midwives, providing the opportunity to develop a sound understanding of the woman and her pregnancy. An integral aspect of LMC midwife care is routine antenatal assessment of fetal growth to ensure the wellbeing of both the woman and her baby during pregnancy. But what does it mean to 'assess fetal growth' in the unique context of continuity of midwifery care in Aotearoa New Zealand?

This research explores the meanings of fetal growth assessment to midwives, how the actual assessment is completed, and the knowledge, skills, and experience that midwives draw upon to undertake assessments. This qualitative descriptive study included semi-structured individual interviews with 14 LMC midwives. The findings were analysed using thematic analysis with key themes emerging from the data.

The findings of the analysis are presented in two chapters. The first findings chapter, 'Midwifery knowing and fetal growth assessment' discusses the art and science of this holistic aspect of midwifery practice. The midwife-woman partnership, the importance of consistency, navigating measurements and intuitive knowing form the themes revealed in discussion with the participants. These themes resonate strongly with midwifery practice in Aotearoa New Zealand and exemplify a midwifery epistemology.

The second findings chapter, 'Navigating the medico-midwifery realm' captures the participants' experiences of working within a maternity landscape dominated by a medical epistemology and grounded in pathologising and medicalising reproductive care. The themes within this chapter are: the medicalisation of fetal growth assessment, and midwives' negotiation of and response to the medicalisation of fetal growth assessment. The implementation and expected adherence to protocols is discussed by the participants, as is the marginalisation of midwifery knowledge within this context. Equally, the self-knowledge of pregnant women also appears to be undervalued within this paradigm.

A midwifery epistemology specific to fetal growth assessment is illuminated and affirmed. Scientific, holistic, experiential, and intuitive knowledge is combined and applied expertly within LMC midwifery care. The marginalisation of this expert knowing within the scientific paradigm is a loss both for women and midwives. As a body of primary maternity care professionals, midwives must represent the midwifery epistemology underpinning our fetal growth assessment practices in the medically dominant maternity landscape by transforming the status and value of midwifery knowing, rather than acceding to the medicalisation of fetal growth assessment.

Acknowledgements

Thank you to the midwives who generously shared their practice, wisdom, and time to participate in this research.

This journey has not been short and I am immensely grateful for the support and encouragement I have received from Otago Polytechnic. Sincere thanks to my primary supervisor, Dr George Parker, who has been nothing short of amazing. I am truly fortunate to have had her encouragement and support. Thank you also to Karen Wakelin, Dr Jean Patterson, and Bridie Foster for the roles you played in helping me bring this project to fruition.

And most importantly, thank you to my family. Without the support and encouragement of my partner and children, I would no doubt still be going. Arohanui.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction and Background

Introduction

The provision of maternity care varies around the world, as do methods of assessing fetal growth. Aotearoa New Zealand's world-leading model of primary maternity care is delivered in the community by autonomous lead maternity care (LMC) midwives, who comprise 30.3% of the midwifery workforce (Campbell, 2013; Midwifery Council of New Zealand [MCNZ], 2019). In 2017, 92.3% of pregnant women chose a community midwife as their lead maternity carer (Ministry of Health [MOH], 2019). The remaining practising midwives for the most part are employed by either specialist obstetricians in private practice or by district health boards (DHBs) as 'core' midwives in varying roles within the hospital system. Woman-centred continuity of care underpins Aotearoa New Zealand's midwifery-led community based model, allowing the LMC midwife to develop a holistic understanding of the woman and her growing baby, and the woman to develop a trusting partnership with her midwife (Collins et al., 2010; Cummins et al., 2015; Guilliland & Pairman, 2010; New Zealand College of Midwives [NZCOM], 2015; Sandall et al., 2016; Williams et al., 2010).

Continuity of care describes a model of care in which the woman chooses an LMC midwife who literally leads her care throughout her childbirth journey. It is the role and responsibility of this midwife to provide care and information antenatally, during labour, and postnatally for up to 42 days (NZCOM, 2015). This model of care is also sometimes referred to as continuity of carer (Freeman, 2006; McAra-Couper et al., 2014). Given the increasing workload and stressors of LMC work (Gilkison et al., 2015), some midwives practise within a team midwifery group, where all of the women are

seen by all midwives in the group. This team approach to LMC care is proving pivotal to the sustainability of this model of care and is still considered continuity of care, with a few more midwifery eyes and hands involved in the woman's care (Gilkison et al., 2015). For the purposes of this research, the terms continuity of care and continuity of carer are assumed to be equivalent. This distinctive context has been shown to provide improved outcomes and satisfaction for women and their babies (Moncrieff, 2018; Perriman et al., 2018; Shallow, 2001). It also gifts midwives the opportunity to really *know* the women and growing babies they care for. This way of *knowing* or midwifery epistemology, is foundational to how midwives provide care for both women and their babies in Aotearoa New Zealand and underpins the partnership model of care described. Midwifery epistemology incorporates the many sources of knowing for midwives: intuition, experiential and contextual knowledge, women's embodied knowledge, as well as science and medical protocols, and informs and guides how midwives practice (Walsh, 2006).

Antenatal care and fetal growth assessment

Antenatal care provision encompasses the wellbeing of both women and their babies. In Aotearoa New Zealand, women are seen by maternity care providers regularly throughout their pregnancy to ensure they remain well and that their baby is growing appropriately. This routine care includes discussion about how the woman is feeling, how the pregnancy is progressing, screening, blood pressure checks, assessing her baby's growth, and referrals for obstetric and other types of medical and allied health consultations where necessary (MOH, 2012; NZCOM, 2015). As noted, the vast majority

of women in Aotearoa New Zealand have their antenatal care provided by an LMC midwife. This care is provided in the community, either in women's homes or in community based midwifery clinics.

Assessing fetal growth is a significant part of routine antenatal care provision for LMC midwives. Within Aotearoa New Zealand's continuity of care context, this assessment is carried out by an LMC midwife every four weeks or so, becoming more frequent the closer to term[1] a woman becomes (NZCOM, 2015). Meeting with women and palpating their pregnant bellies regularly provides the midwife with a sound basis for assessing and monitoring fetal growth.

The midwifery approach to fetal growth assessment has traditionally relied on palpation; the art of feeling a baby with skilled and experienced hands (Blee & Dietsch, 2012; Engstrom & Sittler, 1993; Jacobson, 1993; Spillane, 2020). This skill is intrinsic to midwifery practice and is performed mindfully and holistically, taking into account the feel of the belly, the woman's maternity history, and the woman's own view on her growing baby. Exploring the woman's experience of her baby's growth acknowledges that this aspect of antenatal care is a meaningful two-way sharing of information.

Assessments performed through palpation provide information about the baby's presentation and position, liquor[2] levels, and an assessment of size appropriate for gestation. Measuring a woman's belly[3], or her symphysis-fundal height (SFH), has also become part of this assessment over time. More recently, however, midwives have had

[1] Term is 37-42 weeks gestation.
[2] Liquor is another term for amniotic fluid.
[3] I have chosen to use the term belly intentionally as it is reflective of the language used in midwifery practice

to navigate the shift to more standardised approaches to fetal growth assessment introduced through the Growth Assessment Protocol (GAP) and customised growth charts called Growth Related Optimal Weight (GROW) (CCDHB, 2018; McCowan et al., 2018; New Zealand Maternal Fetal Medicine Network [NZMFMN], 2014).

Growth Assessment Protocol and Growth Related Optimal Weight charts

GAP was developed in England by the Perinatal Institute to improve the detection of intrauterine growth restricted (IUGR) fetuses or small for gestational age (SGA) fetuses, thereby improving outcomes and reducing stillbirth statistics (Clifford et al., 2013; Jayawardena & Sheehan, 2019; Lawes & Jones, 2020). Fetuses who do not reach their biologically determined growth potential are termed intrauterine growth restricted. Not all fetuses who are intrauterine growth restricted fall below the 10th centile (Carberry et al., 2014; Diksha et al., 2018; Lawes et al., 2020; McCowan et al., 2018). Small for gestational age is defined as follows: the estimated fetal weight (EFW) is less than the 10th centile on a customised growth chart; the abdominal circumference (AC) is less than the 5th centile by scan; and there is discordancy of AC with other growth parameters (MOH, 2012; NZMFMN, 2014). Small for gestational age is a significant cause of perinatal morbidity and mortality and the primary cause of stillbirth, hence the importance placed upon this aspect of maternity care (Clifford et al., 2013; Diksha et al., 2018; Jayawardena & Sheehan, 2019; Jelks et al., 2007; Lawes & Jones, 2020; Papageorghiou et al., 2016; Royal Australian and New Zealand College of Obstetricians and Gynaecologists [RANZCOG], 2018; Williams et al., 2018). For the context of this

research, and other than in the discussion of protocols where required, I will refer to both IUGR and SGA as growth restricted.

The GAP protocol describes a standardised method of taking SFH measurements, the point of which is to improve accuracy via reduced inter-observer variation (Clifford et al., 2013). These measurements are then plotted on a customised GROW chart. Using GAP software, a customised GROW chart can be generated for each woman, based on her height, weight, parity, ethnicity, and gestation. This chart shows the individualised centiles lines for 5th, 10th, 50th, 90th and 95th centiles, providing a simple method of seeing where the SFH measurement estimates the growth of the baby. It is worth noting that the maternity care context in England, where this protocol was developed, differs from the continuity of care context in Aotearoa New Zealand. Women in England do not necessarily have a designated LMC midwife and can see multiple practitioners antenatally (Bupa, 2020; NICE, 2020).

As I will demonstrate in this research, with the implementation of GAP and GROW, greater emphasis is placed on SFH measurement alone, diminishing the value of a holistic midwifery assessment and medicalising normal pregnancies. This medical intervention is no longer being used with the original intention of detecting SGA babies, which has had significant implications for LMC midwifery practice, women, and babies.

The Aotearoa New Zealand context

Midwifery as an independent profession has had somewhat of a tumultuous journey in Aotearoa New Zealand, as in other Western countries, with the ascension of obstetrics

and the medicalisation and hospitalisation of birth over the 20th century (Donley, 1986). However, as a result of midwifery and consumer activism, midwifery was finally able to reclaim its professional identity and autonomy in 1990 with the passing of the Nurses Amendment Act (Pairman, 1999).

Lead maternity care midwives work as community based autonomous practitioners contracted by the MOH to provide primary maternity services across the midwifery scope of practice: antenatal, intrapartum, and postnatal care (MCNZ, 2019; NZCOM, 2015). The original framework of service specifications for primary maternity care, as well as a payment schedule for LMC midwives was provided in Section 88 of the New Zealand Public Health and Disability Act 2000 (MOH, 2012). Following the introduction of the Health Practitioners Competence Assurance Act 2003, the MCNZ was established. The role of this regulatory body is to ensure that midwives are competent and fit to practise. The Midwifery Council of New Zealand defines the midwifery scope of practice and competencies required to be met by all midwives to hold an annual practising certificate (MCNZ, 2019). The NZCOM is a member of the International Confederation of Midwives and the national professional body for midwifery in Aotearoa New Zealand. In conjunction with its membership NZCOM develops statements regarding ethics, philosophy and standards of midwifery practice. Nga Maia, the national body which represents Māori birthing and promotes Mātauranga Māori in pregnancy and birth developed Turanga Kaupapa or cultural guidelines to guide and inform midwifery practice (Nga Maia, 2018; NZCOM, 2020). In terms of practice and care provision, LMC midwives are guided by all of the above along with the protocols and guidelines of their respective DHBs and the Guidelines for

Consultation with Obstetric and Related Medical Services (Referral Guidelines) (MOH, 2012).

In the LMC midwifery care context, women are seen regularly by the same midwife or group of midwives. As described earlier in this chapter, LMC midwives take this journey in partnership with the woman and provide consistent care to ensure both the woman and her baby remain well. Fetal growth assessment is conducted routinely by LMC midwives, with each midwife autonomously choosing the most appropriate way to do this guided by her professional standards, MOH guidelines, and the specific protocols of her region.

Researcher perspective

This research journey started with feelings of frustration. Assessing the size or growth of babies antenatally is, as discussed, an essential and integrated component of antenatal care approached holistically by LMC midwives. Comments made following a fairly cursory one-off palpation by a different practitioner or even at a scan about the size of a woman's baby can have major repercussions, changing the course of a woman's pregnancy and birth story. This scenario is not uncommon. In my practice this has happened regularly enough to warrant a sense of dread at times when attending an obstetric antenatal clinic with a woman. I often have a feeling of needing to be ready to almost defend this growing baby and her mother, as well as my practice. However, despite this being a common scenario. it was one particular experience that prompted this research journey.

Meet Jennifer[4], a primiparous woman in her early thirties. A normally well woman with an uneventful pregnancy, Jennifer had developed thrombocytopaenia[5]. Following the referral guidelines (MOH, 2012), I offered to refer her to an obstetric antenatal clinic for a consultation, which she accepted. For me, her baby palpated as normally grown. She attended the obstetric antenatal clinic at 37 weeks and was seen by a junior registrar who palpated her belly and said, "What a big baby!" Talk of a growth scan and glucose tolerance test followed. There was also talk of a possible early induction. That was the beginning of the end of 'normal' for this woman. Jennifer rang me in an absolute panic. Her fear at hearing this, despite my reassurances, only grew. My hands and assessment told me this baby was normally grown. As a result of this appointment, Jennifer had a glucose tolerance test and returned a normal result. She also had a scan at 38 weeks which reported an estimated weight of 3.9kg for her baby. I reassured her again, that I felt this baby was normally grown and talked with her about the accuracy of scans. The scan clinched her growing mistrust of my assessment. She chose to believe the scan result, and the impression from a one-off palpation over her midwife. I was "fired". She sought an elective section but agreed to an induction at 40 weeks of a baby who weighed 3.6kg at birth.

In my life as an LMC midwife I have faith in my primary tool—my hands, and also in the continuity of my care. I believe that the art and science of midwifery, along with practice experience and the provision of holistic care, enables LMC midwives to confidently assess fetal growth. In recent years, increasing pressure to routinely use

[4] Jennifer is a pseudonym.

[5] Low platelet count.

GROW charts and rely more on scan results has inferred a lack of trust in midwifery approaches to fetal growth assessment. When asked about the growth of a baby in a secondary setting, the expectation is that an estimated weight and centile from a recent scan will be provided. If there has been a scan, I will share this information after first discussing my impression of the baby's growth. I measure bellies and refer for scans when I feel it is needed. I appreciate the evidence regarding the detection of growth restricted babies, as well as the difficulty in accurately assessing babies of women with a higher BMI. However, I also value my midwifery knowing. This invisibilisation of my midwifery knowledge, and my sense that it was not valued by the woman or the doctor, motivated me to explore this topic with the aim of shedding light on how LMC midwives assess fetal growth.

The literature

This is the first research conducted in Aotearoa New Zealand that explores how midwives assess fetal growth within a continuity of care context. Exploring how LMC midwives assess fetal growth gives meaning and visibility to this intrinsic, but understated, skill. Midwifery is a profession frequently overshadowed by the scientific paradigm and an increasingly medicalised approach to pregnancy and birth. Asserting our midwifery practice of fetal growth assessment and the midwifery epistemology that underpins it, and by documenting this holistic aspect of practice, will contribute to greater understanding of how midwives conduct this assessment. It will also highlight the differences between a midwifery assessment and an assessment dominated by

medical interventions, and what this means in our LMC midwifery-led maternity care context.

Research that reviewed and evaluated various approaches to fetal growth assessment is plentiful. Hands-on abdominal palpations, SFH measurements, customised growth charts, as well as the use of ultrasound scans to assess fetal growth have been compared, discussed, and reviewed. Conclusions regarding the accuracy of these methods vary depending on the study. The vast majority of the research had little midwifery input and was not conducted in a continuity of care context. Rather, the research was from a medical perspective and generally hospital based. Missing from the research was the holistic, psychosocial, woman-centred and continuity aspects of care that are central to the model of care practised by LMC midwives in Aotearoa New Zealand, and that shape and inform our unique approaches to fetal growth assessment.

Research aims and question

This research set out to answer the question: How do LMC midwives assess fetal growth and what informs their practice by exploring fetal growth assessment from the perspectives of LMC midwives for whom, as described by a study participant, this assessment was their “bread and butter”. Shedding light on and affirming how LMC midwives in a continuity of care context approach fetal growth assessment is important to gain an understanding and assert the value of midwifery-centric practices and knowledge.

The literature review confirmed that midwifery-led fetal growth assessment from a continuity of care context was poorly represented in the published literature. By identifying midwifery knowledge and skills drawn upon to assess fetal growth, this project offers contextually relevant information and a unique view of fetal growth assessment from a midwifery perspective in Aotearoa New Zealand's continuity of care context.

Method

The research described in this thesis gives voice to LMC midwives' own accounts of their fetal growth assessment practices with the goal of illuminating and affirming their unique knowledge and skill. The research therefore employed a qualitative descriptive approach as this was suited to the research aims and objectives. Qualitative descriptive research provides an effective method for exploring human existence as it occurs in everyday life (Sandelowski, 2000). Study participants provide detailed descriptions of the research phenomena in everyday language, which allows the researcher to identify patterns, concepts, and relationships, while endeavouring to maintain empathic neutrality (Morse & Field, 1996; Patton, 2002). Gaining insights into how LMC midwives assess fetal growth lends itself to a qualitative descriptive approach, as the intention of this research is to explore an aspect of midwifery practice from an insider perspective. Capturing the participants' experience of this aspect of their practice in detail is key to building a knowledge base in this aspect of practice. For this reason, conducting semi-structured interviews with midwives would enable in-depth exploration of midwives' experiences when assessing fetal growth. Fourteen

generous LMC midwives who practiced across two DHBs agreed to participate and share their practices. The interviews were recorded and a thematic analysis of the data was conducted (Braun & Clarke, 2014).

Thesis overview

This thesis comprises six chapters.

Chapter 1 introduces the study and outlines the reasons for undertaking this study, its purpose, and aim. The chapter also provides a brief summary of the method used to complete the research as well as a thesis overview.

Chapter 2 is a review of the literature. Methods of fetal growth assessment were reviewed, as were studies discussing the accuracy of these methods. This study is the first that explores fetal growth assessment in a midwifery-led continuity of care context.

Chapter 3 discusses the philosophical underpinnings of the study as well as the methodology and study design.

Chapter 4 presents the first of two major themes derived from the interviews, namely midwifery knowing and fetal growth assessment.

Chapter 5 presents the second theme that emerged from the data, namely navigating the medico-midwifery realm.

Chapter 6 is a discussion of the findings of this study. The strengths and limitations of the study are considered. Recommendations for further research and implications for practice are suggested. The chapter concludes with a researcher reflection.

Chapter summary

This chapter introduced the study and provided the background and motivations. The purpose of the study is to explore fetal growth assessment in a woman-centred midwifery-led continuity of care context, with the aim of gaining insights into midwifery-centric practices and contributing to midwifery epistemology regarding fetal growth assessment. This research aims to shed light on fetal growth assessment in order to halt this diminishment of midwifery knowing, and instead, affirm midwifery fetal growth assessment practices in a continuity of care model.

Chapter 2: Literature Review

Introduction

The purpose of this literature review was to identify and critically evaluate research conducted both in Aotearoa New Zealand and internationally that was pertinent to the research question: How do Aotearoa New Zealand LMC midwives assess fetal growth and what informs their practice? Underpinning this question was a desire to understand how or if the continuity of care context of LMC midwifery in Aotearoa New Zealand might shape and influence midwifery approaches to fetal growth assessment.

As demonstrated in Chapter 1, the context in which midwives assess fetal growth is of particular relevance to this research. This is because primary maternity care in Aotearoa New Zealand is largely delivered by autonomous, community based, case-loading LMC midwives who provide continuity of care in partnership with pregnant women (NZCOM, 2015). This primary continuity of care practice context benefits both women and their babies, as women are seen regularly by the same midwife or group of midwives, ensuring the provision of consistent care as well as the opportunity to develop a psychosocial understanding of the woman, her pregnancy, her family, and any social issues at play (Collins et al., 2010; Cummins et al., 2015; Sandall et al., 2016; Williams et al., 2010).

The GAP and GROW customised growth charts were developed in England in a different context of maternity care to specifically improve the detection of growth restricted babies, therefore reducing perinatal morbidity and mortality of these small babies

(Clifford et al., 2013; Jayawardena & Sheehan, 2019). This international protocol has now become part of the maternity landscape in Aotearoa New Zealand. However, it appears to have shifted from a specific tool for the detection of growth restricted babies to a more routinised one, with an increasing degree of expectation to use GROW charts more routinely in midwifery practice (McCowan et al., 2018). For this reason, it was also necessary to explore the literature pertaining to both GAP and GROW.

There was a large amount of literature identified that discussed different methods, applications, and accuracy of fetal growth assessment. There was limited research that included the perspective of midwives and the experience of pregnant women themselves. No research was identified that related specifically to fetal growth assessment undertaken by midwives in a continuity of care context. This identified gap in the literature provides an important rationale and justification for this research to explore and profile midwifery care related to fetal growth assessment in the context of Aotearoa New Zealand's midwifery model of care based on continuity of care and partnership.

Background

Assessing fetal growth is a significant aspect of routine midwifery antenatal care. Discussing with women how they feel in their bodies and whether or not they feel their baby is growing and moving well provides information that contributes to the holistic assessment of fetal growth undertaken by midwives (Baston, 2003; Engstrom & Sittler, 1993; Grigg, 2010; Pembroke & Pembroke, 2008). Palpating the woman's belly to feel

where the baby is lying and how the baby is growing, followed by measuring the woman's belly by landmark or with a tape measure complete the midwifery assessment (Baston, 2003; Carne, 2010; Engstrom & Sittler, 1993; Grigg, 2010; Kayem et al., 2009).

Practice guidelines pertaining to fetal growth assessment are provided by NZCOM, RANZCOG, as well as individual DHBs. The NZCOM are updating their current (2019) practice guidance document on "Assessment and promotion of fetal wellbeing". The RANZCOG position statement of "Detection and management of women with fetal growth restriction in singleton pregnancies" states that a full risk assessment for fetal growth restriction should be undertaken in early pregnancy (RANZCOG, 2018). For low risk women, SFH measurements using a standardised technique, together with the potential plotting of these measurements on a growth chart may help identify this issue. Where slow or static growth is suspected, a scan should be considered. The Maternal Fetal Medicine Network New Zealand Guideline (2014) states that utilisation of customised GROW charts together with structured education can increase detection of SGA fetuses.

Early identification of growth restricted babies will improve their outcomes, therefore the existing literature is largely oriented towards determining the accuracy of the various methods of fetal growth assessment (Griffiths et al., 2008; Jelks et al., 2007; McGeown, 2001; Robert Peter et al., 2015).

Literature review

The following databases were accessed through the Robertson Library at Otago Polytechnic to search for relevant published literature: CINAHL, ProQuest, PubMed, the Cochrane Database, and Google Scholar. Keywords employed in the literature searches were: Lead maternity care, midwife, continuity of care, fetal growth, abdominal palpation, SFH, and customised growth charts, as well as variations of the above. A search was also conducted for customised growth charts, and GAP.

It was hoped that these terms would provide a springboard from which to dive into research about this intrinsic aspect of midwifery care. There was ample literature on continuity of care, but from a more general perspective. This literature focused on the levels of satisfaction for both women and midwives and their experiences of, and the outcomes resulting from, a continuity of care model (Blee & Dietsch, 2012; Perriman et al., 2018; Pullon et al., 2014). There was no specific research on midwifery-led routine antenatal fetal growth assessment in the context of continuity of care.

Similarly, there was a great deal of medical literature that discussed and compared the accuracy and validity of the following methods used to assess fetal growth: abdominal palpation, SFH measurement, and medical interventions such as GAP and GROW. However, this literature was not informed by a midwifery-centric, community based continuity of care perspective, nor relevant to the Aotearoa New Zealand specific LMC model of care.

Considering this and given that the goal of this literature review was to explore the literature in relation to LMC midwifery fetal growth assessment practices, the review is structured around the three key elements of a midwifery-led fetal growth assessment as articulated by Baston (2003): discussion with the woman, palpation, and measurement. Literature specific to midwives, midwifery practice, and women's experiences was reviewed. When midwifery specific literature was not available, this was noted and the medical literature was described.

Discussion with the woman

Recognising and valuing a woman's knowing allows for the two-way sharing of information or "the presence of reciprocity: that is, mutual 'give and take'" (Hunter, 2010, p. 259) which underpins the concept of partnership in a midwifery relationship (Baston, 2003; Davies, 2010; Grigg, 2010; Olsen, 1999). The value of this discussion with women is demonstrated in the limited literature that considered women's perspectives and experiences about fetal growth.

The impressions of both parous[6] and primiparous[7] women regarding the size of their baby were shown to be as accurate as an assessment by a physician or a scan, with no significant statistical difference (Baum et al., 2002; Harlev et al., 2006). A study of 200 women demonstrated that parity was not a significant factor in women accurately estimating their baby's weight, with 48.1% of primiparous women and 57.4% of multiparous women accurately estimating their babies weights to within ±10% ($p > .2$)

[6] Women who have had a baby.
[7] Women who have not yet had a baby.

(Baum et al., 2002). Likewise, Chauhan et al. (1995) found that the mean standardised error for the maternal estimate was 92±81g/kg, compared to 75±71g/kg for clinical estimate conducted by obstetric doctors. Herrero and Fitzsimmons (1999) found the maternal estimation of the baby's weight had a mean absolute error of 331g, compared to 324g by doctors. However, despite this evidence of the efficacy of maternal estimation of fetal size, a recent study of women with suspected macrosomic[8] babies, found that women's self-knowledge about the size of their babies was largely ignored (Reid et al., 2014).

Palpation

The second key element of midwifery assessment of fetal growth is palpation (Baston, 2003). Midwifery textbooks and general midwifery articles in journals and magazines contain clear articulations and discussions of the midwifery art and science of palpation (Davies, 2010; Engstrom & Sittler, 1993; Gibson, 2008; Grigg, 2010). Abdominal palpation, or Leopold's manoeuvres, are described in the research as a systematic method of evaluating the presentation, position, and size of the fetus (Bais, 2004; Devi et al., 2016; Farrell et al., 2002; Goetzinger et al, 2013; Goto, 2017; Preyer et al., 2019; Ray & Alhusen, 2016).

Prior to palpation, consideration should be given to the consistency of the following, as these factors can impact the accuracy of the growth assessment: whether or not the woman's bladder is empty, maternal position, and accurate identification of the fundus (Baston, 2003; Gibson, 2008; Grigg, 2010). The palpation of a woman's pregnant belly

[8] Babies whose estimated weight is greater than 4.5kg.

is illustrated below in Figure 1, and includes a visual assessment of the shape and size as well as any scars or marks followed by: (a) identifying the fundus; (b) palpating the position and size of the baby laterally; and finally (c & d) the pelvic assessment which identifies the baby's presenting part and assesses flexion of the head (Baston, 2003; Gibson, 2008; Grigg, 2010).

Figure 1.

Leopold's manoeuvres

(https://en.wikipedia.org/wiki/Leopold%27s_maneuvers)

The woman's position during the assessment was found to matter significantly. Research found that flexed knees, and elevation of the head or trunk resulted in a variation of measurements that were both statistically and clinically significant. However, there is little evidence in the literature to support which position is the most accurate, whether lying supine, or semi-recumbent with arms by the woman's sides, with or without the head supported or knees flexed. Preference was another matter, with practitioners preferring women to lie supine as identifying landmarks and

completing the assessment were easier in this position. Women tended to prefer lying with their knees flexed in a semi reclined position. Nonetheless, when assessing growth, the woman should be in the same position each time to accurately reflect the presence or absence of growth, rather than a difference because of maternal position (Baston, 2003; Engstrom, Piscioneri et al., 1993; Engstrom & Sittler, 1993; Gibson, 2008; Grigg, 2010).

From a midwifery perspective, palpation is a valued and essential midwifery skill that encompasses not only touch but thoughtful interpretation and strong evaluation skills (Davies, 2010; Engstrom & Sittler, 1993; Gibson, 2008; Grigg, 2010; Lawes & Jones, 2020; My Mak & Wong, 2000; Ray & Alhusen, 2016). Midwives described palpation as being "very much about a connection", and "seeing with my hands" (Davies, 2010; Gaskin, 2004; Jacobson, 1993). Grigg (2010) described this process as "the gathering of small pieces of information, using the senses of hearing, seeing and touching, to put together an invisible four-dimensional 'puzzle'" (p. 450). The importance of a holistic approach to palpation and fetal growth assessment, rather than simply surveillance, was discussed in the midwifery literature (Blee & Dietsch, 2012; Davies, 2010).

The remaining literature reviewed consisted of studies comparing the accuracy of palpation to other methods such as SFH measurements and scans. These studies were from a medical perspective and generally set in a hospital environment, with some set in labour wards. In these studies the woman was not mentioned, other than her parity and body mass index (BMI). The literature on the accuracy and reliability of an EFW by palpation/Leopold's manoeuvres in this setting is conflicting (Baum et al., 2002; Goto,

2017; Preyer et al., 2019; Robert Peter et al., 2015). Curti et al. (2014) found that at term, experienced hands can accurately estimate birth weight within 10% in 55%–75% of cases, and that this value is at least as good as ultrasound prediction. Similar findings in other studies also suggested that an EFW based on palpation is a valid and reliable method of assessment which compares favourably with ultrasound derived EFW (Bais et al., 2004; Baum et al., 2002; Kesrouani et al., 2017).

Fetal growth assessment by palpation can be confounded by a range of sensitivities such as practitioner technique and experience, as well as maternal factors such as BMI (Preyer et al., 2019; Ray & Alhusen, 2016). Maternal BMI was found to be a confounding factor in an accurate assessment of fetal growth because it is associated with both the fetal weight and the accuracy of fetal weight estimation (Farrell et al., 2002; Preyer et al., 2019). However, a review by Goto (2017) indicated that there was no significant difference in the rates of EFW within 10% of actual birthweight between palpation and maternal estimations ($n = 8$; $p = 0.491$) or between scan and maternal estimations ($n = 6$; $p = 0.568$), or in the correlation coefficient of actual birthweight with scan estimation compared with palpation ($n = 5$;$p = 0.621$). Maternal and fetal variables as well as practitioner experience were evaluated in two other studies and were also found not to have significantly influenced the accuracy of the growth assessment by palpation (Kesrouani et al., 2017; Noumi et al., 2005).

Practitioners and women themselves tended to underestimate fetal weight in women with a low BMI and overestimated EFW in heavier women (Farrell et al., 2002). The size of babies who weighed more than 4kg at birth was also noted to have been underestimated by midwives (Kesrouani et al., 2017). In a study including 221

macrosomic babies, 81.9% of babies were not picked up by palpation prior to birth. The mean absolute error between clinical EFW and birth weight was 347±273g, indicating the correlation between an estimated weight by palpation and actual birth weight is overall weak ($r = 0.4$), particularly in women with macrosomic babies (Goetzinger et al., 2013). Noumi et al. (2005) observed a positive predictive value of 43% in the detection of fetal macrosomia by palpation. Interestingly, a significantly higher number of macrosomic babies were detected in heavier women than in women with a normal BMI, indicating that the accuracy of clinical EFW at term is not significantly impacted by maternal BMI (Preyer et al., 2019).

The literature on the use of palpation for fetal growth assessment is conflicting. As demonstrated in some studies, palpation is established as a valid tool for fetal growth assessment, while in others it is dismissed as subjective and weak. Body mass index, growth restriction, and macrosomia can be confounding factors on the efficacy of palpation for fetal growth assessment. However, one key here is that the literature evaluating palpation for fetal growth assessment was set in a different context to Aotearoa New Zealand. Continuity of care was not discussed, and a large number of these studies were conducted prelabour, or even during labour, in hospitals. It was unclear whether midwives were involved in this assessment. Given the intrinsic nature of palpation to midwifery practice, this gap in the literature provides an important rationale for this research.

Measuring

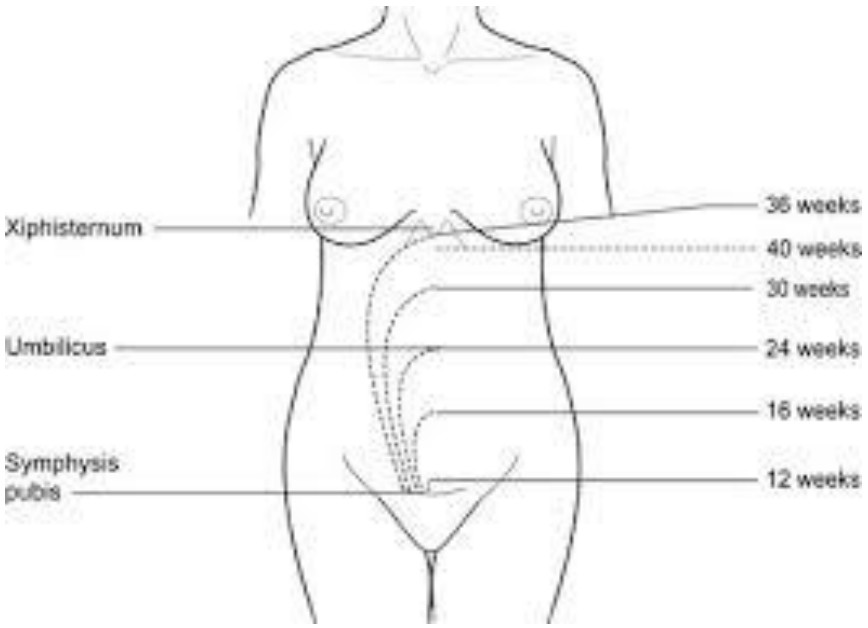
The third key element of midwifery-led fetal growth assessment is fundal height measurement (Baston, 2003). Grigg (2010) and Baston (2003) described two methods of measuring fetal growth: comparing landmarks on the maternal abdomen to gestation and taking an SFH measurement with a tape measure. Measuring by landmarks has been described in midwifery texts for many years, and fits with the midwifery assessment of looking, evaluating, and drawing on the art and science of midwifery knowledge to form the assessment (Grigg, 2010). There is limited research on measurement approaches from a midwifery perspective but identified studies that focused on the practice of measuring by landmarks and by SFH are reviewed.

Landmarks

Landmark guided fundal height assessment is a traditional midwifery practice (Grigg, 2010). Palpating the fundus of the uterus in relation to anatomical landmarks on the woman's belly with a singleton pregnancy antenatally provides an estimation of growth for the midwife (Baston, 2003; Grigg, 2010). Figure 2 illustrates the landmarks in relation to weeks of gestation.

Figure 2.

Abdominal landmarks



(https://nursekey.com/principles-of-abdominal-examination-2/)

When assessing by landmarks and finger breadths, the fundus is palpated at the symphysis pubis, umbilicus, and xiphisternum (Grigg, 2010). Theoretically, at 12 weeks the fundus would be just over the symphysis pubis; between 20 and 24 weeks at the umbilicus; at 32 weeks midway between the umbilicus and xiphisternum; and at 36 weeks at the xiphisternum with an expected growth rate of 1cm per week (Engstrom, Piscioneri et al., 1993; Grigg, 2010).

Historically, the practice of comparing fundal height with landmarks was used to confirm pregnancy and provide an idea of gestation (Engstrom & Sittler, 1993). Questions regarding the accuracy of this method of assessment centred around anatomical differences in women. Studies demonstrated these variations in anatomy,

raising questions about the validity of this method (Engstrom & Sittler, 1993; McGeown, 2001) (see Table 1). Grigg (2010) observed that simply because the accuracy of fetal growth assessment using landmarks has not been subject to scientific evaluation, it does not mean that it is not a useful guide.

Table 1.

Individual variation of the anatomical measurements from studies as cited in Engstrom and Sittler (1993)

Study	Sample (*n*)	Symphysis pubis to umbilicus (cm)
Sutugin (1875)	281	15–22
Spiegelberg (1887)	Unreported	13–28
McDonald (1906)	>1,000	12–20
Pendleton (1926)	1,200	12–23
Smibert (1962)	61	12.5–20
Beazley and Underhill (1970)	233 < 28 weeks	11.5–19
	240 >28 weeks	12.5–23

Symphysis-fundal height measurement

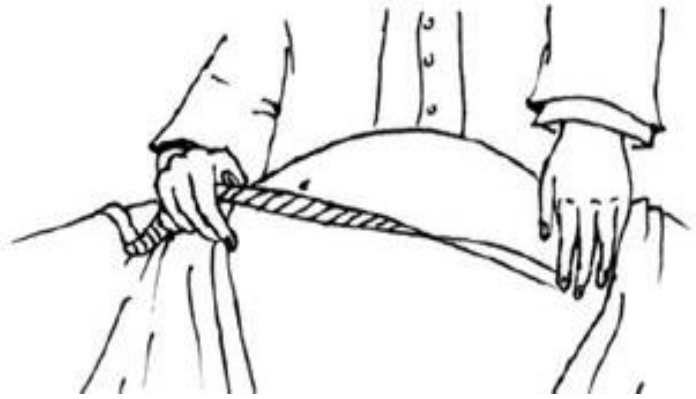
The second and more accepted method of measuring to assess fetal growth is the measurement of the SFH using a tape measure. Serial measurement of the SFH is a primary method of assessing fetal growth in low risk pregnancies (Papageorghiou et al., 2016; Ray & Alhusen, 2016). These measurements are viewed as being non-invasive, easy to conduct, and generally acceptable to women (Carne, 2010; Crosby & Engstrom, 1989; Curti et al., 2014; Henry, 2012; Ray & Alhusen, 2016). Taking an SFH measurement has become a well reported part of fetal growth assessment. There is

much research around how this assessment is conducted, as well as variables that can potentially impact the accuracy of the assessment. Symphysis-fundal height measurement is performed routinely to assess fetal growth and screen for both growth restriction and large for gestational age (LGA) (Haragan et al., 2015; Henry, 2012; Pay et al., 2015). Large for gestational age is defined as an EFW greater than the 90th centile (MOH, 2012).

There are various understandings in the reviewed literature on how this measurement should be conducted, as well as sensitivities described that may impact accuracy. However, even with the relatively large number of studies and research on SFH measurement, there remains insufficient evidence to evaluate the accuracy of this method (Curti et al., 2014; Papageorghiou et al., 2016; Robert Peter et al., 2015; Spillane, 2020).

Figure 3.

Measuring symphysis-fundal height



(https://www.researchgate.net/figure/Method-of-fundal-height-measurement_fig1_38090837)

In general terms, taking this measurement involves placing a tape measure between the top of a woman's uterine fundus to the upper border of her symphysis pubis—or vice versa, and noting the distance between the two points (Gardosi & Francis, 1999; Griffiths et al., 2008; Henry, 2012) (see Figure 3). There are varying possibilities for obtaining SFH measurements as described both in the literature and by the participants. The measurement could be taken from the top of the fetal pole or the uppermost border of the uterine fundus to the uppermost border of the symphysis pubis or on the pubic bone itself. Conversely the measurement could be taken from the symphysis pubis to the fundus. The tape measure could be positioned with the numbers visible or face down, following the natural curve of the belly or held tautly from point to point.

In most of the research reviewed, an explanation of how the SFH measurement was taken was not provided. However, one standardised method was described in detail across a number of studies (Carne, 2010; Clifford et al., 2013; Engstrom, Piscioneri et al., 1993; Gibson, 2008; Jelks et al., 2007; McGeown, 2001). In this method, the SFH measurement should be taken from the top of the uterine fundus to the upper border of the symphysis pubis using a flexible, non-elastic tape measure. The centimetre markings on the tape should be on the underside to reduce practitioner bias and the tape should be laid on the skin.

A lack of evidence supporting SFH measurements alone as an accurate method of identifying fetal growth anomalies was reported in the reviewed literature (Goetzinger et al., 2013; Goto, 2017; Haragan et al., 2015; Lawes & Jones, 2020; McAllion, 2004; Pay et al., 2015; Ray & Alhusen, 2016; Robert Peter et al., 2015; Sparks, 2011). Fundal

height measurement in general was found to be an unreliable and inadequate method of detecting fetal growth restriction with a high false negative rate with wide ranges of sensitivity reported (Papageorghiou et al., 2016; Pay et al., 2015; Sparks et al., 2011). For example, Papageorghiou et al. (2016) found that three systematic reviews assessing the accuracy of SFH measurements in regard to detecting growth restricted fetuses ranged from 17%–93%. Sparks et al. (2011) found that a retrospective cohort study of more than 3,600 women also reported low sensitivity of less than 35% for the detection of an abnormal SFH measurement. In the systematic review conducted by Pay et al. (2015), the sensitivity of SFH measurement to detect growth restriction, specifically SGA, ranged from 0.27–0.76.

Confounding factors in the accuracy of SFH measurements included consistency of method, maternal BMI, inter-observer variation, practitioner experience, knowledge of the woman's gestation, and ability to see the markings on the tape measure (Bailey et al., 1989; Engstrom & Sittler, 1993; Engstrom, Piscioneri et al., 1993; Gardosi & Francis, 1999; Goetzinger et al., 2013; Griffiths et al., 2008; Grigg, 2010; Haragan et al., 2015; Jelks et al., 2007; McAllion, 2004; McGeown, 2001; Ray & Alhusen, 2016).

Conducting fetal growth assessment using a standardised method of measurement was found to improve reliability and accuracy as did serial measurements by the same practitioner (Clifford et al., 2013; Ray & Alhusen, 2016; Spillane, 2020; Williams et al., 2018). The sensitivity of using SFH measurements alone to identify babies at risk of growth restriction was generally poor (12%–20%), particularly in women with increased BMI (Haragan et al., 2015; Hargreaves et al., 2011; Jelks et al., 2007; Sparks et al., 2011). This was reported as being due to an increase in the difference between SFH

measurements and gestational age, and that clinician bias also grew with increasing BMI (Carne, 2010; Goetzinger et al., 2013; Griffiths et al., 2008; Jelks et al., 2007; Wright et al., 2006).

Lack of clinical practitioner experience was also found to impact the accuracy of the assessment. Practitioners with fewer than 10 years of clinical experience were found to measure SFH less frequently. Consequently, when they did measure, this lack of experience manifested in the degree of accuracy of the measurement (Griffiths et al., 2008; Jelks et al., 2007).

The most recent literature reviewed concluded that SFH measurements should be taken in a standardised manner to improve the detection of babies with growth restriction (Clifford et al., 2013; Papageorghiou et al., 2016; Ray & Alhusen, 2016; Williams et al., 2018). Non-standardised methods of SFH measurement were found to result in significant discrepancies, generally due to variations in technique, although the pattern of growth was found to be of greater significance than the actual number on the tape measure (Ray & Alhusen, 2016). Understanding the limitations of this assessment when performed in isolation is essential (Pay et al., 2015).

Using landmarks to assess fetal growth follows on naturally and holistically for a midwife in her palpation of the growing baby. This midwifery-centric approach to "measuring" growth is not evidence-based in a positivist medicalised sense. It is subjective and draws on the experience and knowledge of the midwife. Using a tape measure can provide limited information about a baby's growth. Taking this measurement in a standardised manner was found to improve the accuracy of SFH measurements, although the literature discussed emphasises that further research

must be conducted to validate the reliability and accuracy of this method (Robert Peter et al., 2015).

Growth Assessment Protocol and Growth Related Optimal Weight charts

Having reviewed the key elements of fetal growth assessment as it is undertaken by midwives and reviewing the midwifery literature where available, this section considers the literature pertaining to the recent shift to using GAP and customised GROW charts as part of fetal growth assessment.

The GAP aims to standardise fetal growth assessment. It prescribes a standardised method of taking SFH measurements and serial plotting of these measurements on a computer-generated customised growth chart (Gardosi et al., 2018). Developed by the United Kingdom (UK) -based Perinatal Institute, the primary objective is to improve detection of growth restricted fetuses and reduce stillbirth rates (Gardosi & Francis, 1999). The rationale of standardising how SFH measurements are taken was to reduce the variability in SFH measurements between individual practitioners and therefore promoting greater accuracy (Clifford et al., 2013; Gardosi et al., 2018). More recently, GAP and GROW have incorporated the detection of LGA fetuses into their mandate (Gardosi et al., 2018), demonstrating some expansion in how this tool is used.

As part of the GAP, computer-generated customised GROW charts replace traditional population charts, and provide both a growth trajectory and optimal predicted birth weight (Gardosi et al., 2018). Customising a GROW chart means individual data for height, weight, ethnicity, gestation, and parity that form the building blocks in framing the parameters of each woman's chart (Clifford et al., 2013; Lawes & Jones, 2020).

Curiously, no data regarding the biological father is included. Regardless, GAP literature states that this protocol recognises that one size does not fit all, and that the heterogeneity of birth populations must be considered (Clifford et al., 2013).

Studies published in the UK indicated that serial plotting of SFH measurements on a customised GROW chart, supported by education and clinical practice guidelines, was found to significantly increase the antenatal detection of growth restricted babies in low risk primiparous women ($p < 0.0001$, OR 3.1) (Gardosi, 2013; McGeown, 2001; Roex et al., 2012). For this reason, customised GROW charts have been recommended for routine antenatal use in Aotearoa New Zealand (Stacey et al., 2012). A recent study in an Australian hospital using GAP and GROW saw identification rates of growth restricted babies increase from 21%–41% (OR 2.6, 95% CI 1.3–4.9, $p < 0.05$) (Jayawardena & Sheehan, 2019).

However, there is reason to question the applicability of GAP to the Aotearoa New Zealand maternity care context. Maternity care provision in the UK generally takes place in a different context from the continuity of care provided by LMC midwives in Aotearoa New Zealand (Bupa, 2020; NICE, 2020). Pregnant women in the UK context are generally seen antenatally by different practitioners, including both midwives and doctors (Bupa, 2020; NICE, 2020).

Despite the considerable differences in the provision of maternity care across these contexts, GAP and GROW have been implemented into Aotearoa New Zealand's maternity landscape (McCowan et al., 2018; NZMFMN, 2014) with seemingly little regard for the midwifery model of care well embedded in our primary maternity care context. No literature was identified regarding the evaluation or integration of GAP and

GROW into Aotearoa New Zealand's context of midwifery-led care. Within the Aotearoa New Zealand context, the routinisation of this medical intervention has grown, with a degree of expectation around regular use of customised growth charts (see for example, CCDHB, 2018).

Chapter summary

The conflicting and contrasting evidence on fetal growth assessment approaches in the reviewed literature indicate that no particular method is superior, and that all methods have their inherent weaknesses. Context is of great relevance to this research as no studies reviewed were conducted in a midwifery-led continuity of care context.

The literature reviewed does not refute the use of regular abdominal palpation or SFH measurement to assess fetal growth in low risk populations, but it does indicate limited sensitivity (Curti et al., 2014; Griffiths et al., 2008; Henry, 2012; Pay et al., 2015). Assessing fetal growth using SFH measurement or by landmarks is vulnerable to subjectivity and considerable inter-observer variation (Baston, 2003; Crosby & Engstrom, 1989; Engstrom & Sittler, 1993; Gardosi & Francis, 1999; Griffiths et al., 2008; Grigg, 2010). Research indicated that it did matter if these measurements were taken by different practitioners, whereas regular measurements taken by the same care provider improved the accuracy of these measurements, the detection of deviations from the norm, as well as increasing the identification of fetal growth restriction (Baston, 2003; Crosby & Engstrom, 1989; Engstrom & Sittler, 1993; Gibson, 2008; Henry, 2012; Jelks et al., 2007; Roex, et al., 2012; Wright et al., 2006). Clinical bias could also be reduced, and result reproducibility and accuracy increased by the

development of a standardised guideline detailing the method by which SFH measurements are taken (Morse et al., 2009).

A systematic review of the published literature regarding SFH measurement found that there was insufficient evidence to conclude whether SFH measurements are effective in detecting growth restricted fetuses (Robert Peter et al., 2015). Another systematic review of the literature discussing customised and population growth charts found that the customised growth charts are "widely used with little evidence of benefit" (Carberry et al., 2014, p. 6). Further, financial costs as a result of using customised growth charts in terms of ultrasound and medicalised birth were recognised. This review found insufficient evidence to recommend the routine use of customised growth charts (Carberry et al., 2014). To further explore the accuracy of SFH measurement and the benefits and harms of using customised grow charts, larger randomised trials in different settings were recommended (Carberry et al., 2014; Robert Peter et al., 2015).

GAP and GROW have been implemented by default by our DHBs into midwifery practice across Aotearoa New Zealand, with what seems like little regard for the wealth of professional knowledge held in the hands of the country's midwives. The international results reported an increase in the detection of growth restricted fetuses using GAP and GROW. However, the increasingly routinised use and reliance on this medical intervention in a midwifery-led context excludes an entire body of practice, while invisibilising both women's and midwives' knowledge and experience.

Reflection on the literature

The absence of literature regarding routine antenatal fetal growth assessment both from a midwifery perspective and a continuity of care context indicates that this project is timely. It is evident that there is a glaring gap in the published literature concerning fetal growth assessment. Consistent, woman-centred, holistic, continuity of care—the normal practice elements of an LMC midwife, are missing from much of the medically oriented literature reviewed. The adoption and routinisation of GAP and GROW appears to be compensating for a lack of regular and consistent midwifery input and knowledge. The research ahead is intended to fill this gap.

Chapter 3: Research Methodology and Study Design

Introduction

As discussed in Chapter 1, the aim of this research was to shed light on and affirm fetal growth assessment as it is undertaken by LMC midwives in Aotearoa New Zealand with our unique continuity and partnership model of care. Engaging with, and listening to, experienced LMC midwives describe their practice was essential to gain an understanding of this aspect of practice. This sharing of experiential knowledge within midwifery practice embraces the story telling traditions of midwifery that can influence practice and generate knowledge (Gould, 2017; Power, 2015). It is this type of legitimate knowledge, together with midwifery specific research, that will validate midwifery knowing and aid in the promotion of its own discourse (Gould, 2017; Power, 2015).

The qualitative research paradigm, in particular a qualitative descriptive approach, provides the appropriate methodological framework given the investigative and exploratory nature of this study and its emphasis on capturing experiences. This chapter explains the methodology underpinning this study as well as the rationale for the study design. The research methods are then discussed including ethical and cultural considerations, participant recruitment, data collection, and data analysis.

Methodology

> In qualitative research the researcher aims to situate themselves in the participant's world and to understand the subjective (personal) experiences of

> their research participants. In doing so, the researcher can turn these subjective experiences into representations that allow interpretation and reveal insights that apply more generally beyond those individuals studied. (Lambert et al., 2010, p. 321)

Why qualitative research?

Qualitative research is about capturing meaning and exploring human experiences in a context specific, naturalistic setting (Braun & Clarke, 2013; Hoepfl, 1997; Patton, 2002; Sandelowski, 2000). This methodological approach can reveal "rich and compelling insights" into the real worlds, experiences, and perspectives of research participants (Braun & Clarke, 2014, p. 1). Langford (2001) describes qualitative research as being an objective process used to explore subjective human experiences. Understanding the behaviour, actions, knowledge, beliefs, and contextual influences of participants in qualitative research studies can add depth and nuance to the interpretation and analysis of the research phenomenon, which may then guide knowledge development within a discipline (Cluett & Bluff, 2006; Denzin & Lincoln, 2013; Hennink et al., 2011; Morse & Field, 1996; Sandelowski, 2000).

Cluett and Bluff (2006) propose that research and midwifery practice form a cycle, whereby practice is both the starting and end point for research, and the provision of evidence-based care is the outcome. From a qualitative research perspective, the researcher can explore participants' experiences and perceptions, potentially uncovering empirical knowledge and insights into variations in midwifery practice. Based on this understanding, a qualitative methodological framework provided the

space to generate a new, specific, and overdue body of understanding regarding fetal growth assessment in Aotearoa New Zealand's midwifery-led, woman-centred continuity of care context. It also permitted a delve into fetal growth assessment from an LMC midwifery perspective, as well as presenting research participants with an opportunity to tell their stories.

Qualitative descriptive research

Qualitative descriptive research involves the study of phenomena in their natural state to develop a detailed understanding of both the phenomenon and the context in which it occurs (Hennink et al., 2011; Sandelowski, 2000). The study participants must therefore have experience that will contribute to a deeper understanding of the phenomenon. Purposive sampling is the planned recruitment of participants who have the experience and knowledge of the area being researched (Braun & Clarke, 2013). Therefore, for this research, the recruitment of participants who worked as LMC midwives formed the sample population. The emphasis in qualitative descriptive research is on the quality of data collected, rather than the quantity. The number of participants needs to be sufficient to yield a variety of detailed descriptions and experiences, while too many participants will provide repetition and little new data (Hennink et al., 2011).

The purpose of an interview is to explore the meanings, interpretations, and perceptions that participants attribute to their experiences (Lavender et al., 2004). Maykut Morehouse (1994, as cited in Lavender, 2004) define an interview as a conversation with a purpose where there is genuine curiosity about the participant's experience and where the emphasis is on letting the participants words speak for

themselves (Neergaard et al., 2009; Sandelowski, 2000). The advantages of face-to-face interviews are numerous—it is possible to obtain large amounts of quality data with immediate clarification of any points; the interviewer can develop a relationship with the participant by maintaining eye contact, creating a trusting and positive environment; and the interviewer has the ability to note and interpret non-verbal communication (Cluett & Bluff, 2006; Lavender et al., 2004; Rees, 2011). To conduct successful interviews, it is essential for the interviewer to listen actively and reflect as differing themes may emerge in interviews, which may require varied prompts to reach the essence of what is being communicated. A negative aspect of conducting research by interviews is the potential for enormous amounts of data. This labour-intensive method can also lead to researcher influence (Cluett & Bluff, 2006; Lavender et al., 2004; Rees, 2011).

Providing LMC midwives with the opportunity to describe their approaches to fetal growth assessment using a qualitative descriptive framework yielded data specific to Aotearoa New Zealand's midwifery-led continuity of care context. The analysis of this data provides insight into practice methods and contributes to our unique midwifery epistemology in Aotearoa New Zealand.

Knowledge, power, and the feminist viewpoint

Knowledge is power and the oppressive authoritarian discourse of Western medicine is an example of how power over women's lives is established through dominant forms of knowledge regarded as 'truth'. This powerful and dominant social institution, particularly regarding reproduction and maternity care, marginalises midwifery knowledge and women's own knowing about their bodies (Davis, 1995; Pendleton,

2019; Power, 2015; Shallow, 2001; Stewart, 2010; Yuill, 2012). Taylor (2000) compares the obstetric approach to reproduction in the medical paradigm to industrial production, where "doctors have come to be positioned as 'managers' relative to reproduction, fetuses appear as valuable 'products' and women are like reproductive 'workers'" (pp. 391–392). This feminist description of a positivist system of technological dominance over women's bodies is validated by a belief grounded in pathology and risk management (Davison et al., 2018; Pendleton, 2019).

Feminist theory is "grounded in political activism and a wish to achieve change in order to improve things not just for women but for society as a whole" (Stewart, 2010, p. 277). Underpinning the feminist perspective is the belief that the patriarchal discourse, dominated by male knowledge and opinions, oppresses and controls women (Stewart, 2010). From a feminist perspective, gender and knowledge, particularly the concept of authoritative knowledge, are inextricably linked (Anderson, 1995; Pendleton, 2019). To challenge this authoritative knowledge and the existing patriarchal structures such as the superiority of science and technology, "women's experience in the development of knowledge" must be re-placed (Barnes, 1999, p. 8; Davison et al., 2018).

Yuill (2012) states that "feminist epistemologies contend that knowledge is 'situated'" (p. 39) or in other words, that knowledge reflects the particular perspectives of the knower. Feminist standpoint theory tells us that those oppressed by gendered structures and knowledges are best placed to describe and resist those structures and knowledges (Harding , 2004). Midwifery is a profession outside of the dominant medical culture of maternity care provision and is a gendered profession. Therefore, research conducted by midwives regarding their professional context can reveal the

impact of the medical discourse on their practice and within their context and help identify strategies for change and transformation (Harding, 2004; Yuill, 2012).

As detailed in Chapter 2 in the review of literature on fetal growth assessment, most research has been conducted in the hospital setting and shaped by a positivist quantitative scientific paradigm. Doctors were generally the main participants, although midwives were included as informants. This scientific and medicalised approach to investigating fetal growth assessment appeared to exclude the whole woman and instead objectified the fetus, focusing on a task-oriented assessment of size. The settings and methods of these studies reflect the dominant medical paradigm and exclude midwifery epistemology.

Midwifery epistemology is unique. Downe (1998) coined the term "the art and science of midwifery", which is an apt description for the multiple knowledge systems midwives employ in their practice, "moving fluidly between them to serve the women she attends" (Davis-Floyd, 2007, p. 705). Accordingly, midwifery research challenges the status quo of the medical discourse by recognising women as part of this process by focusing on women's experiences, by making space for women's voices to be heard, and by acknowledging women's knowing (Barnes, 1999; Stewart, 2010; Yuill, 2012).

White (1999) wrote that "silence is the most powerful political tool for the maintenance of the status quo" (p. 6). As a profession, midwifery in Aotearoa New Zealand must challenge the dominant patriarchal medical paradigm, asserting its own worth and rich epistemology. Lavender (2010) uses the terms 'covert' and 'overt' to describe how midwives practice at times within this paradigm. By trying to maintain a holistic

midwifery approach covertly, midwives are lending support to the status quo, when in fact they should be overtly seeking out these discussions to challenge practice and guidelines from a midwifery perspective and exercising this aspect of midwifery's independent and autonomous practice. Stewart (2010) sums it up perfectly with, "Perhaps one of the most important contributions that feminists make, and where it differs from the technocratic, patriarchal approach is that simple but important belief that other points of view exist and, moreover, that they count" (p. 285).

The researcher and reflexivity

In Chapter 1 the rationale for this project was introduced. It is an area of practice that I feel strongly about. In researching fetal growth assessment within the qualitative paradigm, my humanness or subjectivity as the researcher described by Braun and Clarke (2013) is visible, acknowledged, and accepted, as is the subjectivity of the participants (Braun & Clarke, 2013; Lambert, Jomeen, & McSherry, 2010). Reflexivity in qualitative research fulfils the role of quality control and is the ongoing process of critical reflection by the researcher of their role and the research process, as well as the knowledge produced (Barrett et al., 2020; Braun & Clarke, 2013; Ramani et al, 2018). Barrett et al. (2020) described reflexivity as challenging "the status quo through this continuous process of questioning, examining, accepting, and articulating our attitudes, assumptions, perspectives and roles" (p. 10). Developing an awareness of views, beliefs, and experiences as the researcher and how they may have affected the research process and the data facilitates an accurate representation of the data (Lambert et al., 2010; Ramani et al., 2018).

Given that this research connects with me both professionally and personally, I was aware of how much I wanted the research to agree with my view of fetal growth assessment to promote midwifery as a profession as well profile our unique epistemology. Acknowledging and keeping this motivation and bias in the forefront enabled me to assess the published literature and data with curiosity and openness. By choosing to interview the participants in person, I hoped to create a personable, relaxed, conversational atmosphere as you would expect amongst colleagues. Prior to the interviews we chatted about the rationale behind the research and my curiosity to find out how other midwives approached this aspect of their practice so my intentions were explicit. I was attentive to forming the interview guide in a way that was open-ended to reduce my influence on participant responses. Some of the 14 participants recruited across two neighbouring DHBs were known to me and others were not. Regardless, as a practicing midwife, I was an insider in relation to this research and acknowledge the various advantages and complexities of this as discussed below (Burns et al., 2012).

Reflecting on the data throughout the process of analysis was helped by the lengthy process of transcribing the data. In this situation tone can reveal as much as the words used, so listening repeatedly to the individual midwives again was helpful in consolidating the data and ensuring the transcription was accurate. The subsequent reading and re-reading of the transcripts provided the necessary familiarity to begin coding the data for words, and opinions, ensuring the original meaning of the participants' data was maintained.

Study design

In the first half of this chapter I explored the epistemological and methodological considerations that underpin this research. I demonstrated how a qualitative descriptive and interview-based approach was ideally suited to providing midwives the opportunity to describe how they assess fetal growth in their individual practices. In the second part of this chapter, I describe the study design including ethical approval and cultural considerations undertaken prior to commencing this study; the processes of participant recruitment; the approach to data collection; and finally, data analysis.

Ethical and cultural considerations

Consultation with the Kaitohutohu Office at Otago Polytechnic was undertaken to ensure the research was conducted safely for Māori and that relevance of the research to Māori was considered. Correspondence outlining this process is attached (Appendix 1). Support for the research to proceed was granted by the Kaitohutohu Office at Otago Polytechnic.

Prior to undertaking any research careful thought must be given to ethical considerations. Ethical approval for this study was sought from Otago Polytechnic Ethics Committee (OPREC) and obtained on 10/5/2017 (Appendix 2).

Aotearoa New Zealand is a culturally diverse nation. In any research it is imperative to approach the topic with an understanding of cultural diversity and the values upon which Te Tiriti o Waitangi is based, namely, protection, participation, and equity. Working transparently in consultation and partnership to ensure cultural safety is respected and protected is inherent in midwifery practice, and this must be followed

through in any research. Despite the participation of midwives who identified as Māori, this research does not reflect a mātauranga Māori[9] world view.

A total of 14 participants decided to participate in this research through a process of self-selection and no cultural concerns were identified. I had hoped that the group would have naturally included LMC midwives of diverse ethnic backgrounds, including midwives who identified as tangata whenua who could then bring their own cultural experiences into the interview process. The ethnicity of the participants was diverse and included midwives who identified as Māori, European, and New Zealand European. All documentation provided before the interviews as well as the interviews themselves were in English, as all midwives must be able to "communicate effectively in written and spoken English" (MCNZ, 2019).

This research may be relevant to a diverse range of cultural groups who form the population of Aotearoa New Zealand, as assessing fetal growth accurately from a multidisciplinary approach ensures better outcomes for all babies. Assessing fetal growth accurately can reduce the number of growth restricted fetuses and therefore also reduce perinatal related morbidity and mortality.

The participants

The purposive recruitment of 6-10 LMC midwives was the initial plan for this project as this number of interviews would likely provide a range of data without becoming too repetitive. It would also make for a reasonable workload. As I neared the end of data collection, four further LMC midwives approached me and expressed their interest in

[9] Māori knowledge.

being interviewed, which gave a total of 14 participants. While this was initially more than intended, it was hoped this would provide further understanding of midwives' experiences of fetal growth assessment.

Given our relatively small midwifery community, I knew some of the participants. Prior to recruiting participants I considered whether my relationships within the midwifery community would impact the quality of the interviews and data collection. Insider research is defined as research "undertaken by members of the same group, who share characteristics" (Greene, 2014, p. 2). Being an 'insider' allowed me as the researcher to take advantage of my pre-existing knowledge and understanding of the context of the research topic and ask appropriate questions to elicit the information I was seeking (Greene, 2014). Equally, by knowing some of these participants, or being known as an LMC midwife, the interviews were quite relaxed and familiar. I found that the participants were open to discussing this part of their practice with a fellow midwife (Bell, 2005, as cited in Greene, 2014).

The inclusion criteria were:

* Being a practising LMC midwife - as continuity of care was a key aspect of this study.
* A minimum of five years post-registration experience as an LMC in Aotearoa New Zealand.

The requirement of five years post-registration experience as an LMC in Aotearoa New Zealand was to remove the variable of practitioner experience when considering LMC midwives' fetal growth assessment practices. After conversations with several colleagues about confidence in practice, it was decided that after five years an LMC

midwife would have found her ‘mojo’ and settled into how she approached this aspect of her practice. With the agreement of midwifery managers, study advertisements were placed in staffrooms and on noticeboards at local DHB birthing suites. I also advertised in the regional NZCOM newsletter (Appendix 3).

Data collection

The participants initially responded to the study advertisement either in person, by phone, or by email to register their interest, where we discussed what participation would entail. I offered to email a copy of the Participant Information (Appendix 4) Sheet to each participant, but most of the participants were happy to read it at the time of our interview. Those who approached me in person were generally provided with a Participant Information Sheet at the time.

Each participant chose the location and timing of their interview, so as to ensure I could have their full attention and they would be as relaxed as possible. Maintaining confidentiality and anonymity saw these interviews take place in a variety of settings including quiet cafes, the participants’ homes, a quiet space at a hospital, and in my home. Prior to commencing the interviews, participants were provided with a Participant Information Sheet as well as the consent form which we went through together before signing (Appendix 5). Each of the participants consented to having their interview recorded and transcribed by me. Following the interviews, participants were given a copy of their transcript to check for accuracy. One participant indicated a typing error which was corrected. No other changes were requested. All participants were aware that they could withdraw from the research up until I commenced analysis of the data.

I estimated the interviews would take between 30 and 60 minutes each following my pilot interview, accounting for getting off track as well as the different personalities I was interviewing. The interviews were semi-structured with a list of pre-determined open-ended questions that defined the area of interest and acted as prompts to help me guide the interviews. This allowed for the exploration of any other points that emerged during conversation. The initial interview felt a bit stunted; however, the flow of the questions improved and each interview was progressively better. A few of the midwives were pragmatic and to the point, providing great data in record time. Conversely, some interviews were lengthy, punctuated with lots of laughter and common ground shared. Many anecdotes were related, and at the request of the participants, some of these were not included in the data analysis. My overall impression was that these midwives were glad to share their practice and thoughts with someone who was taking the time to listen to them.

At the end of each interview, the participants were offered a small koha such as sweet treats or coffee cards as a gift of thanks for their time and sharing their knowledge. Gaining a glimpse into another midwife's practice is a privilege and I am very grateful to the participants for sharing this aspect of their practice with me.

Confidentiality

To ensure confidentiality, each participant was assigned a pseudonym that they received with their transcript. In my other life before becoming a midwife, languages were my passion, so all pseudonyms are the word 'midwife' in various languages:

Akusherka Bidan Bydwraig Hebamme

Jordemoder	Josanpu	Kaiwhakawhānau	Kätilö
Mkunga	Primalja	Qabila	Umbelethisi
Vecmāte	Vroedvrouw		

All documentation and recordings pertaining to the interviews and participation in the study remains locked in my filing cabinet in my office. As per the requirements of ethics approval, I will keep the documentation for five years. Computer files including the audio files are password protected on my personal laptop and will be deleted following the completion of this study.

Data analysis

Thematic analysis provides a theoretically flexible process for analysing qualitative data and is well suited to research focused on midwives reflections on an aspect of their practice (Braun & Clarke, 2014). The analysis of qualitative, transcribed data is a lengthy cyclical reflective process, whereby active reading requires repeated reconsideration of the data to identify and analyse repeated patterns of meaning (Braun & Clarke, 2006; Joffe, 2012). The importance of a theme in this context is based on its relevance to the research question. For this research, this is what constitutes midwifery knowledge and how this knowledge is employed to assess fetal growth, as well as the impact of medical interventions on midwifery knowledge and the practice of fetal growth assessment. The researcher must also be aware of their influence on the data as this method of data analysis can be somewhat shaped by the researcher's standpoint and epistemology (Braun & Clarke, 2006, 2013; Cluett & Bluff, 2006; Lavender et al., 2004; Rees, 2011).

The data in this project was analysed using an inductive approach which is data driven, and means the identified themes are strongly linked to the data (Patton, 2002). Braun and Clarke (2006) described this as "a process of coding the data without trying to fit it into a pre-existing coding frame, or the researcher's analytic preconceptions" (p. 83).

The analysis of the data began with verbatim transcriptions of the interviews (Braun & Clarke, 2013; Willis et al., 2016). I chose to complete this task myself to become familiar with the data. I am no typist, so this was a lengthy but useful experience. After transcribing each interview I added my field notes and reflections where appropriate (Willis et al., 2016). During each interview I generally made a few discrete notes as the interview progressed. Immediately after completing each interview I also made notes about the participant's reactions, including animated gestures and body language which helped to bring the written transcripts back to life. When all the interviews had been transcribed, I felt I had a good understanding of the data, the participants' practice as they described it, and patterns in the data.

During this period of listening, reading, and re-reading, common concepts across the data emerged, which allowed me to develop a method of categorising or coding the patterns (Braun & Clarke, 2013; Joffe, 2012). Braun and Clarke (2006) describe a code as "the most basic segment or element of raw data or information that can be processed in a meaningful way" (p. 18). These codes were captured in a detailed spreadsheet of themes and subthemes, and after much discussion with a patient supervisor, yielded two overarching themes richly supported with participant quotes, with each overarching theme containing multiple subthemes. At this stage, another round of reading and checking was completed to ensure the interpretive and

descriptive validity matched (Willis et al., 2016). The two overarching themes which emerged from the data were: midwifery knowing about fetal growth assessment; and navigating the medico-midwifery realm.

Chapter summary

This chapter discussed qualitative descriptive as the appropriate methodology for exploring LMC midwives' reflections on fetal growth assessment. Capturing and highlighting the voice of the participants echoes the traditional sharing of experiential midwifery knowledge. Fourteen semi-structured interviews provided rich insights into midwives' knowledge and practice related to fetal growth assessment. A thematic analysis of the data resulted in two overarching themes which will be presented and discussed in the following chapters.

Chapter 4: Midwifery Knowing and Fetal Growth Assessment

Whaowhia te kete mātauranga

(Fill your basket of knowledge)

Introduction

Lead maternity care midwives are experts in the provision of primary maternity care in Aotearoa New Zealand. Despite this, the legitimacy and importance of midwifery knowing, particularly around fetal growth assessment, lacks visibility and appears to be increasingly marginalised within New Zealand's maternity setting.

Assessing fetal growth is a specialist skill and a core midwifery competency. This skill is developed as an undergraduate midwife and refined and honed in-practice as an LMC midwife. This specialised midwifery knowledge has been aptly described by Downe (1998) as "an art and a science". Midwifery education is extensive and encompasses hard sciences such as physiology, anatomy, chemistry, and pharmacology; along with the "art" of midwifery, for example, how to feel, palpate, and interpret the belly of a pregnant woman and determine when normal has deviated into abnormal. Midwifery epistemology or ways of knowing can therefore be understood as integrating a traditionally structured, formal knowledge base with a perceptive sense of knowing based on interaction and intuition which ripens with time and experience (Lexico, 2019). The continuity of care context of LMC midwifery facilitates the formation of a partnership between the woman and midwife which is fundamental to LMC midwives' approach to fetal growth assessment. Investing in the woman's physical wellbeing as well as her psychosocial wellbeing facilitates a mutual sharing with the

woman's knowledge of her own body and growing baby, adding to that of the LMC midwife providing her care.

This chapter explores the midwifery art and science of fetal growth assessment as described by study participants. I discuss the holistic and diverse aspects of midwifery practice included in the routine assessment of fetal growth as described by the study participants as they reflected on their individual practice. The midwifery art and science of fetal growth assessment is described in relation to two key themes identified from analysis of the participants accounts: the midwife-woman relationship, the importance of consistency, navigating measurement, and intuitive knowing. I conclude by affirming that the expert hands-on knowledge and accumulated experience of LMC midwives working within Aotearoa New Zealand's continuity of care context positions LMC midwives as ideal practitioners to accurately assess fetal growth.

The midwife-woman partnership

> Community based midwives generally adopted a 'natural' approach to maternity care, demonstrated not only by their expressed confidence in physiological processes, but also by their focus on the psychosocial aspects of care (Hunter, 2004, p. 268).

Holistic care that takes account of the whole woman and her context is an integral part of the midwifery approach to fetal growth assessment facilitated by the continuity of care context. The importance of getting to know the woman in the context of her psychosocial setting was emphasised by the majority of the participants in this study

as an integral part of the midwifery art of fetal growth assessment. This included investing in the woman, taking the time to listen to her experience of her pregnancy, and placing value on her perspective of how her baby was growing. Here, the "professional with a heart" (Copp, as cited in Hunter, 2009, p. 179) became evident in the data in the form of nurturing reassurance offered by the LMC midwife to settle women into the normalcy of their pregnancy, and support women to develop a connection between her body and growing baby. Kätilö talked about how she instinctively nurtured her clients, with a maternal eye, encouraging them to feel at ease in their pregnant bodies:

> …if you've got a little mother or a very highly stressed woman… I think they grow small babies these women. I look at what the woman does for work, how much exercise she has, whether she's worried about her change of body image, whether she's slim when she came in for the first meeting. Change of body image is huge for these women when they worry about their weight and their size. They look stunning and they still look stunning, but they are the [heaviest] they've ever been. So they make sure what they [watch what they eat], they exercise more, and their babies don't grow. I tell them to stop walking up [a steep hill] and funnily enough, the babies do start growing as they settle down.

Umbelethisi also described the important information offered by an understanding of women's psychosocial context:

> What mum's doing, how she is doing herself, what kind of social kind of situation and that's why I think you know continuity of midwifery care makes

> such a big difference cause you are showing an interest in this young woman and hopefully that she will tell you how things are for her.

Partnerships formed with women and the resulting insights into the women's lived experiences and social context, was seen by participants as facilitating the trust needed for the intimate act of palpation where the woman allows herself to be vulnerable by exposing her belly to the midwife's touch. In turn, the hands-on interaction with the woman and sharing of mutual knowledge about the baby's wellbeing and growth afforded by palpation was described as enhancing the midwife-woman partnership. Participants also expressed that palpating women's pregnant bellies in this holistic way, informed by knowledge and understanding of the woman and her context, was an aspect of practice from which they gained satisfaction and enjoyment. Umbelethisi, for example, described how much she appreciated this part of her practice:

> I really enjoyed it. I thought it was a really important part. I love the touch of the belly… that's something that I suppose we are also feeling that whole kind of thing around the woman is quite happy for her to touch you, that things are feeling good for her with this baby.

The quality of communication facilitated by the midwife-woman partnership was emphasised by all participants as another important aspect of assessing the baby's growth. Talking with the woman about her experience of her baby's growth and movements provided participants with an understanding from the woman's perspective. Who better to describe the tightening of pants, the action on the inside, and needing longer arms at their desk or in the kitchen. As Josanpu described,

"Obviously you listen to what the woman is saying as well about her growth, how she's feeling about it all as well". Qabila also spoke of the importance she placed on listening to the woman's experience of her baby's growth in her practice. She described how early on in her practice she had a woman whose belly palpated smaller than she would have liked. The woman related similar experiences with her two previous pregnancies and that she felt this baby was bigger. Qabila asked her, "So do you think that your tummy this time is bigger or smaller than for your other babies" and she replied, "Definitely bigger than for the other babies". And it was. Following this experience, Qabila understood the value of the woman's perspective, "… one of the really pivotal moments that I kind of went, listening to women is important. So that woman taught me an awful lot about my knowledge and her knowledge and whose knowledge is the most important".

Establishing a partnership with the woman can lead to "the presence of reciprocity: that is, mutual 'give and take'" (Hunter, 2010, p. 259). This familiarity, supported within a continuity of care context, provided participants with the opportunity to develop an understanding of the woman and aided the midwife with her knowing of the baby and the pregnancy. Communication and understanding played an important role in the LMC midwife approach when assessing fetal growth.

The importance of consistency

> "… as long as the same person is checking. That's the beauty of our LMC system isn't it". (Bidan)

The importance of consistency, both in terms of the midwife performing the assessment and method of assessment used by the midwife, emerged as a subtheme from the data. Practising within a continuity of care framework was considered by participants as key to achieving an accurate and consistent assessment of fetal growth. Participants described the importance of one familiar person regularly checking and monitoring growth, consistently feeling each baby, and recognising subtle shifts and differences in their growth. Umbelethisi explained how she valued her one-on-one care for women, so she could both nurture them and recognise positive and negative changes and growth:

> I quite liked the idea of keeping you know, tabs on what the women were doing from one visit to the other and I didn't want to miss anything. I felt that that kind of assessment was really important. That the one familiar person was doing it. I really liked the familiarity.

Qabila expressed how important this regular touch and feeling of women and their babies was to her practice, "… it's me wrapping my hands around that baby consistently month after month, week after week".

The majority of participants conducted their antenatal appointments in their clinical practice rooms, with two conducting home visits. Having a good look at the woman as she entered the clinic space or as the midwife entered the woman's space was the first part of the assessment—a kind of head to toe scan, really looking at the woman to gauge any changes. Hebamme described this moment in her practice by saying, "In each appointment I would usually do a quick visual scan of someone when they walk in. I think "Oh that's a sudden change" or "Not as much change as I expected".

Akusherka also mentioned how she ensures she really looks at the woman. She said, "… what the woman physically looks like, because some people have a lot of room in their abdomens … and other [women] just don't…".

Midwives' own routines surrounding the assessment of fetal growth were described in detail by participants. Was the woman asked to empty her bladder prior to this assessment? Was he woman asked to lie flat or semi-reclined? Did the midwife do the same things in the same order the same way each visit for each woman? Each participant described a detailed, consistent routine in the way they approached their assessment of the baby's growth. When asked to describe their approach to fetal growth assessment, some participants had to pause and think as this part of their practice was second nature. For some participants, this part of the antenatal visit took time, and for a few, it was a relatively quick process.

After assessing the woman visually, the majority of participants described having the woman pass urine either on a dipstick or just for comfort, at the beginning of the appointment prior to palpating the baby. For some midwives, having the woman pass urine first is a conscious part of their growth assessment, ensuring her bladder is empty so as not to distort the growth assessment, as well as making the assessment more comfortable for the woman. In other words, creating a baseline for each appointment. As Jordemoder described, "Well, before about 24 weeks I am not particularly wanting to do a urine dipstick, but I do ask women if they want to pee before I palpate anyway, so I am assuming their bladder's not full". Qabila also asked women to empty their bladder. She said, "So usually an empty bladder is a thing to

consider at the beginning". For Bydwraig, it was not an essential aspect of her growth assessment:

> Actually, I've never considered… but I usually have done and usually do do a routine protein and glucose dipstick at the visit and usually I've asked them to do this before they… but… interestingly I'm not doing it to affect the growth. Just really comfort for them if I am going to be poking around.

Next came the palpation and actual growth assessment. Consistency of place and positioning of the woman was considered important by all participants, and their descriptions and awareness of how and where they asked the woman to lie were quite particular. Jordemoder said, "Our clinic room beds are a bit saggy, so I am aware they are not the best flat surface to be measuring on. But I guess that's a consistent place for me to be measuring a baby, mostly". Bydwraig commented on this also and said, "I guess we are doing it predominantly in a consistent manner because we are using the same bed, the same equipment, and you know it's the same tape measure I am using". Umbelethisi, who performed home visits described how she preferred the woman to be positioned for this part of the assessment:

> ...to lie either on a kind of a couch that was quite flat or often on the floor … but you had them somewhere that was quite stable and quite flat. And it would be with both buttocks and shoulders on the ground, so they'd be quite flat, but only for a very short time just to make sure the measure was consistent with each one.

The majority of participants described palpating the uterus from the beginning of the second trimester, using fingerbreadths and landmarks to gauge growth. Umbelethisi

said, “Then from kind of 14 weeks I would start assessing whether you could feel the uterus”. Josanpu described, “I’ll go by fingers until 24 weeks”. Likewise, Bydwraig explained:

> So I would start listening to the baby at around about 13 or 14 weeks. And so from that point I am having a rough expectation of, okay, at 20 weeks, the fundus will be at the umbilicus. At 12 weeks it has just popped over the symphysis. So having landmarks in my head.

Feeling for the fundus was followed by palpating the baby’s size and, depending on gestation, the baby’s position. Liquor levels were also evaluated. In working with the descriptions of how these wise women palpated, I admired the sense of understanding the midwives had in their hands and minds of what growth actually is. Palpating the uterus and feeling the baby itself was described in detail both with words and hands—almost as if the two were inseparable. Most participants described wrapping their hands around the baby to get an idea of their size. Primalja explained how she would palpate the baby and uterus:

> … you either work up the abdomen or down the abdomen to get the height of the uterus depending on how many weeks she’s going to be… Then you feel for your poles, so your bottom and your head. And then you find your position then you feel the baby, you find your landmark on the abdomen, so the height of the uterus and then you feel the baby. So, you have a rough idea of how big you feel it should be. So as long as the uterus is at the landmark that you expect, and then you feel that it is all baby, then you’re happy with the growth.

Akusherka also established how baby was lying before assessing the size:

> So I find the pole of the baby and I find the top of the fundus and I just work my way around the baby and then find out where the head is as well. [I] work my hands around the baby and then I basically put my hands on the width of the baby.

Primalja went on to say how she would look at either the traditional midwifery gestational ring calculator or an app on her phone to get an estimated weight for gestation prior to palpating the baby, "It says the average estimated weight of the baby at this time should be… three kilos. You think, alright, so how would three kilos feel?". Mkunga described her understanding of how the baby's position can impact what you are feeling, "Well baby's position and presentation are important. If baby is lying in an oblique or transverse position or breech presentation or posterior, I'll expect things to feel a bit differently to a cephalic anterior lie".

Participants expressed a knowing about size based on years of experience performing this routine aspect of midwifery antenatal care, just knowing what felt right, and having confidence in their hands. Vecmāte patiently stated the obvious about fetal growth assessment and her midwifery knowing, "It's [midwives] bread and butter". Kaiwhakawhānau reflected on her experience as an LMC midwife and said, "… you know I think over the years, your experience, you know where they should be". Vroedvrouw expressed this also by saying, "… after all this time, I guess you just know if it's small or not". The descriptions that participants gave of how they felt the baby were generally similar, and illustrate a common understanding of this process and their practice amongst midwives. In other words, knowing how to feel.

It is important to note here that consistent with trends in the profession, some study participants were planning to transition from individual caseloading practice into team midwifery practice, where all midwives in the practice provide care to all women. One participant was already practicing in this type of group. Despite this presenting a potential disruption to consistency in fetal growth assessment, this was not viewed by the participants as a major issue. Participants described their awareness of variations in how their colleagues assessed fetal growth and how they took this into account when conducting their own assessments. For example, Akusherka described, "I'll look at the others' measurements and who has done them. Some people are more prone to measuring small and some people are more prone to [measuring] bigger".

Navigating measurement

Tensions around measuring the SFH were discussed by the majority of the participants as something they had to navigate when assessing fetal growth. The introduction of the GAP into the Aotearoa New Zealand context has seen SFH measurements, customised GROW charts, and growth scans become an established and expected part of fetal growth assessment. Growth Assessment Protocol is based on the premise that the SFH measurement accurately reflects the growth of the baby when plotted on the woman's customised GROW chart. The implications of this protocol for LMC midwifery practice in relation to fetal growth assessment is explored in Chapter 5. Regardless, measurement of the SFH has a role in the LMC midwife's holistic assessment of fetal growth and was navigated by all participants in this study.

While nearly all participants measured the SFH routinely, the value placed on these measurements varied between participants. In discussing with the participants how they each assessed fetal growth, two midwives made the same unexpected, yet insightful, observation. Qabila explained how she assessed fetal growth by palpation and landmarks until 28 weeks and after that, she said, "… in terms of actually assessing growth in a more formal way, I do measure fundal heights these days most of the time and I probably am doing that from about 28 weeks". Hebamme echoed this expression and said, "In a formal way, probably not until 28 weeks to 30 weeks". It was striking to note the participants' use of the construct of 'formal' versus 'informal', unconsciously positioning their midwifery skill of palpation as subordinate to the use of GROW charts in the third trimester. Did the term formal mean fulfilling DHB expectations? Interestingly, Qabila and Hebamme were both experienced practitioners who described the importance of using their hands in their holistic assessment of fetal growth, yet also inferred deference to the superiority measurement.

Bidan was the only participant to discuss how she preferred to measure, rather than rely on palpation to assess fetal growth. She elaborated that she valued the reassurance from plotting SFH measurements on a woman's customised growth chart and said, "No, I don't really like using my hands, I use a tape measure". She went on to say, "I religiously do growth charts for every woman. You just measure and then you've got the chart and then send for a scan if you need to just to give you peace of mind". On the other hand, Umbelethisi viewed taking this measurement as completing her assessment, and "tying it all in with measurement and a measuring tape". Other participants were sceptical of the measurement part of their assessment, describing

measuring because they felt an expectation to do so from DHBs with which they had access agreements[10] (a dynamic that will be explored in more detail in Chapter 5). Akusherka, for example, explained how she preferred to rely on the accuracy of her hands:

> I measure because we have to put a figure down, we can't say, "My hands feel wonderful". We have to write a number. I don't actually care too much about my tape measure sorry, I use my hands and length.

Likewise, other participants described a tension between what they felt with their hands and the need to record a measurement. Qabila described how this required reliance on the tape measure and disregard for her hands as tools made her feel by saying, "So, early in my practice my hands were my tool and then the tape measure has become an adjunct to that these days and I feel a wee bit sad sometimes about that".

Regardless of how they navigated measurement in their practice, the accuracy of SFH measurements and GROW charts was questioned by most participants. Umbelethisi for example, described using the tape measure as an "inexact science", and was sceptical about the attempt to quantify feelings and touch. Participants were critical of how these medical interventions, with their own issues of accuracy, were of greater value than a skillful palpation. Akusherka felt SFH measurements were not an accurate measure of fetal growth and wellbeing and noted, "… sometimes you get really long babies and you get a beautiful measurement, but there's no bulk to them, there's no width, there's no substance". Hebamme also reflected on how her hands told her more than a measurement, "… I do a lot of it by the bulk of the baby you know, I kind of

[10] An access agreement allows the midwife to provide care within a particular DHB.

feel… it's not just the height of the fundus – you feel the bulk of the baby within the uterus as well".

Some participants were also concerned about the potential anxiety that the measurements and charts may cause for both the woman and the midwife. Primalja expressed her concern around how measuring could induce anxiety for the midwife, "I think the tape measuring coming in has caused just a little bit of anxiety, because you have to write this number down … instead of saying in my experience or in my estimation…". Another midwife discussed anxiety from a different perspective, and said she worried about implications for the woman whose baby is a bit bigger and viewed as LGA. The potential for increased morbidity, as well as the possible psychological impacts on both the woman and the midwife's clinical decision making presents an issue to be considered. As Qabila discussed:

> I do worry a little bit about the bigger babies and the level of morbidity that's attached to all the inductions of labour, and just the psychological thing that happens with women when they're told their baby's big – I just hear it all the time. In fact, a bit of a side issue, I think that women enter labour in a more apprehensive state if they think they've got a big baby on board and it probably affects their decision making in labour and I think it also affects the clinician's decision making.

Measuring was discussed by all participants. The almost obligatory measuring and plotting added a level of complexity, rather than reassurance, to fetal growth assessment. Relying on measurements and charts rather than experienced touch put participants in the position of defending their midwifery practice against existing

recommended protocols or referring for scans and obstetric review unnecessarily. Nearly all participants valued their thorough hands-on palpation skills over a two-dimensional measurement to provide an accurate assessment of fetal growth.

Intuitive knowing

When discussing their approach to assessing fetal growth, several participants talked about the confidence they placed in their instinct, gut feelings, intuition or *just knowing.* Barnfather (2013) described this intuitive knowledge as a "type of knowing that is difficult to articulate but is an essential component of the art of midwifery, an element of complex judgement" (p. 131). Kaiwhakawhānau expressed the importance she placed on following these instincts in her practice, "I think when you're palpating people you just get a gut feeling – you've always got to follow your instincts". Akusherka had a similar belief in her hands, "[I] use my hands and instinct more than my tape measure". Following and acting upon this sense of knowing was important to the participants who mentioned it.

According to Dreyfus & Dreyfus (1986), the foundation of intuitive knowledge is based in both pattern recognition and clinical practice experience. White (1996) suggested another way of considering this could be practice wisdom. As midwives form and grow knowledge, experience and collective wisdom helps to assimilate all kinds of information, so the midwifery response becomes intuitive. Hebamme recognised this type of knowledge in her practice and rationalised it to a 'web of experience':

> I feel like so much of gut feeling and intuition is actually that really tight web of experience and knowledge that gets tighter and tighter and bigger and bigger

> the longer you are in practice, and what we often think of as a gut feeling is I think if you really pull that thread you often find that it leads you back to a previous experience or previous piece of knowledge that you have filed away.

Experience and confidence underpinned the knowing of the participants when they assessed the growth of a baby using their hands. Assessing fetal growth confidently was described by the participants as an ever-evolving skill developed with experience over time. Mkunga, who was in her sixth year of practice at the time of her interview, explained the growth in her confidence and her fetal growth assessment skills from starting out as a new graduate LMC in her first year of practice to where she is now. She described an intense first year of practice as she found her feet, "as an LMC I found that my most intensive year was as a new grad [graduate midwife]". She went on to talk about the shift in her confidence levels over the past five years and how she now feels about her assessment skills. She explained, "As my experience has grown, the [longer] I have worked, I trust myself and I trust my gut and if something doesn't feel right, I will do something about it". Kaiwhakawhānau also spoke about how time gave her practice, and the experience and confidence she needed to simply know. She explained, "… you know I think over the years, your experience, you know where they [the growth of the baby] should be".

Experienced participants who had been practicing for 10 or more years had long completed this part of their journey, and were quite matter of fact about this specialised midwifery knowledge and almost downplayed their assessment skills. Akusherka declared, "Oh yeah doesn't worry me, it's part of the picture". When talking about palpations and the correlation between her estimation of the baby's size and

birth weight, she went on to say, “I get very surprised when I’m wrong”. As with the other experienced midwives, Bydwraig also felt it was simply one of her many midwifery skills and stated, “It’s just another aspect of care”.

Chapter summary

> “So all those kinds of things shape how you really feel babies”. (Umbelethisi)

Participants described drawing on multiple skills to assess fetal growth. Hebamme summarised this approach to midwifery care succinctly by saying, “to always put all the different bits of my practice and my knowledge about the woman together”. All participants spoke about palpation, measuring, and taking the woman’s social context as well as her own embodied knowing into account. Many midwives felt their hands are the tool of choice in assessing fetal growth. This is informed by the holistic knowing of the woman, facilitated by the midwife-woman relationship and supported by their practice experience. For a few participants, assessing the baby’s growth appeared to be simply another part of the appointment, whereas for others it appeared to be more of an experience shared with the woman—an experience of mutual giving in a way. Feeling and touch is one way to gain information, as is talking with the woman about her experience of the baby. Most of the midwives described placing their faith in their primary tool, their hands, to assess growth accurately.

Feelings of positivity, satisfaction, and enjoyment derived from applying midwifery expertise and knowledge to fetal growth assessment was clear within the interviews. Primalja said, “Yes, yes, I really enjoy antenatal care”. Josanpu simply said, “I really like it”. Feeling confident in their individually formed fetal growth assessment practice was

expressed by all participants, whether they relied on their intuitive midwifery assessment or more on measurement and growth charts. The thoughtful evaluation of what the participants were feeling for each woman was also clearly evident. The act of abdominal palpation and assessment of the baby's growth may be routine in that it is done regularly at each antenatal visit, but it is by no means pedestrian.

From listening to these women and reflecting on their interviews, I have come away with the impression that it is about creating your own kete[11] of knowledge, and consistently reflecting and growing knowledge as skilled individuals and as a professional collective. As Primalja reflected, "I think you need to just keep feeling, feeling, feeling, feeling".

Despite this wealth of knowledge, participants described how the increasing medicalisation of fetal growth assessment, together with expectations from their DHBs, is leading to a devaluing and marginalisation of midwifery skills. Navigating protocols and medical tools while keeping the woman at the centre and maintaining the midwifery way is discussed in the next chapter.

[11] Woven flax basket.

Chapter 5: Navigating the Medico-Midwifery Realm

He moana pukepuke e ekengia e te waka

A choppy sea can be navigated

Introduction

> In many situations, equally legitimate parallel knowledge systems exist and people move easily between them, using them sequentially or in parallel fashion for particular purposes. But frequently one kind of knowledge gains ascendance and legitimacy. A consequence of the legitimisation of one kind of knowing as authoritative is the devaluation, often the dismissal, of all other kinds of knowing (Jordan, 1997, p. 56).

Despite having unique knowledge and expert skills grounded in the midwifery epistemology of normal pregnancy and birth, LMC midwives are compelled to work within a wider maternity care landscape that is driven by medically dominated knowledge and practices. These include the policies and protocols of the DHB with which they have access agreements, national guidelines, and documents such as the Guidelines for Consultation with Obstetric and Related Medical Services (The Referral Guidelines) and at times, the individual preferences of obstetric specialists (MOH, 2012). Medical adherence to policies and protocols and a worldview grounded in pathology and risk can at times relegate LMC midwives to the role of an adjunct to the medical provision of obstetric care, marginalising, and undervaluing midwifery knowledge, skill, and expertise (CCDHB, 2018). Balanced against this medicalised milieu is the right of the woman to make informed choices regarding the provision of

her care and the LMC midwife's fundamental role as being in partnership with the woman.

In Chapter 4, I explored midwifery knowing and expertise in regard to fetal growth assessment as explained by the participants. This chapter discusses the medicalisation of fetal growth assessment and the consequent marginalisation of the holistic fetal growth assessment performed by LMC midwives. In the first section, I consider the participants' experiences of these imposed medical methods and the corresponding invisibilisation and disregard of their midwifery expertise. In the second section, I examine the participants' negotiations of, and responses to, this medically dominant and ideologically conflicting context of fetal growth assessment. Each participant, within this new context, described where their practice sat on a continuum of perspectives related to the incorporation of GAP and GROW into their practice. These ranged from wholesale acceptance and use of GAP and GROW, to a midwifery business as usual stance. This chapter concludes by affirming midwives and their holistic assessment of fetal growth, despite the challenges they face and in spite of the medicalisation of this core part of their practice.

The medicalisation of fetal growth assessment

> In contemporary post-industrial societies, pregnancy and birth are medically framed and technologized… (Sänger, 2015, p. 105).

Regardless of midwives' competency and confidence in their own skills in fetal growth assessment in the continuity of care context of LMC midwifery, knowing and estimating a baby's growth by palpation is no longer sufficient in Aotearoa New

Zealand. As discussed in Chapter 1, in the UK where continuity of care is not the norm and where women are routinely seen by different practitioners, concern around the "lack of antenatal recognition of fetal growth problems" led to the development of the GAP and customised GROW charts (Clifford et al., 2013, p. 516). The aim of this systematic and standardised approach to fetal growth surveillance was to reduce stillbirth rates by increasing the detection of babies who were growth restricted and specifically SGA.

Irrespective of the specific clinical setting in which they were developed, GAP and GROW charts have been implemented into Aotearoa New Zealand's maternity landscape and function as clinical guidelines across the two DHBs where the participants in this study had access agreements. In one DHB, the clinical guideline recommended that GROW charts should be used for all women accessing the Women's Health Service[12] after 24 weeks (CCDHB, 2018). As part of a referral pathway to access a secondary service, this could be viewed as a valid reason. However, one participant described how it was now expected, if not required, by the DHB with which she had an access agreement, for LMC midwives to routinely measure SFH, enter this measurement into the woman's notes, and generate a customised growth chart. Hebamme described how she experienced this expectation:

> The hospital area I'm in is very much central in midwifery practice. There have been no primary birth units and it's right in the middle of the [town] so it becomes quite a hub and so I think because of the way we tend to revolve

[12] The Women's Health Service covers the provision of antenatal obstetric and gynaecological care as well as postnatal care.

> around the hospital quite a bit, the hospital preferences on growth assessment are … quite central to the way we practise. For better or worse. So I feel like there is an expectation in my area of using the Growth Assessment Protocol.

Despite the impetus for the development and implementation of GAP and GROW to increase the detection rate of babies who are growth restricted, the majority of participants discussed experiencing a degree of expectation from within their DHBs to routinely adopt this standardised approach to fetal growth assessment in their practice, applying it to all women regardless of their risk profile. Josanpu became acutely aware of this after attending a GROW workshop. She felt that GROW chart usage was not just about detecting growth restricted babies, but was expected to be used routinely for all women. Josanpu said, "they are definitely a fan of us using it for fundal height as well". Hebamme also explained the expectation she experienced in her practice around a more routine use of GROW:

> It's really expected that we will provide those growth charts or if we are making any referrals or anything like that… but there is also an expectation that we are doing it for every woman which is more you know, sometimes true, sometimes not.

It was clear from the participants' perspectives that GAP and GROW charts were something they had to increasingly navigate in their practice. Josanpu described her recent attendance at a GROW study day and the recommended guidelines:

> They had a little wee model and they got us to do it the way we do it, so I did it and I got the right 34 centimetres … but then they showed us the way they'd prefer us to [measure] from the top of the uterus down to the symphysis pubis.

Umbelethisi described how she had taken her training from a GROW course into her own practice:

> I was using the method taught by GROW of assessing where the top aspect of the symphysis pubis was, and then getting that kind of fall of the abdomen once you've palped around the side and located the position, and then just very gently I would hold one centimetre just under the palm of my hand on the top of the fundus and then run it down to the end without looking to the top of the symphysis pubis, with the tape measure just gently going around curve of the baby.

Kätilö discussed her frustration with the new and standardised approach to fundal height measurement and the tension she felt between this and her longer standing practice. She acknowledged the value of a consistent approach to measuring, but felt that changing her method after 20 years in practice was just not going to work for her:

> I went to one of those study days about two years ago and they said you should measure from the fundus down to the pubic bone. I tried that, but after doing it from the pubic bone up I can't - it's just like changing sides of a soccer team, you know you can't switch team. I measure up.

Accepting the use of medical technology into midwifery practice could be attributed to an evidence-based approach to the assessment of growth restricted babies. However, consideration should be given as to how this reflects a wider dynamic of medicalisation and technologisation as discussed by Davis-Floyd (1993). Midwives are increasingly subjected to the medical gaze and pressure to adopt a medicalised approach to fetal growth assessment. Qabila described the impact of this dynamic potently:

> I really worry that midwifery confidence is being undermined in that process and skills are being lost and you know there's just some old dinosaur midwives out there who still really cling to other ways of doing things that they value and that work for them.

Hebamme noted that midwives working in the community context had been measuring fundal heights since she was an undergraduate midwife, but without plotting the measurements on any kind of growth chart. She said, "Certainly growth charts were starting to come in in New Zealand. I think the midwives I was working with were still doing fundal height measurement without applying it to a growth chart – customised or otherwise". Josanpu practised similarly and said, "I've always used the tape measure. I may start using a GROW chart for every single person. I haven't been doing that".

However, in today's context, SFH measurements are plotted onto customised GROW charts of not only women who have been identified as being at risk of having a growth restricted baby, but by following protocol, all women. This measurement indicates in which centile the baby's current measurement is thought to lie and whether the baby's growth is tracking along the optimal GROW trajectory, regardless of the baby's presentation. The implication is that SFH measurements and GROW charts accurately identify a baby's growth. Jordemoder did not find this in her practice and explained how she found a general lack of consistency in various SFH measurements, scan derived EFWs, and birth weights:

> I do use GROW charts and I don't find them particularly useful. I think because I know that my fundal height measurements and any scans that women have can

> just jump all over the page… I do plot the baby's birth weight when it's born on the graph, so consistency is not what I am finding.

Midwives negotiation of and response to the medicalisation of fetal growth assessment

> Midwifery is characterised by its ideological emphasis on 'woman-centred care' and autonomous practice, which co-exist uncomfortably within contemporary healthcare systems which favour 'efficient' processing of clients and standardisation of care. (Hunter, 2010, p. 254)

The introduction of GROW charts into the Aotearoa New Zealand maternity landscape stems from the well-intentioned medical perspective of detecting growth restricted babies. However, as noted by the participants, the use of GROW charts has moved beyond this specific context and has become routinised and an expected part of midwifery fetal growth assessment. Participants' negotiation of GAP and GROW are now explored.

The practice continuum

Navigating midwifery practice in the current medically dominated landscape of maternity care poses different challenges for each midwife. Experience, boundaries, and context all contribute to how each midwife will shape her practice. Participants in this study shared complex, varied, and sometimes contradictory responses about the use of medical technology in their practice. However, each participant had found her own place on a continuum of perspectives ranging from the wholesale acceptance and

use of medical technology, to incorporating it as required but not relying on it, and for a few, a midwifery business as usual stance. Regardless of where they sat on this continuum, the majority of participants commented on the encroachment of medical approaches to fetal growth assessment and the resulting impacts on their midwifery art of fetal growth assessment.

As demonstrated in Chapter 4, almost all participants recognised the midwifery specific knowledge they held in their hands. The touch and impression of a baby's growth under a midwife's hands was an important part of their assessment. A common thread was the art of *knowing* how big a baby should feel at a certain gestation. Primalja described thinking about, "How many packs of butter". Akusherka described relying on her well-honed midwifery skills, "I use my hands and instinct… and probably a lot more of looking at the women themselves". Incorporating SFH measurements and GROW charts into antenatal care was a decision made for diverse reasons. A small number of participants spoke about the reassuring role GROW played in their practice.

The majority of participants said they had incorporated routine measuring and the use of GROW charts into their practice alongside their midwifery specific fetal growth assessment skills, either as a way of conforming with medical expectations, or as another tool to help inform their practice, or both. For some participants, GROW charts were viewed as a useful addition to their practice toolbox as it helped to inform their knowledge and practice in this area. Other participants had not changed their practice and neither measured nor used GROW charts unless they had some concerns. Primalja had not changed the way she assessed fetal growth in her practice, despite the

introduction of GAP and GROW charts. Primalja said, “To be fair, in the last I don’t know how many years… I don’t know when they started suggesting that we needed to do tape measures, I’ve done the tape measure stuff as well…I don’t always think it’s helpful”. Primalja went on to say how she placed greater value on her own practice of assessing by landmarks.

Umbelethisi had measured women’s bellies for many years in her own practice, and described how the use of measuring tapes and growth charts had become more consistent due to the standardised approach and education of GAP:

> It has changed in that the grow charts… it’s much more consistent with the rest of the practitioners having gone through that course, so we’re familiar with the landmarks and the consistency of how to put the tape measure down on the belly.

Despite the recognition of the benefits of a consistent and standardised approach, participants voiced their reservations. For example, Umbelethisi acknowledged, “… it’s kind of one of those things that just is still a very inexact science”. Several participants noted that an appropriate measurement on the growth chart could be deceptive and did not necessarily provide reassurance of a well-grown baby. Hebamme felt obliged to use GROW charts in her practice, yet she questioned the reliability of this tool by saying:

> I just really distrust the growth charts in that early stage. I find them really out of sync and often you can have you know 9 out of 10 babies measuring way above the 90th centile in those early weeks of the customised growth charts up to about 28 weeks.

Equally, she found that she could not rely on the SFH measurement alone. She described how the lack of hands-on-input could lead to false reassurance in this process:

> though I'm using [GROW charts] more I distrust them more as well. I will still send someone for a scan if sometimes I've got a fundal height that feels fine, but I'm just feeling this baby and going, "I don't think it's baby I'm feeling here… like this baby is little... the fundal height's fine but this baby feels small".

For the majority of participants, the expected and routinised use of GROW charts was an unnecessary intrusion upon their midwifery practice. Vroedvrouw disclosed that she did not routinely use a tape measure, and only measured if she had concerns, "If I think 'Oh this baby feels a bit small', I will get the tape measure out. Just to double check myself". She continued to say, "after all this time I guess you just know if it's small or not". Akusherka also spoke descriptively about not basing her practice on measurements and growth charts. She expressively pronounced, "I measure because we have to put a figure down, we can't say 'my hands feel wonderful'".

The role of ultrasound

Incorporating GAP and GROW charts into practice was associated with a flow on effect in terms of the use of other medical technology such as ultrasound scans. The decision to scan was largely due to pressure from the 'medical gaze'. The participants felt anxious about having their practice scrutinised, rather than about any actual clinical risk. The practice continuum regarding growth scans ranged from one extreme to another. Bidan referred to scans as a "reassuring tool for us" and said, " Often, I find if

it seems a bit off on the growth chart, I send them for a scan and 99% of the time it comes back totally fine – the scan is like fully reassuring". Whereas Akusherka did not necessarily view scans as being particularly useful and said, "Oh scans, if I have concerns, if I have to".

The majority of participants recognised that they were requesting more growth scans. Bydwraig said, "I think we do a lot more scans than what we used to". Kätilö also described this by saying, "I'm doing a few more scans than I would [normally] do". Despite knowing that she had missed a few small babies in her lengthy career, Primalja also felt she was referring women in her care for more growth scans than she ever had and stated, "Probably more in the last five years than I would ever have done". Additionally, several of the more experienced midwives talked about feeling vulnerable and used the word "fear" when considering why they were making more referrals. Kätilö explained that her fear of missing SGA babies led to her referring more women for scans and said, "I'm getting older and I might miss something". Primalja also attributed the reason behind increased referrals for ultrasound scans to "fear probably".

Participants in this study grappled with the use of ultrasound scans for assessing fetal growth. All participants acknowledged the potential benefits of ultrasound scanning where increased risk was identified. Phrases such as "if I am worried", or "if I am concerned" were expressed by participants as reasons for suggesting a scan was necessary. However, these feelings were generally not generated by a measurement on a GROW chart, rather from the feel of the baby in the participant's hands. Vecmāte talked about how she approached growth variations in her practice, "on the growth

chart obviously I follow the recommendations and if the same centile stays then I will have a growth scan". Vroedvrouw also referred for an ultrasound scan, but from a different perspective, "If I think the woman is small for dates, she goes off for a scan and I generate a growth chart". One participant explained how she felt compelled to follow GAP and refer for a scan due to the medical gaze induced by GAP and often in spite of what she was feeling and thinking. This medicalised and defensive approach to maternity care illustrates the marginalisation and undermining of midwifery knowledge and skill. Hebamme said:

> I almost always find myself saying to women, you know, a lot of the time when I do send women for a scan based on their customised growth chart … 'I'm not personally concerned, it feels to me like your baby is growing okay' or you know, 'I think the measurements might be off for this reason…'.

Interestingly, while participants acknowledged their increasing use of ultrasound, the majority of participants considered the accuracy of ultrasound scans in general as overstated. Vroedvrouw, for example, described her experience of scans as being "fairly accurate along the way but not at term when they are saying what the weight is, often you're a kilo out". Despite identifying some benefits of ultrasound scans for fetal growth assessment, participants also expressed their reservations about the wholesale embrace of this technology for fetal growth assessment and the resulting medicalisation of women's pregnancies. For example, several participants questioned the problematisation of large babies altogether and the rationale for scanning them. As Umbelethisi questioned, "When you get a large baby, I just really think, 'Why are we sending them all to ultrasound?'". Qabila also spoke about the detrimental impact of

GROW charts and scans on LGA babies. She described a pattern of seeing bigger babies having more scans, and as a result, more inductions and the potential for increased morbidity:

> I think a lot of clinical decisions get made based on based on a fundal height measurement that's plotted on a graph that suggests a baby is getting too big, and so there's a lot of a lot more scanning probably happening and a lot more inductions of labour.

This was also a dilemma Bydwraig encountered in her practice:

> I think that the large for dates babies are tricky. You know, like you are measuring a bit ahead, you've had a normal GTT[13], you've previously pushed out a 4.2kg baby, you're probably going to be fine but the referral guidelines say that if it's over the 90th centile, I should be referring you. So then I refer you and they're just going to scare you.

Qabila expressed her concern around outcomes for babies described as big, "I do worry a little bit about the bigger babies and the level of morbidity that's attached to all the inductions of labour and just the psychological thing that happens with women when they're told their baby's big". Qabila went on say that she felt "women enter labour in a more apprehensive state if they think they've got a big baby on board, and it probably affects their decision making in labour and I think it also affects the clinician's decision making".

[13] Glucose tolerance test is a diagnostic test for gestational diabetes.

It is important to note that it is not just midwifery knowing that is marginalised with the medicalisation of fetal growth assessment. Omitted from the medical viewpoint is the woman's understanding of her own pregnancy. Acknowledging a woman's ability to know her body and her sense of her baby's growth, particularly for multiparous women, is a missed opportunity. Ray and Alhusen (2016) found that despite maternal estimation of weight being as accurate as clinical estimates, women's input was not generally sought or valued. Qabila described a pivotal moment in her practice with a woman whose baby felt small on palpation, yet in midwifery partnership, she followed this woman's knowing of her body and her baby. Qabila went on to say, "that woman taught me an awful lot about my knowledge and her knowledge and whose knowledge is the most important".

Emotions

> … the emotional experiences of midwives at work are often not spoken about. Midwives often tend to 'get on with the job', but the process of dealing with others' emotions, managing their own and displaying different kinds of emotion can be a challenging part of midwives' work (Rayment, 2015, p. 9).

Midwifery is emotional work. Tears of joy and relief after a birth, stress regarding complexity, and exhaustion after many hours of work and still being on call. This side of being an LMC midwife is not often spoken of outside families and group practices. This final section looks into the emotional work of midwives around fetal growth assessment.

The participants in this study spoke candidly about how they felt about their practice regarding fetal growth assessment on an emotional level. The marginalisation of

midwifery knowledge and practice that comes with the expectation of conforming with the medicalisation of fetal growth assessment, resulted in feelings of frustration and anxiety. These recurring feelings were discussed by the majority of participants. In particular, participants described experiencing pressure to conform to the medicalisation of fetal growth assessment and the resulting conflicting ideologies.

The responsibility of assessing fetal growth was a source of anxiety for some participants. This anxiety stemmed from understanding how even a small intervention such as a growth scan prompted by a measurement can potentially change a woman's pathway of care. Interestingly, the midwives who had been in practice the longest were the ones who verbalised this. Feeling mindful, and at times anxious, about the wellbeing of the woman and her baby's growth was discussed by several participants. Qabila talked about how she experiences an underlying sense of anxiety for the woman. She said:

> I do think there is an element of it that kind of makes me just really hope that's okay because I just know the treadmill that people end up on if you pick up something that you are worried about. So, there's a little bit of anxiety there in the background.

Josanpu also talked about her awareness of the importance of things progressing normally antenatally for the woman, to avoid any kind of intervention and said, "it's going to make a massive difference to that woman if her baby is doing well compared to if they're not doing so well".

Pressure, vulnerability, and trying to control the situation over which sometimes midwives have no control over can provide immense emotional work for midwives.

Within the midwifery community it is understood that the longer you are in practice, statistically, the likelier you are to experience adverse outcomes. Both Kätilö and Primalja had been in practice long enough to understand that quite simply, sometimes bad things happen. Kätilö was one of the most experienced participants and she became quite emotional when we discussed how she felt about fetal growth assessment and antenatal care. She said, "I actually hate antenatal with a passion. Because it's the only time babies die". Kätilö went on to say, "that's why I don't like antenatal. I hate clinics. I hate getting up on Thursday and Friday morning to go to clinic".

It is important to recognise that LMC midwives are vulnerable in their practice. Regardless of information sharing, informed consent, and thorough documentation, adverse outcomes frequently result in the midwife having her practice scrutinised. Primalja, another experienced midwife, also felt this pressure and said, "it's probably the aspect that I'm most nervous about". She explained that the medical gaze and obstetric viewpoint were the reasons for feeling this way, " I think grow charts and the obstetric viewpoint constant - you have to have a number, actually writing that measurement number and being a bit concerned that you might miss a small baby". However, these two participants did not describe a defensive or fear-based practice. Rather, they conducted their midwifery-centric practice holistically, despite this underlying ever-present level of anxiety. Primalja went on to say "and it's the media thing isn't it? It's that the people are out to get midwives type of thing". While Primalja was the only participant to express this, this is not an uncommon sentiment within the profession.

Frustration was a recurring feeling discussed by participants in relation to the use of GAP and GROW charts and the impact on the participants' practice. Qabila said:

> there's so much focus on bioscience and the biomedical model in terms of what's valued and so women's knowing about their babies and midwifery knowing of baby growth tends to be less valued I think in our current culture.

Qabila then added:

I guess one of the things that troubles me a little bit is that over time, that real devaluing of midwifery knowledge about growth. I think that you know we've come to rely so heavily on technology and scanning and all of those things and you know it would just be marvellous if every woman tracked an estimated fetal weight and an actual fetal weight and fed it back to the radiology clinics because that's such an inexact science and the thing that's always thrown at midwifery is that … our knowledge is inexact and that midwifery ways of knowing are not reproducible and not you know…not that they're not valid but the tools of biomedicine are the valued information that we have and I really worry that midwifery confidence is being undermined in that process.

Regardless of the complexities surrounding midwives' engagement with changing protocols around fetal growth assessment, it is inarguable that GAP and GROW charts have changed the maternity landscape. The emotional work of assessing fetal growth, conflicting ideologies, and the medicalisation of fetal growth assessment is omnipresent for midwives. The expectation to integrate medical tools into LMC midwifery practice has led to a sense of conflict for some participants between their own midwifery-centric knowledge and medically dominated standards of care. Relying

on the information technology provides and deferring to GROW charts and the EFW generated from an ultrasound scan not only invisibilises midwifery knowing, but also the woman's own knowledge about her pregnancy and her baby's growth.

Chapter summary

Navigating the practice landscape around fetal growth assessment has become more complex for LMC midwives. The overt devaluing of midwifery skill and marginalisation of midwifery knowledge in favour of medical frameworks and practice tools has left little room for what LMC midwives, who excel at primary maternity care, are feeling or thinking. Measurements and scans appear to trump midwifery touch. The tangible black and white charts and reports also appear to hold greater value than the intangible, yet informed opinion, of a skilled midwife.

In this medically dominated context, the increasing invisibilisation of unique midwifery skills and knowledge has significant consequences for midwifery practice, midwives' professional identities, and their relationships with women. In the next chapter, the implications of this positivist context on midwifery and maternity care is discussed.

Chapter 6: Discussion

Kaōre te kūmara e kōrero mō tōna ake reka

(The kumara does not speak of its own sweetness)

Introduction

As explored in Chapter 1 of this thesis, it was my own experience of having my midwifery knowledge regarding fetal growth assessment marginalised that first impelled me to embark on this research journey. I wanted to make visible and validate midwifery knowing about fetal growth. I also wanted to make sense of why the consistent hands-on assessment of women and the growth of their babies appeared to no longer be as valued in the current maternity context. I therefore set out to explore how community based caseloading LMC midwives in the Aotearoa New Zealand continuity of care context approach and regard fetal growth assessment within their practice. The aims of this research were to gain an understanding of how these autonomous primary care practitioners used their midwifery-centric knowledge to assess fetal growth as well as understanding what informed their practice.

Fourteen LMC midwives generously shared their practices and each explained their individual midwifery knowing pertaining to fetal growth assessment. From the interviews, two overarching themes emerged:

1. LMC midwives embrace their midwifery knowing confidently in the routine assessment of fetal growth in the primary setting. This knowing stems from the epistemological foundation upon which midwifery is based, the holistic

partnership with the women they care for, continuity of care, and from experience.

2. Encroaching medical practices are marginalising midwifery knowing and skill regarding fetal growth assessment in the medically dominated provision of maternity care.

These themes illustrate how the increasingly medicalised approach to fetal growth assessment and ongoing struggles around the legitimacy of different ways of knowing in maternity care underpin contemporary practices in relation to fetal growth assessment in Aotearoa New Zealand (Fry, 2007; Gould, 2017; Power, 2015). As demonstrated in Chapters 4 and 5, participants in this study clearly articulated the midwifery epistemology of fetal growth assessment grounded in an established midwife: woman partnership and continuity of care. However, participants also described the encroachment of medicalised approaches to fetal growth assessment in their practice with the effect of sidelining and even undermining midwifery knowledge and skill.

The participants in this study described their reservation about the consequences of medicalised fetal growth assessment not only in terms of their own practice, but also questioning its effects on women and their babies. The published literature reviewed in Chapter 2 centred on methods of fetal growth assessment from both a midwifery and medical perspective, as well the accuracy of these methods. The published research that discussed the accuracy of fetal growth assessment methods was largely set in the dominant medical paradigm, which contributes to the invisibility and undervaluing of midwifery knowledge and skill. The need for research on fetal growth assessment

informed by a midwifery epistemology and reflecting a partnership and continuity of care context was a key finding.

In the following discussion I explore the tensions between midwifery and medical approaches to fetal growth assessment and their significance for midwifery practice. I begin by discussing the legitimacy of midwifery knowledge and practice in relation to fetal growth assessment. I then explore the increasing encroachment of a more medicalised approach to fetal growth assessment and its effects on midwifery practice. Finally, I discuss the way forward and how to elevate and transform the status and value of midwifery epistemology in relation to fetal growth assessment.

The legitimacy of knowledge

> To legitimize one way of knowing as authoritative devalues, often totally dismisses, all other ways of knowing. Those who espouse alternative knowledge systems tend to be seen as backward, ignorant, or naïve troublemakers (Jordan, 1993, p. 152).

There are times in midwifery practice where our belief in our, or our colleagues' midwifery knowledge and skill, leads us to be seen, and potentially labelled as ignorant, and certainly as a (naïve) troublemaker in the way that Jordan describes above. Our determination to assert our midwifery knowledge in practice, can, in a medical setting, lead others to think of us as ignorant and troublemakers. However, challenging an outdated hierarchical paradigm with a differing professional epistemology should promote discussion, rather than judgement.

As demonstrated in Chapter 2, current research evidence on fetal growth assessment does not adequately represent midwifery knowledge and expertise. It also neglects the specific continuity of care context in which LMC midwives undertake fetal growth assessment in Aotearoa New Zealand. Understanding how LMC midwives provide care in our unique practice context is essential to recognising the important professional role community midwives play in primary maternity care, specifically regarding fetal growth assessment.

Midwifery epistemology can be described as being of two halves. Formally recognised scientific knowledge is integrated with hands-on experiential and perceptive knowledge or as Downe (1998) described it, the art of midwifery (Davis, 1995; Fry, 2007; Shallow, 2001). This art of midwifery care is a sensory and experiential fusion of different ways of knowing. We talk, listen, look, touch, and think, creating a detailed and informed picture of the woman and her pregnancy. However, in the scientific paradigm, an SFH measurement or an estimated weight from a scan has greater validity than the holistic source of knowing relied upon by midwives to inform their practice. The art of midwifery knowing appears to carry little visibility or validity within the medical discourse about fetal growth assessment. As Downe and McCourt (2008) note, "Knowledge that is generated by hands-on experience, by messy interactions with people and with events, and by intuitive understandings and decisions is dismissed as being biased or unscientific" (p. 9).

Lead maternity care midwives conduct fetal growth assessments grounded in a woman-centred, holistic paradigm, in contrast to the medically oriented assessments described in Chapter 2 (Davison et al., 2018; Guilliland & Pairman, 2010). These two

contrasting approaches to fetal growth assessment highlight the difference between a midwifery and medical paradigm, from inclusive of women to exclusive, and from flexible to procedural. In Chapters 4 and 5 participants described the key components of a midwifery knowing about fetal growth assessment as listening to the woman's experience of her baby, feeling the "whole" baby during the clinical assessment of abdominal palpation, measuring the SFH and then for some, plotting that measurement on a GROW chart. Being confident in their palpation and fetal growth assessment skills was expressed by nearly all participants. Feeling the baby offered a fuller sense of the baby's size compared to an SFH height measurement alone, providing greater confidence in their assessment. Just knowing what felt right was another common description. Those who had been in practice the longest primarily palpated to assess growth, with some taking an SFH measurement also. These midwives discussed having measured bellies prior to the introduction of GAP. The majority of "newer" practitioners (those who had been practising as LMCs for less than 10 years) felt equally confident in their clinical palpation skills and had also incorporated routine measuring into their practice.

Experiential knowing comes from skill, practice, knowledge sharing, and is grown and developed by each midwife in their practice over time. Midwives extend their web of knowing further with intuitive knowledge. Whether it is viewed as pattern recognition, practice wisdom, or instinct, it is part of midwifery practice upon which most midwives rely, and are at times, very grateful for (Barnfather, 2013; Muoni, 2012; White, 1996). In considering the ways of midwifery knowing, they are undoubtedly alternative in comparison to the authoritative discourse of science and medicine. However, that does

not make them illegitimate or invalid. Rather, the integration of formal and non-traditional ways of knowing provide an example of thoughtful, expert, holistic care.

Context, as discussed in Chapter 4, is another valuable piece in the holistic midwife-woman way of knowing. Woman-centred care provided within a continuity of care context encourages the development of a partnership built on trust and knowledge between a woman and her midwife. This provision of personalised care together with the woman feeling "known" and feelings of empowerment, result in improved clinical outcomes and greater maternal satisfaction (Moncrieff, 2018; Perriman et al., 2018; Shallow, 2001). Forming this connection is very much an investment for the midwife in her practice as well as in the wellbeing of the woman and the baby. As Gruenberg (2016) affirms, "Empathy, experiencing another person's condition from their perspective and sharing their feelings, is a key value in midwifery. As midwives we forge a collaborative partnership with clients and connect emotionally with the women in our care" (p. 41). John and Parsons (2006) describe this as the shadow work of the midwife, unpaid and often unnoticed, but so important to the woman's care.

Within our woman-centred dynamic of care, it makes sense that women are a key source of midwifery knowledge. Developing an understanding of the whole woman and her pregnancy and sharing in her expert knowledge about her body and baby is a significant role of the midwife and allows her to "be sensitive to subtle cues and graded qualitative changes that may not otherwise have been recognised" (Davis, 1995, p. 31).

The medicalisation of fetal growth assessment

> The art of palpation is suffering in some settings because we have stopped thoroughly evaluating the gravid abdomen with our hands. (Jacobson, 1993)

In her article, Spillane (2020) discusses how even in remote settings a mindset of 'machines are best' is replacing the belief in foundational midwifery skills such as palpation. While this research gives visibility to midwifery epistemology and the midwifery-centric approach to fetal growth assessment, it also demonstrates the encroachment of medical dominance on this provision of primary midwifery care through the implementation of GAP and GROW. Maternity care provision in Aotearoa New Zealand is structured differently to that of other countries represented in the literature, and should therefore not simply absorb international practices. Midwifery expertise is also poorly represented in the international literature and with an increasingly medicalised surveillance model of fetal growth assessment, midwifery practice is becoming increasingly invisibilised in our maternity setting as well.

The scope of identifying SGA babies using GAP and GROW in the Aotearoa New Zealand context has broadened to a more routinised use of customised GROW charts (CCDHB, 2018; NZMFMN, 2014). This medical intervention has become normalised, moving on from women with risk factors to include all women. Medicalisation does not necessarily represent *progress* in terms of better care or outcomes. Most participants acknowledged the evidence that a standardised system of measurement together with a GROW chart may help identify growth restricted fetuses (Gardosi et al., 2013; McGeown, 2001; Roex et al., 2012). However, participants also felt that this protocol had been imposed upon them by their respective DHBs, altering the focus of their

practice to adopt a more medical and pathological approach to fetal growth assessment

In terms of incorporating the protocol into their practice, some participants used GROW charts routinely, and welcomed GAP and GROW into their practice toolbox. Some participants had changed to the GAP recommended standardised method of measuring while others had not. Kätilö, who had been a midwife for more than 20 years, was quite sure that she would not be changing her practice. Kätilö likened changing her method of measuring to "changing sides of a soccer team".

Her response to this suggestion was initially amusing, but on reflection, it encapsulated the way in which the scientific paradigm undermines midwifery autonomy, attempting to standardise midwifery knowing and practice into a one size fits all approach. This medicalised model excludes the woman and, in this case, the midwife as well, removing the skilled sense of touch and feeling that midwives in our continuity of care context do so well (Davis-Floyd, 2007; Davison et al., 2018). Gaskin (2004) describes this powerfully as, "Our culture's love affair with machines, contraptions and gadgets has, unfortunately, blinded literally hundreds of millions of people to the importance of human contact, feeling, experience and judgment in maternity care" (p. 9).

As discussed, the Aotearoa New Zealand context is different in its mode of primary maternity care provision, embracing midwifery-led care, consistency, and continuity. The extensive uptake and increasingly routinised use of GAP and GROW is contributing to the marginalisation and invisibilisation of midwifery specific knowledge in our continuity of care context. Feelings of disenfranchisement and vulnerability in their

practice were described by participants with the increasing medical dominance of maternity care in general, and specifically, a devaluing of midwifery epistemology and practice in relation to fetal growth assessment. For midwives, the ongoing and increasing marginalisation of their knowledge means a loss of skill within the profession, and likely fewer women attracted to this profession due to the change in the role. Equally, the increased medicalisation and management of fetal growth surveillance from such a defensive viewpoint opens the door to increased surveillance and intervention, and places the woman and her baby at risk of potentially unnecessary medicalised outcomes. The word that springs to mind is “loss”, a great loss of skill, knowledge, and all things normal around maternity care.

The Aotearoa New Zealand context cannot be compared to international results as quite simply, we do things differently here. Understanding this difference and utilising the wealth of knowledge provided by LMC midwives, rather than diminishing it, could add another dimension to fetal growth assessment.

The way forward

> The constitution of authoritative knowledge is an ongoing social process that both builds and reflects power relationships within a community of practice. It does so in such a way that all participants come to see the current social order as a natural order, i.e. as the way things (obviously) are. (Jordan, 1993, p. 152)

This research has illustrated the diverse ways of knowing embraced and practised by midwives when assessing fetal growth. Midwifery epistemology is expansive, intuitive, objective, subjective, and rational (Brailey et al., 2017; Davis, 1995, Downe, 1998; Fry,

2007). Scientific learning forms part of this knowledge with multiple layers of different types of knowledge adding to this foundation. Despite this, midwifery knowledge is undervalued and marginalised in favour of medical hegemony.

This section will discuss how as midwives with our own epistemology, the transformation of status and value of midwifery knowing in relation to fetal growth assessment as well as other aspects of practice is critical. Part of this transformation must be the way in which we ourselves value and represent our knowledge in the medically dominant maternity setting. Moreover, transforming this setting by "examining and contesting the validity of hegemonic practices" is equally essential if as a profession, we are to move forward (Johnston, 2014, p. 55).

Transformation

> As midwives we need to continue to challenge guidelines that are based on expert opinion and call for better quality evidence to support practice, especially when that practice is counter-intuitive to our own knowledge and philosophy. (Dixon, 2014, p. 12)

Midwives value their epistemology and their autonomy. Yet, having completed this research, it has become evident that midwifery autonomy is moderated by the scientific paradigm, and certainly in the case of fetal growth assessment. A protocol developed internationally and then transplanted into a foreign setting has appeared to supplant the knowledge base of midwives in that setting. Further, the scope of this protocol has been broadened and routinised, without appropriate contextual research.

It is unfortunate that rather than working with midwives in our primary focused communities, our medical contemporaries have asserted their authority and introduced a medical intervention to standardise and de-personalise a very personal aspect of midwifery care. Understanding how this shift to routinely medicalise, even pathologise, fetal growth assessment is critical, as yet another aspect of normal is being eroded. This is the quandary—knowledge is power, and the dominant medical discourse is powerful and reductive (Fry, 2007; Gould, 2017). Midwives work to provide excellent care based on knowledge, experience, and research, yet as a profession, our epistemology is disregarded. This does not serve women or the maternity landscape. As Davis (1995) affirms, "No one way should be perceived as superior to another" (p. 31).

Changing the landscape is the way forward. Midwifery as a profession needs to challenge the dominant medical discourse by elevating and transforming the status and value of midwifery epistemology. Evidence-based practice is another term for utilising the art and science of midwifery. Clinical experience, together with recent research evidence, combines the midwifery and scientific paradigms to achieve optimal outcomes and results (Power, 2015). This multi-layered foundation of differing types of knowledge must be extended with research conducted within our context and by our midwives to build a separate and unique body of evidence. As midwives we must also back ourselves by validating our knowledge confidently in practice, rather than acquiescing to technology, protocols, and guidelines. As a profession we need to step forward and create our own discourse by fully embracing our autonomy, rather than standing behind a medical model of maternity care. Creating a more inclusive

collaborative environment within maternity care provision, comprising of diverse epistemologies will not only enhance interprofessional relationships and create a better dynamic of care for women in our maternity landscape, but will also undoubtedly lead to greater sustainability and satisfaction within midwifery (Brailey et al., 2017; Pendleton, 2019).

Within Aotearoa New Zealand's midwifery context, how can we optimise fetal growth assessment and the use of GAP and GROW without undermining midwifery approaches? Published evidence shows this standardised method of fetal surveillance is effective at detecting growth restricted fetuses. Midwives can appreciate that evidence and use this tool where we consider appropriate in our practice. However, we must also be alert to, and challenge, the ways in which this works to abnormalise fetal growth with this now routinised medical surveillance. This research has also highlighted the need for further research to establish the reliability of SFH measurements, standardised or otherwise; the limitations of the accuracy of scans; and the impact of inter-observer variation and experience on the accuracy of both scans and SFH measurements.

It seems obvious to place value on what the midwife in Aotearoa New Zealand's context is feeling, not just measuring. In other words, what her sense of the baby's growth is. Removing the routine aspect of this surveillance and using this medical intervention appropriately and judiciously when there are concerns links back to the development and validation of our own professional discourse and epistemology.

Strengths and limitations

This qualitative descriptive study centred on 14 participants' practices relating to fetal growth assessment as LMC midwives in a continuity of care context. It provided depth and detail of fetal growth assessment practices from a midwifery perspective and gave voice to a previously unvoiced part of midwifery practice in Aotearoa New Zealand.

The ethnicity of the participants was diverse and included midwives who identified as Māori, European, and New Zealand European.

By being an 'insider', this engendered midwife to midwife conversation and contributed to shared knowing, creating an open space to bring light into midwifery knowing. Fetal growth assessment is a pertinent topic as professionally, the marginalisation and devaluing of LMC midwives and their midwifery practices is at a crisis point in Aotearoa New Zealand. By engaging midwives in conversations such as this, it will serve to develop and strengthen our midwifery epistemology and our practice.

This study was small and relatively local, so therefore there are limitations to the extent to which findings can be extrapolated. Despite this, generalisations can be made from the research, and potentially, awareness of the fetal growth assessment methods raised. Qualitative research is dependent on the skills of researcher. In hindsight, the questions could have been improved. Being in the interview and staying on track at all times was challenging, as was teasing out some of the more pragmatic midwives' responses.

This study represents the passion I have for midwifery knowledge and practice, particularly pertaining to fetal growth assessment. I am hoping this small study calling for visibility, recognition, and value of midwifery epistemology plays a role in emboldening my fellow LMC midwives, as well as unsettling the dominant narrative.

Recommendations

> Midwives represent key players in obstetrics. (Kesrouani et al., 2017)

1. As the published literature does not adequately represent autonomous midwifery- led care nor midwifery expertise in fetal growth assessment, further research evidence is required to inform fetal growth assessment guidelines, standards, and protocols in Aotearoa New Zealand.
2. Midwives must advance our epistemology and practice by using midwifery descriptions authoritatively to describe fetal growth in discussion with medical colleagues. Furthermore, medical interventions such as GAP, GROW, and ultrasound scans should be used in conjunction with midwifery practice, rather than superseding midwifery specific expertise.
3. Midwifery and medical students should be supported to develop confident palpation skills.

Researcher reflection

A posterior labour has much in common with this research project—longer than anticipated, an enormous feeling of pressure together with quite a lot of pain at times, culminating in an enormous sense of relief and accomplishment. This postdates OP labour of love was conceived with Jennifer and an overwhelming feeling of frustration at the medical system, the impact of ill-chosen words, and a disregard for midwifery knowing. I tell my beautiful teenagers, "You can't complain if you are not prepared to do anything about it", and so it was this family mantra that set me on this journey, encouraging the 'naïve troublemaker' in me to emerge.

Whether it is age or experience, simply accepting things in midwifery because they are has become untenable. As a profession, LMC midwives have been largely disregarded by recent governments over the last few years and despite engaging in 'political activism', I feel powerless. I have to wonder if anyone is actually listening to us as a collective. A quintessential and well-practised midwifery skill is that of waiting, patiently and professionally. We wait expectantly for women to labour and birth. However, we also waited for government and DHB support during COVID-19 and still we wait for pay equity. Waiting for things to change within the maternity landscape will only see more medicalisation and an increase in the invisibilisation of midwifery knowledge.

Being a midwife is meaningful to me as is the hope of producing something meaningful for our midwifery context to perhaps contribute to the status of midwifery. Lavender's (2010) comment regarding midwives' practising covertly rather than challenging guidelines resonated with me. As midwives we have a wide-ranging and

specialised knowledge base, yet it appears that we can be hesitant to claim this. In completing this research, I wanted to draw attention to midwives and the basic skill of using their hands, something I feel very strongly about, and claim this disregarded knowledge for our context.

This unnecessary divide between medical and midwifery epistemologies promotes discord and covertness on the part of most likely a multitude of naïve troublemakers. By collaborating and sharing knowledge, as midwives do with women, we can create a stronger more robust approach to fetal growth assessment more suited to our Aotearoa New Zealand midwifery context.

References

Anderson, E. (1995). Feminist epistemology: An interpretation and a defence. *Hypatia*, *10*(3), 50–84. https://doi.org/10.1111/j.1527-2001.1995.tb00737.x

Bailey, S. M., Sarmandal, P., & Grant, J. M. (1989). A comparison of three methods of assessing interobserver variation applied to measurement of the symphysis-fundal height. *BJOG: An International Journal of Obstetrics & Gynaecology*, *96*(11), 1266–1271. https://doi.org/10.1111/j.1471-0528.1989.tb03223.x

Bais, J. M. J., Eskes, M., Pel, M., Bonsel, G. J., & Bleker, O. P. (2004). Effectiveness of detection of intrauterine growth retardation by abdominal palpation as screening test in a low risk population: An observational study. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, *116*(2), 164–169. https://doi.org/10.1016/j.ejogrb.2004.01.037

Barnes, M. (1999). Research on midwifery – The relevance of a feminist theoretical framework. *Australian College of Midwives Incorporated Journal*, *12*(2), 6–10. https://doi.org/10.1016/s1031-170x(99)80013-0

Barnfather, T. (2013). Can intuitive knowledge be taught in midwifery practice? *British Journal of Midwifery*, *21*(2), 131–136. https://doi.org/10.12968/bjom.2013.21.2.131

Barrett, A., Kajamaa, A., & Johnston, J. (2020). How to … be reflexive when conducting qualitative research. *Clinical Teacher*, *17*(1), 9–12. https://doi.org/10.1111/tct.13133

Baston, H. (2003). Monitoring fetal wellbeing during routine antenatal care. *The Practising Midwife*, *6*(4), 29–33.

Baum, J. D., Gussman, D., & Wirth III, J. C. (2002). Clinical and patient estimation of fetal weight vs. ultrasound estimation. *The Journal of Reproductive Medicine*, *47*(3), 194–198.

Blee, D., & Dietsch, H. (2012). Women's experience of the abdominal palpation in pregnancy: A glimpse into the philosophical and midwifery literature. *New Zealand College of Midwives*, *46*, 21–25.

Brailey, S., Luyben, A., & van Teijli ngen, E. F. L. (2017). Women, midwives, and a medical model of maternity care in Switzerland. *International Journal of Childbirth*, *7*(3), 117–125. https://doi.org/10.1891/2156-5287.7.3.117

Braun, V., & Clarke, V. (2006). Qualitative research in psychology: Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2013). *Successful qualitative research*. London, UK: SAGE.

Braun, V., & Clarke, V. (2014). What can "thematic analysis" offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-Being*, *9*(1), 20–22. https://doi.org/10.3402/qhw.v9.26152

Bupa. (2020). *Antenatal care*. https://www.bupa.co.uk/health-information/pregnancy/antenatalcare#:~:text=Antenatal%20care%20is%20the%20care,for%20you%20and%20your%20baby.

Burns, E., Fenwick, J., Schmied, V., & Sheehan, A. (2012). Reflexivity in midwifery research: The insider/outsider debate. *Midwifery*, *28*(1), 52–60.

Campbell, N. (2013, March). Spread the word – Continuity of care is now mainstream. *Midwifery News*, 8–9.

Capital and Coast District Health Board. (2018). Guideline: GROW (Gestation Related Optimal Weight).

Carberry, A. E., Gordon, A., Bond, D. M., Hyett, J., Raynes-Greenow, C. H., & Jeffery, H. E. (2014). Customised versus population-based growth charts as a screening tool for detecting small for gestational age infants in low-risk pregnant women. *Cochrane Database of Systematic Reviews*, *5*. https://doi.org/10.1002/14651858.CD008549.pub3

Carne, V. (2010). Symphysis fundal height: A measure of the evidence. *Essentially MIDIRS, 1*(5), 32-36.

Chauhan, S., Sullivan, C., Lutton, T., Magann, E., Morrison, J. (1995). Parous patients' estimate of birth weight in post term pregnancy. *Journal of Perinatology*, *15*(3), 192-194.

Clifford, S., Giddings, S., Southam, M., Williams, M., & Gardosi, J. (2013). The Growth Assessment Protocol: A national programme to improve patient safety in maternity care. *Midwifery Digest*, *23*(4), 516-523. Retrieved from https://www.perinatal.org.uk/gap/Resources/GAP_article_MIDIRS_Dec_2013.pdf

Cluett, E., & Bluff, R. (2006). *Principles and practice of research in midwifery.* Edinburgh, Scotland: Churchill Livingstone Elsevier.

Collins, C. T., Fereday, J., Pincombe, J., Oster, C., & Turnbull, D. (2010). An evaluation of the satisfaction of midwives' working in midwifery group practice. *Midwifery*, *26*(4), 435–441. https://doi.org/10.1016/j.midw.2008.09.004

Crosby, M., & Engstrom, J. (1989). Inter-examiner reliability in fundal height measurement. *Midwives Chronicle and Nursing Notes, 102*(1219), 254–256.

Cummins, A. M., Denney-Wilson, E., & Homer, C. S. E. (2015). The experiences of new graduate midwives working in midwifery continuity of care models in Australia. *Midwifery*, *31*(4), 438–444. https://doi.org/10.1016/j.midw.2014.12.013

Curti, A., Zanello, M., De Maggio, I., Moro, E., Simonazzi, G., Rizzo, N., & Farina, A. (2014). Multivariable evaluation of term birth weight: A comparison between ultrasound biometry and symphysis-fundal height. *Journal of Maternal-Fetal and Neonatal Medicine*, *27*(13), 1328–1332. https://doi.org/10.3109/14767058.2013.858241

Davies, L. (2010). Midwifery lore and abdominal assessment. *Essentially MIDIRS, 1*(4), 38–42.

Davis, D. (1995). Ways of knowing in midwifery. *Australian College of Midwives Incorporated Journal*, *8*(3), 30–32.

Davis-Floyd, R. (1993). Hospital birth as a technocratic rite of passage. *Mothering*, *67*, 68–75.

Davis-Floyd, R. (2007). Daughter of time: The postmodern midwife (Part 1). *Revista Da Escola de Enfermagem*, *41*(4), 705–710. https://doi.org/10.1590/S0080-62342007000400023

Davison, C., Geraghty, S., & Dobbs, K. (2018). The F word: Midwifery students' understanding of feminism. *British Journal of Midwifery*, *26*(11), 731–737. https://doi.org/10.12968/bjom.2018.26.11.731

Denzin, N., & Lincoln, Y. (Eds.). (2013). *The landscape of qualitative research* (4th ed.). Thousand Oaks, CA: SAGE.

Devi, B., Khandelwal, B., & Das, I. (2016). Abdominal palpation-An art in the heart of midwifery practice to determine persistent oblique lie-A rare condition at term pregnancy. *Asian Journal of Nursing Education and Research*, *6*(2), 255–259. https://doi.org/10.5958/2349-2996.2016.00049.5

Diksha, P., Permezel, M., & Pritchard, N. (2018). Why we miss fetal growth restriction: Identification of risk factors for severely growth-restricted fetuses remaining undelivered by 40 weeks gestation. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, *58*(6), 674–680. https://doi.org/10.1111/ajo.12818

Dixon, L. (2014, September). Connecting midwifery knowledge, expertise and practice. *Midwifery News*, 10–13.

Donley, J. (1986). *Save the midwife*. Auckland, New Zealand: New Women's Press.

Downe, S. (1998). Caring and sharing: Developing the art and science of midwifery. *British Journal of Midwifery*, *6*(7), 427. https://doi.org/10.12968/bjom.1998.6.7.427

Downe, S. (2008). Alternative ways of seeing. In S. Downe (Ed.), *Normal childbirth: Evidence and debate* (pp. 128–136). London, UK: Elsevier Health Sciences.

Downe, S., & McCourt, C. (2008). From being to becoming: Reconstructing childbirth knowledges. In S. Downe (Ed.), *Normal childbirth: Evidence and debate* (pp. 3–28). London, UK: Elsevier Health Sciences.

Dreyfus, H. & Dreyfus, S. (1986). *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer.* New York: The Free Press.

Engstrom, J. L., McFarlin, B. L., & Sampson, M. B. (1993). Fundal height measurement. Part 4-Accuracy of clinicians' identification of the uterine fundus during pregnancy. *Journal of Nurse-Midwifery*, *38*(6), 318-323. https://doi.org/10.1016/0091-2182(93)90012-6

Engstrom, J. L., Mcfarlin, B. L., Sittler, C. P., & Ms, R. N. (1993). *Three Measurement*.

Engstrom, J. L., Piscioneri, L. A., McShane, H., Mcfarlin, B., & Low, K. (1993). *Part C & the position* (7).

Engstrom, J. L., & Sittler, C. P. (1993). Fundal height measurement. Part 1-Techniques for measuring fundal height. *Journal of Nurse-Midwifery*, *38*(1), 5-16. https://doi.org/10.1016/0091-2182(93)90120-6

Farrell, T., Holmes, R., & Stone, P. (2002). The effect of body mass index on three methods of fetal weight estimation. *BJOG*, *109*(6), 651-657. https://doi.org/10.1111/j.1471-0528.2002.01249.x

Freeman, L.M. (2006). Continuity of carer and partnership. A review of the literature. *Women and Birth, 19,* 39-44.

Fry, J. (2007). Are there other ways of knowing? An exploration of intuition as a source of authoritative knowledge in childbirth. *MIDIRS Midwifery Digest*, *17*(3), 325–328.

Gardosi, J., & Francis, A. (1999). Controlled trial of fundal height measurement plotted on customised antenatal growth charts. *BJOG*, *106*(4), 309–317. https://doi.org/10.1111/j.1471-0528.1999.tb08267.x

Gardosi, J., Francis, A., Turner, S., & Williams, M. (2018). Customized growth charts: Rationale, validation, and clinical benefits. *American Journal of Obstetrics and Gynecology*, *218*(2), S609–S618. https://doi.org/10.1016/j.ajog.2017.12.011

Gardosi, J., Giddings, S., Clifford, S., Wood, L., & Francis, A. (2013). Association between reduced stillbirth rates in England and regional uptake of accreditation training in customized fetal growth assessment. *BMJ Open*, *3*(12). https://doi.org/10.1136/bmjopen-2013-003942

Gaskin, I. M. (2004). Teaching respect for hands-on care. *Midwifery Today with International Midwife*, *70*, 9–10.

Gibson, J. (2008). How to ... perform an abdominal examination. *Midwives*, *11*(5), 22.

Gilkison, A., McAra-Couper, J., Gunn, J., Crowther, S., Hunter, M., Macgregor, D., & Hotchin, C. (2015). Midwifery practice arrangements which sustain caseloading lead maternity carer midwives in New Zealand. *New Zealand College of Midwives Journal*, *51*(6), 11–16.

Goetzinger, K., Odibo, A., Shanks, A., Roehl, K., & Cahill, A. (2013). Clinical accuracy of estimated fetal weight in term pregnancies in a teaching hospital. *The Journal of Maternal-Fetal and Neonatal Medicine*, *27*(1), 89–93. https://doi.org/10.3109/14767058.2013.806474

Goto, E. (2017). Comparing the accuracy of maternal, clinical, and ultrasound estimations to predict birthweight: A meta-analysis. *Acta Obstetricia et Gynecologica Scandinavica*, *96*(11), 1289–1299. https://doi.org/10.1111/aogs.13208

Gould, J. (2017). Storytelling in midwifery: Is it time to value our oral tradition? *British Journal of Midwifery*, *25*(1), 41–45. https://doi.org/10.12968/bjom.2017.25.1.41

Greene, M. (2014). On the inside looking in: Methodological insights and challenges in conducting qualitative insider research. *The Qualitative Report*, *19*(29), 1–13. Retrieved from https://nsuworks.nova.edu/tqr/vol19/iss29/3/

Griffiths, A., Pinto, A., & Margarit, L. (2008). A survey of methods used to measure SFH. *Journal of Obstetrics and Gynaecology, 28*(7), 692–694.

Grigg, C. (2010). Working with women in pregnancy. In S. Pairman, C. Thorogood, & J. Pincombe (Eds.), *Midwifery: Preparation for practice* (2nd ed.). New South Wales, Australia: Churchill Livingstone Elsevier.

Gruenberg, B. (2016). The cost of caring: Midwifery and traumatic stress. *Midwifery Today*, *120*, 40–43.

Guilliland, K., & Pairman, S. (2010). *The midwifery partnership. A model for practice* (2nd ed.). Christchurch, New Zealand: The New Zealand College of Midwives.

Haragan, A. F., Hulsey, T. C., Hawk, A. F., Newman, R. B., & Chang, E. Y. (2015). Diagnostic accuracy of fundal height and handheld ultrasound-measured abdominal circumference to screen for fetal growth abnormalities. *American Journal of Obstetrics and Gynecology*, *212*(6), 820.e1–820.e8. https://doi.org/10.1016/j.ajog.2015.03.042

Harding, S. G. (Ed.). (2004). *The feminist standpoint theory reader: Intellectual and political controversies*. New York, NY: Routledge.

Hargreaves, K., Cameron, M., Edwards, H., Gray, R., & Deane, K. (2011). Is the use of symphysis-fundal height measurement and ultrasound examination effective in detecting small or large fetuses? *Journal of Obstetrics and Gynaecology*, *31*(5), 380–383. https://doi.org/10.3109/01443615.2011.567343

Harlev, A., Walfisch, A., Bar-David, J., Hershkovitz, R., Friger, M., & Hallak, M. (2006). Maternal estimation of fetal weight as a complementary method of fetal weight assessment: A prospective clinical trial. *Journal of Reproductive Medicine*, *51*(7), 515–520.

Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative research methods.* London, England: SAGE.

Henry, M. (2012). The accuracy of symphysis fundal height measurement. *British Journal of Midwifery*, *20*(9), 640–644. https://doi.org/10.12968/bjom.2012.20.9.640

Herrero, R., & Fitzsimmons, J. (1999). Estimated fetal weight: Maternal vs physician estimate. *Journal of Reproductive Medicine*, *44*(8), 674–678.

Hoepfl, M. (1997). Choosing qualitative research: A primer for technology education researchers. *Journal of Technology Education*, *9*(1), 47–63. https://doi.org/10.1177/014107689709000431

Hunter, B. (2004). Conflicting ideologies as a source of emotion work in midwifery. *Midwifery*, *20*(3), 261–272. https://doi.org/10.1016/j.midw.2003.12.004

Hunter, B. (2009). 'Mixed messages': Midwives' experiences of managing emotion. In B. Hunter, & R. Deery (Eds.), *Emotions in midwifery and reproduction* (pp. 175–191). https://doi.org/10.1007/978-1-137-08641-9_11

Hunter, B. (2010). Mapping the emotional terrain of midwifery: What can we see and what lies ahead? *International Journal of Work Organisation and Emotion*, *3*(3), 253–269.

Jacobson, A. K. (1993). Are we losing the art of midwifery? *Journal of Nurse-Midwifery*, *38*(3), 168–169.

Jayawardena, L., & Sheehan, P. (2019). Introduction of a customised growth chart protocol increased detection of small for gestational age pregnancies in a tertiary Melbourne hospital. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, *59*(4), 493–500. https://doi.org/10.1111/ajo.12902

Jelks, A., Cifuentes, R., & Ross, M. G. (2007). Clinician bias in fundal height measurement. *Obstetrics and Gynecology*, *110*(4), 892–899. https://doi.org/10.1097/01.AOG.0000282758.28533.d9

Joffe, H. (2012). Thematic analysis. In D. Harper, & A. R. Thompson (Eds.), *Qualitative research in mental health and psychotherapy: A guide for students and practitioners* (1st ed., pp. 209–223). https://doi.org/10.4135/9781412986281.n339

John, V., & Parsons, E. (2006). Shadow work in midwifery: Unseen and unrecognised emotional labour. *British Journal of Midwifery*, *14*(5), 266–271. https://doi.org/10.12968/bjom.2006.14.5.21046

Johnston, J. L. (2014). Resistance is not futile: Foucault and a brave new world of medical education research. *Medical Education*, *48*(6), 554–555. https://doi.org/10.1111/medu.12476

Jordan, B. (1993). *Birth in Four Cultures* (4th ed.). Long Grove, Illinois: Waveland Press.

Jordan, B. (1997). Authoritative Knowledge and Its Construction. In *Childbirth and Authoritative Knowledge: Cross Cultural Perspectives* (pp. 55–79).

Kayem, G., Grangé, G., Bréart, G., & Goffinet, F. (2009). Comparison of fundal height measurement and sonographically measured fetal abdominal circumference in the prediction of high and low birth weight at term. *Ultrasound in Obstetrics and Gynecology*, *34*(5), 566–571. https://doi.org/10.1002/uog.6378

Kesrouani, A., Atallah, C., AbouJaoude, R., Assaf, N., Khaled, H., & Attieh, E. (2017). Accuracy of clinical fetal weight estimation by midwives. *BMC Pregnancy and Childbirth*, *17*(1), 1–6. https://doi.org/10.1186/s12884-017-1242-7

Lambert, C., Jomeen, J., & McSherry, W. (2010). Reflexivity: A review of the literature in the context of midwifery research. *British Journal of Midwifery*, *18*(5), 321–326. https://doi.org/10.12968/bjom.2010.18.5.47872

Langford, R. (2001). *Navigating the maze of nursing research.* St Louis, MO: Mosby.

Lavender, T. (2010). Is there enough evidence to meet the expectations of a changing midwifery agenda? In J. Spiby, & H., Munro (Eds.), *Evidence based midwifery : Applications in context* (pp. 109–122). Oxford, UK: Wiley-Blackwell.

Lavender, T., Edwards, G., & Alfirevic, Z. (2004). *Demystifying qualitative research in pregnancy and childbirth.* Wiltshire, UK: Quay Books Division.

Lawes, R., & Jones, S. (2020). Student midwives' perception of the growth assessment protocol (GAP): Preparation for clinical practice. *Nurse*

Education in Practice, *44*. https://doi.org/10.1016/j.nepr.2020.102756

Lexico. (2019). Retrieved March 6, 2019, from https://www.lexico.com/en/definition/knowing

McAllion, D. (2004). Fundal height measurement and low birth weight. *British Journal of Midwifery, 12*(2), 101-104.

McCowan, L. M., Figueras, F., & Anderson, N. H. (2018). Evidence-based national guidelines for the management of suspected fetal growth restriction: Comparison, consensus, and controversy. *American Journal of Obstetrics and Gynecology*, *218*(2), S855-S868. https://doi.org/10.1016/j.ajog.2017.12.004

McGeown, P. (2001). Detecting fetal growth abnormalities. *MIDIRS Midwifery Digest*, *11*(2), 190-193.

Midwifery Council of New Zealand. (2019). Code of conduct. Retrieved from https://www.midwiferycouncil.health.nz/sites/default/files/documents/midwifery code of conduct feb 2011.pdf

Ministry of Health. (2012). *Guidelines for consultation with obstetric and related medical services (Referral guidelines)*. Wellington, New Zealand: Author.

Ministry of Health. (2019). *Report on Maternity 2017*. Retrieved from https://www.health.govt.nz/publication/report-maternity-2017

Moncrieff, G. (2018). Can continuity bring birth back to women and normality back to midwives? *British Journal of Midwifery*, *26*(10), 642–650. https://doi.org/10.12968/bjom.2018.26.10.642

Morse, J., & Field, P. (1996). *Nursing research: The application of qualitative approaches.* London, UK: Chapman and Hall.

Morse, K., Williams, A., & Gardosi, J. (2009). Fetal growth screening by fundal height measurement. *Best Practice and Research: Clinical Obstetrics and Gynaecology*, *23*(6), 809–818. https://doi.org/10.1016/j.bpobgyn.2009.09.004

Muoni, T. (2012). Decision-making, intuition, and the midwife: Understanding heuristics. *British Journal of Midwifery*, *20*(1), 52–56.

My Mak, C., & Wong, H. (2000). Assessing women in pregnancy and labour: Is it better to palpate? A perspective from midwives. *Hong Kong Journal of Obstetrics, Gynaecology and Midwifery*, *1*(2), 86–95.

National Institute for Health and Care Excellence (NICE). (2020). Antenatal care for uncomplicated pregnancies. Retrieved February 1, 2020, from https://www.nice.org.uk/guidance/cg62/ifp/chapter/Antenatal-care

Neergaard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative description-The poor cousin of health research? *BMC Medical Research Methodology*, *9*(1), 1-5. https://doi.org/10.1186/1471-2288-9-52

New Zealand College of Midwives. (2015). *Midwives handbook for practice* (5th ed.). Christchurch, New Zealand: Author.

New Zealand College of Midwives. (2020). *Standards of Practice.* https://www.midwife.org.nz/midwives/professional-standards/standards-of-practice/

New Zealand Maternal Fetal Medicine Network. (2014). *Guideline for the management of suspected small for gestational age singleton pregnancies and infants after 34 weeks gestation*. Retrieved from https://www.healthpoint.co.nz/downloadinfo,138318,otherList,qrxtiaam6ix6f02q5yd3.do

Nga Maia. (2018). *Nga Maia Māori Midwives Aotearoa.* https://www.ngamaia.co.nz

Noumi, G., Collado-Khoury, F., Bombard, A., Julliard, K., & Weiner, Z. (2005). Clinical and sonographic estimation of fetal weight performed during labor by residents. *American Journal of Obstetrics and Gynecology*, *192*(5), 1407-1409. https://doi.org/10.1016/j.ajog.2004.12.043

Olsen, K. (1999). 'Now just pop up here, dear…': Revisiting the art of antenatal abdominal palpation. *The Practising Midwife, 2*(9), 13–15.

Pairman, S. (1999). Partnership revisited: Towards midwifery theory. *New Zealand College of Midwives*, *21*, 6–12. Retrieved from https://www.midwife.org.nz/wp-content/uploads/2019/01/Jnl-21-October-1999-min.pdf

Papageorghiou, A. T., Ohuma, E. O., Gravett, M. G., Hirst, J., Da Silveira, M. F., Lambert, A., … Villar, J. (2016). International standards for symphysis-fundal height based on serial measurements from the Fetal Growth Longitudinal Study of the INTERGROWTH-21(st) Project: Prospective cohort study in eight countries. *BMJ*, *355*, 1–7. https://doi.org/10.1136/bmj.i5662

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: SAGE.

Pay, A. S. D., Wiik, J., Backe, B., Jacobsson, B., Strandell, A., & Klovning, A. (2015). Symphysis-fundus height measurement to predict small-for-gestational-age status at birth: A systematic review. *BMC Pregnancy and Childbirth*, *15*(1), 1–9. https://doi.org/10.1186/s12884-015-0461-z

Pembroke, N. F., & Pembroke, J. J. (2008). The spirituality of presence in midwifery care. *Midwifery*, *24*(3), 321–327. https://doi.org/10.1016/j.midw.2006.10.004

Pendleton, J. (2019). What role does gender have in shaping knowledge that underpins the practice of midwifery? *Journal of Gender Studies*, *28*(6), 629–634. https://doi.org/10.1080/09589236.2019.1590185

Perriman, N., Davis, D. L., & Ferguson, S. (2018). What women value in the midwifery continuity of care model: A systematic review with meta-synthesis. *Midwifery*, *62*, 220–229. https://doi.org/10.1016/j.midw.2018.04.011

Power, A. (2015). Contemporary midwifery practice: Art, science, or both? *British Journal of Midwifery*, *23*(9), 654–657. https://doi.org/10.12968/bjom.2015.23.9.654

Preyer, O., Husslein, H., Concin, N., Ridder, A., Musielak, M., Pfeifer, C., … Husslein, P. (2019). Fetal weight estimation at term – Ultrasound versus clinical examination with Leopold's manoeuvres: A prospective blinded observational study. *BMC Pregnancy and Childbirth*, *19*(1), 1–9. https://doi.org/10.1186/s12884-019-2251-5

Pullon, S., Gray, B., Steinmetz, M., & Molineux, C. (2014). Midwifery-led care embedded within primary care: Consumer satisfaction with a model in New Zealand. *Journal of Primary Health Care*, *6*(4), 319–323. https://doi.org/10.1071/hc14319

Ramani, S., Könings, K., Mann, K., & van der Vleuten, C. (2018). A guide to reflexivity for qualitative researchers in education. *Academic Medicine*, *93*(8), 1257. https://doi.org/10.1097/ACM.0000000000002263

Ray, E. M., & Alhusen, J. L. (2016). The suspected macrosomic fetus at term: A clinical dilemma. *Journal of Midwifery and Women's Health*, *61*(2), 263–269. https://doi.org/10.1111/jmwh.12414

Rayment, J. (2015). Emotional labour: How midwives manage emotion at work. *Practising Midwife*, *18*(3), 9–11.

Rees, C. (2011). *Introduction to research for midwives.* (3rd ed.). Edinburgh, Scotland: Churchill Livingstone Elsevier.

Reid, E. W., McNeill, J., & Holmes, V., & Alderdice, F. (2014). Women's perceptions and experiences of fetal macrosomia. *Midwifery*, *30*(4), 456–463.

Robert Peter, J., Ho, J. J., Valliapan, J., & Sivasangari, S. (2015). Symphysial fundal height (SFH) measurement in pregnancy for detecting abnormal fetal growth. *Cochrane Database of Systematic Reviews*, *9*. https://doi.org/10.1002/14651858.CD008136.pub3

Roex, A., Nikpoor, P., Van Eerd, E., Hodyl, N., & Dekker, G. (2012). Serial plotting on customised fundal height charts results in doubling of the antenatal detection of small for gestational age fetuses in nulliparous women. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, *52*(1), 78–82. https://doi.org/10.1111/j.1479-828X.2011.01408.x

Royal Australia New Zealand College of Obstetricians and Gynaecologists. (2018). Detection and management of women with fetal growth restriction in singleton pregnancies *Royal Australia New Zealand College of Obstetricians and Gynaecologists – Position Statement* Retrieved from https:// https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/PSANZ-StillbirthCRE-FGR_PositionStatement_Final_2018.pdf?ext=.pdf

Sandall, J., Soltani, H., Shennan, A., & Devane, D. (2016). Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews*, *4*. https://doi.org/10.1002/14651858.CD004667.pub5

Sandelowski, M. (2000). Focus on research methods: Whatever happened to qualitative description? *Research in Nursing and Health*, *23*(4), 334–340. https://doi.org/10.1002/1098-240X(200008)23:43.0.CO;2-G

Sänger, E. (2015). Obstetrical care as a matter of time: Ultrasound screening, temporality, and prevention. *History and Philosophy of the Life Sciences*, *37*(1), 105–120. https://doi.org/10.1007/s40656-014-0056-4

Shallow, H. (2001). Teams and the marginalization of midwifery knowledge. *British Journal of Midwifery*, *9*(3), 167–171.

Stacey, T., Thompson, J., Mitchell, E., Zuccollo, J., Ekeroma, A., & McCowan, L. (2012). Antenatal care, identification of suboptimal fetal growth and risk of late stillbirth: Findings from the Auckland Stillbirth Study. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, *52*(3), 242–247.

Sparks, T., Cheng, Y., McLaughlin, B., Esakoff, T., & Caughey, A. (2011). Fundal height: A useful tool for screening fetal growth? *The Journal of Maternal-Fetal and Neonatal Medicine*, *24*(5), 708–712.

Spillane, E. (2020). Abdominal palpation–A core skill. *British Journal of Midwifery*, *28*(2), 74–75. https://doi.org/10.12968/bjom.2020.28.2.74

Stewart, M. (2010). Feminisms and intrapartum care. In D. Walsh, & S. Downe (Eds.), *Essential midwifery practice: Intrapartum care* (pp. 275–288). https://doi.org/10.1002/9781444317701.ch15

Taylor, J. S. (2000). Of sonograms and baby prams: Prenatal diagnosis, pregnancy, and consumption. *Feminist Studies*, *26*(2), 391–418. https://doi.org/10.2307/3178541

Walsh, D. (2006). The ontology of childbirth. *British Journal of Midwifery*, *14*(11), 662. https://doi.org/10.12968/bjom.2006.14.11.22254

White, J. (1996). Midwifery: The balance of intuition and research. *New Zealand College of Midwives Journal*, *15*, 20–24.

White, J. (1999). Midwifery practice always a political act. *Australian College of Midwives Incorporated Journal*, *12*(1), 6–13. https://doi.org/10.1016/S1031-170X(99)80034-8

Williams, K., Lago, L., Lainchbury, A., & Eagar, K. (2010). Mothers' views of caseload midwifery and the value of continuity of care at an Australian regional hospital. *Midwifery*, *26*(6), 615–621. https://doi.org/10.1016/j.midw.2009.02.003

Williams, M., Turner, S., Butler, E., & Gardosi, J. (2018). Fetal growth surveillance – Current guidelines, practices, and challenges. *Ultrasound*, *26*(2), 69–79. https://doi.org/10.1177/1742271X18760657

Willis, D. G., Sullivan-Bolyai, S., Knafl, K., & Cohen, M. Z. (2016). Distinguishing features and similarities between descriptive phenomenological and qualitative description research. *Western Journal of Nursing Research*, *38*(9), 1185–1204. https://doi.org/10.1177/0193945916645499

Wright, J., Morse, K., Kady, S., & Francis, A. (2006). Audit of fundal height measurements plotted on customised growth charts. *MIDIRS Midwifery Digest 16*(3), 341–345.

Yuill, O. (2012). Feminism as a theoretical perspective for research in midwifery. *British Journal of Midwifery*, *20*(1), 36–40. https://doi.org/10.12968/bjom.2012.20.1.36

Appendix 1: Copy of email consultation with Kaitohutohu Office

Consultation – Post graduate Midwifery Research Project

Inbox x

Reply
Forward
Print
Report spam
Report phishing
Show original
Translate message
Show details
Mark unread from here

Sheryl Morris <sheryl.morris.rm@gmail.com> 8/21/16

to kaitohutohu

Tena Koe Professor Russell,

My name is Sheryl Morris and I am an LMC midwife based in Paraparaumu. I am currently at the beginning stages of undertaking a research project for a Masters in Midwifery.

My project title is 'How do New Zealand Lead Maternity Care midwives assess foetal growth and what informs their practice?' The aim of this research is to collect information from LMC midwives in New Zealand about how antenatal assessment of foetal growth is conducted in practice, with the objective of providing contextually relevant information and insight into midwifery practice. As you may know our maternity care system is quite different to other countries and so to the best of my knowledge, there has been no research in this subject area in the New Zealand continuity of care context.

I plan to interview 10-15 LMC midwives, recruited through advertisements in the local DHB, and regional New Zealand College of Midwives (NZCOM) newsletters. I also plan to email Nga Maia Maori Midwives Aotearoa as well as the NZCOM Midwifery Membership Database, seeking permission to contact their members. The interviews will be digitally recorded for transcription at a later point.

Ideally the participants will include LMC midwives of diverse ethnic backgrounds, as New Zealand is an ethnically diverse society. The research will impact on Maori either through interviews with midwives who

identify with tangata whenua or as experiences drawn upon by midwives of other cultures who are interviewed and who have Maori women as part of their client base.

This research project will hopefully provide a degree of insight into how midwives in LMC practice assess foetal growth, potentially providing opportunities for future discussion or exploration. Assessing foetal growth is a key aspect in ensuring our babies and our mothers remain healthy, which is of benefit to all New Zealanders.

I would value your input for this project, and look forward to working with your office.

Nga mihi

Kaitohutohu <Kaitohutohu@op.ac.nz> 8/24/16

to me

Kia ora Sheryl, thanks for sharing an outline of your project with us. Have you read the Kaitohutohu moodle page? This gives more context to our role in the ethics process and outlines the key questions we require.
As you have responded to most of the questions can I suggest you look over the page also let me now if the research is to be done by Maori ? Once you respond I confirm our support for your ethics application
Many thanks
Richard kerr-Bell
On behalf of the Office of the Kaitohutohu
Richardkb@op.ac.nz

From: Sheryl Morris <sheryl.morris.rm@gmail.com>
Date: Sunday, 21 August 2016 2:36 pm
To: richard <Kaitohutohu@op.ac.nz>
Subject: Consultation – Post graduate Midwifery Research Project

Sheryl Morris <sheryl.morris.rm@gmail.com> 8/27/16

to Kaitohutohu

Hi Richard
Thank you for your email.
I have added the questions specifically for clarity and attached my updated research proposal.

Nga mihi

Attachments area

Kaitohutohu <Kaitohutohu@op.ac.nz> 8/27/16

to Tessa, me

Awesome!
Thanks Sheryl for taking the time, and we are happy to support your project. Go well.
Richard Kerr-Bell on behalf of the Office of the Kaitohutohu.

From: Sheryl Morris <sheryl.morris.rm@gmail.com>
Date: Saturday, 27 August 2016 3:53 pm
To: richard <Kaitohutohu@op.ac.nz>
Subject: Re: Consultation – Post graduate Midwifery Research Project

Click here to Reply, Reply to all, or Forward

Appendix 2: Ethics approval

10 May 2017

Sheryl Morris
48 Margaret Road
Raumati Beach 5032

Dear Sheryl

Re: Application for Ethics Consent
Reference Number: 730
Application Title: *How do New Zealand community based, case loading Lead Maternity Care midwives assess foetal growth and what informs their practice?*

Thank you for your application for ethics approval for this project.

The review panel has considered your revised application including responses to questions and issues raised. We are pleased to inform you that we are satisfied with the revisions made and confirm ethical approval for the project.

Many thanks for your careful responses to our recommendations.

We wish you well with your work and remind you that at the conclusion of your research you should send a brief report with findings and/or conclusions to the Ethics Committee. All correspondence regarding this application should include the reference number assigned to it.

Regards

Richard Humphrey
Chair, Ethics Committee
Otago Polytechnic

Appendix 3: Study advertisement

YOU ARE INVITED TO PARTICIPATE IN A RESEARCH STUDY

'How do New Zealand community based, case loading Lead Maternity Care midwives assess foetal growth and what informs their practice?'

I am interested in understanding how LMC midwives practise foetal growth assessment and what they consider during the assessment. I am undertaking a research project in fulfilment of the requirements to obtain a Master of Midwifery degree at Otago Polytechnic.
This project has ethics approval.

If you are a community based, case loading LMC midwife and have been practising for 5 or more years, and live within the Capital and Coast, Hutt or Mid Central Health DHB areas, I would love to talk with you.
I am hoping to complete this phase of the project by September and submit my research in Summer 2018.

If you would like to participate, or learn more about my study please contact me at:
sheryl.morris.rm@gmail.com or on 0210476872

My primary supervisor is Jean Patterson, RM, PhD.
Associate Professor & Masters Coordinator, School of Midwifery, Otago Polytechnic.
She can be contacted at jeanpat@op.ac.nz or on 0800762786

I look forward to hearing from you
Sheryl Morris

Appendix 4: Participant information form

Participant Information Form

Project Title

How do community based, case loading Lead Maternity Care midwives in New Zealand assess foetal growth and what informs their practice?

Introduction

My name is Sheryl Morris and I am an LMC midwife on the Kapiti Coast. I am undertaking a research project in fulfilment of the requirements to obtain a Master of Midwifery degree at Otago Polytechnic.

Community based, case loading Lead Maternity Carer (LMC) midwives in New Zealand provide primary maternity care to women. They assume the responsibility for antenatal, intrapartum (labour and birth) and postnatal care up to 6 weeks following the birth. An important aspect of that care is assessing foetal growth in the antenatal period to ensure the wellbeing of both the woman and her baby. But what does this mean and how do LMC midwives do this? There is international literature which discusses a variety of methods of assessment, but there is no literature from the New Zealand continuity of care context that explores how midwives learn to assess foetal growth and how they conduct this assessment.

What is the aim of the project?

The aim of this research is to collect descriptive information from community based case loading LMC midwives in the New Zealand continuity of care context about how they assess foetal growth and the knowledge, skills and experience that the midwife draws upon to undertake the assessment. Understanding how community based, case loading LMC midwives in New Zealand practise foetal growth assessment could provide contextually relevant information and insights into New Zealand LMC foetal growth assessment practices.

How will potential participants be recruited?

I plan to approach community based, case loading LMC midwives by seeking permission from the Wellington and Palmerston North NZCOM chairs to advertise the study in both the Wellington and Palmerston North regional NZCOM newsletters as well as in the Birthing Suites of Palmerston North Hospital, Hutt Hospital, Wellington Regional Hospital and the two CCDHB primary birthing units at Kenepuru and Paraparaumu.

Who are the participants I am looking for?

Community based, case loading LMC midwives, who have been practising for 5 or more years and who practise within the Capital & Coast, Hutt and Mid Central Health DHB areas.

What will my participation involve?

If you consent to participate in this study, I will arrange a mutually suitable time and location to audio record an individual, face to face interview, which I anticipate will take between 1-2 hours. The questions will include demographic aspects of your practice area, work history, and usual foetal assessment practices.

How will my anonymity be protected?

Following the interview process, I will transcribe your recording, which will be returned to you for verification before I begin analysing the data. Only I will know your identity. The transcripts may be read by my research supervisors, but your identity will already be protected.

How will the data be stored?

All information related to this study will be stored in a locked filing cabinet in my office, or on a password protected computer. A copy will also be held on the OP secure data storage. All data will be deleted and shredded after a period of 5 years.

How will the data be used?

Results of this project and may be used in further research projects; presented at conferences and published in peer reviewed journals. A copy of the thesis will be available online to participants following completion.

Can the participants change their minds and withdraw from the project?

If you choose to participate, you may withdraw from the project at any time, without giving reasons for your withdrawal. You can also withdraw any information up to and including the verification process of your interview transcript. You can also refuse to answer any question, and ask for the recording device to be turned off at any stage.

Any questions?

For further information please feel free to contact me at:

sheryl.morris.rm@gmail.com
0210476872

Or my supervisor:

Jean Patterson, RM, PhD.
Assoc. Professor & Masters Coordinator,
School of Midwifery, Otago Polytechnic
jeanpat@op.ac.nz
0800762786

Appendix 5: Participant consent form

Participant Consent Form

'How do New Zealand community based, case loading Lead Maternity Care midwives assess foetal growth and what informs their practice?'

I have read the information sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

- My participation in the project is entirely voluntary.
- I am free to withdraw at any time without giving reasons and without any disadvantage. I can also withdraw any information up to and including the verification process of my interview transcript.
- All information related to this study will be stored in a locked filing cabinet or on a password protected computer. A copy will also be held on the OP secure data storage.
- Only the researcher will know my identity.
- The data (including audio) will be retained in secure storage for five years after which it will be deleted/destroyed.
- Results of this project may be published and may be used in further research projects.
- Additional information given or conditions agreed to

I agree to take part in this project under the conditions set out in the Information Sheet.

..... *(signature of participant)*

..... *(date)*

..... *(signature of researcher)*

This project has been reviewed and approved by the Otago Polytechnic Research Ethics Committee