Acupuncture in the perinatal period:

A survey on childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period.

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Abstract

Acupuncture during the perinatal period hopes to increase normal birth and enhance a woman's birth experience by decreasing intervention and adverse birth outcomes. Acupuncture in the perinatal period, in Australian maternity services, has not been well accepted, and it is unclear whether women are supportive of acupuncture as an adjunct or alternative treatment during their childbearing experience. There is limited literature in Australia on acupuncture during the perinatal period and, to the best of my knowledge, there is a gap in understanding women's attitudes and beliefs towards using acupuncture during the perinatal period; which led to this research study.

The aim of this study was to determine childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. Data was collected through an online survey using a tool that was developed to specifically answer the research question. Pilot testing and test/retest was also undertaken to enhance reliability of the tool.

A sample size of 302 was suitable for the study and childbearing aged women from the Hunter and Central Coast regions of NSW were targeted to complete the survey. Respondents were recruited via Facebook birth and parenting groups and pages, with a recruitment advertisement posted on newsfeeds by page administrators or the researcher.

A total of 304 women completed the survey and were recruited into the study with 77% residing in the Hunter and Central Coast regions of NSW, Australia. The survey findings showed 68% of all respondents had used acupuncture with mostly positive outcomes, and for concerns during pregnancy, birth and the postnatal period. Additionally, 89% of respondents would consider using acupuncture during pregnancy, birth and the postnatal period. Respondents beliefs about trying acupuncture during pregnancy, birth and the postnatal period were very positive and as this was the first study of its kind, to the researcher's knowledge, it was difficult to find similar studies. However, three studies did show women would try acupuncture again during birth and the postnatal period.

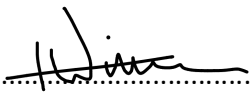
When respondents were asked about their beliefs of a midwife providing acupuncture treatments during pregnancy, birth and the postnatal period, findings were once again positive. More than 67% and up to 93% of women strongly agreed or agreed to the positively worded statements. Most respondents strongly disagreed or disagreed that a midwife providing an acupuncture treatment was a threat to public health. Many women responded similarly when asked if a midwife's acupuncture treatment was due to the placebo effect or if improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife. However, more respondents were 'unsure' to these two last statements. Most of these statements were broadly consistent with other studies on the attitudes and beliefs of acupuncture or Complementary and Alternative Medicine (CAM).

In summary, the majority of childbearing aged women surveyed; would consider acupuncture in the perinatal period, were positive to trying acupuncture for various concerns or issues during the perinatal period and were positive towards a midwife providing acupuncture treatments to women in their care. These findings highlight the need for women to have choice of an adjunct or alternative treatment during their pregnancy and birthing experience.

Recommendations and actions include: raising awareness of the research to women and their families and health professionals working in maternity services; raising awareness via a local media release and recontacting the Facebook groups and pages who posted the survey weblink; publishing results in a peer-reviewed journal, and further quantitative and qualitative research and clinical research on acupuncture in the perinatal period. Further research would focus on childbearing aged women's perceptions of a midwife providing an acupuncture/acuneedling treatment during the perinatal period, and on midwives providing acupuncture/acuneedling treatments that may address concerns such as fetal posterior positioning in labour with an epidural insitu.

Declaration of authorship

I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signature.....  .....Date.....30 April 2018.....

Chapter 1: Introduction

1.1 Acupuncture, women and midwives

Acupuncture, as an adjunct or alternative treatment in pregnancy, birth and the postnatal period, seeks to provide birthing women with an option when being cared for by a midwife. Pregnancy, childbirth and the ensuing months spent with a new baby can be an exciting, nervous and apprehensive time and transition to parenthood with a new baby can be daunting (Pincombe, Reibel & Hart 2010). An acupuncture treatment may assist the woman to have a positive birth experience, may assist in the transition for new mothers and may also assist the midwife who strives to morally and ethically play a significant role in assisting women to encounter their best childbearing experience (Fahy & Hastie 2008). Additionally, a woman's optimal childbearing experience may occur because a woman has been informed of an adjunct or alternative acupuncture treatment during the perinatal period, that fits within her social, cultural, moral and ethical mindset (Leap & Pairman 2010). However, evidence-based research of acupuncture in pregnancy is lacking, in particular of childbearing aged women's attitudes, beliefs and practices.

Following an extensive review of published literature, limited English language evidence was located on childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. There is limited evidence in Australia on acupuncture (Hope-Allan et al. 2004; Levett et al. 2014; Skouteris et al. 2008; Smith, Crowther & Beilby 2002), therefore, it is important to build a reliable evidence base, which start with observational studies (Witt et al. 2012). Witt et al. (2012) states observational studies can be used to develop clinical studies which establish validity of RCT findings to field-based practices and individuals. Additionally, case studies and case reports still continue to be valuable sources of research (Bothwell et al. 2016).

Therefore, this Australian quantitative descriptive/explorative survey aims to identify childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period from two regions in New South Wales (NSW),

Australia. Information gained from completing the survey may invoke, within the respondents, an awareness of potential options available during the perinatal period and the knowledge of contribution towards maternity service policy review and guideline development. Furthermore, the research findings may bring awareness to health professionals including midwives, and management personnel on women's views of acupuncture, and potentially inform future research. Future research may include quantitative studies on pre-birth and labour activation treatments, and fetal posterior positioning in labour. Qualitative research may include a woman's perception of an acupuncture treatment during the perinatal period, and the perception of health professionals when acupuncture treatments are provided to women during the perinatal period; particularly when acupuncture treatments are provided by a midwife.

This first chapter will discuss the background to acupuncture and acuneedling by midwives, identify the aim and significance of the study, and conclude with a discussion on the content of each chapter of the thesis. For literary ease 'perinatal period' will represent 'pregnancy, birth and the postnatal period' where appropriate.

1.2 Research motive

Acupuncture benefited the researcher after many years of infertility and being told by doctors the use of an egg donor was required. Additionally, acupuncture assisted during pregnancy, leading up to the birth, and postnatally. The researcher's experience left her feeling all women should have access to acupuncture during the perinatal period, without prohibitive aspects such as cost and access. The researcher's passion for acupuncture provision in maternity grew throughout her degree and during the new graduate year. An acupuncture course for midwives was sourced that would equip the researcher with acupuncture skills through a New Zealand Acupuncture school that has trained midwives since 1997, using certain acupuncture points, for certain conditions, for pregnant women only. The first 'Acuneedling for Midwives' course (a form of acupuncture) was held in Newcastle, Australia in 2015 with twelve midwives participating. From this course grew more passion, especially hearing of the success stories coming from New Zealand and learning of other countries

around the world offering women acupuncture provided by a midwife in the home and hospital setting. The limited evidence became apparent and the natural progression was to complete the Master of Midwifery, focusing research on acupuncture provided during the perinatal period.

1.3 A history of acupuncture

Acupuncture, an eastern medical practice and sub-therapy of Traditional Chinese Medicine (TCM), has treated individuals for over 2000 years (Xia, Ding & Wu 2013). Acupuncture textbooks written between 476 and 221 BC, and still in use today, show the use of acupuncture to treat women's reproductive problems, including threatened miscarriage, hyperemesis gravidarum, irregular menses and amenorrhea (Betts 2006; Schlaeger et al. 2017). Worldwide, people are using acupuncture's holistic approach for the prevention, management and maintenance of illness independently, or as an adjunct treatment to conventional medicine (Syed 2008; Yang et al. 2014). Treatment involves the insertion of fine, sterile needles into acupuncture points along a body's energy pathways, known as meridians which balance qi (Schlaeger et al. 2017). Qi (pronounced chi) in acupuncture terms, is described by Betts (2006, p. 274) as 'the functional activities of the body, in other words, all movement, change and process is brought about by qi', and acupuncture activates the body to restore balance and health (Schlaeger et al. 2017). Acupuncture is recognised as a Complementary and Alternative Medicine (CAM) and may prevent or treat neurological, musculoskeletal, respiratory, digestive, gynaecology/obstetric and cancer related conditions (McDonald & Janz 2017; Smith, Armour & Betts 2014).

Acupuncture has become widely accepted by individuals evidenced by growing research, particularly in western civilisations (Syed 2008; Xue et al. 2008b). Research in Australia shows 49.4% of women who birthed within the year of a cross-sectional study used at least one CAM modality and 9.5% of those women used acupuncture (Steel et al. 2012). Additionally, systematic reviews (Smith et al. 2011; Smith, Crowther & Grant 2013) and studies (Betts & Lennox 2006; Citkovitz et al. 2009; Hope-Allan et al. 2004; Nesheim & Kinge 2006; Ramnero, Hanson & Kihlgren 2002; Smith, Crowther & Beilby 2002) suggest acupuncture is beneficial

during the perinatal period. This evidence has shown acupuncture can reduce caesarean and instrumental birth (Betts & Lennox 2006; Citkovitz et al. 2009), labour time (Nesheim & Kinge 2006), medical induction (Betts & Lennox 2006) and pharmacological analgesia (Nesheim & Kinge 2006; Ramnero, Hanson & Kihlgren 2002), have no adverse events (Citkovitz et al. 2009; Ramnero, Hanson & Kihlgren 2002; Smith, Crowther & Beilby 2002), and increase a woman's satisfaction and wellbeing (Citkovitz et al. 2009: Hope-Allan et al. 2004; Ramnero, Hanson & Kihlgren 2002). However, the latest systematic review does not show a reduction in caesarean and instrumental birth (Smith, Armour & Dahlen 2017). The World Health Organisation (2013) promotes the integration of traditional medicine and CAM, including acupuncture, into health services worldwide. The now ceased Nurses and Midwifes Board of NSW (2010) recognised CAM and a position statement still exists online discussing the use of CAM by midwives. However, the new Nursing and Midwifery Board of Australia does not currently have a position statement on the use of CAM by midwives. The NSW Nurses and Midwives Association (2014) does provide a policy titled 'Complementary and Alternative Therapies in Nursing and Midwifery Practice'. This evidence and promotion warrants the integration of acupuncture/acuneedling by a midwife into Australian maternity services. Acupuncture or acuneedling is not a common procedure performed by midwives in Australia however the first 'Acuneedling for Midwives' course was held in Australia in 2015.

Acuneedling is a term created specifically for midwives who practice acupuncture on pregnant women only, using certain acupuncture points without TCM diagnosis. The first 'Acuneedling for Midwives' course was developed and conducted by Debra Betts, a New Zealand acupuncturist with a background in nursing who worked with the New Zealand School of Acupuncture and Traditional Chinese Medicine. Debra has educated New Zealand midwives to practice acupuncture, moxibustion and acupressure within the New Zealand midwifery scope of practice since 1997. Whilst attending the course, midwives learn the knowledge, skills and application to provide safe treatments and learn the history of acupuncture in ancient China, and today's society. Appendix 1 outlines the 'Acuneedling for Midwives' course. Additional sessions involve discussion around midwives consulting with midwifery and medical professionals when required, assignment writing and a competency examination. Midwives who complete the course in Australia are not qualified acupuncturists, therefore, the New Zealand School of Acupuncture and Traditional Chinese

Medicine renamed the course for Australian midwives who are deemed competent in Australia to receive an 'Acuneedling for Midwives' certificate (New Zealand School of Acupuncture and Traditional Chinese Medicine 2014). A fully qualified acupuncturist in Australia must complete a five-year full-time Bachelor of Health Science/Bachelor of Applied Science in Chinese Medicine or a three-year part-time Master of Applied Science in Acupuncture (RMIT University 2017a; RMIT University 2017b). Similar courses are available through other institutions.

Continuing professional development points have been provided by the Australian College of Midwives for the acuneedling course and local health districts develop and manage specific guidelines for midwives to practice acuneedling in their region. Additionally, the Australian Nursing and Midwifery Accreditation Council confirm no accreditation is needed for the course (Mel 2017, telephone, 17 February) with the Australian Health Practitioner Regulatory Authority (C Smith 2017, email, 21 February) confirming midwives must:

- Practice within their scope of practice and adhere to the various codes, policies and procedures that govern midwifery practice.
- Undergo evidence-based education/training in acuneedling.
- Be assessed as being competent.
- Adhere to the evidence-based policies and procedures as per the local health district and the relevant Department/Ministry of Health.
- Not refer to themselves as acupuncturists.

The 'Acuneedling for Midwives' course has helped the researcher to begin a journey to study acupuncture in the perinatal period.

1.4 Significance of the study

Historically, acupuncture has not been well accepted in Australian maternity care and it is unclear whether women are supportive of acupuncture as an adjunct or alternative treatment in the perinatal period. However, it is well accepted women have the right to make a choice in relation to their care (Nursing and Midwifery Board of Australia 2008, p. 3) and on a national level, there is an initiative to support and enhance normal birth (NSW Health 2010). This initiative towards normal birth hopes to enhance a woman's birth experience and ensure

positive birth outcomes, by decreasing the caesarean section rate and medical intervention, and increasing non-pharmacological intervention (NSW Health 2010). Therefore, a woman choosing an adjunct or alternative treatment such as acupuncture/acuneedling may improve her birth outcome and enhance her birth experience, as shown in maternity and obstetric research in other Austalia and other countries (Carr & Lythgoe 2014; Citkovitz et al. 2009; Hope-Allan et al. 2004; Ramnero, Hanson & Kihlgren 2002; Smith & Dahlen 2009).

Unfortunately, without first understanding childbearing aged women's attitudes, beliefs and practices to using acupuncture during the perinatal period, it is difficult to move forward with the introduction of acupuncture/acuneedling into the western medicine dominant Australian health system (Lane 2010). There is a general worldwide view that childbirth is medicalised with birthing women facing increased medical intervention (Pairman & McAra-Couper 2010). The Australian Institute of Health and Welfare (AIHW) (AIHW 2017b) provide an annual Mothers and Babies report, and between 1991 and 2014 the reports showcase a substantial increase in medical intervention, as shown in Table 1.

Table 1 - Mode of delivery and onset of labour, 1991 and 2014 (AIHW 2017b)

Category	Type	1991	2014	Decrease or increase
Mode of delivery	Vaginal birth	68.4%	54.4%	14% decrease
	Ventouse birth	2.5%	7.47%	4.97% increase
	Forceps birth	10%	5.4%	4.6% decrease
	Caesarean birth	18%	33%	15% increase
Onset of labour	Spontaneous	70.6%	51.3%	19.3% decrease
	Medical induction	19.5%	28.4%	8.9% increase
	No labour onset	9.9%	20.3%	10.4% increase

The medicalisation of childbirth may contribute to women being denied control of their birthing experience and the ability to make properly informed decisions (Shirley & Mander 1996, Davis-Floyd 2000, Shuval 2006 cited in Warriner, Bryan & Brown 2014). These factors may be why there is a rise towards non-pharmacological CAM therapies, such as acupuncture ,for women during the perinatal period (Warriner, Bryan & Brown 2014).

Acupuncture treatments are used by women during the perinatal period in Australia (Smith, Armour & Betts 2014; Steel et al. 2012) which are usually administered by a qualified acupuncturist, outside of a hospital setting and for a fee. Acupuncturists are not easily accessible for women during the four stages of labour unless a midwife is a qualified acupuncturist and working independently. To the researcher's knowledge, there is currently no identified local health district in Australia with a working guideline offering birthing women acupuncture treatments by a midwife or hospital health professional such as a medical doctor, physiotherapist or onsite acupuncturist. Countries such as the United Kingdom, Germany and Scandinavia routinely offer acupuncture by a midwife in labour, with training provided by the hospitals (Carr & Lythgoe 2014, p. 10). Acupuncture guidelines have been written for maternity services by the University College Hospital London England where midwives provide treatments to women during labour for pain relief (University College London Hospitals n.d.b; A Esquerdo 2016, personal communication, June). At New Zealand's Hutt Hospital Wellington, an acupuncture clinic is provided for women during the antenatal period (Hutt Maternity 2017) and New Zealand's Lead Maternity Carer (LMC) midwives, who are primary care health workers work in the community and can provide acupuncture treatments (Betts 2006; Guilliland, Tracy & Thorogood 2010). Additionally, LMC's birth within the woman's home or in a hospital setting and consult and refer when required (Guilliland, Tracy & Thorogood 2010). In addition to hospital funding, the LMC service is funded by the New Zealand Ministry of Health (Guilliland, Tracy & Thorogood 2010).

Most recently, Hunter New England (HNE) Health in NSW, Australia are working towards a guideline titled 'Acuneedling in the perinatal period' (M Crilley 2017, personal communication, 28 July). The HNE Health guideline allows midwives to provide treatments to women throughout the perinatal period who are birthing in a hospital, birth centre or at home (M Crilley 2017, personal communication, 28 July). The HNE Health guideline has been written with the assistance of published literature from quantitative and qualitative research in maternity and obstetrics and by acupuncturists and midwives, to develop best practice and safe outcomes for birthing women (A Esquerdo 2016, personal communication, June; Richens, Rycroft-Malone & Morrell 2004). A guideline and option that is up-to-date, unbiased, woman-centred and culturally appropriate, taking into account a woman's attitude and belief about her birthing experience (Australian Health Minister's Advisory Council 2012; National

Health and Medical Research Council 2010). Additionally, a guideline written by a tertiary Australian hospital that provides acupuncture/acuneedling treatments that are easily accessible and at no cost to the woman.

Since 1984, Medicare Australia has publicly subsidised acupuncture when performed as part of a General Practitioner's (GPs) consultation (Australian Institute of Health & Welfare 2017a). Research shows Australian GPs rate acupuncture moderately to highly effective, and recognise it as an appropriate treatment to use in medical practice (Wardle, Sibbritt & Adams 2013). The reasons GPs referred individuals to acupuncturists was not discussed in this study (Wardle, Sibbritt & Adams 2013). Non-medical, CAM practitioners such as acupuncturists, chiropractors, physiotherapists, naturopaths and homeopaths provide treatments for a fee, which are not subsidised by Medicare Australia, but may be subsidised by private health insurance companies. Wardle, Sibbritt and Adams (2013) state acupuncturists and acupuncture are integrating substantially into Australia's healthcare system which may indicate a future place in maternity for acupuncture/acuneedling by a midwife.

The introduction of acupuncture/acuneedling by a midwife in Australia's maternity system may be a sound adjunct and alternative treatment for women who would like this option, which in turn may assist a woman to feel she has control of her childbearing experience and therefore promote normal birth. Additionally, acupuncture/acuneedling by a midwife may reduce medical intervention especially when health professionals and consumers, within the Hunter and Central Coast regions of NSW, indicate their acceptance and belief in the effectiveness of acupuncture.

1.5 Aim of the study

This study aims to understand childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period from two regions of New South Wales, Australia. In addition, this study aims to determine the acceptance of an acupuncture treatment provided by a midwife during a woman's antenatal visit, the four stages of labour, and during the postnatal period; whether in the hospital or the home.

1.6 Overview of the thesis

There are five chapters in this thesis. Chapter 1 comprised the introduction to acupuncture in the perinatal period, and positioning of the need for the study. Chapter 2 provides a review of the literature and discusses the general attitudes and beliefs of individuals who use acupuncture including the benefits of acupuncture, consumer use and health professional referral of acupuncture, the safety of acupuncture and attitude towards acupuncture.

Chapter 3 concentrates on the methods used in undertaking this research project. Tool development and rigour will be discussed along with recruitment of respondents and data collection. Additionally, chapter 3 will discuss the methods for data analysis.

Chapter 4 reports the study findings using descriptive analytical statistics for the quantitative data and content analysis for the qualitative data collected. Tables and figures will be used to present findings from each section of the survey, ending with a discussion on content analysis of the qualitative data.

Chapter 5 begins with a discussion of the pertinent findings identified in the findings chapter with reference to published literature, mainly sourced for the literature review, to explain the findings. Chapter 5 concludes with a summary, involving major points of discussion from the study. Additionally, recommendations and actions including dissemination of the findings, further and future research, and potential maternity policy review and guideline development in the Australian maternity system, thus concluding this research thesis.

Chapter 2: Literature review

2.1 Introduction

As discussed in the previous chapter, acupuncture has been provided to individuals for over two millennia, with growing acceptance and research in the western world of this eastern modality. Research findings suggest acupuncture is one of the most common CAM therapies and is well received by health professionals and individuals (Akan et al. 2012; Alzahrani et al. 2016; Betts, McMullan & Walker 2006; Corbett & Prestwich 2011; de Lacey, Smith & Paterson 2009; de Valois, Asprey & Young 2016; Furlow et al. 2008; Gisin et al. 2013; Harding & Foureur 2009; Kalder et al. 2010; Kumar et al. 2015; Mann, Burch & Shakeshaft 2016; Mitchell et al. 2006; Münstedt et al. 2014; Poynton et al. 2006; Stewart et al. 2014, Wardle, Sibbritt & Adams 2013; Wiebelitz et al. 2009; Zeng et al. 2014). Additionally, Individuals are satisfied with treatments they have received (Chan, Siu & Fung 2016; de Lacey, Smith & Paterson 2009; de Valois, Asprey & Young 2016; Gisin et al. 2013; Soliday & Hapke 2013; Zeng et al. 2014). There are many hospitals worldwide providing acupuncture treatments to individuals within maternity and other health disciplines (Carr & Lythgoe 2014; Gisin et al. 2013; Hutt Maternity 2017; Seattle Children's Hospital 2014; University College London Hospitals n.d.a) however, acupuncture is not offered to women during the perinatal period in Australian hospitals. The future for acupuncture/acuneedling in Australian maternity services is promising, and one which can potentially improve a woman's birthing experience, outcomes and satisfaction.

The emphasis of this chapter is to carry out and determine published literature about childbearing aged women's attitudes and beliefs to using acupuncture during pregnancy, birth and the postnatal period. The chapter begins by discussing the search strategy to identify literature relevant to the research question which is followed by an analysis of the studies, and identification and presentation of major themes from each of the studies. This literature review concludes with limitations and implications for practice.

2.2 Literature search strategy

In May 2016 an initial search of the literature was undertaken to source articles in relation to childbearing aged women's attitudes and beliefs to using acupuncture/acuneedling by a midwife during the perinatal period. Despite an extensive search, no Australian literature was found specific to the research aim, however, two qualitative articles and one mixed methods study were found. A Switzerland study sought women's perception of acupuncture in labour (Gisin et al. 2013), a New Zealand study interviewed women about their experiences of receiving acupuncture for threatened miscarriage and a United States of America study sought women's perception of the benefits of acupuncture during pregnancy (Soliday & Hapke 2013). Therefore, the search was broadened to include individuals and health professional's attitudes and beliefs of acupuncture over all disciplines of medicine including studies in maternity care and obstetrics. An additional search was carried out in January 2017.

The literature search question was formulated using the PICOT acronym (Whitehead & Maude 2016, p. 61). 'P' stands for 'patient' or 'problem' which is childbearing aged women, individuals and health professionals. 'I' stands for 'intervention' which in this case is acupuncture. 'C' stands for 'comparison' which is not applicable for this research. 'O' stands for 'outcome' which is attitudes and beliefs, and 'T' stands for 'timeframe' which was originally set at five years but expanded to ten years due to limited literature found. A search of the following databases was conducted to source contemporary literature on the attitudes and beliefs to using acupuncture:

- CINAHL (Cumulative Index of Nursing and Allied Health)
- MEDLINE (Medical Literature Analysis and Retrieval System), also known as MEDLARS, from the United States National Library of Medicine's life science database)
- MIDIRS (Midwife's Information and Resource Service)
- AMED (Allied and Complementary Medicine)

Keywords in the database search included 'acupuncture', 'acuneedling', 'attitude', 'belief', 'perception', 'midwife', 'woman', 'perinatal', 'labour', 'pregnancy', using Boolean operators

(AND/OR) and truncation (*). The limits applied to the search were 2006 to 2016 due to limited literature found in the last five to seven years, English only and human studies.

The identified papers in the broadened search were assessed and reviewed using an inclusion and exclusion criterion. The inclusion criteria included:

- English language research papers, and primary studies from peer reviewed journals discussing acupuncture/acuneedling and the attitudes, beliefs and/or perceptions of health professionals and individuals/consumers.
- English language research papers, and primary studies from peer reviewed journals discussing CAM (which includes acupuncture as a modality) and the attitudes, beliefs and/or perceptions of health professionals and individuals/consumers.
- Full text journal articles
- Articles between 2006 and 2016

The exclusion criteria included:

- Papers that did not significantly discuss acupuncture/acuneedling as one of CAM's modalities and the attitudes, beliefs and/or perceptions of health professionals and individuals/consumers.
- Non-English research papers
- Secondary studies
- Literature reviews
- Abstracts of journal articles
- Studies published more than ten years ago

A search of reference lists of relevant papers was also undertaken to identify additional literature relevant to the search question, a process known as backward chaining (Rees 2003).

2.3 Analysis of the studies

Twenty-five studies were identified from peer-reviewed journals and included in this literature review. The studies are primary research articles and consist of six qualitative studies from Australia (de Lacey, Smith & Paterson 2009), Australia/New Zealand (Armour,

Dahlen & Smith 2016), England (de Valois, Asprey & Young 2016), Hong Kong (Chan, Siu & Fung 2016), Switzerland (Gisin et al. 2013) and the United States of America (Soliday & Hapke 2013), sixteen quantitative studies from Australia (Wardle, Sibbritt & Adams 2013), Australia/New Zealand (Smith, Armour & Betts 2014), China (Zeng et al. 2014), England (Corbett & Prestwich 2009; Mitchell et al. 2006), Germany (Kalder et al. 2010; Münstedt et al. 2014; Wiebelitz et al. 2009), Malaysia (Kumar 2015), New Zealand (Betts, McMullen & Walker 2016; Poynton et al. 2006), Saudi Arabia (Alzahrani et al. 2016), Scotland (Stewart et al. 2014), Turkey (Akan et al. 2012; Koc, Topatan & Saglam 2012) and the United States of America (Furlow et al. 2008), and three mixed methods studies from Canada/New Zealand (Harding & Foureur 2009), New Zealand (Betts, Smith & Dahlen 2016) and the United States of America (Mann, Burch & Shakeshaft 2016). Additionally, one discussion paper is included (Betts & Budd 2011). Fourteen studies focussed on the attitudes and beliefs of health professionals, students, individuals and women during pregnancy and the postnatal period about CAM. Acupuncture was significantly mentioned in each study hence resulting in inclusion in this literature review. Appendix 2 provides a summary of each article listing pertinent information regarding the research undertaken. Pertinent information includes aims/objectives, sample/setting, method/methodology, major findings, limitations/rigour/validity and significance to the current research being undertaken.

The twenty-five studies were analysed using the Critical Appraisal Skills Programme (CASP) tool (CASP 2014) (Appendix 3) or the Health Care Practice Research and Development Unit's (HCPRDU) tool (Long et al. 2002) (Appendix 4), relevant to each study's paradigm. These findings are shown in Appendix 5 and 6. Strengths found during analysis include sufficient sample sizes for survey studies and most surveys being piloted before official release. In many instances, the study was the first of its kind in their country, and most studies discussed the type of sampling used and potential for bias; four studies did not discuss bias. Additionally, there was discussion of ethics approval from committees or boards for all but three studies. The three studies were included in the literature review due to their significance and publication by peer-reviewed journals. Limitations of the studies included small sample sizes in the qualitative studies, potential for bias and caution in generalising to the wider population for the quantitative studies. Many themes were found in each study that related to attitudes and beliefs of acupuncture which will now be presented.

2.4 Identified themes

During synthesis of the literature the most important and recurring themes were identified using a process known as 'thematic analysis' (Coughlan & Cronin 2017). Thematic analysis was used to deduce areas that form the main attitudes and beliefs towards acupuncture from the included papers (Coughlan & Cronin 2017). Firstly, coding was undertaken that labelled recurring themes from the findings and discussion section of each paper. Each code was then grouped together with related concepts, and the main themes were established (Coughlan & Cronin 2017). The preliminary themes were presented to supervisors for discussion and refinement. The four substantive themes identified in the thematic synthesis of the published literature are shown in Table 2 and give rise to the following discussion.

Table 2 - Major themes identified in the literature

Themes		Relevant articles
1	Benefits of acupuncture (13 articles)	Alzahrani et al. 2016; Armour, Dahlen & Smith 2016; Betts, McMullan & Walker 2016; Betts; Smith & Dahlen 2016; Chan, Siu & Fung 2016; Corbett & Prestwich 2009; de Lacey, Smith & Paterson 2009; de Valois, Asprey & Young 2016; Furlow et al. 2008; Gisin et al. 2013; Koc, Topatan & Saglam 2012; Mann, Burch & Shakeshaft 2016; Mitchell et al. 2006; Poynton et al. 2006; Soliday & Hapke 2013.
2	Consumer use and health professional referral to acupuncture (10 articles)	Betts, Smith & Dahlen 2016; Chan, Siu & Fung 2016; Corbett & Prestwich 2009; Furlow et al. 2008; Harding & Foureur 2009; Kumar et al. 2015; Münstedt et al. 2014; Poynton et al. 2006; Smith, Armour & Betts 2014; Stewart et al. 2014; Wardle, Sibbritt & Adams 2013; Zeng et al. 2014.
3	Safety of acupuncture (8 articles)	Armour, Dahlen & Smith 2016; Betts & Budd 2011; de Lacey, Smith & Paterson 2009; Gisin et al. 2013; Harding & Foureur 2009; Kalder et al. 2010; Mann, Burch & Shakeshaft 2016; Münstedt et al. 2014; Stewart et al. 2014; Wiebelitz et al. 2009.
4	Attitude towards acupuncture (14 articles)	Akan et al. 2012; Alzahrani et al. 2016; Armour, Dahlen & Smith 2016; Betts, Smith & Dahlen 2016; Chan, Siu & Fung 2016; Corbett & Prestwich 2009; de Lacey, Smith and Paterson 2009; de Valois, Asprey & Young 2016; Furlow et al. 2008; Gisin et al. 2013; Koc, Topatan & Saglam 2012; Kumar et al. 2015; Mann, Burch & Shakeshaft 2016; Mitchell et al. 2006; Stewart et al. 2014; Wardle, Sibbritt & Adams 2013.

2.5 Presentation of findings

Findings from the twenty-five studies and one discussion paper will discuss the benefits of acupuncture, consumer use and health professional referral to acupuncture, the safety of acupuncture, and attitude towards acupuncture. The four identified themes address the research aim by discussing the general view of health professional and individual's attitudes and beliefs of acupuncture compared to specifically childbearing aged women's attitudes and beliefs to using acupuncture during pregnancy, birth and the postnatal period.

2.5.1 Benefits of acupuncture

Acupuncture has been widely studied with positive findings showing the importance of acupuncture's benefits, particularly in maternity and obstetrics (Betts 2006). Qualitative studies seeking women's perception of benefits during pre-conception and the perinatal period found women were happy with the benefits acupuncture provided (Betts, Smith & Dahlen 2016; de Lacey, Smith & Paterson 2009; Gisin et al. 2013; Soliday & Hapke 2013). Women declared their acupuncture treatment provided them with stress and anxiety reduction, relaxation, calmness, mental clarity, birth confidence and empowerment (Betts, Smith & Dahlen 2016; de Lacey, Smith & Paterson 2009; Soliday & Hapke 2013). Birthing and postnatal women declared acupuncture was effective for labour progression, increasing contractions, tolerance and reduction in labour pain, less medication use, epidural avoidance, achievement of a natural birth and excellent postnatal recovery (Gisin et al. 2013; Soliday & Hapke 2013). Statements included 'I dilated quickly and efficiently without pain' and 'Recovery was also easy' (Soliday & Hapke 2013, p. 111). A major benefit by all respondents in the de Lacey, Smith and Paterson (2009) study found acupuncture helped them regain control which they felt had diminished or been lost during medical intervention. A quantitative New Zealand study focussing on pain scores of women in an antenatal acupuncture clinic found clinically significant differences in pain after treatment compared to before treatment, using the Measure Yourself Medical Outcome Profile tool to assess pain levels (Betts, McMullan & Walker 2016). Additionally, a mixed methods study in New Zealand found women benefited from acupuncture which assisted their stress and anxiety in relation to threatened miscarriage. Physical benefits included a change in back pain, cramping and

bleeding that was not found by women in the non-acupuncture group (Betts, Smith & Dahlen 2016). Additionally, a statistical significance ($p = 0.04$) was found for women who reported a reduction in their primary concern when utilising acupuncture (Betts, Smith & Dahlen 2016).

A reduction in pain and medical complaints was also found to be a benefit of acupuncture with non-childbearing women, outside of maternity. Individuals who received acupuncture treatments found a reduction in knee pain, chemotherapy side effects, infertility and complaints which modern medicine had failed in effectiveness (Chan, Siu & Fung 2016; Corbett & Prestwich 2009). Chan, Siu and Fung (2016) found individuals in Hong Kong perceived acupuncture to be a treatment that was effective, did not involve ingestion of substances such as medications, had less side effects than biomedical treatment and was a preventative health measure. Along with reduction in pain and medical complaints, individuals in a study discussing the benefits of acupuncture for lymphoedema treatment found acupuncture to be a relaxing experience and preferable to modern medicine (de Valois, Asprey & Young 2016). The acupuncture treatment assisted them to deal with stress and anxiety better and whilst some individuals felt these benefits were short lived, others felt a long-term benefit (de Valois, Asprey & Young 2016). Some individuals experienced enhanced wellbeing and improved quality of life, even stating acupuncture was a life changing experience (de Valois, Asprey & Young 2016). One of their survey participants, who was trained as a physiotherapist providing complementary therapy, stated:

> I was enormously interested because the sensations that I got didn't bear any resemblance to the nervous system that I'd learned as a physio. And that didn't make sense, so I thought there must be something here that Western medicine doesn't accept. (de Valois, Asprey & Young 2016, p. 9)

Acupuncture is recognised as a Complementary and Alternative Medicine (CAM) and many studies determining the attitudes and beliefs of individuals/health professionals, in relation to CAM, discuss the benefits of acupuncture. A New Zealand study found 86.7% of GPs perceived acupuncture to be the most beneficial CAM (Poynton et al. 2006). However, National Health Service Midwifery Unit Managers in the United Kingdom and Turkish midwives, even though convinced of CAM's benefits, stated acupuncture is not the most recommended modality. Acupuncture is ranked fourth behind massage, aromatherapy and

reflexology in the Mitchell et al. (2006) study and ranked last behind herbal treatment, diet, exercise, fast walking and relaxation therapies in the Koc, Topatan and Saglam (2012) study. This contrasts with the Poynton et al. (2006) study and may be due to 21.7% of GPs in New Zealand being trained to provide acupuncture treatments to their patients (Poynton et al. 2006). Additionally, 73.2% of physicians in the Furlow et al. (2008) study declared CAM's methods, including acupuncture, could enhance the methods of conventional medicine and 59.3% agree CAM, including acupuncture, holds promise for treating diseases, conditions and symptoms. However, less than 50% of the patient respondents in this study agreed with the above statements, potentially due to low patient sample size and not truly reflecting the attitudes and beliefs of individuals in the region surveyed (Furlow et al. 2008).

2.5.2 Consumer use and health professional referral to acupuncture

Consumer use and health professional referral to acupuncture was the most researched topic identified in this literature review. Consumers include non-pregnant individuals and women during the perinatal period, and health professionals include GPs, acupuncturists and obstetric/maternity staff. GPs surveyed in Australia and New Zealand refer individuals to acupuncture for varied reasons with studies finding similar and different reasons (Poynton et al. 2006; Wardle, Sibbritt & Adams 2013). Other complementary medicine and biomedical practitioners also referred to acupuncturists for pregnancy related concerns (Smith, Armour & Betts 2014). New Zealand GPs, who were also surveyed about their perceived benefits of CAM and acupuncture, discussed their reasons for referring which included on an individual's request and previous experience, and failure of biomedical treatment (Poynton et al. 2006). Australian GPs referred due to their personal knowledge of CAM/acupuncture, on an individual's request due to previous personal use, and the GP feeling comfortable offering acupuncture as a treatment (Wardle, Sibbritt & Adams 2013). Both studies stated health professionals referred acupuncture because of personal past positive experiences and their belief in the effectiveness of CAM and acupuncture (Poynton et al. 2006; Wardle, Sibbritt & Adams 2013). GPs in the Poynton et al. (2006) study also believed acupuncture to be the most accepted of all CAMs by health professionals and individuals. In the Smith, Armour and Betts (2014) study pregnant women were mostly referred to an acupuncturist by word of mouth,

and for recruitment in the Betts, Smith and Dahlen (2016) RCT, women were referred by biomedical practitioners and other women taking part in the study.

During the perinatal period, health professionals such as midwives and obstetricians, refer pregnant women to CAM therapies, such as acupuncture, for varied reasons as well. Midwives and obstetric staff such as nurses and physicians recommend CAM and acupuncture for their belief in acupuncture's effectiveness, at the woman's request and for its cost effectiveness (Furlow et al. 2008; Zeng et al. 2014). Of the CAM therapies in the Zeng et al. (2014) study, acupuncture was recommended by 23.5% of midwives/obstetric staff and in the Harding and Foureur (2009) study close to 50% of Canadian and New Zealand midwives. Canadian and New Zealand midwives referred pregnant women for concerns such as fetal malpresentation, labour activation and postdates, common discomforts of pregnancy, breastfeeding problems, postnatal healing, back/hip/symphysis pubis pain and anaemia (Harding & Foureur 2009). In contrast to the other studies above (Furlow et al. 2008; Harding & Foureur 2009; Poynton et al. 2006; Zeng et al. 2014), Stewart et al. (2014) found only a third of the respondents from North East Scotland who had recommended the use of CAM (32.5%), recommended acupuncture to pregnant women. The authors stated this contrast may be due to study design, differing cultural aspects or differing healthcare systems (Stewart et al. 2014). For example, acupuncture is used in maternity and obstetrics in Germany (Carr & Lythgoe 2014) with midwives providing acupuncture treatments in 3.7% of all hospital births between 2001 and 2008 (Münstedt et al. 2014). Additionally, 14.8% of obstetricians personally provided acupuncture to women for complaints during pregnancy, instead of referring to CAM practitioners (Münstedt et al. 2014).

In addition to a health professional's reasons for recommending acupuncture, consumers in general used acupuncture for various reasons. Participants in a Hong Kong study felt treatment for physical ailments was best suited to acupuncture and were motivated by referrals from physiotherapists and TCM practitioners (Chan, Siu & Fung 2016). A Malaysian study found different reasons consumers use acupuncture, including recommendation from family and friends, trust in acupuncture and disappointment with conventional western medicine (Kumar et al. 2015). Additionally, women during the pre-conception phase used acupuncture adjunctively to IVF because of their dissatisfaction with conventional western

medicine that was not perceived as holistic (de Lacey, Smith & Patterson 2009). Women believed acupuncture encompassed an all-inclusive approach to health and wellbeing and assisted them to feel in control when conceiving a baby. As one participant stated:

> Acupuncture could offer me something that the traditional medicine couldn't necessarily offer me and that was just a feeling of wellness and inner health and I felt with the acupuncture, I felt that like my being and my soul were being looked after as well as just making a baby. (de Lacey, Smith & Patterson 2009, p. 8)

Clinical reasons women use acupuncture during the perinatal period include activation of labour, threatened premature labour, relaxation, pain relief, to correct a breech presentation, treat anatomical pain during pregnancy, postnatal recovery and common discomforts of pregnancy (Harding & Foureur 2009; Kalder et al. 2010; Smith, Armour & Betts 2014; Soliday & Hapke 2013; Zeng et al. 2014). Soliday and Hapke (2013) did not discuss how their sample of birthing women came to use acupuncture, which contrasts to Zeng et al. (2014) and Kalder et al. (2010) who asked women how and why. Zeng et al. (2014) and Kalder et al. (2010) found birthing women used acupuncture and CAM on recommendation from their health professional, which included midwives and obstetricians. Additionally, Kalder et al. (2010) found birthing women used CAM, including acupuncture, during pregnancy and delivery because of positive previous personal use in pregnancy (24.9%).

The qualitative studies by de Lacey, Smith and Paterson (2009) and Harding and Foureur (2009) used thematic analysis to discuss the reasons women use acupuncture and CAM. Themes included 'resistance' and 'keeping birth normal' (Harding & Foureur 2009, p. 10), and 'awareness of, and perceived benefits of acupuncture' (de Lacey, Smith & Paterson 2009, p. 7). 'Resistance' involved refraining from medical management and included, avoidance of medical induction and using a natural alternative. 'Keeping birth normal' included, as mentioned earlier, using CAM and acupuncture for postdates, breech correction, slow progression of labour, common discomforts of pregnancy and postnatal concerns (Harding & Foureur 2009). In the de Lacey, Smith and Paterson (2009, p. 7) study, acupuncture was used for its reliability, predictability and a perception of acupuncture's 'scientific' component which was discussed under the theme 'awareness of, and perceived benefits of acupuncture'. Women in the Gisin et al. (2013) study were motivated to use acupuncture during labour

because of past use or they had heard of acupuncture's benefits. The women also believed acupuncture was an option that could assist labour progression, pain relief, epidural avoidance, increase contractions and assist a natural birth (Gisin et al. 2013).

2.5.3 Safety

The issue of safety is paramount when providing any kind of treatment to women during the perinatal period (Skinner 2010). Studies have concluded that the majority of health professionals and student health professionals surveyed do not associate CAM, including acupuncture, with any intermediate/serious side effects or adverse effects, and that acupuncture is generally safe (Koc, Topatan & Saglam 2011; Mann, Burch & Shakeshaft 2016; Wiebelitz et al. 2009). Over 95% of Pain Medicine Fellowship Directors believe acupuncture to be safe (Mann, Burch & Shakeshaft 2016) and Turkish midwives believe acupuncture, along with other CAM therapies, is a safe adjunctive therapy during pregnancy (Koc, Topatan & Saglam 2011). However, North East Scotland obstetric professionals believe there is a lack of evidence on the safety of CAM (Stewart et al. 2014). Canadian and New Zealand midwives identify CAM as a traditional part of midwifery practice but concur CAMs long history 'is not evidence for safety in practice' (Harding & Foureur 2009, p. 10). This divergent statement reflects a belief of CAM on a whole and is not acupuncture specific nor consumer specific.

Kalder et al. (2010, p. 479) concluded that women surveyed in their study, who use CAM, are not concerned about safety issues and believe CAM therapies are a 'reasonable approach during pregnancy'. de Lacey, Smith and Paterson (2009, p. 8) further stated women believe acupuncture is a 'credible therapy', and not 'quackery', which is commonly associated with CAM. Specifically, acupuncture participants in a qualitative study stated they felt 'safe' with their acupuncturist which assisted the participants to trust their acupuncturist (Armour, Dahlen & Smith 2016, p. 5). Acupuncture was also perceived by women as a better choice as an adjunct to conventional medical treatment in contrast to herbal remedies (de Lacey, Smith & Paterson 2009). Herbal remedies require ingestion with unknown interactions and side effects (de Lacey, Smith & Paterson 2009). Generally, health professionals and consumers/individuals in this literature review believed acupuncture is a safe treatment even

without substantial evidence (de Lacey, Smith & Paterson 2009; Kalder et al. 2010; Koc, Topatan & Saglam 2011; Mann, Burch & Shakeshaft 2016; Wiebelitz et al. 2009).

In the discussion paper by Betts and Budd (2011), the authors discuss the historical use of contraindicated points during the perinatal period and state that even though literature is limited, for maternal and fetal outcomes, there have been no reported adverse effects. Perinatal studies have included acupuncture for nausea, pain relief during labour, induction of labour, breech presentation, back pain and moxibustion (Betts & Budd 2011).

2.5.4 Attitude towards acupuncture

This literature review has attempted to determine the attitudes and beliefs of acupuncture from health professionals and individuals from all parts of the world and this theme shows a positive attitude towards incorporating acupuncture into health services. Studies have shown many health professionals are encouraging of CAM incorporation including acupuncture, such as midwifery unit managers, obstetricians, midwives and obstetric nurses (Mitchell et al. 2016; Stewart et al. 2014). Reasons for this encouraging attitude include increased consumer satisfaction, promotion of normal childbirth, reduction of medical intervention and to increase a midwife's job satisfaction (Mitchell et al. 2016) and is based on positive individual feedback and personal belief (Stewart et al. 2014).

Midwives and GPs attitudes towards CAM and acupuncture were found to be more positive than obstetricians and gynaecologists (Furlow et al. 2008; Koc, Topatan & Saglam 2011). Mann, Burch and Shakeshaft (2016) found acupuncture to be widely available at academic hospitals in the United States of America with 72% of Pain Medicine Fellowship Directors stating they discussed acupuncture with their patients. Their attitude towards acupuncture is that it is safe, and they used positive words and phrases to describe acupuncture, including 'low-risk', 'minimally invasive', 'important alternative', 'great adjunctive technique', calm', 'relaxation', 'enjoyable', 'cost-effective'. (Mann, Burch & Shakeshaft 2016, p. 497). The positive attitude of the Pain Medicine Fellowship Directors correlated with their perception of their patient's positive acupuncture experience (Mann, Burch & Shakeshaft 2016).

Medical students from regions of Turkey and Saudi Arabia also had a positive attitude towards CAM and acupuncture because of a personal interest, the belief it was an important part of practice, had a family member who had used CAM and/or acupuncture, believed modern medicine had limitations, and patients had a right to choose between modern medicine and alternative treatment (Akan et al. 2012; Alzahrani et al. 2016). Saudi Arabian medical students were overall more likely to have a positive attitude towards CAM and acupuncture, with students in their last year of study having a more positive attitude compared to students in younger years (Alzahrani et al. 2016). Three study's findings showed respondents were more inclined than not to believe CAM and acupuncture education should be incorporated into tertiary education for physicians (Akan et al. 2012; Alzahrani et al. 2016; Stewart et al. 2014). Studies also showed health professionals/student respondents, who knew about or had an interest in CAM or acupuncture, were more likely than not to refer their patients (Akan et al. 2012; Alzahrani et al. 2016; Mann, Burch & Shakeshaft 2016; Stewart et al. 2014). The attitudes of midwifery students towards CAM and acupuncture was not provided in the Wiebelitz et al. (2009) study however the researcher did find midwifery students were interested in the topic of 'CAM in obstetrics' and expected the importance of CAM and acupuncture to be the same as it currently is or increased in the future (Wiebelitz et al. 2009).

Positive acupuncture experiences, an individual's knowledge of acupuncture and the current increase in evidence may be the reason 41% of individuals surveyed, from a West London GP clinic, had a positive attitude towards acupuncture being offered in the National Health Service (Corbett & Prestwich 2009). Further studies, specifically on the attitudes and beliefs from individuals regarding acupuncture, found participants responded positively to treatment. Respondents stated acupuncture 'had a substantial and positive impact on aspects of their physical and psychosocial health' (de Valois, Asprey & Young 2016, p. 7), 'TCM is more natural when compared to modern medicine' and 'TCM has less side effects when compared to modern medicine' (Kumar et al. 2015, p.321). For women suffering dysmenorrhea, their overall attitude towards acupuncture was that it was 'more than needles' as the acupuncture treatment also included explanation of the condition, moxibustion and advice on self-care (Armour, Dahlen & Smith 2016). For women suffering threatened miscarriage the main theme was that acupuncture was about 'finding something they could do' (Betts, Smith & Dahlen 2016, p.6). Women believed being part of the RCT was

a positive step towards taking control of their situation when biomedical practitioners could not offer them anything (Betts, Smith & Dahlen 2016). During labour, a woman's positive attitude towards acupuncture was expressed by their tolerance of needle insertion and an immediate reaction which helped to relieve pain and increase contractions (Gisin et al. 2013). Women in the study stated acupuncture 'made them feel confident in this intervention' and the majority of women expressed 'satisfaction with their experience and would use it again in the same situation during their next labour'. Additionally, the majority of women interviewed would recommend an acupuncture treatment during labour to friends (Gisin et al. 2013, p. 259). Women in the de Lacey, Smith and Paterson (2009) study believed acupuncture is reliable, predictable and scientific, and does not interfere with the body's normal reproductive state.

2.6 Discussion of major findings

In many studies, acupuncture was rated within the top four CAM therapies accepted and recommended by health professionals (Harding & Foureur 2009; Wiebelitz et al. 2009; Zeng et al. 2014). When acupuncture is specifically studied, health professionals and consumers have positive attitudes towards the safety and potential benefits acupuncture can offer (Betts & Budd 2011; Betts, Smith & Dahlen 2016; de Lacey, Smith & Paterson 2009; Gisin et al. 2013; Poynton et al. 2006; Smith, Armour & Betts 2014). The benefits of acupuncture assist in physical, emotional and clinical concerns (Chan, Siu & Fung 2016; Corbett & Prestwich 2009; de Lacey, Smith & Paterson 2009; Gisin et al. 2013; Soliday & Hapke 2013) and individuals feel acupuncture provides enhanced wellbeing and is a life changing experience (de Valois, Asprey & Young 2016). Acupuncture is also perceived by health professionals and their patients to be a therapy that is an adjunct treatment along with conventional medicine rather than as an alternative (Furlow et al. 2008). There is a strong belief from many health professionals that acupuncture and CAM have a place in hospital settings (Mitchell et al. 2006), and in China and Germany acupuncture is already a common hospital and community treatment (Gisin et al. 2013; Zeng et al. 2014).

Health professionals refer patients to acupuncture and CAM for treatment effectiveness (Wardle, Sibbritt & Adams 2013; Zeng et al. 2014;), patient request (Wardle, Sibbritt & Adams 2013; Zeng et al. 2014), cost effectiveness (Zeng et al. 2014), when conventional western treatment has failed (Betts, Smith & Dahlen 2016; Furlow et al. 2008; Poynton et al. 2006), for clinical concerns (Harding & Foureur 2009; Smith, Armour & Betts 2014), based on their personal knowledge or use (Wardle, Sibbritt & Adams 2013), and when patients have had past positive experiences with acupuncture (Wardle, Sibbritt & Adams 2013). Individuals, including birthing women, use acupuncture and CAM because of recommendations from health professionals, family and/or friends (Chan, Siu & Fung 2016; Kalder et al. 2010; Kumar et al. 2015; Zeng et al. 2014), a trust in acupuncture (Chan, Siu & Fung 2016; de Lacey, Smith & Paterson 2009; Kumar et al. 2015), disappointment with conventional medicine (Betts, Smith & Dahlen 2016; Chan, Siu & Fung 2016; de Lacey, Smith & Paterson 2009; Kumar et al. 2015), wanting a holistic approach to their healthcare (de Lacey, Smith & Paterson 2009), for perinatal clinical concerns (Betts, Smith & Dahlen 2016; Harding & Foureur 2009; Kalder et al. 2010; Smith, Armour & Betts 2014; Soliday & Hapke 2013), and to keep birth normal (Harding & Foureur 2009) which includes labour facilitation and converting a breech/malpresentation. Additionally, midwives, obstetricians and GPs provided acupuncture as part of their practice when caring for women, for complaints during pregnancy, (Münstedt et al. 2014), and for individuals with musculoskeletal concerns and pain (Poynton et al. 2006).

Regarding the safety of acupuncture, studies concluded student midwives, midwives, obstetricians, gynaecologists, GPs, Pain Medicine Fellowship Directors, and individuals perceived acupuncture to be a safe and credible therapy (Armour, Dahlen & Smith 2016; de Lacey, Smith & Paterson 2009; Gisin et al. 2013; Kalder et al. 2010; Koc, Topatan & Saglam 2012; Mann, Burch & Shakeshaft 2016; Münstedt et al. 2014; Wiebelitz et al. 2009). Many women interviewed and surveyed believed a CAM therapy, such as acupuncture, is a good alternative or adjunctive treatment to conventional medicine (de Lacey, Smith & Paterson 2009; Kalder et al. 2010). Even though some authors stated CAM and/or acupuncture has a place in midwifery they also stated there was limited evidence for its use (Harding & Foureur 2009).

Studies have demonstrated that the attitude towards acupuncture is positive in maternity units (Mitchell et al. 2006), and by individuals (Armour, Dahlen & Smith 2016; Betts, Smith & Dahlen 2016; Chan, Siu & Fung 2016; Corbett & Prestwich 2009; de Valois, Asprey & Young 2016; Gisin et al. 2013; Kumar et al. 2015), medical students (Akan et al. 2012; Alzahrani et al. 2016) and health professionals (Furlow et al. 2008; Koc, Topatan & Saglam 2012; Mann, Burch & Shakeshaft 2016; Stewart et al. 2014). Maternity unit managers believed CAM, including acupuncture should be integrated into maternity services in the National Health Service (Mitchell et al. 2006) and individuals from a London GP clinic believed acupuncture should also be part of the National Health Service (Corbett & Prestwich 2009). Corbett and Prestwich (2009) also found patients demonstrated positive attitudes towards acupuncture based on previous acupuncture use, and an increase in evidence and knowledge of acupuncture, which aligns with health professional's attitudes based on personal use of acupuncture (Furlow et al. 2008; Koc, Topatan & Saglam 2012; Mann, Burch & Shakeshaft 2016).

The attitudes and beliefs of health professionals and consumers are mostly positive towards acupuncture and CAM, and acupuncture is recommended and used by patients and birthing women showing an array of benefits. Even when there is debate of acupuncture and CAM's safety there is evidence that acupuncture, in particular, is a safe adjunct or alternative treatment that has a place in conventional medicine.

2.7 Limitations

A major limitation of this literature review was access to English only literature. Acupuncture originated in China and is regularly practiced during the perinatal period in China, Scandinavia and Germany. Therefore, additional evidence from these countries may exist but is not identified in this review. This literature review was limited to published material only and due to the small number of articles sourced the search was expanded from five years to ten years since publication. Major limitations of the studies in this literature review show small sample sizes and potential for response bias, as shown in the presentation of articles (Appendix 2). Nevertheless, it has offered an insight into an individual's attitudes and beliefs of acupuncture in healthcare.

2.8 Implications for practice

The findings of this literature review show acupuncture and CAM has a place in health services, especially in maternity care. The addition of an adjunct or alternative treatment provide women with choice and control of their situation and in turn may enhance a woman's birth experience, enhance a health professionals practice and improve birth and clinical outcomes (Coulter & Willis 2004; MacArtney & Wahlberg 2014; NSW Health 2010).

Many health professionals believe acupuncture is a safe therapy, however there is a need for further research even when individuals often request and use acupuncture and CAM with or without disclosing use to their care provider (Coulter & Willis 2004). Further research on the willingness to use and outcomes of acupuncture for childbearing aged women will bring awareness to consumers, health professionals, organisations, and policy makers; with the aim of enhancing primary health care in maternity and obstetrics throughout the Hunter, Central Coast, and potentially Australia. Midwives are uniquely placed to influence the health and wellbeing of women and children, providing information that is evidence based, safe and potentially experience enhancing.

2.9 Conclusion

This chapter has provided evidence on the attitudes and beliefs of acupuncture from sourced literature. Four themes were developed from the literature on the attitudes and beliefs of acupuncture from the perspective of health professionals and consumers. These themes were 'Benefits of acupuncture', 'Consumer use and health professional referral to acupuncture', 'Safety' and 'Attitude towards acupuncture'. CAM and acupuncture are recommended for their perceived benefits. Consumers used acupuncture and CAM for physical, mental and clinical concerns hoping to achieve improved outcomes. Acupuncture is seen as an adjunct to conventional medical treatment rather than as an alternative treatment. There is a large amount of agreeance that acupuncture is a safe treatment and attitudes are generally positive towards CAM and acupuncture. However, these attitudes are not reflective of childbearing aged women from the Hunter and Central Coast regions of NSW, Australia

which the current research study aims to achieve. The following chapter will discuss the methodology employed to conduct the research study.

Chapter 3: Methodology and Research Design

3.1 Introduction

As shown in chapter two, there is limited evidence worldwide and no identified evidence in Australia, determining childbearing aged women's attitudes and beliefs to using acupuncture during pregnancy, birth and the postnatal period. This chapter describes the methodology and research design of a quantitative study undertaken to fill this gap in the knowledge. Methodology and research design are discussed incorporating setting, sampling, participant recruitment, the data collection tool created, data collection and data analysis activities. The process in gaining reliability and validity are also discussed, along with ethical considerations and the role of the researcher.

3.2 Methodology

A non-experimental, descriptive/explorative, quantitative methodology was used for this study (Shields & Smyth 2016), to gather data about childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. A quantitative methodology aims to test a hypothesis or theory, numerically measure data using a tool and seek objectivity (Francis, Chapman & Whitehead 2013). Collected data from a quantitative study can be summarised and presented in frequencies, numbers, percentages, charts and graphs to examine relationships between variables (Shields & Smyth 2016). A descriptive/explorative quantitative study may explore how people react to events or situations, gather information about a sample when there is little known about a subject, and identify variables of interest from observing a sample's response (Shields & Smyth 2016). A non-experimental, descriptive/explorative quantitative methodology was selected to invoke information from a recruited sample of a desired population, for which appropriate research methods were planned and implemented to collect data to determine whether statistically significant relationships exist (Lowhorn 2007). This quantitative approach was undertaken to analyse data that investigated a relationship between childbearing aged women and their attitudes, beliefs and practices (Shields & Smyth 2016).

3.3 Justification of methodology

The aim of the study was to determine childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. Additionally, the study aimed to discover:

- Childbearing aged women's use of acupuncture
- Childbearing aged women's use of acupuncture during the perinatal period
- Childbearing aged women's consideration of using acupuncture during the perinatal period
- Childbearing aged women's belief to trying acupuncture during the perinatal period
- Childbearing aged women's belief of a midwife providing an acupuncture treatment during the perinatal period.

A quantitative methodology is therefore more appropriate for this study for its ability to mathematically measure responses from childbearing aged women on their attitudes, beliefs and practices. Additionally, to discover relationships between variables in an objective manner (Shields & Smyth 2016). The qualitative methodology could have been used to provide in-depth experience from childbearing aged women but this would not address the aims of the study. Data collection and analysis using a qualitative study would fail to identify how many childbearing aged women have used or would use acupuncture in the perinatal period.

3.4 Research design

The non-experimental, descriptive/explorative research design using a survey provides valuable insight that does not rely on the need for intervention, such as in a randomised control trial. A descriptive/explorative design gains information when little is known about a subject and when cause and effect is not the intention (Shields & Smyth 2016). Bias in a descriptive/explorative study can be minimised by accurately defining variables, having sufficient sample selection and size, a reliable and valid measurement tool, and sound data collection and analysis processes (Pannucci & Wilkins 2010). The descriptive/explorative aspect will allow a large sample size to provide pertinent information from the population under study, and where working guidelines are close to being in place for acuneedling by a

midwife in the perinatal period. This enables the research findings to provide valuable insight for consumers and health professionals about childbearing aged women's attitudes, beliefs and practice to using acupuncture during the perinatal period, and to guide further research.

3.5 The research setting

This research was designed to ascertain views of childbearing aged women in the Hunter (Cessnock, Lake Macquarie, Maitland, Newcastle and Port Stephens) and Central Coast (Gosford and Wyong) regions of NSW, Australia via a large-scale survey. Women from the Hunter and Central Coast regions were targeted because of where an acuneedling guideline and/or policy has the most potential for development. An online setting was chosen for the survey to link respondents, and for ease of access for both respondent and the researcher (Henten & Tadayoni 2008). The survey platform used was LimeSurvey (LimeSurvey n.d.) which was securely housed on the Flinders University network.

3.6 Respondents and their characteristics

Childbearing aged women from the Hunter and Central Coast regions of NSW, Australia were the primary targeted respondents for the research study. The World Health Organisation (2017) define women of childbearing aged to be between 15 and 49, however for ethical reasons, women over the age of 18 were sought to complete the survey. Even though the age of consent in NSW is 16 years of age (Australian Institute of Family Studies 2017) it was appropriate to seek respondents over the age of 18 years due to parents holding parental responsibility for their children up until the age of 18 years (Office of Parliamentary Council 2016). In 2015, there were 212,728 childbearing aged women in the Hunter and Central Coast regions (Australian Bureau of Statistics 2016) as shown in Table 3. Therefore, a large sample size was required to achieve findings that would be significantly important to initiate maternity policy review, develop guidelines and potentially provide women with an option during their childbearing experience in the Hunter and Central Coast regions of NSW, Australia.

Table 3 - Region and age group of childbearing aged women

Region	Age 15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Gosford	5381	4849	4609	4942	5115	5920	5924	36740
Wyong	5099	4603	4632	4678	4563	5424	5060	34059
Lower Hunter	2914	2657	2868	2915	2673	2884	2839	19750
Maitland	2456	2383	2368	2494	2547	2624	2382	17254
Port Stephens	2192	1884	1651	1906	1929	2379	2397	14338
Upper Hunter	982	943	1060	1032	1010	1013	1000	7040
Lake Macquarie	6333	5963	5510	5856	6004	6789	6417	42872
Newcastle	4692	7303	6793	6086	5125	5566	5110	40675
Total	30049	30585	29491	29909	28966	32599	31129	212728

3.6.1 Sample size

The recommend sample size calculated from an online sample size calculator was 377 with a target population of over 20,000, a 5% margin of error and a confidence level of 95% (Raosoft Inc. 2004), however this study did not involve intervention or attempt to generalise. Garson (2013) states that an accepted number of respondents for a survey is 50 responses and Lawley & Maxwell (1971, cited in Garson 2013) state that to support Chi-square testing there should be 51 more cases than the number of variables. Drawing on this guidance from Garson (2013), recognising there are 21 question variables in the survey tool 'Acupuncture in Pregnancy' (Appendix 10), and recalculating the sample size using the online calculator, a sample size of 302 was determined. A sample size of 302 provides a margin of error of 5% and a confidence interval of 92% (Raosoft Inc. 2004). Not reaching the 377 recommend sample size with a margin of error of 5% and a confidence interval of 95% was recognised as a potential limitation of this study.

3.6.2 Inclusion/exclusion

Included in this study were childbearing aged (18-49 years) women; including women who may be currently pregnant, not pregnant but have children, never been pregnant, or who have completed their family. Excluded from the study were all males, and females under 18 years of age or over 50 years of age. It was recognised that women who did not have access to the internet would be unable to complete the survey, but this was not an intentional exclusion. Women who are non-English speaking or unable to read were not excluded from participating, but it was recognised they would require assistance to complete the survey online.

3.6.3 Sampling

A targeted convenience sampling approach, followed by a snowball sampling process was used to recruit respondents. A descriptive/explorative study constitutes a non-probability convenience sampling approach (Fisher & Fethney 2016). This type of sampling enables the most willing or readily accessible respondents to access the survey, and forward to other potential respondents. A downfall to convenience and snowballing sampling is the potential for bias; respondents may fill out the survey because they have a particular interest in the area of research (Fisher & Fethney 2016). Due to the convenience and snowball sampling process of the study, it was recognised that respondents may not be residents of the targeted Hunter and Central Coast regions. To minimise this, a very targeted advertising process was used to recruit respondents in the desired regions only, and their location of residence sought within the data collection. The responses from childbearing aged women in the Hunter and Central Coast regions may not be a true reflection of childbearing aged women from all regions of Australia, therefore data has not been generalised to the wider population of Australia's childbearing aged women however meet the needs of this study.

3.7 Measurement tool – the survey

There was no identified measurement tool available to specifically measure the variables of childbearing aged women and their attitudes, beliefs and practices to using acupuncture during the perinatal period. To fill this gap, a survey was developed, creating specific questions related to acupuncture and to meet the aims of the study (Polit & Beck 2012a; Da Costa & Schneider 2016). The process of designing the tool followed the guidelines of Da Costa and Schneider (2016), Marsden and Wright (2010), and Polit and Beck (2012a). The survey sought information determining a woman's belief to using acupuncture during the perinatal period, as well as their basic demographic status and prior acupuncture use, if any. The survey was developed into four sections including demographics, pregnancy history, acupuncture use, and belief about acupuncture in the perinatal period. Types of questions used included open-ended and closed-ended questions (yes/no/not sure), multiple choice, and Likert scales (strongly agree, agree, not sure, disagree, strongly disagree) (Da Costa & Schneider 2016, p. 188). A Likert scale is easy to create using simple responses that a respondent may feel more comfortable in responding to than the one dimensional yes/no response. The Likert scale may also provide more insight about a woman's belief towards acupuncture in the perinatal period (Kumar 2008, p. 108). A mix of both positive and negative phrased statements were included in the Likert scale section to attempt to avoid response bias (van Sonderen, Sanderman & Coyne 2013). Open-ended questions were included to enable respondents to provide clarification of their responses, and when there was not a definite list of potential responses (Da Costa & Schneider 2016, p. 187). The design and content of the survey was completed with the assistance of experienced researchers at Flinders University.

3.7.1 Pilot testing

The survey tool was piloted on a small cohort of 17 women who were representative of the sample and assessed the completeness of the survey (Gillespie & Chaboyer 2016, p. 208). The assessment of completeness included whether the online link was easily accessed, the structure of the survey was easy to follow, and the readability of the questions. One of the research supervisors and the researcher recruited women via their work contact lists from

within and outside the targeted regions. The recruited women completed the pilot survey and provided feedback on the survey structure. Minor changes were made from feedback provided by the pilot respondents, which strengthened readability of the survey.

Readability of the survey was assessed using Microsoft Word's readability tool, providing a combined score of all questions in the survey. Knowing a survey's readability score can assist the overall validity of a survey (Calderón et al. 2006). The Flesch Reading Ease test provided a score of 49.7; this test rates text on a 100-point scale with the higher the score the easier the survey will be for respondents to understand. The Flesch-Kincaid Grade level test provided a score of 9.6, and this test rates text on a United States school grade level. A score of 9.6 means a respondent is at the reading level of a 14 or 15-year-old (Microsoft 2017). Therefore, the reading level of the survey was appropriate.

3.7.2 Test-retest

To ensure survey stability a technique known as test-retest reliability was undertaken. For this, the survey was tested and retested with nine respondents (due to lack of response within the timeframe allocated) two to three weeks after initial completion of the survey. Two to three weeks was chosen as the re-test time so a respondent's memory from first administration would not affect the second administration. The two to three-week break minimises the risk of bias which can be a threat to internal validity (Gillespie & Chaboyer 2016). Retesting also assures the tool 'measures the outcome in the same way' (Vaz et al. 2013, p. 1). The following paragraphs provide a description of the errors that occurred in the test-retest process and findings of the Spearman Rank Order Correlation test on scale items of the survey.

3.7.2.1 Test/retest errors

In the demographic and pregnancy history retest there were a few minor errors. One respondent stated her age as 21 in the original survey and 41 in the retest; this respondent stated she had a doctorate for both test/retest therefore the age of 41 would be correct as it

would not be feasible to have a doctorate at age 21. One respondent had changed her relationship status and two respondents had different answers for combined household income. These changes may be due to a typing error or a change of status between test and retest. The 'how many pregnancies' question showed one error which may be due to women experiencing miscarriages or terminations and not disclosing this information the second time around. The next 19 questions, based on concerns or issues in pregnancy, showed 14 differences from 159 responses. Four retest responses where different in relation to how the respondent had come to use acupuncture, who performed the acupuncture, why they had never had acupuncture and why they had never had the need for acupuncture. When asked 'who would you accept an acupuncture treatment from during the perinatal period?' and 'what would make a publicly funded acupuncture treatment by your midwife or care provider more appealing during pregnancy, birthing and the postnatal period?' nine respondents had slightly different answers between the test and retest. Respondents had the opportunity to choose more than one answer, and their response between test and retest may have changed due to personal circumstance, an increased knowledge of acupuncture or a typing error.

3.7.2.2 Correlation between test/retest scale items

To determine the strength of association between each respondent's test-retest ordinal level belief statements, the Spearman Rank Order Correlation (rho) was calculated using SPSS (Pallant 2016). A positive correlation (between 0 and 1) (Pallant 2016) was found between all test/retest responses for a woman's belief to trying acupuncture during the perinatal period (n=7) and a woman's belief to a midwife providing acupuncture during the perinatal period (n=9). Additionally, there was a large strength of association for all test/retest belief statements as described by Cohen (1988, cited in Pallant 2016, p. 137) (small rho=.10 to 0.29, medium rho=.30 to .49, large rho=.50 to 1.0). Appendix 11 provides a summary of the positive correlation that is shown for each test/retest belief statement and includes the sample size, the Spearman rho calculation, the p value, and the bootstrap confidence interval for added reliability. The Spearman rho calculation demonstrated reasonable reliability and a large strength of association to progress the survey to the recruitment stage.

3.8 Data collection process

To distribute the online survey to potential respondents, the social networking system Facebook was used. A Facebook search combined the words Newcastle, Hunter, Central Coast, Gosford, Wyong, Cessnock, Maitland, Port Stephens, birth, parent, women, and woman. The search found an initial 60 relevant birth and parenting Facebook groups and pages. During the data collection period, an additional 14 Facebook groups and pages came to the attention of the researcher, and so by the conclusion of data collection, a total of 14 groups and 60 pages had been contacted for recruitment.

A private message with an introductory letter (Appendix 7) about the survey was sent to 60 Facebook page administrators requesting they post the survey weblink along with the introductory letter to their Facebook page. For the 14 Facebook groups, the researcher directly posted the weblink and introductory letter to the groups' newsfeed, once membership was approved. Appendix 8 provides a list of all Facebook groups and pages that were contacted for recruitment.

Of the 60 Facebook pages contacted via private message, six group administrators responded with a 'yes', three responded with a 'no' and 51 did not respond to the request to advertise the survey. A reminder message was sent three weeks later to the 51 page administrators who did not respond; one responded with a 'yes'. The remainder Facebook pages either blocked another message being received or did not respond. Of the 14 Facebook groups, 11 accepted the researcher's request to join their group, and the recruitment post was added to their newsfeed. One of the three groups that did not initially accept the researchers request to join, posted the recruitment weblink after the researcher sent a private message. Additionally, the survey weblink was reposted on five groups three weeks after the initial posting. The survey weblink was also passed onto acquaintances via Facebook who were interested in accessing the survey and could be shared by anybody viewing in on Facebook. The final reach of the advert is therefore unknown.

3.9 Data analysis

Once the survey was closed, all data was exported into Microsoft Excel from the survey platform, where it was organised and coded ready for data entry into the statistical software package (Pallant 2016). IBM's Statistical Package for the Social Science (SPSS) version 23, was used to analyse collected data. SPSS was used to generate frequencies such as mode and median, and descriptive statistics using Chi-square and Fisher's Exact tests to analyse questions of interest with variables. Variables included demographics such as age and education, gravida, acupuncture use and belief statements. Fisher's Exact was used for those certain questions of interest with variables when Chi-square analysis in SPSS showed over 20% of cells with an expected count less than five, in a 2x2 table (Schlotzhauer 2007).

The Chi-square test for independence (2 x 2 table) $\chi 2$ (df, n=(sample)=($\chi 2$ result), p=(result) and Fisher's Exact Probability Test (larger than 2 x 2 table) (p=result) were performed to identify factors that were associated with a respondent's high use of, consideration of, belief of trying and belief of a midwife providing acupuncture during the perinatal period. Statistical significance is discussed here when there is a p value less than .05 for the practice and consideration of using acupuncture during the perinatal period. A p value less than .05 'conclude that the frequencies found would not be expected if the null hypothesis was true (no association) and it would be rejected' (Fisher & Fethney 2016, p. 231). The p value is the chance a finding is actually declared given that the null hypothesis is actually true (Panagiotakos 2008). Additionally, the effect size is provided with the phi coefficient (2 x 2 table) determining a strength of association and Cramer's V (larger than 2 x 2) showing the degree of freedom (Pallant 2016, p. 221). The phi coefficient value is determined small (.10), medium (.30) or large (.50) using Cohen's criteria (Pallant 2016, p. 221). Pallant (2016, p. 221) additionally states Cramer's V value is determined by picking the smaller number when subtracting 1 from the number of categories in the row variable, and then subtracting 1 from the number of categories in the column variable in SPSS. The criteria states:

- Row 1 and column 1 = 1 (two categories): small=.01, medium=.30, large=.50.
- Row 1 and column 1 = 2 (three categories): small=.07, medium=.21, large=.35.
- Row 1 and column 2 = 3 (four categories): small=.06, medium=.17, large=.29.

Descriptive statistics were used to summarise and organise the collected data of demographics, pregnancy history, acupuncture use, and beliefs with graphs and charts generated to show differences and trends of information obtained from the survey (Fisher & Fethney 2016). Nominal measurement placed demographic questions into categories using a numbering system. The answers of a nominally measured question were assigned to one category only (Fisher & Fethney 2016, p. 215). For the Likert-scale data, ordinal measurement ranked a respondent's belief using a response statement such as strongly agree, agree, unsure, disagree or strongly disagree (Fisher & Fethney 2016; Polit & Beck 2012b). The Chi-square test of independence was used to test a relationship or difference between variables (Heavey 2015, p. 162).

Free text responses were analysed using content analysis which 'identifies categories into groups' (Da Costa & Schneider 2016, p. 188). Data was coded using line-by-line coding with each response carefully examined to find key words to interpret a respondent's comment. The code or key word was then categorised to ensure a respondent's comments are grouped into the smallest categories possible (Harding & Whitehead 2016, p. 133). Content analysis was undertaken on the three questions in the survey which asked women to freely discuss the purpose and outcome of their acupuncture treatment, if they were satisfied with their acupuncture treatment, and if they had any comments regarding a midwife providing acupuncture to women during the perinatal period.

3.10 Rigour

Rigour in research enhances a study's reliability and validity, attempting to minimise bias and manage confounders (Polit & Beck 2012c). A reliable survey will consistently measure a construct of interest and a valid survey will measure what it intends to measure (Gillespie & Chaboyer 2016, p. 208-209). In this study, quantitative rigour strategies were used to enhance the credibility of the research. Quantitative strategies included test-retest reliability, face validity, content validity and selection bias (Gillespie & Chaboyer 2016). Qualitative strategies included trustworthiness (Harding & Whitehead 2016).

3.10.1 Reliability

As outlined in the tool development section, stability of the belief statements in the survey were measured with test-retest reliability, using Spearman rho. To determine the internal consistency between scale items of this survey (Coakes, Steed & Ong 2010), the Cronbach alpha coefficient was calculated. The Cronbach alpha coefficient for the seven belief statements of trying acupuncture in the perinatal period was .89 with an inter-item correlation mean value of .539, with values ranging between .429 and .749. The Cronbach alpha coefficient for the eight belief statements of an acupuncture treatment being provided by a midwife was .69 with an inter-item correlation mean value of .216, with values ranging between -.076 and .837. A Cronbach's alpha coefficient score indicates the 'average correlation among all of the items that make up the scale and a score closer to one indicates greater reliability' (Pallant 2016, p. 6). The inter-item correlation value was provided due to each scale having less than 10 items. There was found to be a strong inter-item relationship among the belief statements of trying acupuncture and not a strong inter-item relationship among the belief statements of a midwife providing an acupuncture treatment. This not so strong relationship was due to the varied questions about a midwife providing acupuncture during the perinatal period (Pallant 2016, p. 104). The study aimed to include a varied list of questions regarding a midwife providing an acupuncture treatment during the perinatal period in one scale-item section of the survey.

3.10.2 Validity

Internal validity was tested to ensure the survey was complete, measured what it intended to measure, and controlled any confounding variables (Da Costa & Schneider 2016). For this research, internal validity relates to whether childbearing aged women's attitudes, beliefs and practices had real measurable effect on acupuncture use during the perinatal period (Da Costa & Schneider 2016). Face validity of a survey was tested by subjectively determining that the concepts of the research questions were covered. Content validity was tested by experts to determine completeness of the survey in regard to the aims of the research (Polit & Beck 2012d; Gillespie & Chaboyer 2016). A panel of three experts tested face and content

validity of the survey including two midwifery academics and an experienced quantitative researcher from the School of Nursing and Midwifery at Flinders University.

On attempting to control selection bias, recruitment information was sent to birth and parenting Facebook groups or pages, instead of acupuncture Facebook groups or pages. However, there was still the chance that bias would occur due to respondents completing the survey because of an interest in acupuncture and self-selecting to participate in the survey (Da Costa & Schneider 2016). As mentioned in sampling, a targeted approach to convenience sampling was used to recruit respondents which led into snowball sampling. Additionally, as discussed in the data collection process, the survey weblink was passed onto acquaintances who were interested in accessing the survey which may lead to bias. Acquaintances may become survey respondents and provide responses that may support the researcher's study.

3.11 Ethical considerations

Beneficence, justice and respect are all important factors to consider when undertaking research (National Health and Medical Research Council (NHMRC), Australian Research Council & Australian Vice-Chancellors' Committee 2007). Beneficence in research is achieved by ensuring the welfare of the respondent is maximised, justice ensures all respondents are treated equally, and respect ensures a respondent's beliefs are valued along with their right to autonomy (NHMRC, Australian Research Council & Australian Vice-Chancellors' Committee 2007). The NHMRC, the Australian Research Council & Australian Vice-Chancellors' Committee's guidelines (2007) were followed to ensure ethics approval was granted, respondents remained anonymous, and their information remained confidential. The online platform which the survey ran from ensured respondents were not identified and furthermore, the survey did not request any identifying data from respondents. The weblink directed respondents to an information page which described the purpose of the study and what their participation would involve, ensuring the potential respondent was aware of their rights as a research respondent. The online survey then gained consent from each respondent when the 'yes' button was clicked to start the survey.

The Flinders University, Social and Behavioural Research Ethics Committee (SBREC) granted ethics approval for the research study as shown in Appendix 9. The SBREC is comprised of researchers, expert professionals and members of the community who are committed to ensuring the research study followed ethical guidelines on human research (Flinders University n.d.).

Data generated during the data collection stage was housed on the primary researcher's password secured laptop and with the research supervisors. The supervisors retained a copy of all de-identified data on a password-protected university network drive. Data storage guidelines were in accordance with the NHMRC, Australian Research Council & Australian Vice-Chancellors' Committee (2007) storage procedural guidelines. All stored data will be kept for at least five years from the date of any resultant publications and all data will be destroyed after this time. The introductory page on the survey web-link advised respondents of collection, storage and proposed use of the collected data (Appendix 9).

3.12 Role of the researcher

The researcher worked independently to recruit respondents and data was collected and analysed with the assistance of Flinders University lecturers and supervisors. The researcher did not have direct contact with respondents, who acted independently of the researcher and were not subject to coercion. However, there was potential for personal or professional relationships due to the nature of Facebook groups and pages in the local regions where the primary researcher lives and works and forwarding the online survey weblink directly to acquaintances. Such relationships remain unknown due to the anonymous provision of data.

3.13 Conclusion

This chapter has provided pertinent information regarding the methodology and research design of this study, with the inclusion of study rigour, ethical considerations and the role of the researcher. Ethical approval was granted and the study provided respondents with the opportunity to make an autonomous decision to complete the survey, maintaining anonymity and confidentiality. A quantitative methodology was implemented using an online survey

through Facebook groups and pages related to birth and parenting, targeting women of the Hunter and Central Coast regions of NSW, Australia. Respondent data was collected, organised, coded and then analysed using SPSS. The following chapter will discuss the findings of the data analysis.

Chapter 4: Findings

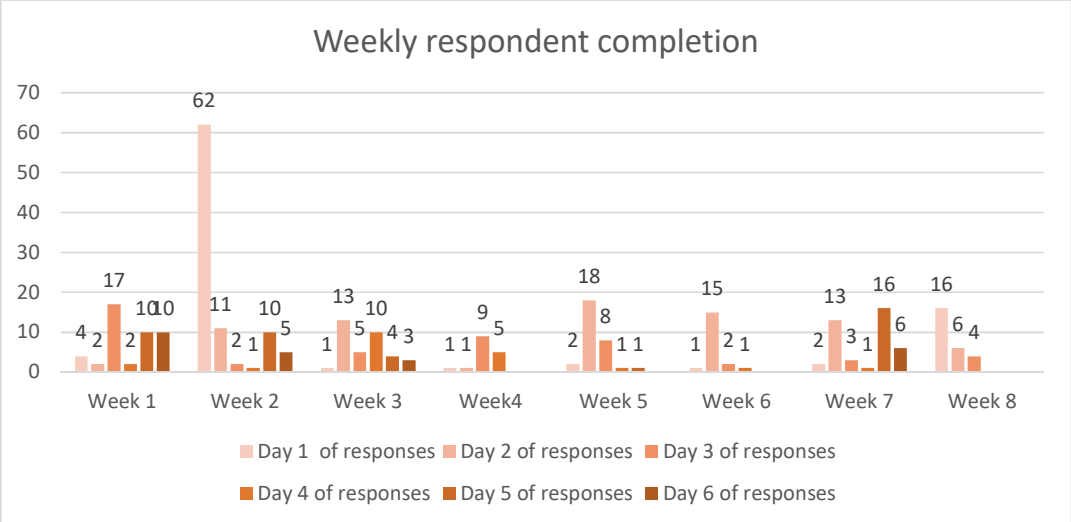
4.1 Introduction

This chapter follows on from the previous chapter which discussed the methodology and research design of the study. The following chapter outlines the findings of the survey on childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. The survey was forwarded to Facebook pages and groups targeting childbearing aged women from the Hunter and Central Coast regions of NSW, Australia.

4.2 Time-frame of data collection

The first group of Facebook groups and pages were contacted on the 3 January 2017 and the last being contacted on the 22 February 2017. The first survey response was completed on the 4 January 2017 and the last on the 25 February 2017. The survey was closed once the sample size of 302 complete surveys was reached. Figure 1 shows the weekly completion of the survey by respondents.

Figure 1 - Weekly respondent completion



4.3 Response rate for the survey

At the end of the recruitment phase, 396 responses were exported to an Excel spreadsheet and checked for compliance. Six responses were omitted due to respondents being over the age of 50. Incomplete surveys were received from 85 respondents therefore none of their data was included for analysis. The final number of complete surveys used for analysis was 304. As discussed in the methods section 302 was the required number of responses for the survey when calculating appropriate sample size.

4.4 Findings of data analysis

The findings of the survey are presented from each of the four sections of the survey, Table 4 lists demographic and pregnancy questions along with findings. Questions thereafter discuss findings or provide a graph. Statistically significant findings follow discussing relationships between a respondents' practices and consideration to using acupuncture during the perinatal period and demographics, other practices and beliefs. Additionally, statistically significant relationships are discussed between the respondent's belief statements and demographics, practices, consideration and other beliefs.

4.4.1 Demographics

Demographic findings include age of women surveyed, the region they reside in, their relationship status, education level, employment status, ethnicity, combined household income, if they have ever been pregnant and how many pregnancies they have experienced.

Table 4 - Demographic and pregnancy data

Age in years (n=304)					
20-24	25-29	30-34	35-39	40-44	45-50
12 (4%)	47 (15%)	109 (36%)	83 (27%)	39 (13%)	14 (5%)

Region (n=304)		
Central Coast NSW	Hunter NSW	Other
109 (36%)	126 (41%)	69 (23%)

Relationship status (n=304)						
Divorced	In a domestic partnership or civil union	In a relationship but not living together	Married	Separated	Single, never married	Widowed
2 (0.7%)	53 (17%)	6 (2%)	219 (72%)	12 (4%)	11 (4%)	1 (0.3%)

Education level (n=304)					
Did not complete high school	High School Certificate	TAFE	Bachelor degree	Post-graduate	Doctorate
9 (3%)	37 (12%)	64 (21%)	126 (41%)	67 (22%)	1 (1%)

Employment (n=304)					
Disabled, not able to work	Employed, working full-time	Employed, working part-time	Not employed, looking for work	Not employed, NOT looking for work	Self-employed
2 (1%)	74 (24%)	135 (44%)	8 (3%)	48 (16%)	37 (12%)

Ethnicity (n=304)					
Other	Middle Eastern	Maori	Caucasian	Asian	Aboriginal or Torres Strait Islander
8 (2.6%)	1 (0.3%)	2 (0.7%)	282 (92.8%)	5 (1.6%)	6 (2%)

Combined household income (n=304)				
Less than $50,000	$50,0001 to $100,000	$100,001 to $150,000	More than $150,000	Prefer not to answer
24 (8%)	82 (27%)	115 (38%)	69 (23%)	14 (5%)

Pregnancy history (n=304)	
Had been pregnant	Not ever being pregnant
283 (93%)	21 (7%)

Pregnancy gravida (n=283)			
One	Two	Three	Four
68 (24%)	104 (37%)	56 (20%)	55 (19%)

4.4.2 Concerns or issues experienced by women in pregnancy

Only women who had been pregnant (n=283) were asked questions about concerns or issues in pregnancy, with the response rate for each ranging from 230 to 279. The most predominant concern or issue women had in pregnancy was nausea and vomiting with 86% (240 of 279). This was followed by headaches with 66% (170 of 256) and insomnia 64% (160 of 250). Nearly half (125 of 254; 49%) of women had experienced an induction of labour, over half had used analgesic pain relief in labour including gas or injections (155 of 250; 61%), and 47% (120 or 254) of women had an epidural administered. Additionally, nearly one third of women experienced an emergency caesarean section (74 of 252; 29%) and birth trauma (66 of 230; 29%). Table 5, in order of percentage, provides a list of all concerns or issues in pregnancy that women responded 'yes' or 'no' to, and additionally provides the percentage and total number of responses. The total number of responses varies as respondents were also given the ability to not answer the question.

Table 5 - Concerns or issues experienced during pregnancy

Have you experienced any of the following concerns or issues in pregnancy?	Number of 'Yes'	Number of 'No'	Total number of responses
Nausea and vomiting	240 (86%)	39 (14%)	279
Headaches	170 (66%)	86 (34%)	256
Insomnia	160 (64%)	90 (36%)	250
Analgesic pain relief in labour including gas or injections	155 (62%)	95 (38%)	250
Induction of labour	125 (49%)	129 (51%)	254
Epidural analgesia in labour	120 (47%)	134 (53%)	254
Mastitis	97 (38%)	155 (62%)	252
Miscarriage	88 (35%)	164 (65%)	252
Failure to progress in labour	84 (34%)	163 (66%)	247
Posterior position of baby during labour	77 (32%)	162 (68%)	239
Bleeding in early pregnancy (threatened miscarriage)	78 (31%)	172 (69%)	250
Emergency caesarean section	74 (29%)	178 (71%)	252
Birth trauma	66 (29%)	164 (71%)	230
Severe after birth pains	66 (27%)	177 (73%)	243
Instrumental delivery - ventouse or forceps	64 (26%)	180 (74%)	244
Breech presentation	41 (17%)	199 (83%)	240
Hypertension in pregnancy	41 (17%)	196 (83%)	237
Postpartum haemorrhage	37 (16%)	199 (84%)	236
Threatened premature labour	32 (14%)	205 (86%)	237

4.4.3 Acupuncture history

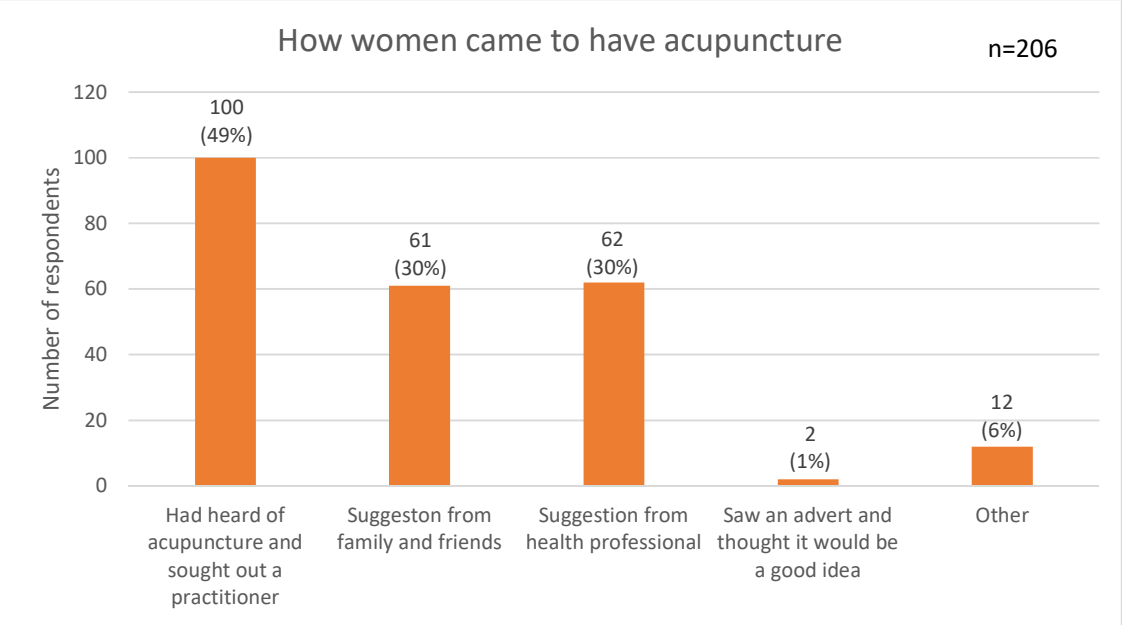
Acupuncture use

A large proportion of women surveyed had used acupuncture at some point in their life (206 of 304; 68%) with 98 of 304 (32%) women never previously using acupuncture.

How women came to have acupuncture

Those respondents who had ever used acupuncture (n=206) were then asked how they came to have acupuncture. Respondents could choose more than one answer for this question. As shown in Figure 2, women had heard of acupuncture and sought out a practitioner (100 of 206; 49%), and also on a recommendation from a health professional or friends/family. Only two women of 206 (1%) surveyed had seen an advert and thought it would be a good idea. Additionally, 12 women chose 'other', however nine of the text explanations can be classed under health professional or family/friend recommendations. The remaining three responded with 'Used acupuncture to treat migraine before first pregnancy' (Respondent 19), 'Unwell' (Respondent 127) and 'Traditional Chinese Medicine' (Respondent 271).

Figure 2 - How women came to have acupuncture



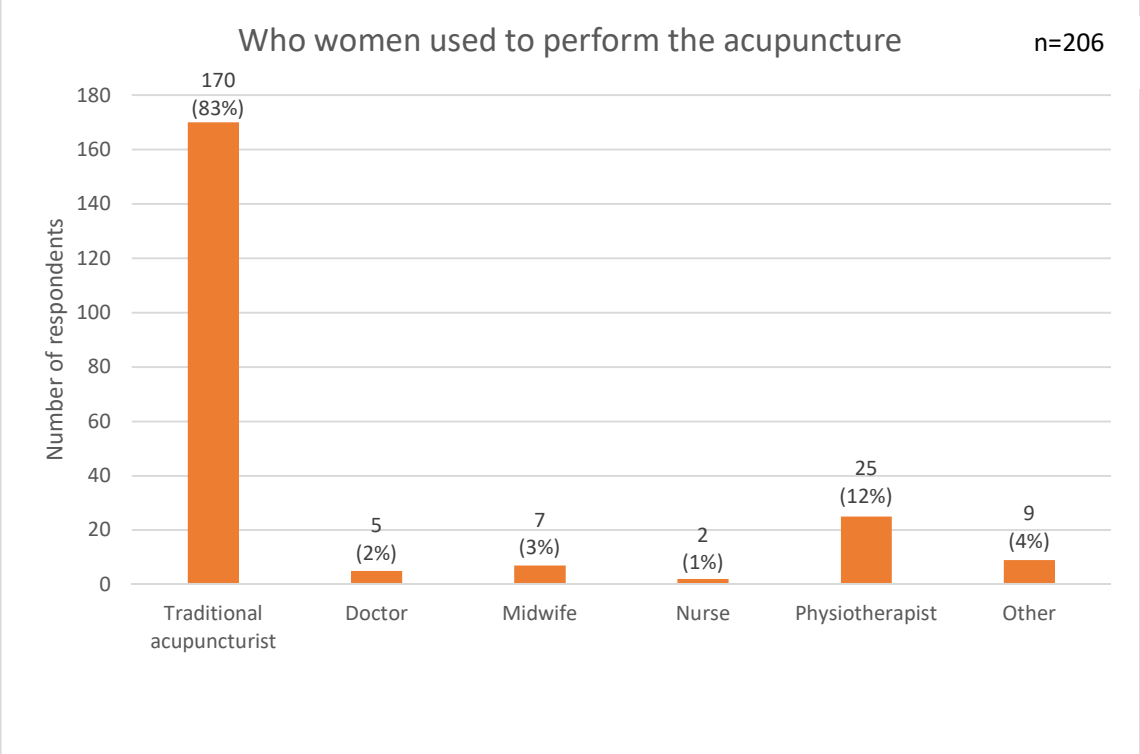
Acupuncture use during the perinatal period

Of the 206 women who had used acupuncture, 140 (68%) had used it during the perinatal period. While 66 of 206 (32%) women had not used acupuncture during the perinatal period, they had used acupuncture for non-birth related concerns or issues.

Who women used to perform the acupuncture treatment

The health professional who provided an acupuncture treatment to those women who used acupuncture is shown in Figure 3. Of the 206 women, 170 (82.5%) had a traditional acupuncturist perform their acupuncture treatment. Examples of 'other' include a chiropractor, a massage therapist and an osteopath.

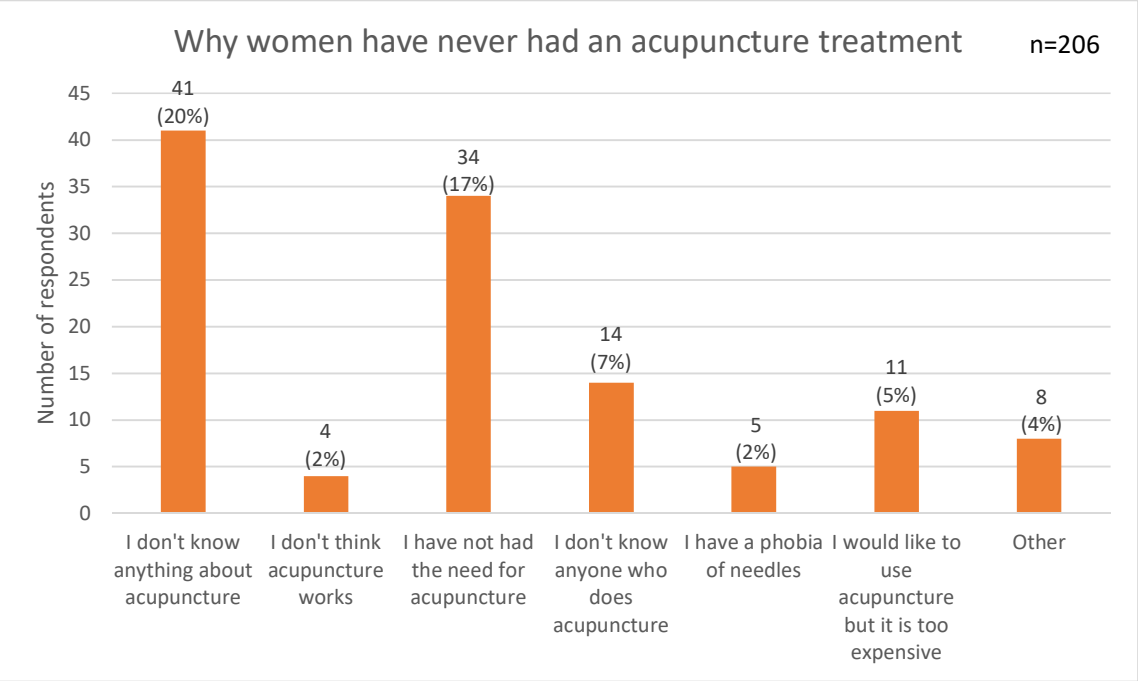
Figure 3 - Who women used to perform the acupuncture



Why women have never had an acupuncture treatment

Those respondents who had not ever used acupuncture (n=98) were asked the reason why. Shown in Figure 4, the main reasons were not knowing anything about acupuncture (41 of 98; 42%) and not having the need for an acupuncture treatment (34 of 98; 35%). Of the eight women who chose 'other', five responses fit into pre-written responses such as not knowing anything about acupuncture and a treatment being too expensive, with the remaining suggesting there is no scientific basis for acupuncture and concerns of hygiene safety in the clinic.

Figure 4 - Why women have never had an acupuncture treatment



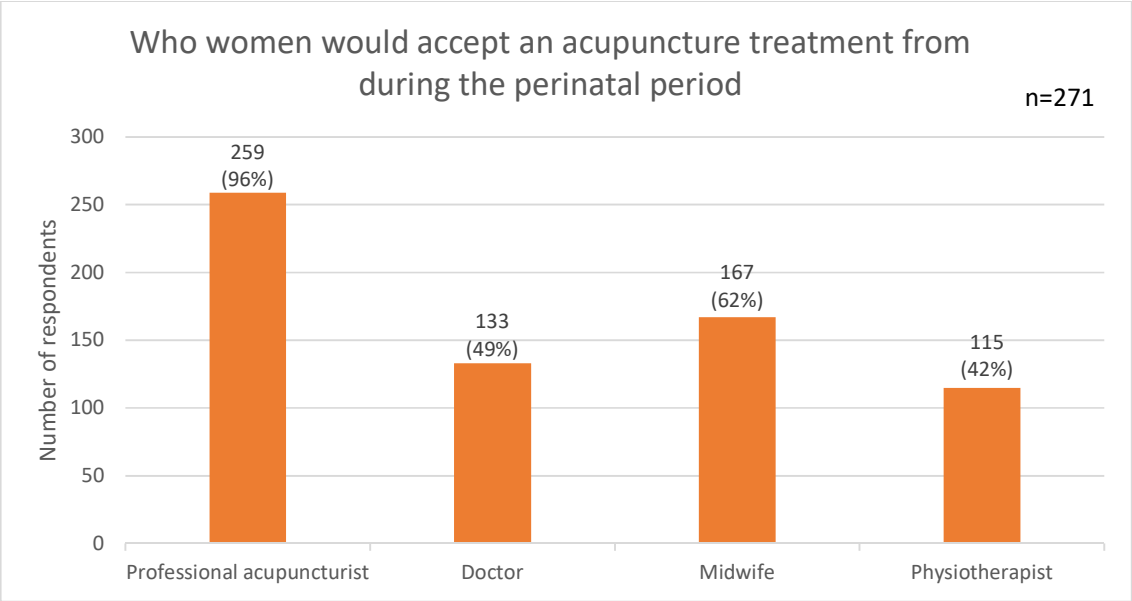
Women considering acupuncture during the perinatal period

Of the 304 women surveyed, 271 would consider having acupuncture during pregnancy, birth or the postnatal period (89%), with 33 women choosing not to consider acupuncture (11%). Of the 271 women who would consider acupuncture in the perinatal period 194 (72%) have previously used acupuncture and 77 (28%) have never used acupuncture. Of the 33 women who would not consider acupuncture in the perinatal period 12 (36%) women have used acupuncture in the past and 21 (64%) women have never used acupuncture.

Who women would accept an acupuncture treatment from during the perinatal period

The women who said they would consider using acupuncture in pregnancy (n=271) were asked from whom? Respondents could choose more than one answer for this question and findings show the mode response was 'from a professional acupuncturist' (259 of 271; 85%), as shown in Figure 5.

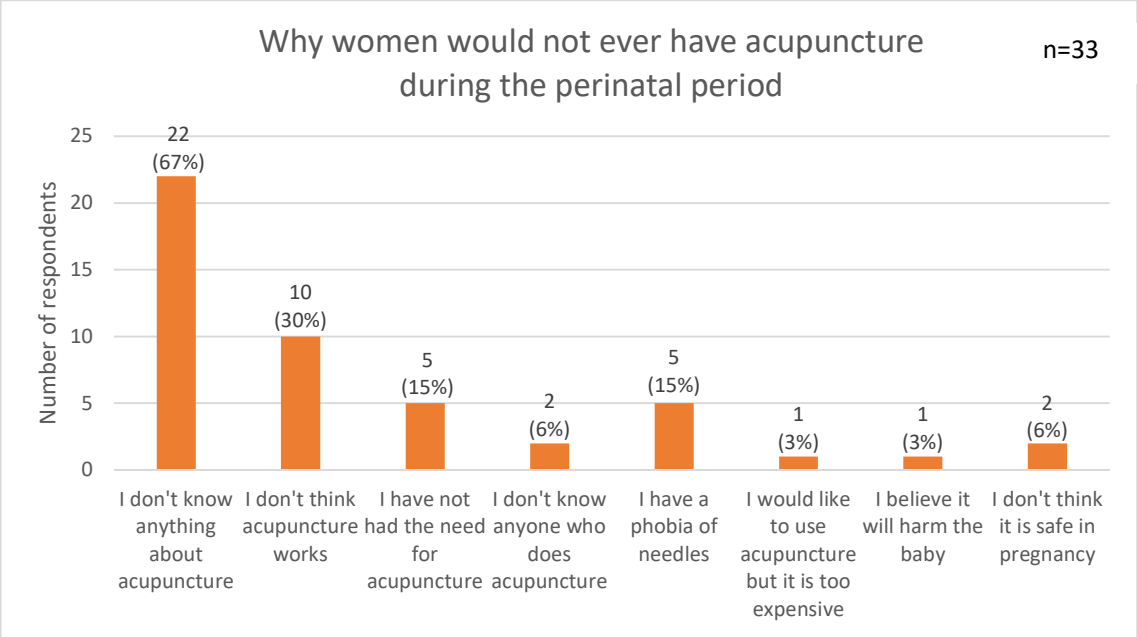
Figure 5 - Who women would accept an acupuncture treatment from during the perinatal period



Why women would not ever have acupuncture during the perinatal period

Respondents who selected that they would not have acupuncture during the perinatal period (n=33) were provided with several response options that may explain why, with the responses shown in Figure 6. Respondents could choose more than one answer for this question. The findings show women mostly selected 'I don't know anything about acupuncture' (11 of 33; 33%) and 'I don't think acupuncture works' (10 of 33; 30%).

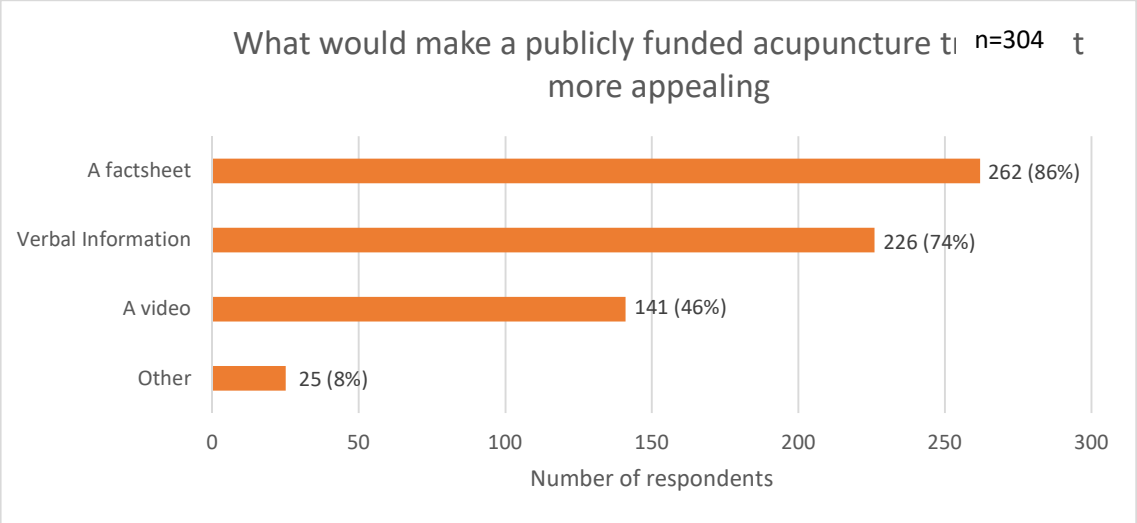
Figure 6 - Why women would not ever have acupuncture during the perinatal period



What would make a publicly funded acupuncture treatment more appealing

After women were asked about their beliefs to trying acupuncture and their belief of a midwife providing acupuncture during the perinatal period, all respondents (n=304) were asked what would make a publicly funded acupuncture treatment more appealing during the perinatal period. Respondents could choose more than one answer for this question. As shown in Figure 7, women mostly chose a factsheet which could explain how acupuncture works, how it is used, and its possible benefits including evidence of its utility (262 of 304; 86%). Women also had the opportunity to provide a free-text response to this question under 'other' (25 of 304; 8%). An example of 'other' statements include 'continuity of care for women by the care provider, doing acupuncture and antenatal care' and 'use of acupuncture sessions leading up to the pregnancy/birth'.

Figure 7 - What would make a publicly funded acupuncture treatment more appealing



4.4.4 Belief towards acupuncture in the perinatal period

Belief aspects of a woman trying acupuncture during the perinatal period

The Likert scale (strongly agree, agree, not sure, disagree, strongly disagree) was used to determine the beliefs of women towards trying acupuncture during the perinatal period. As shown in table 6, the findings from the survey on the beliefs of trying acupuncture show most women strongly agreed or agreed overall to trying acupuncture in the perinatal period. Of all the belief statements to trying acupuncture during the perinatal period, women were more likely to try acupuncture during pregnancy and the postnatal period than during labour and birth.

Belief aspects of a midwife providing acupuncture treatments during the perinatal period

The Likert scale (strongly agree, agree, not sure, disagree, strongly disagree) was used to determine women's beliefs about midwives providing acupuncture treatments during the perinatal period with four of the seven questions positively worded and three negatively worded. Negatively or reverse worded questions were used to minimise response bias (Schriesheim, Eisenbach & Hill 1991, p. 68). Women's responses were mostly positive but there were also many 'unsure' responses. Table 7 provides the number of responses of belief statements about a midwife providing an acupuncture treatment.

Table 6 - Belief of trying acupuncture during the perinatal period

Please rate your beliefs about the following statements:	Strongly agree		Agree		Not sure		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%	N	%
I would try acupuncture for common discomforts of pregnancy such as nausea, vomiting, headache or insomnia	**166**	**61**	**87**	**32**	11	4	7	3	0	0
I would try acupuncture for complications in pregnancy such as breech presentation, pregnancy induced hypertension or threatened premature labour	**146**	**54**	**68**	**25**	39	14	15	6	3	1
I would try acupuncture from 37 weeks' gestation to prepare for labour	**155**	**57**	**60**	**22**	43	16	11	4	2	1
I would try acupuncture to induce labour	**157**	**58**	**66**	**24**	28	10	12	4	8	3
I would try acupuncture for pain relief in labour	**126**	**47**	**65**	**24**	51	19	26	10	3	1
I would try acupuncture to reposition the baby in labour	**120**	**44**	**52**	**19**	64	23	28	10	7	3
I would try acupuncture for after birth pain relief	**130**	**48**	**81**	**30**	45	17	11	4	4	1

Table 7 - Belief of a midwife providing acupuncture during the perinatal period

Please rate your beliefs about the following statements:	Strongly agree		Agree		Not sure		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%	N	%
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	**139**	**46**	**93**	**30**	67	22	3	1	2	1
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	**121**	**40**	**108**	**35**	60	20	12	4	3	1
The results of acupuncture by a midwife are due to the placebo effect	8	3	9	3	**149**	**49**	**94**	**31**	**44**	**14**
A midwife offering a treatment during labour as a pain relief option would be valuable for women	**130**	**43**	**118**	**39**	53	17	2	0.7	1	0.3
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	11	4	15	5	**119**	**39**	**110**	**36**	**49**	**16**
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	**102**	**34**	**99**	**33**	87	28	13	4	3	1
Acupuncture by a midwife is a threat to public health	5	2	3	1	41	13	**119**	**39**	**136**	**45**
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	**146**	**47**	**114**	**36**	**14**	**14**	6	2	2	1

4.4.5 Statistical significance – practice, consideration and belief of acupuncture

As this study was the first of its kind to the researcher's knowledge, there were multiple statistical tests performed to investigate any relationships of childbearing aged women's attitudes, beliefs and practices to using acupuncture during the perinatal period. The researcher is aware of the multiple comparisons that are provided in the following section and corresponding appendices and reporting the effect size tackles this issue. When multiple testing occurs, adjustments are required which is discussed in appropriate literature on the topic and in discussion with the university statistical consultant (see for examples Austin et al. 2006; Bender & Lange 2001; Feise 2002; Nakagawa 2004).

The Chi-square test for independence and Fisher's Exact Probability Test were performed to identify factors that were associated with a respondent's high use of, consideration of, belief of trying and belief of a midwife providing acupuncture during the perinatal period. Statistical significance is discussed here when there is a p value less than .05 for the practice and consideration of using acupuncture during the perinatal period. Appendices 12, 13 and 14 provide the full statistical analysis outcomes for these components. Given the large number of belief statements with a p value less than .05, only those with a p value less than .001 will be presented here. However, the full statistical analysis of the belief statements is provided in Appendices 15, 16 and 17

4.4.5.1 Have you ever had acupuncture

Statistically significant relationships were found between women having ever had acupuncture and age $\chi 2$ (5, n=304)=13.40, p=.019, V = .210, region $\chi 2$ (4, n=304)=14.61, p=.004, V = .219, women ever being pregnant $\chi 2$ (1, n=304)=19.09, p=.004, phi = .173, and women considering using acupuncture during the perinatal period $\chi 2$ (1, n=304)=16.71, p < .001, phi = .234. Table 9 provides a summary of statistical significance between women ever having had acupuncture and belief statements.

Women who responded no to ever having had acupuncture were more likely to be in the 20-24 age group. Women who responded yes to ever having had acupuncture were more likely

to be older than 25 years of age and there was a rising occurrence in using acupuncture at some point during their childbearing years as the age range of women increased. However, there was a slight drop between 40-44 and then an increase again between 45-50 as shown in table 8. Women who responded no to ever having had acupuncture were more likely to reside in the Hunter region and women who reside in the Central Coast region were more likely than not to use acupuncture at some point during their childbearing years. Women who have ever had acupuncture were more likely than not to have ever been pregnant and women who have ever had acupuncture were more likely than not to consider using acupuncture during the perinatal period.

Table 8 - Crosstabulation - Have you ever had acupuncture and age

		Age						
		20-24	25-29	30-34	35-39	40-44	45-50	TOTAL
Have you ever had acupuncture?	No	8	21	35	20	11	3	98
	Have you ever had acupuncture?	*8.2%*	*21.4%*	*35.7%*	*20.4%*	*11.2%*	*3.1%*	*100%*
	What is your age in years?	*66.7%*	*44.7%*	*32.1%*	*24.1%*	*28.2%*	*21.4%*	*32.2%*
	Yes	4	26	74	63	28	11	206
	Have you ever had acupuncture?	*1.9%*	*12.6%*	*35.9%*	*30.6%*	*13.6%*	*5.3%*	*100%*
	What is your age in years?	*33.3%*	*55.3%*	*67.9%*	*75.9%*	*71.8%*	*78.6%*	*67.8%*

Table 9 - Statistical significance between women ever having had acupuncture and belief statements

Have you ever had acupuncture and belief statements of trying acupuncture during the perinatal period:	Statistical significance
Common discomforts of pregnancy. Complications in pregnancy. Labour preparation. Induction of labour. Pain relief in labour. Repositioning the baby in labour. After birth pain relief.	(p=.007, V = .234) χ2 (2, n=271)=17.57, p < .001, V = .194 χ2 (2, n=271)=28.49, p < .001, V = .326 χ2 (2, n=271)=17.16, p < .001, V = .252 χ2 (2, n=271)=13.53, p < .001, V = .223 χ2 (2, n=271)=24.61, p < .001, V = .301 χ2 (2, n=271)=20.51, p < .001, V = .275
Have you ever had acupuncture and belief statements of a midwife providing acupuncture during the perinatal period:	**Statistical significance**
A midwife offering acupuncture during labour for pain relief being valuable.	(p < .001, V = .201).
Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife.	χ2 (2, n=304)=18.28, p < .001, V = .245
Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial.	χ2 (2, n=304)=16.76, p < .001, V = .235
Disagreement to acupuncture by a midwife being a threat to public health.	χ2 (2, n=304)=9.44, p=.008, V = .176
Acupuncture by a midwife for common discomforts of pregnancy being a welcome option.	χ2 (2, n=304)=25.23, p < .001, V = .288

4.4.5.2 Did you have acupuncture during pregnancy, labour, birth or the postnatal period

Statistically significant relationships were found between women having had acupuncture during pregnancy, labour, birth or the postnatal period and age (p=.009, V = .271), using analgesic pain relief in labour χ2 (1, n=175)=4.53, p=0.045, phi = -.161, and women considering using acupuncture during the perinatal period (p=.002, phi = .229).

Women who responded yes to having acupuncture during pregnancy, labour, birth or the postnatal period were more likely to be in the 30-34 age group. Women who responded yes to having had acupuncture during the perinatal period were more likely to consider using acupuncture during the perinatal period. Table 10 provides a summary of statistical

significance between women ever having had acupuncture during pregnancy, labour, birth and the postnatal period and belief statements.

Table 10 - Statistical significance between women having acupuncture during pregnancy, labour, birth and the postnatal period and belief statements

Did you have acupuncture during pregnancy, labour, birth and the postnatal period and belief statements of trying acupuncture during the perinatal period:	Statistical significance
Labour preparation.	(p=.002, V = .264)
Did you have acupuncture during pregnancy, labour, birth and the postnatal period and belief statements of a midwife providing acupuncture during the perinatal period:	**Statistical significance**
A midwife offering acupuncture during labour for pain relief being valuable.	(p=.023, V = .183).
Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife.	$\chi 2$ (2, n=206)=8.81, p=.012, V = .207
Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial.	$\chi 2$ (2, n=206)=15.08, p < .001, V = .207
Disagreement to acupuncture by a midwife being a threat to public health.	(p=.028, V = .185).

4.4.5.3 Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period

Statistically significant relationships were found between women considering having acupuncture during pregnancy, labour, birth and the postnatal period and women ever having had acupuncture $\chi 2$ (1, n=304)=16.71, p < .001, phi = .234, and women ever having had acupuncture during pregnancy, labour, birth and the postnatal period (p= .002, V = .229). Table 11 provides a summary of statistical significance between women considering having acupuncture during pregnancy, labour, birth and the postnatal period and belief statements of a midwife providing acupuncture during the perinatal period.

Table 11 - Statistical significance between women considering having acupuncture during pregnancy, labour, birth and the postnatal period and belief statements

Would you consider having acupuncture during pregnancy, labour, birth and the postnatal period and belief statements of a midwife providing acupuncture during the perinatal period:	Statistical significance
A midwife offering acupuncture during labour for pain relief being valuable.	($p < .001$, $V = .256$)
Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife.	$\chi2$ (2, n=304)=20.95, $p < .001$, $V = .262$
Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial.	$\chi2$ (2, n=304)=16.94, $p < .001$, $V = .236$
Disagreement to acupuncture by a midwife being a threat to public health	($p < .001$, $V = .297$)
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy.	($p < .001$, $V = .289$).

4.4.5.4 Belief statements of a woman trying acupuncture during the perinatal period

There were many statistically significant relationships related to a woman trying acupuncture during the perinatal period, as shown in Appendix 18. In particular, a statistically significant relationship was found between a woman who would try acupuncture from 37 weeks gestation to prepare for labour and region ($p < 0.001$, $V = .218$). Women from the Central Coast region were more likely to use acupuncture to prepare for labour than the Hunter region, however, women in the Hunter region were three times more likely to be unsure than women from the Central Coast. Table 12 provides crosstabulation findings.

Table 12 - Crosstabulation – I would try acupuncture from 37 weeks gestation to prepare for labour and region.

		Region					
		Central Coast	Hunter	North Coast	Sydney	Other	TOTAL
I would try acupuncture from 37 weeks gestation to prepare for labour	Strongly agree and agree	82	72	3	21	37	215
	Belief statement	*38.1%*	*33.5%*	*1.4%*	*9..8%*	*17.2%*	*100%*
	Region	*87.2%*	*64.9%*	*100%*	*91.3%*	*92.5%*	*79.3%*
	Total	*30.3%*	*26.6%*	*1.1%*	*7.7%*	*13.7%*	*79.3%*
	Not sure	8	31	0	2	2	43
	Belief statement	*18.6%*	*72.1%*	*0.0%*	*4.7%*	*4.7%*	*100%*
	Region	*8.5%*	*27.9%*	*0.0%*	*8.7%*	*5.0%*	*15.9%*
	Total	*3.0%*	*11.4%*	*0.0%*	*0.7%*	*0.7%*	15.9%
	Disagree and strongly disagree	4	8	0	0	1	13
	Belief statement	*30.8%*	*61.5%*	*0.0%*	*0.0%*	*7.7%*	*100%*
	Region	*4.3%*	*7.2%*	*0.0%*	*0.0%*	*2.5%*	*4.8%*
	Total	*1.5%*	*3.0%*	*0.0%*	*0.0%*	*0.4%*	*4.8%*

4.4.5.5 Belief statements of a midwife providing an acupuncture treatment during the perinatal period

There were many statistically significant relationships related to a midwife providing an acupuncture treatment during the perinatal period, as shown in Appendix 19. There were no statistically significant relationships found regarding a woman's belief that the results of acupuncture by a midwife are due to the placebo effect.

Statistically significant relationship findings are not provided between each belief statement of a midwife providing acupuncture in the perinatal period and a woman's belief to trying acupuncture in the perinatal period. These calculations have already been provided in appendix 18 and appendix 19.

4.6 Analysis of free-text responses

Analysis of free-text qualitative questions is presented in this section of the chapter. Of the 199 women who provided a satisfaction response, 84% responded positively and 16%

responded negatively to their acupuncture treatment. Tables 13, 14 and 15 provide a summary, showing content headings and number of responses.

For the question, 'please provide the purpose and outcome of your acupuncture treatment', many women had multiple answers as they had used acupuncture for different reasons on different occasions. There were two parts to this question: The purpose of the acupuncture treatment and the outcome of the acupuncture treatment. Following is examples of respondent statements which include the purpose, outcome if provided, and satisfaction of the acupuncture treatment, if provided.

- Ninety-six respondents used acupuncture for general purposes. Respondent statements include 'I had several health complaints that traditional medicine wasn't helping to my satisfaction. I felt that acupuncture combined with Chinese medicine helped the complaints', 'Yes' (Respondent 14) and 'Hormonal balance', 'Absolutely' (Respondent 168).
- Forty-one respondents used acupuncture to assist falling pregnant, for infertility and whilst using Assisted Reproductive Technology (ART). Respondent statements included 'I realised how it could assist me to 'prepare' my body for pregnancy, and to assist in becoming pregnant. I became pregnant again soon after starting acupuncture. I used it throughout my pregnancy', 'I enjoyed my experience and have recommended it to several friends' (Respondent 149) and 'Wellbeing and health to fall pregnant and during pregnancy', 'Yes' (Respondent 10).
- During the antenatal period 153 respondents used acupuncture. Respondent statements included 'I suffered from severe Hyperemesis Gravidarum with both of my pregnancies and for the entire duration of my pregnancies and the only slight relief that I experienced from the severe vomiting was immediately after receiving acupuncture. My relief was delivered by a midwife/acupuncturist and I experienced vomiting relief for approximately 8 hours post treatment' (Respondent 123), 'I had it once a week for 4 weeks including the day before my successful VBAC', 'Yes' (Respondent 204) and 'To try and avoid induction due to gestational diabetes with both pregnancies', 'Yes' (Respondent 256).

- Only one respondent received acupuncture during labour and/or birth and she stated 'Acupuncture during pushing of labour', 'Absolutely' (Respondent 167).
- Postnatally, nine respondents had used acupuncture. Respondents statements included 'I had acupuncture to assist in increasing my milk supply postnatally (along with other initiatives) with good results. Went from needing to use donor EBM to being able to exclusively BF my baby', 'Yes, most definitely' (Respondent 203) and 'Post birth I have had acupuncture for stress/mood symptoms on the postnatal depression spectrum', 'I also have had immense improvements in my mood and stress levels since having acupuncture treatments' (Respondent 258).

Table 13 - Purpose of acupuncture treatment

Question - Please provide the purpose of your acupuncture treatment		**n=300**
General	- Depression and anxiety	6 (2%)
	- Headache/migraine	8 (2.6%)
	- Health complaints such as hormonal	13 (4.3%)
	- Injuries	6 (2%)
	- Musculoskeletal (includes pregnancy)	56 (18.7%)
	- Stress/relaxation/wellbeing	7 (2.3%)
Pre-conception	- Falling pregnant	28 (9.3%)
	- Fertility drugs, IVF	13 (4.3%)
Antenatal	- Antenatal complications	2 (0.7%)
	- Antenatal concerns	13 (4.3%)
	- Breech presentation/posterior and optimal positioning	14 (4.7%)
	- Labour activation	65 (21.7%)
	- Nausea/vomiting/indigestion/heartburn	18 (6%)
	- Post-miscarriage	44 (14.7%)
	- Pre-birth	27 (9%)
	- Pregnancy maintenance/prevent miscarriage	10 (3%)
Labour and/or birth		1 (0.3%)
Postnatal	- Constipation	2 (0.7%)
	- Increase milk supply	2 (0.7%)
	- Mastitis	1 (0.3%)
	- Postnatal concerns and wellbeing	4 (1.3%)

Table 14 - Outcome of acupuncture treatment

Question – Please provide the outcome of your acupuncture treatment		**n=167**
Perinatal related	- Baby did turn	2 (1.2%)
	- Baby didn't turn	2 (1.2%)
	- Breastfed for more than a year	1 (0.6%)
	- Did not bring on labour	5 (2.3%)
	- Brought on release of fetus after miscarriage	1 (0.6%)
	- Fell pregnant	20 (12%)
	- Gave me power over my situation and felt in control	1 (0.6%)
	- Great pregnancy, labour, birth and postnatal period	7 (4.2%)
	- Laboured and birthed before medical induction	19 (11.4%)
	- Relieved or diminished symptoms of pregnancy	35 (21%)
	- Still induced	3 (1.8%)
	- Unable to sustain pregnancy	1 (0.6%)
Positive	- Beneficial and/or successful	23 (13.8%)
	- Helped when conventional couldn't	1 (0.6%)
	- Ongoing treatment	3 (1.8%)
	- Relieve stress and aid relaxation	11 (6.6%)
	- Think it helped or worked reasonably	6 (3.6%)
Negative	- Not a good experience	2 (1.2%)
	- Not successful	22 (13.2%)
	- Not sure if it helped	2 (1.2%)

Table 15 - Satisfaction with the outcomes of your acupuncture treatment

Question – Were you satisfied with the outcomes of your acupuncture treatment?	**n=207**
- Yes	163 (78.7%)
- No	6 (2.9%)
- Somewhat	33 (16%)
- Not sure	3 (1.4%)
- Neither here nor there	1 (0.5%)
- Glad tried	1 (0.5%)

For the third free-text question, 73 responses were received for content analysis as shown in Table 16. Examples of respondent statements for the question 'Is there anything else you would like to comment further about regarding the provision of acupuncture by a midwife or care provider during pregnancy, labour, birth and the postnatal period' include 'I think that it is important women have choice. We offer women pharmaceutical options for pain relief and for morning sickness etc but not much in the way of natural options. I feel that acupuncture during childbirth would dramatically reduce intervention thus reducing costs to the government' (Respondent 39), 'The ability to offer pregnant and birthing women the

opportunity to receive acupuncture from a qualified midwife would be so beneficial, it seems to have so many positive effects with minimal side effects' (Respondent 98), and 'I would like to make sure that the midwife had undergone the appropriate training to be qualified to give acupuncture treatments' (Respondent 145).

Table 16 - Any other comments

Question – Is there anything else you would like to comment further about regarding the provision of acupuncture by a midwife or care provider during pregnancy, labour, birth and the postnatal period?	**n=73**
- Appropriate information about acupuncture in pregnancy	5 (6.8%)
- Appropriate training of a midwife	20 (27.4%)
- Have an acupuncturist as a staff member	3 (4.1%)
- More evidence required	7 (9.6%)
- No place in medicine	1 (1.4%)
- Provides women with choice other pharmacological options	9 (12.3%)
- Should be offered by a health professional during the perinatal period	28 (38.4%)

4.7 Conclusion

In summary, childbearing aged women provided responses to the survey on their use of acupuncture (n=304), belief to trying acupuncture during the perinatal period (n=271) and belief of a midwife providing acupuncture during the perinatal period (n=304). The majority of women identified they would consider using acupuncture during pregnancy, birth and the postnatal period (89%) with 62% of women stating they would have a midwife provide an acupuncture treatment. Many women (68%) had used acupuncture during the perinatal period and provided a free-text response stating the purpose, the outcome and level of satisfaction with the treatment. The majority of women strongly agreed or agreed to the belief questions of trying acupuncture, and the belief of a midwife being appropriate and safe to provide an acupuncture treatment during the perinatal period. The majority of women were either unsure or strongly disagreed or disagreed to the negatively worded questions. A discussion of the findings will be presented in chapter 5.

Chapter 5: Discussion

5.1 Introduction

Chapter 5 will interpret the findings from chapter 4 and discuss childbearing aged women's responses from the online survey. Responses include practices and considerations to using acupuncture, belief of trying acupuncture during the perinatal period, and belief of a midwife providing acupuncture during the perinatal period. To the best of the researcher's knowledge, studies of this nature have not previously been undertaken in Australia and there is limited evidence of research undertaken in other English language countries. However, there is published literature on the attitudes and beliefs of health professionals and consumers in relation to acupuncture and CAM, during and outside of pregnancy. This literature has been reported from North America, Asia and Europe as stated in Chapter 2 and shown in Appendix 2. This current study sets a precedent to determine the attitudes, beliefs and practices of childbearing aged women regarding acupuncture in the perinatal period, from the Hunter and Central Coast regions of NSW, Australia.

The current survey responses demonstrated childbearing aged women had positive attitudes to using acupuncture and believed they would try acupuncture during the perinatal period. The majority of respondents also believed a midwife should provide acupuncture to women during the perinatal period. Similar studies, from other countries, have also found acupuncture has a place in the perinatal period (Betts, Smith & Dahlen 2016; Furlow et al. 2008; Gisin et al. 2013; Harding & Foureur 2009, Mitchell et al. 2006; Münstedt et al. 2014; Smith, Armour & Betts 2014; Soliday & Hapke 2013; Wiebelitz et al. 2009; Zeng et al. 2014). The studies found CAM including acupuncture should be incorporated into maternity care (Furlow et al. 2008; Mitchell et al. 2006), CAM including acupuncture is already incorporated in maternity care (Gisin et al. 2013; Münstedt et al. 2014; Wiebelitz et al. 2009; Zeng et al. 2014), CAM including acupuncture is perceived as essential in maternity care (Harding & Foureur 2009), and women receiving acupuncture have benefited from a treatment during labour (Gisin et al. 2013; Soliday & Hapke 2013).

5.2 Acupuncture use

Acupuncture has been provided to women in Eastern society for over 2000 years and is becoming increasingly accepted in western societies (Betts 2006). In Australia, acupuncture has been practised since the 1840s (Xue et al. 2008a) and a survey by Xue et al. (2008b) in 2002, found 9.2% of the Australian population had used acupuncture within a twelve-month period. The study also found that individuals came to use acupuncture mostly for pain related issues and general health and wellbeing (Xue et al. 2008b). In the current study, 68% of childbearing aged women surveyed stated they had used acupuncture. This finding is in contrast to Corbett and Prestwich's (2009) study of patients in an English GP clinic and the Kumar et al. (2015) study from Malaysia of acupuncture users and non-users. These two studies showed 41% and 33.8% of individuals had used acupuncture, respectively (Corbett & Prestwich 2009; Kumar et al. 2015). These smaller rates of use may be due to the English study taking place in one GP clinic in London (Corbett & Prestwich 2009) and the Malaysian study showing traditional Chinese herbs being used more than acupuncture (Kumar et al. 2015). The current study discussed acupuncture only and was targeted to women over two regions in NSW, Australia. Australian research has shown only 9.5% of women aged between 34 and 39 have used acupuncture and were more likely to be single than married (Yang, Adams & Sibbritt 2017). Additionally, women were more likely to use CAM therapies than men (Adams, Sibbritt & Young 2009), and acupuncture is a more popular therapy compared to other CAM (Steel et al. 2012; Yang, Adams & Sibbritt 201).

When discussing how individuals came to use acupuncture, various authors found similar findings to the current study, with individuals using acupuncture on recommendation from health professionals, and family and friends (Corbett & Prestwich 2009; Harding & Foureur 2009; Kalder et al. 2011; Kumar et al. 2015; Münstedt et al. 2014; Stewart et al. 2014; Wardle, Sibbritt & Adams 2013; Zeng et al. 2014). No other quantitative studies had discussed an individual using acupuncture because they 'had heard of it and decided to try it', which was the highest rated reason in the current study. It must be noted though, that this response was not an option in the other studies. However, in the Betts, Smith and Dahlen (2016) mixed methods study the qualitative thematic analysis found women participated in the trial to feel in control and taking responsibility for self-care. Additionally, two women in the de Lacey,

Smith and Paterson (2009) study had heard of acupuncture and sought more information via the internet. Interestingly, the same percentage of women who had ever used acupuncture in this survey had used acupuncture during the perinatal period (68%). In an Australian study, only 9.5% of pregnant women surveyed had used acupuncture during the perinatal period (Steel et al. 2012) and this is in stark contrast to the current study and may be due to the different regions of Australia that the women reside in, women's health-seeking behaviours, and women being randomly chosen from a larger nationwide study (Steel et al. 2012). Additionally, women who have completed the current study may have an innate interest in acupuncture during the perinatal period.

The current study's findings on the use of acupuncture are broadly consistent with other quantitative studies on acupuncture and CAM (Harding & Foureur 2009; Furlow et al. 2008; Kalder et al. 2008; Smith, Armour & Betts 2014; Zeng et al. 2014). Another quantitative study showed acupuncture was used by women in a pregnancy acupuncture clinic in New Zealand for back or pelvic/hip pain relief and to prepare for labour (Betts, McMullan & Walker 2016). Of the 47 women surveyed, 80% felt a positive change after treatment (Betts, McMullan & Walker 2016) which compares to the current study's free-text positive satisfaction response of 84%. The mixed methods study for threatened miscarriage (Betts, Smith & Dahlen 2016) is broadly consistent with 79% of women in the current study who would try acupuncture for complications in pregnancy. In qualitative studies, an acupuncture treatment was provided to women during labour in a Swiss hospital by a midwife (Gisin et al. 2013), and by a traditional acupuncturist in a United States of America hospital (Soliday & Hapke 2013). In the Gisin et al. (2013) study, women had knowledge of acupuncture because of information provided by friends, which is broadly consistent with the current study where 29% of women had used acupuncture on the advice of family and friends. In the Soliday and Hapke (2013) study many responses were similar in regard to the reason for using acupuncture and the outcome. For example, for induction of labour a participant stated, 'this treatment helped put me in labour', and for nausea another respondent stated, 'I found it helped reduce nausea' (Soliday & Hapke 2013). In the current study a respondent stated, 'pregnant discomfort, nausea, pains and to help induce labour' with a satisfaction response of 'yes'. Additionally, the acupuncturists and midwives who performed the acupuncture treatment during the perinatal period (Gisin et al. 2013; Soliday & Hapke 2013) are consistent with the highest rated responses of who a woman

in the current study would have perform an acupuncture treatment during the perinatal period.

The majority of women in the current study would consider using acupuncture during the perinatal period. This finding compares favourably to the women in the Frawley et al. (2006) study who consulted a CAM practitioner prior to pregnancy and during pregnancy and continued with a CAM practitioner during pregnancy. Additionally, the Gisin et al. (2013, p. 259) study found most women were satisfied with their acupuncture treatment and believed they would use acupuncture again during labour if they were in the same situation.

5.3 Belief of trying acupuncture in the perinatal period

The findings of childbearing aged women's beliefs to trying acupuncture in the perinatal period for concerns or issues such as repositioning the baby and pain relief in labour, and common discomforts and complications of pregnancy, to the researcher's knowledge, are being described for the first time. There have been other studies showcasing the potential of acupuncture during pregnancy however, these are mainly RCTs and systematic reviews. The majority of women, for all questions in this section, would try acupuncture in the perinatal period (between 63% and 93%). A New Zealand mixed methods study found that of the women who participated in the RCT arm to assist threatened miscarriage, 79% strongly agreed or agreed to trying acupuncture for complications in pregnancy. A further comparison can be drawn from one qualitative study (Gisin et al. 2013) and one quantitative study (Zeng et al. 2014) whose participants/respondents would use acupuncture or CAM again during labour (Gisin et al. 2013) or during the postnatal period (Zeng et al. 2014). Zeng et al. (2014) found 34.3% of women would use CAM again which included acupuncture, and Gisin et al. (2013) found women would use acupuncture again and recommend to other pregnant women, as shown by the aptly transcribed quote from a study participant:

> If I had another child, I would ask for it. I would like to have that again ... I would recommend that each and every person who is pregnant and goes into labour I would say try acupuncture. If it doesn't help, it doesn't do any harm. (Mrs G, cited in Gisin et al 2013, p. 259)

Women in the Gisin et al. (2013) study specifically stated pain in labour was their motivation for trying acupuncture which is also an observation from personal clinical experience; women will try anything when their pain becomes too much to bear. Women believed acupuncture during labour would assist in labour progression, make pain tolerable, and potentially avoid medication and analgesics (Gisin et al. 2013). These comments are consistent with the current study where more than 70% of women would try acupuncture in labour for pain relief.

5.4 Belief of a midwife providing acupuncture in the perinatal period

Belief statements pertaining to a midwife providing an acupuncture treatment during the perinatal period, to the researcher's knowledge, is also being discussed for the first time. The majority of women surveyed in the current study provided 'strongly agree' or 'agree' responses to questions from positively worded statements. Statements included: Acupuncture treatments by a midwife being beneficial and a welcome option in pregnancy and birthing; a local birthing service or hospital offering treatments by midwives to women during pregnancy and birth; an acupuncture treatment being offered for concerns or issues throughout the perinatal period; pain relief treatments in labour being valuable and turning a baby into the optimal position for birthing being beneficial. Other studies have shown that women believed their acupuncture treatment by a midwife or traditional acupuncturist during the perinatal period assisted their concerns or issues, prepared their body for labour and birth, and there was an immediate positive effect after treatment (Gisin et al. 2013; Soliday & Hapke 2013). In the Kalder et al. (2010) study from Germany, 18% of women had a CAM treatment, which included acupuncture, by a midwife during pregnancy and birth. The majority of women who were asked about their beliefs were not afraid of side-effects, left the type of treatment up to the midwife, believed CAM, including acupuncture, was a reasonable treatment adjunctive to conventional medicine, reduced complications during pregnancy, and facilitated birth (Kalder et al. 2010).

The negatively worded statements, such as a midwife's acupuncture treatment being due to the placebo effect, being a threat to public health, and improved birth experiences and outcomes having nothing to do with an acupuncture treatment, have shown not many women agreed or strongly agreed. However, two negatively worded statements

(acupuncture treatment by a midwife is due to the placebo effect and improved birth experiences and outcomes have nothing to do with an acupuncture treatment by a midwife) showed women were more likely to respond as being 'not sure', but did 'disagree' more to this statement than 'agree'. Most respondents (49%) stated 'not sure' to a midwife's treatment being due to the placebo effect and this finding is higher than the Poynton et al. (2006) study, where 29.7% of GPs stated CAM, including acupuncture, is due to the placebo effect. This jump in percentage may be due to the current study asking about acupuncture only, whereas CAM has many modalities that do not involve needle insertion. However, more GPs agreed (54%) that the results of CAM were due to the placebo effect (Poynton et al. 2006) which is in contrast to respondents in the current study (45%) who mainly disagreed to this statement. The closest findings that partly reflects the respondent's attitude to acupuncture by a midwife is found in one other study. Furlow et al. (2008) surveyed obstetrics/gynaecology patients and found 62.5% were neutral or skipped the question, and 36.9% disagreed to the statement 'While a few CAM approaches may have limited health benefits, they have no true impact on treatment of symptoms, conditions and/or diseases'. In the current study 39% of respondents were 'not sure' and 52% of respondents 'strongly disagree' or 'disagree' to the statement 'Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife'. Childbearing aged women surveyed in the current Australian study are more inclined to believe in acupuncture's benefits during the perinatal period compared to Furlow et al's (2008) American study with obstetrics/gynaecology patients. Interestingly, they showed that physicians where more positive towards CAM, including acupuncture, than the patients were (Furlow et al. 2008).

In contrast to the current study, where respondents are mostly positive to a midwife providing acupuncture during the perinatal period, participants in a study from Hong Kong were wary of physiotherapists, much like a midwife (not a traditional acupuncturist), providing acupuncture treatments (Chan, Siu & Fung 2016). The users and non-users of acupuncture were unsure of practice governance and regulation for a physiotherapist to provide acupuncture treatments (Chan, Siu & Fung 2016). This assumption may be due to the study not being related to the perinatal period and the participants unaware of the training that is required for a midwife or physiotherapist to provide acupuncture treatments. However, health professionals are more aware of the training that is required to provide CAM

treatments such as acupuncture, as determined in other studies (Akan et al. 2012; Alzahrani et al. 2016; Harding & Foureur 2009; Mitchell et al. 2006; Stewart et al. 2014). It is clear from maternity and obstetric based studies that health professionals and medical students, who are more likely to recommend CAM including acupuncture, agree there is value in CAM and acupuncture treatments during the perinatal period and in general medicine (Akan et al. 2012; Alzahrani et al. 2016; Stewart et al. 2014). Respondent's attitudes and beliefs in the current study are broadly consistent with health professional and medical students and their responses positively reflect midwifery acupuncture during the perinatal period. CAM, including acupuncture, should be part of maternity services to satisfy a woman during her birthing experience, ensure a midwife's job satisfaction, promote normal birth, decrease intervention, and enhance midwifery practice, which were discussed by Harding and Foureur (2009) and Mitchell et al. (2006). Statistically significant findings, discussed in the next paragraph, may add value when developing midwifery acupuncture in Australia.

5.5 Statistical significance of acupuncture in the perinatal period

There is limited literature available to compare and contrast statistically significant findings with the current study from previous quantitative studies. However, it was found women surveyed in the current study who have used acupuncture in the perinatal period showed statistical difference with demographics in the Kalder et al. (2010) study. The Kalder et al. (2010) study showed predictors of CAM use during the perinatal period included nationality, greater income, and better education, however in the current study statistical significance was only evident with a woman's age ($p = .009$). This may be due to the Kalder et al. (2010) study taking place in Germany where CAM and acupuncture is integrated into maternity services more than Australia.

The only other studies that can provide statistical comparison/contrast broadly related to acupuncture/CAM use in clinical care. Physicians, more than patients believed clinical care should integrate CAM therapies ($p < .005$) (Furlow et al. 2008) and Midwifery Unit Managers believed in the importance of CAM therapies to promote normal birth ($p = .006$) and decrease medication intervention ($p = .009$) (Mitchell et al. 2006). The current study showed 51 instances of statistical significance with beliefs of a midwife providing acupuncture during the

perinatal period as provided in Appendix 18 and 19. Instances such as a statistically significant relationship between acupuncture by a midwife being available in pregnancy and birth and acupuncture by a midwife being part of a local birthing service or hospital ($p < .001$).

As this study was the first of its kind, to the researcher's knowledge, it was difficult to compare and contrast statistically significant data. The comparisons/contrasts discussed do provide an insight into the relationships between acupuncture and individuals/health professionals demographics, and their attitudes and beliefs.

5.6 Limitations of the study

Research is subject to a number of limitations and this current study is no exception. Limitations did occur due to time constraints and the Master of Midwifery degree being undertaken. Mentioned below are the major limitations of the study.

5.6.1 Research motive

A potential bias was the researcher's own personal experience of using acupuncture. To address rigour the survey information sheet did not include any personal experiences of the researcher.

5.6.2 Sample size

To achieve a 95% confidence interval and 5% margin of error a sample size of 377 would have been ideal. To achieve the ideal sample size of 377 the survey weblink should have stayed open for longer. However, a sample size of 302 was appropriate, as discussed in chapter 3 outlining the methodology and research design of the study.

5.6.3 Generalisability

It was unlikely the findings of childbearing aged women, surveyed about their attitudes, beliefs and practices to using acupuncture in the perinatal period, are representative of

childbearing aged women in Australia. The childbearing aged women who responded to the survey were mostly in the 30-34 age group, resided in the Central Coast and Hunter regions, were married, worked part-time, Caucasian, had a combined household income of $100,0001 to $150,000, and had been pregnant twice. Generalisability can only be confirmed when a sample is representative to the nation (Da Costa & Schneider 2016), and in this instance the primary target was childbearing aged women of the Hunter and Central Coast regions of NSW, Australia and generalisability was not sought. Additionally, convenience sampling was used by targeting Facebook groups and pages in the regions and not all over Australia, which further limited generalisability.

5.6.4 Self-reporting and response bias

It was difficult to minimise bias when attempting to gain responses through an online survey platform where respondents self-administer and may be socially, ethically and culturally more inclined to complete a survey (Dalton & Ortegren 2011; Polit & Beck 2008c). Response bias in this study was attributed to childbearing aged women completing the survey because of an innate interest in acupuncture, either because they have previously used acupuncture or another CAM therapy. Additionally, when self-reporting, there is the chance of social desirability response bias, meaning respondents may complete survey questions in a manner that is perceived to be socially, ethically and culturally more desirable (Dalton & Ortegren 2011). Self-reporting is also associated with a respondent's computer literacy and time availability to complete the survey.

5.6.5 Factor analysis

Factor analysis is a technique to develop and evaluate a measurement tool (Pallant 2016, p. 182). This technique assesses items on a scale to investigate relationships that may be collapsed into one or more factors (Gillespie & Chaboyer 2016). Factor analysis would be worthwhile considering in future work in this field.

5.6.6 Design of survey questions

After 'other' free-text responses were received it was found the corresponding questions could have been designed differently to ensure a respondent had not interpreted the question differently than was intended. For example, one respondent stated the reason for using acupuncture without providing the outcome of the treatment when asked 'Please provide the purpose and outcome of your acupuncture treatment'. To provide more of an understanding the question should have been broken up into two questions; one asking about the purpose of the acupuncture treatment and one asking about the outcome of the acupuncture treatment.

5.6.7 Multiple statistical testing

To the researcher's knowledge, this study was the first of its kind in Australia, therefore multiple statistical testing was undertaken to investigate any relationships between childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. A limitation of multiple statistical testing is that it can cause errors, however this has been addressed by providing the effect size along with statistical significance.

5.7 Recommendations and actions

The findings of this study may bring awareness to local health district and hospital maternity services, in the Hunter and Central Coast, of childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. The findings suggest acceptability of this technique which may support the development of guidelines and policies in the Hunter and Central Coast, allowing midwives to provide acupuncture/acuneedling treatments to women in their care during the perinatal period. In turn, an acupuncture/acuneedling treatment may improve maternity care for women during the perinatal period and enhance a woman's access to an adjunct or alternative therapy, that is not a conventional medical treatment or intervention. Childbearing aged women and their families should be made aware of the research findings. The findings may allow them insight

into the attitudes and beliefs of women, from two regions of Australia, who have positive attitudes towards acupuncture/acuneedling treatments by a midwife; an acupuncture treatment that could potentially be part of their local maternity service.

1. Publication of the findings from the survey to Central Coast and Hunter region media outlets via a media release, and Facebook groups and pages who were originally contacted to post the survey weblink.

2. Disseminate the findings of the survey to health professionals who work in maternity and obstetrics in the Central Coast and Hunter regions. Awareness of the findings can support midwives and other health professionals to develop policies and guidelines in hospital maternity units.

3. Publication in a peer-reviewed journal.

4. Further research related to the current study would focus on:
    a. Childbearing aged women's perceptions of a midwife providing an acuneedling treatment during the perinatal period.
    b. Midwives perception of providing acuneedling treatments to women during the perinatal period

    Additionally, if the current research measurement tool was to be used for further research it is important factor analysis is performed prior to pilot to ensure enhanced survey validity.

5. Future research that is related to specific clinical outcomes would focus on:
    a. Midwives providing acuneedling treatments in the clinical setting that may address concerns such as breech presentation in pregnancy, fetal posterior positioning during labour with an epidural insitu, and low milk supply in the postnatal period.
    b. The outcomes of a pre-birth and labour activation acuneedling treatment by a midwife for primiparas.

6. Further and future research will not be hindered by the time constraints of completing a Master of Midwifery degree, which will allow increased time to ensure rigour of the research.

Conclusion

There is limited literature on the attitudes and beliefs of acupuncture and CAM in maternity, obstetrics and other disciplines of health in Australia and worldwide. To the best of the researcher's knowledge, there was no literature in Australia determining childbearing aged women's attitudes, beliefs and practices to using acupuncture during the perinatal period particular from the Central Coast and Hunter regions of New South Wales, Australia. The limited literature led the researcher to engage in the current research study hoping childbearing aged women would be accepting of an acupuncture/acuneedling treatment by a midwife before development of maternity guidelines and policies.

The main aim of this study was to determine childbearing aged women's attitudes, beliefs and practices to using acupuncture during pregnancy, birth and the postnatal period. Data was collected through an online survey using a tool that was developed to enhance reliability. Respondents were recruited via Facebook groups and pages with a recruitment advertisement posted on newsfeeds by page administrators or the researcher.

Among the 396 women who began the survey, 304 responses were complete and suitable for data analysis, which was just above the appropriate sample size of 302. The majority of respondents were from the Hunter and Central Coast regions of NSW, which were the primary targets for the study and where maternity guidelines are in the process of being approved. The majority of women were over the age of 30. The Hunter region provided the majority of women followed by the Central Coast. The majority were married, had completed an undergraduate degree, were employed part-time, were Caucasian, and had a combined household income of $100,001 to $150,000.

The survey findings also showed the majority of respondents had used acupuncture with mostly positive outcomes and for concerns and issues during and outside the perinatal period.

Generally, acupuncture had been used outside of the perinatal period for hormonal issues, pre-conception, IVF supplementation and injuries. A larger number of respondents would consider using acupuncture during the perinatal period with only a small number of respondents who had ever had acupuncture not considering it during the perinatal period, mostly due to bad previous experiences or the treatment not fixing their issue.

Findings were very positive when respondents were asked about their belief to trying acupuncture during the perinatal period. More respondents would try acupuncture for common discomforts and complications of pregnancy, and to prepare for labour and induction than for issues or concerns in labour, such as pain relief or to reposition the baby. As this was the first study of its kind it was difficult to find similar studies asking if a woman would try acupuncture during the perinatal period for concerns or issues, however one study from Switzerland and one from China found women would try acupuncture again in labour and the postnatal period, respectively.

When respondents were asked about their belief of a midwife providing acupuncture treatments during the perinatal period, findings were once again positive. The positively worded questions about a midwife providing acupuncture during the perinatal period and a local birthing service or hospital offering acupuncture by a midwife, showed more than 75% of women strongly agreed or agreed to these two statements. For the negatively worded questions, women were still positive that outcomes of acupuncture by a midwife were not due to the placebo effect, would not be a threat to public health and that an acupuncture treatment by a midwife may improve birth experiences and outcomes. However, more women answered 'not sure' to the placebo effect and improved birth experiences/outcomes questions than to any other question on the belief of a midwife providing an acupuncture treatment. Most of these statements were broadly consistent with other studies on the attitudes and beliefs of acupuncture or CAM.

In summary, childbearing aged women surveyed in the current study would consider acupuncture in the perinatal period, were positive to trying acupuncture for various concerns or issues during the perinatal period and were positive towards a midwife providing acupuncture treatments. These findings highlight the need for awareness of an adjunct or

alterantive treatment that may improve maternity care for women during the perinatal period. Findings may additionally bring awareness to local health districts and hospital maternity services which may support the development of maternity policy and guideline review and development concerning acupuncture/acuneedling by a midwife in the perinatal period. The findings also highlight the desire for women to have the choice of an acupuncture/acuneedling treatment during their birthing experience.

Recommendations and actions include awareness of the research to women and their families, and health professionals working in maternity and obstetrics in the Hunter and Central Coast regions of NSW, and nationwide. Publication in a peer-reviewed journal, further quantitative and qualitative research and future clinical research on acupuncture in the perinatal period.

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Appendix 1: 'Acuneedling for Midwives' course

Practical component	Theory component
Needling, moxibustion and acupressure techniques	History of acupuncture
Hand hygiene and safe needle disposal	Basic principles of acupuncture
Pre-birth to prepare the uterus and dilate the cervix	Measurement techniques
Labour activation	Needling techniques
Anxiety and fear and previous birth trauma	Needle manipulation and handling
Posterior positioning and breech/malpresentation	Use of moxibustion
Pain relief	Needle and moxibustion accidents
Failure to progress and cervical lip	The YingYang theory
Retained product	Fundamental substances of Qi
Pregnancy Induced Hypertension	The five-phase theory
Threatened premature labour	The causes of disease
Nausea, vomiting and heartburn	Channel theory
Constipation and haemorrhoids	The four examinations
Vulva varicosities and varicose veins	Midwifery case histories
Insomnia	
Musculoskeletal concerns	
After-birth pains	
Post-surgery	
Breastfeeding concerns	
Postnatal depression	

Appendix 2: Summary of articles

#	Author and Date	Aim/Objective	Sample and Setting	Methods and Methodology	Major Findings	Limitations and Rigour/Validity	Significance to the issue
1	**Akan et al. 2012**	To examine the knowledge and attitudes of medical students towards CAM (including acupuncture).	943 students from seven medical schools in Turkey.	A cross-sectional three-part questionnaire using cluster sampling. Descriptive analysis and the Mann-Whitney U test were performed to analyse the data.	80.8% of students knew about acupuncture (the second highest behind herbal treatment at 81.2%). Acupuncture was better known to women respondents than men. Overall there was a positive attitude toward acupuncture. Students with an interest in CAM believed CAM should be part of the medical curriculum.	Strengths – valid selection of medical schools for data collection, large sample size with 348 being the targeted sample, piloted, ethics approval. Limitations – Cannot analyse factors over a period of time due to the cross-sectional nature of the study and response bias.	The attitude towards acupuncture is discussed and whether CAM should be taught as part of the curriculum.
2	**Alzahrani et al. 2016**	To assess Saudi Arabian medical student's knowledge and attitudes towards CAM (including acupuncture) and the incorporation	242 (sample size of 273) medical students from the faculty of medicine at a Saudi Arabian university.	A cross-sectional quantitative self-administered questionnaire using stratified sampling. Mann-Whitney *U* test and	62.4% of medical students had heard of acupuncture as a CAM modality with 55% agreeing that acupuncture was effective. Female students had a greater knowledge than male students of CAM.	Strengths – A previously developed rigorous Australian questionnaire, ethics approval and student's consent obtained, 86% response rate,	Findings discuss medical students' attitudes towards acupuncture and importance of CAM modalities being taught in the university curriculum.

		into the curriculum.		Kruskal Wallis *H*-test was performed to determine significance.	Over half of students believe physicians should know of patient's CAM use, that conventional medicine can benefit from CAM and therapies should be tested for efficacy before use.	comparison of findings. Limitations – localised findings and potential for response bias.	
3	**Armour, Dahlen & Smith 2016**	From the perspective of acupuncture practitioners and women receiving acupuncture, examine the treatment outcomes of primary dysmenorrhea.	19 acupuncture practitioners from New Zealand and Australia, and 12 women from New Zealand.	A qualitative, pragmatic study using focus groups and semi-structured interviews. Thematic analysis was used.	Three themes were identified from the main theme of "more than needles": "guiding women back to health: the importance of the partnership in TCM", "holistic understandings: a new way of thinking about period pain", and "taking back control: self-care for period pain". Most participants found an improvement in pain	Strengths – triangulation, a cross section of participants, ethics approval. Limitations – Self-care advise had already been provided during a previous trial and may not reflect advice given by other practitioners, findings may not be generalisable.	This study discusses the attitudes towards acupuncture.
4	**Betts & Budd 2011**	Examination of acupuncture points contraindicated during pregnancy.	Not applicable	A discussion paper only.	Historical literature recommendations range from avoiding certain points in pregnancy that are not contraindicated. A discussion on the physiology of the pregnancy body.	Not applicable	This paper discusses the safety of acupuncture

					A discussion on the effects the acupuncture points have during research trials.		
5	**Betts, McMullan & Walker 2016**	To describe and analyse collected data from a maternity acupuncture clinic	261 women attending a free acupuncture clinic at a New Zealand Hospital.	A quantitative retrospective study describing and analysing data from the (MYMOP) tool, source of referral, feedback on satisfaction, and reasons for seeking treatment.	Main source of referral was from lead maternity carer midwives. The majority of women presented for pre-birth treatment and back or pelvic/hip pain. 80% of women showed a clinically significant change in their perception of pain.	Strengths – first study of its kind in New Zealand. Findings based on women's satisfaction. Further research is currently taking place within the clinic exploring and reporting on women's experiences and demographic data. Ethics approval sought. Limitations – generalisability due to limited findings. No control group to compare findings and confounding variables not analysed.	This study discusses acupuncture provided to women, free of charge, within a hospital setting.
6	**Betts, Smith &**	Examine the feasibility and	40 New Zealand women were	A mixed-methods study	A statistically significant reduction was found in women's	Strengths – mixed methods study,	This study discusses the

	Dahlen 2016	acceptability of offering acupuncture for threatened miscarriage and associated outcomes.	randomised for the trial and 11 New Zealand women were interviewed.	which included a pragmatic RCT and semi-structured interviews of women's experiences. Descriptive statistics were used along with t-test and chi-square and thematic analysis.	symptoms of threatened miscarriage when using acupuncture compared to the control group (p = 0.04). A main theme was found 'finding something you can do'. Three sub-themes emerged: 'they said there was nothing they could do', feeling the benefits' and 'managing while marking time'.	ethics approval, the same researcher delivered the acupuncture and control group treatments. Limitations – the inability to blind women to treatment allocation. Not specifically acupuncture and included dietary and lifestyle advice.	attitudes of acupuncture by women during pregnancy.
7	**Corbett & Prestwich 2009**	To determine patient's knowledge, opinions and experiences of acupuncture.	134 (of as 162 sample) patients from one National Health Service (NHS) GP practice in West London.	A three-part questionnaire reporting descriptive statistics.	94% of patients had heard of acupuncture, 74% were aware of how an acupuncture treatment worked, 41% had used acupuncture previously of which 60% reported effectiveness and 71% said they would try acupuncture if it was recommended by a GP. 75% of respondents strongly agreed or agreed acupuncture should be offered on the NHS.	Strengths – Ethics approval sought, bias discussed, valid sample size for one GP practice. Limitations – Selection bias and small sample size (to be able to generalise) with limited demographics of	This study discusses the attitude towards and benefits of acupuncture.

						one GP practice. Minimal descriptive statistics reported and no discussion of questionnaire validity.	
8	**Chan, Siu & Fung 2016**	To examine the perception of acupuncture among users and non-users.	37 participants (25 women and twelve men) from Hong Kong.	A qualitative study using focus groups with purposive sampling. Audio recorded and comparison analysis used to link data, then placed into themes.	Six themes were identified. The majority of participants perceive acupuncture as effective. People used acupuncture for physical ailments and failure of other therapies. Participants were satisfied with acupuncture due to their belief and trust in the treatment and the acupuncturist.	Strengths – data saturation. Limitations – setting not fully discussed, findings cannot be generalised nationally. Ethical approval not discussed. Additionally, the paper states six themes but only five are discussed.	This study provides information about the benefits of acupuncture and the reasons individuals use acupuncture.
9	**de Lacey, Smith & Paterson 2009**	To explore women's experiences, beliefs and perceptions of acupuncture as an adjunct treatment with IVF.	Eight (from a sample of 20) women who attended two acupuncture clinics in South Australia. Women were interviewed in their home or	A preliminary qualitative study. Semi-structured interviews using a questionnaire. Descriptive content analysis used to analyse data.	Four categories of perception were identified: a) awareness of, and perceived benefits of acupuncture; b) perceptions of the body and impact of acupuncture upon it; c) perceptions of stress and resilience in regard to acupuncture use – resilience;	Strengths – ethics approval, data saturation, a preliminary study to understand the phenomena, depth of data, inclusion criteria and discussion of rigour.	Even though this study explores acupuncture in relation to IVF the attitudes and beliefs of using acupuncture are discussed.

			over the telephone.		and d) perceptions of the link between IVF and acupuncture	Limitations – small sample size, informed consent not discussed and bias not discussed which is common with qualitative studies.	
10	**de Valois, Asprey & Young 2016**	To explore patient's perception of acupuncture who have lymphoedema, secondary to cancer.	Nineteen women and three men attended a drop-in cancer clinic in north-west London. Telephone interview with one woman.	A qualitative focus group part. A questioning route was developed with a flexible approach to further questioning. Thematic analysis was used to analyse data.	Seven themes emerged from the focus group: a) disempowerment, disablement and disfigurement of the disease; b) the experience of having acupuncture and/or moxibustion treatment; c) moxibustion; d) unhelpful aspects of the treatment; e) concepts of wellbeing; f) empowerment, control and acceptance; g) degree of change attributed specifically to acupuncture/moxibustion.	Strengths – ethics approval, data saturation, first study of its kind additionally addressing overall wellbeing, richness of data due to comprehensive accounts of patient's experiences. Limitations – The authors stated a lack of participants from diverse ethnic backgrounds. Smaller sample size potentially limiting experiences. No	This study discusses the benefits and the attitude towards acupuncture.

						discussion on the patient's concerns about safety regarding needling for lymphoedema.	
11	**Furlow et al. 2008**	To determine obstetric and gynaecological physicians and patient's attitudes and approaches to CAM.	401 physicians who are members of the American Medical Association and 483 patients (convenience sample) from a U.S.A. Health Care Centre.	Physicians – postal survey and patients – survey provided with check-in paperwork. Multivariate logistic regression analyses used for data analysis.	Physicians were more positive towards CAM than patients. 73.8% of physicians believe CAM should be integrated into conventional clinical care. 62.4% of physicians believed acupuncture was highly to moderately effective.	Strengths – ethics approval, convenience sampling, response bias and types of data analysis used were discussed. Limitations – subject to recall bias due to self-reporting. Demographic data not requested which may have provided pertinent information regarding CAM use.	Acupuncture is discussed in this study as it is a CAM modality. Health professionals and patient's attitudes are discussed
12	**Gisin et al. 2013**	The exploration of women's experiences of acupuncture during labour.	Seven low risk women treated with acupuncture in a	Exploratory semi-structured interviews. Thematic analysis used to	Three themes were identified and included: 'physical, emotional and cognitive dimensions of the acupuncture treatment'.	Strengths –ethics approval and informed consent, discussion of	Women's motivation for use and choice along with belief in acupuncture.

			tertiary Swiss hospital.	analyse qualitative data.	Women reported enhanced birth experiences and were satisfied with pain relief and progress of labour after acupuncture treatment	purposive sampling. Limitations – Bias in regard to language translation from Swiss German to German to English and transferability is limited due to a small exploratory study.	
13	**Harding & Foureur 2009**	To investigate the use of CAM in midwifery practice.	172 (sample of 265) midwives in Canada and 171 (sample of 383) midwives in New Zealand.	A mixed methods approach using a postal survey. The descriptive study used descriptive statistics and thematic analysis to analyse data.	Most commonly used therapies were homeopathy, herbs, aromatherapy and acupuncture. 8.7% of midwives indicated 21-60% of women used acupuncture during the perinatal period. 49.7% of midwives referred women to acupuncturists. Themes identified include: a) resistance; b) efficacy; c) women's choice; and d) keeping birth normal	Strengths – ethics approval. A cross-sectional approach with midwives from two countries. Limitations – quantitative data analysis method was not discussed, survey not pre-tested, lower response rate in New Zealand which may limit generalisability, subject to recall	The attitudes and beliefs of midwives was discussed in relation to their midwifery practice. Acupuncture is discussed in this study as it is a CAM modality.

						bias due to self-reporting.	
14	**Kalder et al. 2010**	Patient's perspectives on their use of CAM before and during the perinatal period.	205 (sample of 475) women from three hospitals in a region of Germany.	A newly designed self-reporting questionnaire that was pre-tested. Stepwise regression analysis was used to analyse data.	29.8% of 205 women used homeopathy, acupuncture and massage the most during pregnancy and birth with these treatments predominantly applied by midwives. Two main reasons for CAM use during pregnancy were on recommendation from health care provider and post positive experiences.	Strengths – ethics approval, pre-tested on ten people, results in accordance with the literature and first study of its kind. Limitations – no discussion of bias however subject to recall bias due to self-reporting, low response rate and informed consent not discussed.	The discussion on women's perspectives on their CAM use. Acupuncture is discussed in this study as it is a CAM modality.
15	**Koc, Topatan & Saglam 2012**	To evaluate the attitudes of midwives regarding CAM for pregnant women.	129 midwives from family health centres in the Samsun region in Turkey.	Descriptive survey design using a questionnaire. Descriptive and inferential statistics used to analyse the data.	58.9% of midwives suggest CAM to pregnant women. Acupuncture is offered the least compared to herbs, diet and exercise.	Strengths – ethics approval, pre-tested questionnaire and data saturation for the region. This study was the first of its kind in Turkey. Limitations – low sample size and generalisability.	The attitudes of CAM and acupuncture are discussed from the perspective of midwives.

						Subject to recall bias due to self-reporting.	
16	**Kumar et al. 2015**	To determine the knowledge and attitudes of adult Malaysians regarding TCM	400 respondents from two states of Malaysia.	Descriptive cross-sectional survey, interview-administered three-part questionnaire using convenience sampling. Descriptive and inferential statistics were used to analyse data.	58.5% of respondents used TCM. Acupuncture was the second most commonly used therapy at 33.8% behind herbal medicine. Reasons for using TCM include recommendation by family and friends, trust in TCM and not satisfied with conventional medicine.	Strengths – survey validity, piloted, ethics approval. Limitations – Convenience sampling used which may show sampling bias. Sample size may not be generalizable.	The attitudes and recommendation to acupuncture are discussed.
17	**Mann, Burch & Shakeshaft 2016**	To evaluate the attitudes of Pain Medicine Fellowship Directors to using acupuncture.	65 (sample of 97) Pain Medicine Fellowship Directors from the America College of Graduate Medical Education.	Mixed methods: Online or paper survey which included descriptive and inferential analyses plus thematic grouping for narrative comments.	83% of respondents stated acupuncture was available to patients at their institution. Acupuncture was the most frequently offered therapy after Physical Medicine and Rehabilitation, and Internal Medicine. Practitioners were either a medical doctor or a qualified acupuncturist.	Strengths –survey reliability, ethics approval. Limitations - A focus only on Pain Medicine Fellowship Directors – future surveys with patients would assist in corroborating the findings, potential	The attitudes, benefits and safety of acupuncture are discussed in this study.

					Mostly positive attitudes towards acupuncture.	of non-response bias	
18	**Mitchell et al. 2006**	To explore the use of CAM in Maternity and how CAM is integrated into maternity from the views of Midwifery Unit Managers.	167 (sample of 221) Midwifery Unit Managers from the National Health Service in England.	Self-reporting postal survey developed using a theoretical framework. Chi-square test and Kendall's tau test for comparison and correlation.	Acupuncture is one of four therapies most commonly used. 70% of respondents believed in CAMs benefits and 94% believe it is important in the English Maternity service.	Strengths – ethics approval and data analysis methods discussed. Limitations –bias was not discussed however subject to recall bias due to self-reporting	The attitudes and beliefs of midwifery managers are discussed. Acupuncture is discussed in this study as it is a CAM modality.
19	**Münstedt et al. 2014**	To determine the attitudes of obstetricians and gynaecologists regarding CAM.	310 office based obstetricians and gynaecologists from the state of Hesse in Germany.	A newly developed, self-reporting postal questionnaire. Data was analysed using descriptive statistics and bivariate correlation.	More than 50% of respondents cooperate with colleagues including midwives on the use of CAM. Acupuncture was one of four modalities most frequently used. 69% of respondents considered acupuncture the most reasonable treatment in pregnancy.	Strengths – data analysis methods discussed, ethics approval, and pre-tested. Limitations – did not discuss informed consent, Bias was not discussed however subject to recall bias due to self-reporting.	Attitudes of obstetrician/ gynaecologist and how they use/refer CAM are discussed. Acupuncture is discussed in this study as it is a CAM modality.
20	**Poynton et al. 2006**	To understand the views of GPs towards CAM and the use of	300 (sample of 2358) GPs in New Zealand.	A nationwide, cross-sectional postal survey.	Acupuncture is the most common CAM practiced by GPs and perceived as the most beneficial.	Strengths – update to a study completed fifteen years previously.	GP's attitudes and use of CAM is discussed.

		CAM in their practice.		Descriptive statistics was used to analyse data.	44.7% of GPs believed acupuncture was conventional rather than a CAM. 67% believe CAM should be taught in medical school.	Limitations – response rate may leave room for bias and limit generalisability, ethics approval and consent not discussed.	Acupuncture is discussed as it is a CAM modality.
21	**Smith, Armour & Betts 2014**	To examine acupuncture treatments of women's reproductive health.	377 (sample of 3406) Australian and New Zealand acupuncturists.	A cross sectional self-completion questionnaire. Descriptive statistics and bivariate analysis were performed along with chi-square tests.	91% of acupuncturists treated pregnancy concerns with the most commonly concerns being nausea, back or pelvic pain and pre-birth treatment.	Strengths – ethics approval, Limitations – Findings cannot be generalised, low response rate, potential for responder bias.	This study discusses what acupuncture is used for during the perinatal period and referral of treatment.
22	**Soliday & Hapke 2013**	To assess the perceived benefits of acupuncture from former obstetric patients	137 (sample of 265) respondents from an acupuncture clinic database in the U.S.A.	An online survey. A qualitative grounded theory approach using the LaPelle process.	The five major themes identified include: a) effectively treated chief concerns; b) holistic benefit; c) no benefit; d) achieved desired birth; and e) assisted in childbirth.	Strengths – ethics approval, valuable insight into women's perceived benefits, respectable sample size. Limitations – Bias with the gifting of a $10 voucher on survey completion and potential	Former birthing women's attitudes and beliefs of acupuncture are important and relate to the research topic.

						recall bias due to self-reporting.	
23	**Stewart et al. 2014**	To investigate the reasons for and the use of CAM by health professionals who care for pregnant women.	117 (sample of 135) health care professionals in a maternity service in the North-East Scotland.	A prospective study using a questionnaire. Descriptive and inferential statistics analysed data.	32.5% of respondents recommended acupuncture (32%). Health professionals who recommended CAM to pregnant women were more likely to have received training, were interested in or users themselves of CAM.	Strengths – Face and content validity discussed, the questionnaire was pre-tested and ethics approval sought. Limitations – localised findings and may not generalise. Bias not discussed however subject to recall bias due to self-reporting.	The attitudes and beliefs of health professionals who care for pregnant women in relation to CAM. Acupuncture is discussed in this study as it is a CAM modality.
24	**Wardle, Sibbritt & Adams 2013**	To explore the practices, attitudes and referral patterns of GPs to acupuncture.	585 (sample of 1486) GPs in rural and regional NSW in Australia.	A five-part questionnaire. Descriptive statistics, $\chi 2$, and logistic regression modelling used to analyse data	Significant interaction between GPs and acupuncture/acupuncturists in rural and regional NSW. 90% of GPs would refer patients to acupuncture. Over 66% of GPs have referred patients to acupuncture more than once a year.	Strengths – piloted, ethical approval, first focussed study of GPs referral to acupuncture. Limitations – response rate of 40.7%. Subject to response bias	Acupuncture attitudes and referral patterns of GPs are discussed in this study.

25	**Wiebelitz et al. 2009**	To examine the views of student midwives and midwives on the use and safety of CAM in obstetrics.	309 student midwives and midwives from seven German midwifery schools.	A survey questionnaire. Descriptive statistics and significance levels were calculated using Chi-square tests.	63.1% estimated CAM was applied frequently by midwives. Available CAM training was deemed inadequate by 88.4% of midwives. There was a high level of acceptance for acupuncture with increasing use by midwives.	Strengths – 100% response rate. Limitations – no bias discussed however subject to recall bias due to self-reporting, ethics and informed consent not discussed. The study was also confined to midwifery schools.	The attitudes of midwifery students are important for future midwifery practice. Acupuncture is discussed in this study as it is a CAM modality.
26	**Zeng et al. 2014**	To explore the use of CAM, types of practitioners used and beliefs of efficacy with women in the postnatal period.	306 women and 225 obstetric staff in a university-affiliated hospital and a maternity and child health hospital. Both institutions were in Guangzhou, China	A retrospective, self -reporting, cross-sectional survey questionnaire. Descriptive and inferential statistics were used to analyse data.	CAM was utilised by 42.8% of patients. 81.3% of obstetric staff recommended CAM due to patient demand. Acupuncture was the third most common CAM modality used (14.7%). Acupuncture was the fourth most common CAM modality provided by the hospitals (23.5%).	Strengths – pre-tested questionnaire with postpartum women, ethics approval and discussed consent with respondents Limitations – localised findings, the method used potentially resulted in recall and responder bias.	The belief in acupuncture's benefits and efficacy with women in the perinatal period is significant to the research topic. Acupuncture is discussed in this study as it is a CAM modality.

Appendix 3: Qualitative evaluation tool (CASP 2014)

Screening Questions

1. Was there a clear statement of the aims of the research? ☐Yes ☐Can't tell ☐No

HINT: Consider
- What was the goal of the research?
- Why it was thought important?
- Its relevance

2. Is a qualitative methodology appropriate? ☐Yes ☐Can't tell ☐No

HINT: Consider
- If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
- Is qualitative research the right methodology for addressing the research goal?

Is it worth continuing?

Detailed questions

3. Was the research design appropriate to address the aims of the research? ☐Yes ☐Can't tell ☐No

HINT: Consider
- If the researcher has justified the research design (E.g. have they discussed how they decided which method to use)?

4. Was the recruitment strategy appropriate to the aims of the research? ☐ Yes ☐ Can't tell ☐ No

HINT: Consider

- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g. why some people chose not to take part)

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5. Was the data collected in a way that addressed the research issue? ☐ Yes ☐ Can't tell ☐ No

HINT: Consider

- If the setting for data collection was justified
- If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
- If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews were conducted, or did they use a topic guide)?
- If methods were modified during the study. If so, has the researcher explained how and why?
- If the form of data is clear (e.g. tape recordings, video material, notes etc)
- If the researcher has discussed saturation of data

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6. Has the relationship between researcher and participants been adequately considered? ☐ Yes ☐ Can't tell ☐ No

HINT: Consider

- If the researcher critically examined their own role, potential bias and influence during
  (a) formulation of the research questions
  (b) Data collection, including sample recruitment and choice of location
- How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

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7. Have ethical issues been taken into consideration? ☐ Yes ☐ Can't tell ☐ No

HINT: Consider

- If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
- If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)
- If approval has been sought from the ethics committee

8. Was the data analysis sufficiently rigorous? ☐ Yes ☐ Can't tell ☐ No

HINT: Consider

- If there is an in-depth description of the analysis process
- If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data?
- Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
- If sufficient data are presented to support the findings
- To what extent contradictory data are taken into account
- Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

9. Is there a clear statement of findings?

☐ Yes ☐ Can't tell ☐ No

HINT: Consider

- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researchers arguments
- If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
- If the findings are discussed in relation to the original research question

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10. How valuable is the research?

HINT: Consider

- If the researcher discusses the contribution the study makes to existing knowledge or understanding e.g. do they consider the findings in relation to current practice or policy?, or relevant research-based literature?
- If they identify new areas where research is necessary
- If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

Appendix 4: Quantitative evaluation tool (Long et al. 2002)

Evaluation Tool for Quantitative Research Studies

Building on work within a project exploring the feasibility of undertaking systematic reviews of research literature on effectiveness and outcomes in social care, a set of evaluation tools have been developed to assist in the critical appraisal of research studies. The evaluation tool for quantitative studies contains six sub-sections: study evaluative overview; study, setting and sample; ethics; group comparability and outcome measurement; policy and practice implications; and other comments. It provides a template of key questions to assist in the critical appraisal of quantitative research studies.

Review Area	Key Questions
(1) STUDY OVERVIEW	
Bibliographic Details	0. Author, title, source (publisher and place of publication), year
Purpose	1. What are the aims of the study? 2. If the paper is part of a wider study, what are its aims?
Key Findings	3. What are the key findings of the study?
Evaluative Summary	4. What are the strengths and weaknesses of the study and theory, policy and practice implications?
(2) STUDY, SETTING, SAMPLE AND ETHICS	
The Study	5. What type of study is this? 6. What was the intervention? 7. What was the comparison intervention? 8. Is there sufficient detail given of the nature of the intervention and the comparison intervention? 9. What is the relationship of the study to the area of the topic review?
Setting	10. Within what geographical and care setting was the study carried out?
Sample	11. What was the source population? 12. What were the inclusion criteria? 13. What were the exclusion criteria? 14. How was the sample selected? 15. If more than one group of subjects, how many groups were there, and how many people were in each group? 16. How were subjects allocated to the groups? 17. What was the size of the study sample, and of any separate groups? 18. Is the achieved sample size sufficient for the study aims and to warrant the conclusions drawn? 19. Is information provided on loss to follow up? 20. Is the sample appropriate to the aims of the study? 21. What are the key sample characteristics, in relation to the topic area being reviewed?
(3) ETHICS	
Ethics	22. Was Ethical Committee approval obtained? 23. Was informed consent obtained from participants of the study? 24. Have ethical issues been adequately addressed?

(4) GROUP COMPARABILITY AND OUTCOME MEASUREMENT	
Comparable Groups	25. If there was more than one group was analysed, were the groups comparable before the intervention? In what respects were they comparable and in what were they not? 26. How were important confounding variables controlled (e.g. matching, randomisation, in the analysis stage)? 27. Was this control adequate to justify the author's conclusions? 28. Were there other important confounding variables controlled for in the study design or analyses and what were they? 29. Did the authors take these into account in their interpretation of the findings?
Outcome Measurement	30. What were the outcome criteria? 31. What outcome measures were used? 32. Are the measures appropriate, given the outcome criteria? 33. What other (e.g. process, cost) measures are used? 34. Are the measures well validated? 35. Are the measures of known responsive to change? 36. Whose perspective do the outcome measures address (professional, service, user, carer)? 37. Is there a sufficient breath of perspective? 38. Are the outcome criteria useful/appropriate within routine practice? 39. Are the outcome measures useful/appropriate within routine practice?
Time Scale of Measurement	40. What was the length of follow-up, and at what time points was outcome measurement made? 41. Is this period of follow-up sufficient to see the desired effects?
(5) POLICY AND PRACTICE IMPLICATIONS	
Implications	42. To what setting are the study findings generalisable? (For example, is the setting typical or representative of care settings and in what respects?) 43. To what population are the study's findings generalisable? 44. Is the conclusion justified given the conduct of the study (For example, sampling procedure; measures of outcome used and results achieved?) 45. What are the implications for policy? 46. What are the implications for service practice?
(6) OTHER COMMENTS	
Other Comments	47. What were the total number of references used in the study? 48. Are there any other noteworthy features of the study? 49. List other study references
Reviewer	50. Name of reviewer 51. Review date

Source: Long AF, Godfrey M, Randall T, Brettle AJ and Grant MJ (2002) *Developing Evidence Based Social Care Policy and Practice. Part 3: Feasibility of Undertaking Systematic Reviews in Social Care*. Leeds: Nuffield Institute for Health.

Note: This tool was developed while the lead author was at the Health Care Practice R&D Unit (HCPRDU) at the University of Salford. It has since been slightly modified.

Appendix 5: Evaluation of qualitative studies

Author & Date	Clear statement of aims	Qualitative methodology appropriate	Research design appropriate	Recruitment strategy appropriate	Data collected addressed the issue	Participant-researcher relationship considered	Ethical issues considered	Data analysis rigorous	Clear statement of findings	How valuable is the research
Armour, Dahlen & Smith 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Betts, Smith & Dahlen 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chan, Siu and Fung 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
de Lacey, Smith & Paterson 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
de Valois, Asprey & Young 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gisin et al. 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Harding & Foureur 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mann, Burch & Shakeshaft 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Soliday & Hapke 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 6: Evaluation of quantitative studies

Author & Date	Study overview	Study, setting and sample	Ethics	Group comparability and outcome measurement	Policy and practice implications	Comments
Akan et al. 2012	Yes	Yes	Yes	Yes	Yes	
Alzahrani et al. 2016	Yes	Yes	Yes	Yes	No	
Betts, McMullan & Walker 2016	Yes	Yes	Yes	Yes	Yes	Outcome measurement of women's personal satisfaction only; no group comparability
Betts, Smith & Dahlen 2016	Yes	Yes	Yes	Yes	Yes	Mixed methods approach
Corbett & Prestwich 2011	Yes	Yes	Yes	Yes	No	Small sample, limited demographics
Furlow et al. 2008	Yes	Yes	Yes	Yes	Yes	Small sample size
Harding & Foureur 2009	Yes	Yes	Yes	Yes	Yes	Small sample size – mixed methods approach
Kalder et al. 2010	Yes	Yes	Yes	Yes	Yes	Small sample size
Koc, Topatan & Saglam 2012	Yes	Yes	Yes	Yes	Yes	
Kumar et al. 2015	Yes	Yes	Yes	Yes	Yes	Reliability of data may be affected due to close-ended questions being used.
Mann, Burch & Shakeshaft 2016	Yes	Yes	Yes	Yes	Yes	
Mitchell et al. 2006	Yes	Yes	Yes	Yes	Yes	

Münstedt et al. 2014	Yes	Yes	Yes	Yes	Yes	
Poynton et al. 2006	Yes	Yes	Yes	Yes	Yes	Ethics not discussed
Smith, Armour & Betts 2014	Yes	Yes	Yes	Yes	Yes	Small sample size
Stewart et al. 2014	Yes	Yes	Yes	Yes	Yes	
Wardle, Sibbritt & Adams 2013	Yes	Yes	Yes	Yes	Yes	Sufficient sample size compared to similar studies. Discrepancy in percentages between table and text.
Wiebelitz et al. 2009	Yes	Yes	No	Yes	Yes	Ethics not discussed
Zeng et al. 2014	Yes	Yes	Yes	Yes	Yes	

Appendix 7: Letter of introduction

Dr Linda Sweet
Associate Professor
School of Nursing and Midwifery
Flinders University

GPO Box 2100
Adelaide SA 5001
Tel: 08 8201 270
linda.sweet@flinders.edu.au
CRICOS Provider No. 00114A

Dear Sir/Madam

This letter is to introduce Heidi Williams who is a master's student in the School of Nursing and Midwifery at Flinders University. She is undertaking research leading to the production of a thesis and journal publication on the subject of childbearing aged women's attitudes, beliefs and practices to using acupuncture in pregnancy, birth and the postnatal period. She would like to invite you to assist with this project by posting the weblink to the survey on your Facebook group or page.

We would appreciate the weblink being posted to your group or page so that respondents can click on the link which will direct them to the survey. The survey will take no more than 10 minutes to complete. An information sheet precedes the survey including a 'Next' request to consent to completing the survey.

Be assured that any information provided will be treated in the strictest confidence and none of the respondents of your Facebook group or page will be individually identifiable in the publications. Respondents and your Facebook group or page are, of course, entirely free to discontinue participation at any time.

Please find the link to the survey which we would appreciate you posting on your Facebook group or page.

http://tinyurl.com/midwiferyresearch

Any enquiries you may have concerning this project should be directed to me at the address given above or by telephone on 08 82013270, or e-mail linda.sweet@flinders.edu.au

Thank you for your attention and assistance

Yours sincerely

Associate Professor Linda Sweet

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7433). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

Appendix 8: Facebook group and page respondent recruitment

Facebook Group or Page	Membership at time of recruitment
Avoca Beach Kindy Class of 2017	28
Avoca Beachside markets	16,962
Avoca Organics	726
Balance Services Newcastle	191
Best Life Birth	375
Birthing Tranquillity	76
Bliss Baby Yoga	1,238
Central Coast Australia	56,419
Central Coast Home and Natural Birth support Group	152
Central Coast Birth and midwifery events	182
Central Coast Birth Photography	217
Central Coast Birth Support	1,806
Central Coast Community Women's Health Service	894
Central Coast Mothers group	694
Central Coast Multiple Birth Association	341
Central Coast MumLink	65
Central Coast Mums	9,257
Central Coast Oztag	4,690
Cloud Nine Photography	3,219
Coast birth doula and placenta encapsulation	1,026
Discovering Birth	488
Dr Amrou Metawa	309
Dr George Angus	578
Dr Greg Hicks	373
Dr John Bailey	182
Dr Ljiliana Miljkovic-Petkovic	31
Dr Mary Norris	179
Dr Matthew Holland	2,173
Dr Oliver Brown	1,125
Dr Raouf Farag	3,028
Friends of Belmont Birthing	977
Goodness Me Organics	6,579
Gosford Private Maternity Services	2.986
Journals and jokes – Midwives caring and sharing	131
Hunter Birth Education Centre	347
Hunter Birth Support	91
Hunter Business Women's Network (HBWN)	2,561
Hunterdoula Calm Birth and baby massage	374
Hunter Mummas	913
Hunter Positive Birth Support	875
Hunter Valley Midwives	317

Hunter Valley Mummas	3,296
Hunter Valley Mums	1,261
Hunter Valley Newborn and Family Photography	3,968
Hunter Women in the Healing Biz	430
Hunter Women's Centre	857
Hypnobirthing Specialists	192
Impact Gym	2,277
Intuition Private Obstetrics and Gynaecology	526
Jasabella Pregnancy and birth support	132
Kate Kennedy Birth Photography	4,516
Lake Macquarie Mums	4,618
Little hands in the Hunter	6,186
Mumtastic	22,639
Newcastle and Central Coast Mums in Business	536
Newcastle and Lake Macquarie Mums	179
Newcastle Australia	59,465
Newcastle Doula Support	294
Newcastle Mums	3,205
Newcastle preschool playgroup	253
Newcastle Uni Bmid Students (All Years)	203
Newcastle women's group: women empowering women	443
Parents of Newcastle and the Hunter Valley	777
Practising Simplicity	7,135
Promoting FB businesses in the Newcastle, Hunter and CC	2,438
Promoting Normal Birth	31
Red Tent Mums	1,851
Red Tent Mums – Education for Midwives	1,380
Singingbird Yoga and birth support	549
Skinnypigs Women's Fitness Class Newcastle	4,198
Tattooed Parents Playgroup Central Coast	97
The Yoga Collective	1,536
University of Newcastle – Bachelor of Midwifery 2013	34

Appendix 9: Ethics approval

From: Human Research Ethics <human.researchethics@flinders.edu.au>
Sent: Monday, 17 October 2016 11:49:14 AM
To: Heidi Williams; Linda Sweet; Kristen Graham
Subject: 7433 SBREC Final approval notice (17 October 2016)

Dear Heidi,

The Chair of the Social and Behavioural Research Ethics Committee (SBREC) at Flinders University considered your response to conditional approval out of session and your project has now been granted final ethics approval. This means that you now have approval to commence your research. Your ethics final approval notice can be found below.

FINAL APPROVAL NOTICE

Project No.:	**7433**
Project Title:	Childbearing aged women's attitudes, beliefs and practices to using acupuncture in pregnancy, birth and the post-natal period
Principal Researcher:	Mrs Heidi Williams
Email:	will0260@flinders.edu.au
Approval Date:	17 October 2016
Ethics Approval Expiry Date:	**31 December 2019**

The above proposed project has been **approved** on the basis of the information contained in the application, its attachments and the information subsequently provided.

RESPONSIBILITIES OF RESEARCHERS AND SUPERVISORS

1. Participant Documentation

Please note that it is the responsibility of researchers and supervisors, in the case of student projects, to ensure that:

- all participant documents are checked for spelling, grammatical, numbering and formatting errors. The Committee does not accept any responsibility for the above mentioned errors.
- the Flinders University logo is included on all participant documentation (e.g., letters of Introduction, information Sheets, consent forms, debriefing information and questionnaires – with the exception of purchased research tools) and the current Flinders University letterhead is included in the header of all letters of introduction. The Flinders University international logo/letterhead should be used and

documentation should contain international dialling codes for all telephone and fax numbers listed for all research to be conducted overseas.

- the SBREC contact details, listed below, are included in the footer of all letters of introduction and information sheets.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 'INSERT PROJECT No. here following approval'). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au.

2. Annual Progress / Final Reports

In order to comply with the monitoring requirements of the *National Statement on Ethical Conduct in Human Research (March 2007)* an annual progress report must be submitted each year on the **17 October** (approval anniversary date) for the duration of the ethics approval using the report template available from the Managing Your Ethics Approval SBREC web page. *Please retain this notice for reference when completing annual progress or final reports.*

If the project is completed *before* ethics approval has expired please ensure a final report is submitted immediately. If ethics approval for your project expires please submit either (1) a final report; or (2) an extension of time request and an annual report.

Student Projects

The SBREC recommends that current ethics approval is maintained until a student's thesis has been submitted, reviewed and approved. This is to protect the student in the event that reviewers recommend some changes that may include the collection of additional participant data.

Your first report is due on **17 October 2017** or on completion of the project, whichever is the earliest.

3. Modifications to Project

Modifications to the project must not proceed until approval has been obtained from the Ethics Committee. Such proposed changes / modifications include:

- change of project title;
- change to research team (e.g., additions, removals, principal researcher or supervisor change);
- changes to research objectives;
- changes to research protocol;
- changes to participant recruitment methods;
- changes / additions to source(s) of participants;
- changes of procedures used to seek informed consent;
- changes to reimbursements provided to participants;
- changes / additions to information and/or documentation to be provided to potential participants;

- changes to research tools (e.g., questionnaire, interview questions, focus group questions);
- extensions of time.

To notify the Committee of any proposed modifications to the project please complete and submit the *Modification Request Form* which is available from the Managing Your Ethics Approval SBREC web page. Download the form from the website every time a new modification request is submitted to ensure that the most recent form is used. Please note that extension of time requests should be submitted prior to the Ethics Approval Expiry Date listed on this notice.

Change of Contact Details

Please ensure that you notify the Committee if either your mailing or email address changes to ensure that correspondence relating to this project can be sent to you. A modification request is not required to change your contact details.

4. Adverse Events and/or Complaints

Researchers should advise the Executive Officer of the Ethics Committee on 08 8201-3116 or human.researchethics@flinders.edu.au immediately if:

- any complaints regarding the research are received;
- a serious or unexpected adverse event occurs that effects participants;
- an unforeseen event occurs that may affect the ethical acceptability of the project.

Kind regards
Andrea

Mrs Andrea Fiegert and Ms Rae Tyler
Ethics Officers and Executive Officer, Social and Behavioural Research Ethics Committee
Andrea - Telephone: +61 8 8201-3116 | Monday, Tuesday and Wednesday
Rae – Telephone: +61 8 8201-7938 | ½ day Wednesday, Thursday and Friday

Email: human.researchethics@flinders.edu.au
Web: Social and Behavioural Research Ethics Committee (SBREC)

Manager, Research Ethics and Integrity – Dr Peter Wigley
Telephone: +61 8 8201-5466 | email: peter.wigley@flinders.edu.au
Research Services Office |Union Building Basement
Flinders University
Sturt Road, Bedford Park | South Australia | 5042
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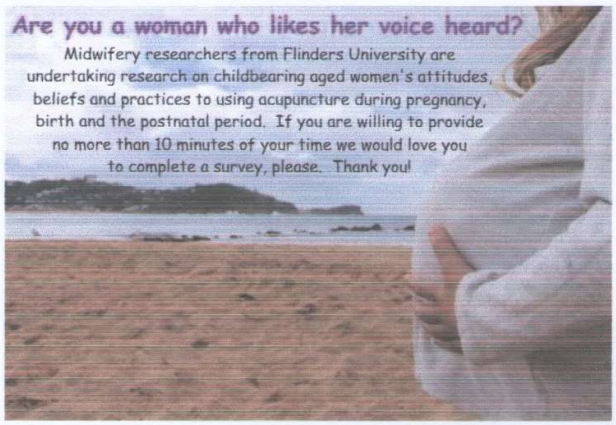
Appendix 10: Information sheet with online survey

Acupuncture in pregnancy



Childbearing aged women's attitudes, beliefs and practices to using acupuncture in pregnancy, birth and the postnatal period.

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Description of the study:

This survey is called **'Childbearing aged women's attitudes, beliefs and practices to using acupuncture in pregnancy, birth and the postnatal period'**. This project will explore whether women would use acupuncture during the perinatal period.

Purpose of the study:

The purpose of the study is to gather information to help us understand the attitudes and beliefs of women in regards to acupuncture treatments being offered by a midwife during the antenatal visit, labour or birth, and during the postnatal period. The study will also gather information about women's current acupuncture use. This information will bring awareness to women, health professionals including midwives, and management who specifically work in the Hunter and Central Coast regions of New South Wales about women's views on acupuncture.

Who can participate in the study?

Childbearing aged women over 18 years of age who are able to understand English are invited to participate. Whilst we are particularly targeting women who live in the Central Coast and Hunter regions of New South Wales, if you live outside of this region you may still respond. All results will be analysed.

What will I be asked to do?

You are asked to complete the following survey, which should take no more than 10 minutes to complete. There are questions based on your demographics; pregnancy history, previous acupuncture use (if any); and your attitudes and beliefs of acupuncture by a midwife during pregnancy, labour, birth and the postnatal period.

What benefit will I gain from being involved in this study?

This project will have little value to you individually, however you may benefit from the knowledge that you are making a contribution to maternity service policy review and development. You may also feel a sense of having your concerns listened to and acted upon appropriately for future maternity care. Your responses are invaluable to this research.

Will I be identifiable by being involved in this study?

You are assured of anonymity as no identifying information will be collected. However, you need to be aware that your anonymous answers may be used in a later project following appropriate ethical approvals, comparing your responses with women in other regions of Australia and/or other countries. The collected data will be stored at Flinders University and will be deleted after five years. The information will be published in journal articles and conference papers, but as the survey is anonymous, you cannot be identified.

Are there any risks or discomforts if I am involved?

There is the risk that survey questions may invoke unwanted feelings about your conception or pregnancy history, as well as previous acupuncture use. If you experience any negative feelings please consider contacting counselling/support services such as Lifeline Australia on 13 11 14.

For all respondents, it is possible the research will prompt active thought about the choices you make as a childbearing woman in regards to options during your childbearing experience. This is an opportunity to impart your attitudes and beliefs about an adjunct or alternative treatment during your childbearing experience, without fear of retribution.

How do I agree to participate?

By clicking NEXT to comence the survey you are consenting to participate.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to complete the survey.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number 7433). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

There are 26 questions in this survey

Demographic information

What is your age in years? *

Only numbers may be entered in this field.

Please write your answer here:

What region of the Central Coast or Hunter do you live in? *

Please choose **only one** of the following:

- ○ Gosford
- ○ Wyong
- ○ Newcastle
- ○ Maitland
- ○ Cessnock
- ○ Lake Macquarie
- ○ Port Stephens
- ○ Other

Which of the following best describes your relationship status: *

Please choose **only one** of the following:

- ○ Single, never married
- ○ In a relationship, but not living together
- ○ In a domestic partnership or civil union
- ○ Married
- ○ Widowed
- ○ Divorced
- ○ Separated

Which of the following best describes your highest level of education? *

Please choose **only one** of the following:

- ○ Did not complete high school
- ○ High school certificate (e.g. SACE)
- ○ TAFE
- ○ Bachelor degree
- ○ Post Graduate
- ○ Doctorate

Which of the following best describes your current employment status?

*

Please choose **only one** of the following:

- ○ Employed, working full-time
- ○ Employed, working part-time
- ○ Not employed, looking for work
- ○ Not employed, NOT looking for work
- ○ Disabled, not able to work
- ○ Self-employed

Which of the following best describes your ethnicity? *

Please choose **only one** of the following:

- ○ Aboriginal or Torres Strait Islander
- ○ African
- ○ Asian
- ○ Caucasian
- ○ Indian subcontinent
- ○ Maori
- ○ Middle Eastern
- ○ Pacific Islander
- ○ Other

What is your combined household income? *

Please choose **only one** of the following:

- ○ Less than $50,000
- ○ $50,001 to $100,000
- ○ $100,001 to $150,000
- ○ More than $150,001
- ○ Prefer not to answer

Pregnancy information

Have you ever been pregnant? *

Please choose **only one** of the following:

- ○ Yes
- ○ No

How many pregnancies have you had? *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '8 [Q10]' (Have you ever been pregnant?)

Please choose **only one** of the following:

- ○ One
- ○ Two
- ○ Three
- ○ Four or more

Have you ever experienced any of the following concerns or issues in pregnancy?

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '8 [Q10]' (Have you ever been pregnant?)

Please choose the appropriate response for each item:

	Yes	Uncertain	No
Nausea or vomiting	○	○	○
Headaches	○	○	○
Insomnia	○	○	○
Miscarriage	○	○	○
Bleeding in early pregnancy (threatened miscarriage)	○	○	○
Threatened premature labour	○	○	○
Hypertension in pregnancy	○	○	○
Breech presentation	○	○	○
Induction of labour	○	○	○
Failure to progress in labour	○	○	○
Posterior position of baby during labour	○	○	○
Analgesic pain relief in labour including gas or injections	○	○	○
Epidural analgesia in labour	○	○	○
Instrumental delivery such as ventouse or forceps	○	○	○
Emergency caesarean section	○	○	○
Postpartum haemorrhage	○	○	○
Severe after birth pains	○	○	○
Mastitis	○	○	○
Birth trauma	○	○	○

Acupuncture use

Have you ever had acupuncture? *

Please choose **only one** of the following:

- ○ Yes
- ○ No

How did you come to have acupuncture? *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '11 [Q20]' (Have you ever had acupuncture?)

Please choose **all** that apply:

- ☐ Had heard of acupuncture and sought out a practitioner
- ☐ Suggestion from family or friends
- ☐ Suggestion from health professional
- ☐ Saw an advert and thought it would be a good idea
- ☐ Other:

Did you have acupuncture during pregnancy, labour, birth or the postnatal period? *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '8 [Q10]' (Have you ever been pregnant?) and Answer was 'Yes' at question '11 [Q20]' (Have you ever had acupuncture?)

Please choose **only one** of the following:

- ○ Yes
- ○ No

Who performed the acupuncture? *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '11 [Q20]' (Have you ever had acupuncture?)

Please choose **all** that apply:

- ☐ Traditional Accupuncturist
- ☐ Doctor
- ☐ Midwife
- ☐ Nurse
- ☐ Physiotherapist
- ☐ Other:

Please describe the purpose and outcome of your acupuncture treatment *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '11 [Q20]' (Have you ever had acupuncture?)

Please write your answer here:

Were you satisfied with the outcomes of your acupuncture treatment?

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '11 [Q20]' (Have you ever had acupuncture?)

Please write your answer here:

Why have you never had acupuncture? *

Only answer this question if the following conditions are met:
Answer was 'No' at question '11 [Q20]' (Have you ever had acupuncture?)

Please choose **all** that apply:

- ☐ I don't know anything about acupuncture
- ☐ I don't think acupuncture works
- ☐ I have not had the need for accupuncture
- ☐ I don't know anyone who does acupuncture
- ☐ I have a phobia of needles
- ☐ I would like to use acupuncture but it is too expensive
- ☐ Other:

Attitudes about acupuncture in pregnancy

Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period? *

Please choose **only one** of the following:

- ○ Yes
- ○ No

Who would you accept an acupuncture treatment from during pregnancy, labour, birth and the postnatal period? *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '18 [Q30]' (Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period?)

Please choose **all** that apply:

- ☐ Professional acupuncturist
- ☐ Doctor
- ☐ Midwife
- ☐ Physiotherapist
- ☐ Other:

Please rate your beliefs about the following statements: *

Only answer this question if the following conditions are met:
Answer was 'Yes' at question '18 [Q30]' (Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period?)

Please choose the appropriate response for each item:

	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
I would try acupuncture for common discomforts of pregnancy such as nausea, vomiting, headache or insomnia	○	○	○	○	○
I would try acupuncture for complications in pregnancy such as breech presentation, pregnancy induced hypertension or threatened premature labour	○	○	○	○	○
I would try acupuncture from 37 weeks gestation to prepare for labour	○	○	○	○	○
I would try acupuncture to induce labour	○	○	○	○	○
I would try acupuncture for pain relief in labour	○	○	○	○	○
I would try acupuncture to reposition the baby in labour	○	○	○	○	○
I would try acupuncture for after birth pain relief	○	○	○	○	○

Why would you not ever have acupuncture during pregnancy, labour, birth and the postnatal period? *

Only answer this question if the following conditions are met:
Answer was 'No' at question '18 [Q30]' (Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period?)

Please choose **all** that apply:

- ☐ I don't know anything about acupuncture
- ☐ I don't think acupuncture works
- ☐ I have not had the need for accupuncture
- ☐ I don't know anyone who does acupuncture
- ☐ I have a phobia of needles
- ☐ I would like to use acupuncture but it is too expensive
- ☐ I believe it will harm the baby
- ☐ I don't think it is safe in pregnancy
- ☐ Other:

Please rate your beliefs about the following statements: *

Please choose the appropriate response for each item:

	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	○	○	○	○	○
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	○	○	○	○	○
The results of acupuncture by a midwife are due to the placebo effect	○	○	○	○	○
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	○	○	○	○	○
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	○	○	○	○	○
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	○	○	○	○	○
Acupuncture by a midwife is a threat to public health	○	○	○	○	○
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	○	○	○	○	○

What would make a publicly funded acupuncture treatment by your midwife or care provider more appealing during pregnancy, birthing and the postnatal period? *

Please choose **all** that apply:

- ☐ Verbal information provided by a midwife or care provider
- ☐ A fact sheet explaining how acupuncture works and is used, possible benefits backed up by evidence, and further information
- ☐ A video explaining how acupuncture works and is used, possible benefits backed up by evidence and further information.
- ☐ Other:

Concluding questions

Is there anything else you would like to comment further about regarding the provision of acupuncture by a midwife or care provider during pregnancy, labour, birth and the postnatal period? Please provide your valued feedback in the box below.

Please write your answer here:

We invite you to pass along information about this study to friends and/or family members who you think may be interested in participating.

If you would like to share this study, please use the following link: http://tinyurl.com/midwiferyresearch

We thank you for your time in participating in this research study.

Appendix 11: Spearman Rank Order Correlation – test/retest responses

Please rate your beliefs about the following statements:	Sample size	Spearman Rank Order Correlation (rho)	Significance	Bootstrap 95% Confidence Interval
I would try acupuncture for common discomforts of pregnancy such as nausea, vomiting, headache or insomnia.	n=7	rho = .73	p =.062	(0.354,1.000)
I would try acupuncture for complications in pregnancy such as breech presentation, pregnancy induced hypertension or threatened premature labour.	n=7	rho = .72	p =.068	(0.394,1.000)
I would try acupuncture from 37 weeks gestation to prepare for labour.	n=7	rho = .65	p =.117	(0.354,1.000)
I would try acupuncture to induce labour.	n=7	rho = .72	p =.068	(0.354,1.000)
I would try acupuncture for pain relief in labour.	n=7	rho = .94	p < .001	(0.556,1.000)
I would try acupuncture to reposition the baby in labour.	n=7	rho = .75	p =.054	(0.354,1.000)
I would try acupuncture for after birth pain relief.	n=7	rho = .99	p < .001	(0.917,1.000)
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women.	n=9	rho = .83	p =.006	(0.395,1.000)
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth.	n=9	rho = .83	p =.006	(0.395,1.000)
The results of acupuncture by a midwife are due to the placebo effect.	n=9	rho = .81	p =.008	(0.354,1.000)
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women.	n=9	rho = .81	p =.009	(0.478,1.000)
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife.	n=9	rho = .84	p < .005	(0.368,1.000
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial.	n=9	rho = .82	p =.007	(0.395,0.994)
Acupuncture by a midwife is a threat to public health.	n=9	rho = .86	p < .005	(0.500,1.000)
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option.	n=9	rho = .87	p < .005	(0.587,1.000)

Appendix 12: Findings – Have you ever had acupuncture?

Have you ever had acupuncture? Yes 67.8% / No 32.2%	
Age	**χ2 (5, n=304)=13.40, p =.019, V = .210**
Region	**χ2 (4, n=304)=14.61, p =.004, V = .219**
Relationship	.370 (FE)
Education	.116 (FE)
Employment	.065 (FE)
Ethnicity	.816 (FE)
Income	.908 (χ2)
Ever been pregnant	**χ2 (1, n=304)=19.09, p =.004, phi = .173**
How many pregnancies	.761 (χ2)
Concerns or issues in pregnancy	
- Nausea or vomiting	.709 (χ2)
- Headaches	.396 (χ2)
- Insomnia	.320 (χ2)
- Miscarriage	.197 (χ2)
- Bleeding in early pregnancy	1.000 (χ2)
- Threatened premature labour	.838 (χ2)
- Hypertension	.712 (χ2)
- Breech	1.000 (χ2)
- Induction	.057 (χ2)
- Failure to progress	.884 (χ2)
- Posterior position	.654 (χ2)
- Analgesic pain relief	.776 (χ2)
- Epidural	.103 (χ2)
- Instrumental delivery	.637 (χ2)
- Emergency c/s	.367 (χ2)
- Postpartum haemorrhage	.443 (χ2)
- Severe after birth pains	.433 (χ2)
- Mastitis	.571 (χ2)
- Birth trauma	.345 (χ2)
Consider acupuncture in perinatal period	**χ2 (1, n=304)=16.71, p < .001, phi = .234**
I would try acupuncture for common discomforts of pregnancy	**P =.007, V = .234**
I would try acupuncture for complications in pregnancy	**χ2 (2, n=271)=17.57, p < .001, V = .194**
I would try acupuncture from 37 weeks' gestation to prepare for labour	**χ2 (2, n=271)=28.49, p < .001, V = .326**
I would try acupuncture to induce labour	**χ2 (2, n=271)=17.16, p < .001, V = .252**
I would try acupuncture for pain relief in labour	**χ2 (2, n=271)=13.53, p < .001, V = .223**
I would try acupuncture to reposition the baby in labour	**χ2 (2, n=271)=24.61, p < .001, V = .301**
I would try acupuncture for after birth pain relief	**χ2 (2, n=271)=20.51, p < .001, V = .275**

Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	.371 (FE)
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	.700 (χ2)
The results of acupuncture by a midwife are due to the placebo effect	.237 (χ2)
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	**p < .001, V = .201**
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	**χ2 (2, n=304)=18.28, p < .001, V = .245**
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	**χ2 (2, n=304)=16.76, p < .001, V = .235**
Acupuncture by a midwife is a threat to public health	**χ2 (2, n=304)=9.44, p =.008, V = .176**
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	**χ2 (2, n=304)=25.23, p < .001, V = .288**

Appendix 13: Findings – Did you have acupuncture during pregnancy, labour, birth or the postnatal period?

Did you have acupuncture during pregnancy, labour, birth or the postnatal period? Yes 68% / No 32%	
Age	**p =.009, V = .271**
Region	.076 (χ2) a
Relationship	.131 (FE)
Education	.275 (FE)
Employment	.470 (FE)
Ethnicity	754 (FE)
Income	.819 (χ2)
Ever been pregnant	.057 (FE)
How many pregnancies	.710 (χ2)
Concerns or issues in pregnancy	
- Nausea or vomiting	.654 (χ2)
- Headaches	.740 (χ2)
- Insomnia	.504 (χ2)
- Miscarriage	.511 (χ2)
- Bleeding in early pregnancy	.487 (χ2)
- Threatened premature labour	.150 (χ2)
- Hypertension	.825 (χ2)
- Breech	.833 (χ2)
- Induction	.633 (χ2)
- Failure to progress	.309 (χ2)
- Posterior position	.485 (χ2)
- Analgesic pain relief	**χ2 (1, n=175)=4.53, p =.045, phi = -.161**
- Epidural	1.000 (χ2)
- Instrumental delivery	.709 (χ2)
- Emergency c/s	.865 (χ2)
- Postpartum haemorrhage	.508 (χ2)
- Severe after birth pains	.105 (χ2)
- Mastitis	.255 (CS)
- Birth trauma	.717 (CS)
Consider acupuncture in perinatal period	**p =.002, phi = .229**
I would try acupuncture for common discomforts of pregnancy	.669 (FE)
I would try acupuncture for complications in pregnancy	.067 (FE)
I would try acupuncture from 37 weeks' gestation to prepare for labour	**p =.002, V = .264**
I would try acupuncture to induce labour	.478 (FE)

I would try acupuncture for pain relief in labour	.340 (χ2)
I would try acupuncture to reposition the baby in labour	.291 (χ2)
I would try acupuncture for after birth pain relief	.777 (FE)
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	.934 (FE)
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	.073 (χ2)
The results of acupuncture by a midwife are due to the placebo effect	.426 (χ2)
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	**p =.023, V = .183**
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	**χ2 (2, n=206)=8.81, p =.012, V = .207**
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	**χ2 (2, n=206)=15.08, p < .001, V = .207**
Acupuncture by a midwife is a threat to public health	**P =.028, V = .185**
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	.266 (FE)

Appendix 14: Findings – Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period?

Would you consider having acupuncture during pregnancy, labour, birth or the postnatal period? Yes 89.1% / No 10.9%	
Age	.200 (FE)
Region	.553 (FE)
Relationship	.483 (FE)
Education	.341 (FE)
Employment	.548 (FE)
Ethnicity	.278 (FE)
Income	.072 (χ2)
Ever been pregnant	.263 (FE)
How many pregnancies	.523 (χ2)
Concerns or issues in pregnancy	
- Nausea or vomiting	.263 (FE)
- Headaches	.518 (χ2)
- Insomnia	.830 (χ2)
- Miscarriage	.086 (χ2)
- Bleeding in early pregnancy	.827 (χ2)
- Threatened premature labour	.762 (FE)
- Hypertension	.792 (FE)
- Breech	.170 (FE)
- Induction	.695 (χ2)
- Failure to progress	1.000 (χ2)
- Posterior position	.255 (χ2)
- Analgesic pain relief	1.000 (χ2)
- Epidural	.431 (χ2)
- Instrumental delivery	1.000 (χ2)
- Emergency c/s	.657 (χ2)
- Postpartum haemorrhage	.775 (FE)
- Severe after birth pains	.654 (χ2)
- Mastitis	.408 (χ2)
- Birth Trauma	.482 (χ2)
Ever had acupuncture	**χ2 (1, n=304)=16.71, p < .001, phi = .234**
Ever had acupuncture in perinatal period	**p=.002, V = .229**
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	.116 (FE)
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	.042 (χ2)
The results of acupuncture by a midwife are due to the placebo effect	.787 (χ2)
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	**p < .001, V = .256**

Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	**$\chi 2$ (2, n=304)=20.95, p < .001, V = .262**
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	**$\chi 2$ (2, n=304)=16.94, p < .001, V = .236**
Acupuncture by a midwife is a threat to public health	**p < .001, V = .297**
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	**p < .001, V = .289**

Appendix 15: Findings – Belief statements of trying acupuncture during the perinatal period

A=Age category was collapsed from six to three responses to run the calculation
B=Region category was collapsed from eleven down to five regions to run the calculation
c=Employment category was collapsed from six to four responses to run the calculation
χ2=Pearson Chi-square Test of Independence
FE=Fisher's Exact test when Pearson Chi-square Test of Independence could not be used due to cell count being greater than 20 percent

	I would try acupuncture for common discomforts of pregnancy	I would try acupuncture for complications in pregnancy	I would try acupuncture from 37 weeks' gestation to prepare for labour	I would try acupuncture to induce labour	I would try acupuncture for pain relief in labour	I would try acupuncture to reposition the baby in labour	I would try acupuncture for after birth pain relief
Age	.890 (FE)	.094 (FE) (A)	.702 (FE)	.263 (FE)	.107 (χ2) (A)	.027 (χ2) (A)	.618 (FE) (A)
Region	.005 (FE) (B)	.087 (FE) (B)	**p < .001, V .218 (B)**	.689 (FE) (B)	.784 (FE) (B)	.054 (FE) (B)	.106 (FE) (B)
Relationship	.916 (FE)	.451 (FE)	.469 (FE)	.113 (FE)	.204 (FE)	.094 (FE)	.013 (FE)
Education	.448 (FE)	.827 (FE)	.774 (FE)	.459 (FE)	.213 (FE)	.815 (FE)	.149 (FE)
Employment	.265 (FE)	.201 (FE)	.093 (FE)	.165 (FE)	.850 (FE) (C)	.484 (FE)	.207 (FE)
Ethnicity	1.000 (FE)	.174 (FE)	.380 (FE)	.075 (FE)	.565 (FE)	.034 (FE)	.972 (FE)
Income	1.000 (FE)	0.598 (FE)	.918 (FE)	.525 (FE)	.372 (FE)	.139 (χ2)	.177 (FE)
Ever been pregnant	1.000 (FE)	**p < .001, V=.254**	.060 (FE)	.065 (FE)	.118 (FE)	.003 (FE)	.708 (FE)
How many pregnancies	.792 (FE)	.652 (FE)	.244 (FE)	.084 (FE)	.562 (χ2)	.882 (χ2)	.409 (FE)
Concerns or issues in pregnancy							
- Nausea or vomiting	1.000 (FE)	.345 (FE)	.236 (χ2)	.285 (FE)	.956 (χ2)	.403 (χ2)	.104 (χ2)
- Headaches	.776 (FE)	.424 (χ2)	.559 (χ2)	.485 (χ2)	.601 (χ2)	.145 (χ2)	.905 (χ2)
- Insomnia	.028 (FE)	.237 (χ2)	.081 (χ2)	.262 (χ2)	.391 (χ2)	.148 (χ2)	.345 (χ2)
- Miscarriage	.927 (FE)	.019 (χ2)	1.000 (χ2)	.419 (χ2)	.123 (χ2)	.135 (χ2)	.045 (χ2)
- Bleeding in early pregnancy	.261 (FE)	.566 (χ2)	1.000 (χ2)	.025 (χ2)	.161 (χ2)	.145 (χ2)	.373 (χ2)
- Threatened premature labour	.465 (FE)	.621 (FE)	.085 (FE)	.045 (FE)	.553 (χ2)	.720 (χ2)	.110 (FE)
- Hypertension	.358 (FE)	.475 (FE)	.277 (FE)	.004 (FE)	.613 (χ2)	.476 (χ2)	.464 (χ2)
- Breech	.727 (FE)	1.000 (FE)	.059 (FE)	.332 (FE)	.349 (χ2)	.642 (χ2)	.942 (χ2)
- Induction	.416 (FE)	.021 (χ2)	.894 (χ2)	.458 (χ2)	.600 (χ2)	.354 (χ2)	.011 (χ2)
- Failure to progress	.105 (FE)	.564 (χ2)	.110 (χ2)	1.000 (χ2)	.285 (χ2)	.734 (χ2)	.152 (χ2)
- Posterior position	.686 (FE)	.087 (χ2)	.133 (χ2)	.921 (χ2)	.755 (χ2)	.181 (χ2)	.120 (χ2)
- Analgesic pain relief	.834 (FE)	1.000 (χ2)	.712 (χ2)	.685 (χ2)	.210 (χ2)	.094 (χ2)	.032 (χ2)
- Epidural	.928 (FE)	.445 (χ2)	.589 (χ2)	.928 (χ2)	.114 (χ2)	.619 (χ2)	.092 (χ2)
- Instrumental delivery	.804 (FE)	.603 (χ2)	.605 (χ2)	.458 (χ2)	.650 (χ2)	.366 (χ2)	.755 (χ2)
- Emergency caesarean section	.561 (FE)	.775 (χ2)	.211 (χ2)	.003 (χ2)	.714 (χ2)	.906 (χ2)	.230 (χ2)
- Postpartum haemorrhage	.844 (FE)	.689 (χ2)	.860 (FE)	.745 (FE)	.917 (χ2)	.419 (χ2)	.752 (χ2)
- Severe after birth pains	1.000 (FE)	.227 (χ2)	.904 (χ2)	.583 (χ2)	.378 (χ2)	.075 (χ2)	.006 (χ2)
- Mastitis	.273 (FE)	1.000 (χ2)	.635 (χ2)	.451 (χ2)	.315 (χ2)	.877 (χ2)	.068 (χ2)
- Birth Trauma	.798 (FE)	.873 (χ2)	1.000 (χ2)	.577 (χ2)	.710 (χ2)	.404 (χ2)	.962 (χ2)
Ever had acupuncture	.007 (FE)	**χ2 (2, n=271)=17.57, p < .001, V = .255**	**χ2 (2, n=271)=28.73, p < .001, V = .326**	**χ2 (2, n=271)=17.16, p < .001, V = .252**	**χ2 (2, n=271)=13.53, p < .001, V = .223**	**χ2 (2, n=271)=24.61, p < .001, V = .301**	**χ2 (2, n=271)=20.51, p < .001, V = .275**
Ever had acupuncture in perinatal period	.669 (FE)	.067 (FE)	.002 (FE)	.478 (FE)	.340 (χ2)	.291 (χ2)	.777 (FE)

Appendix 16: Findings – Belief statements of a midwife providing acupuncture during the perinatal period

A=Age category was collapsed from six to three responses to run the calculation
B=Region category was collapsed from eleven down to five regions to run the calculation
c=Employment category was collapsed from six to four responses to run the calculation
χ2=Pearson Chi-square Test of Independence
FE=Fisher's Exact test when Pearson Chi-square Test of Independence could not be used due to cell count being greater than 20 percent

	Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	The results of acupuncture by a midwife are due to the placebo effect	A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	Acupuncture by a midwife is a threat to public health	A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option
Age	.521 (FE)	.310 (FE)	.627 (FE)	.683 (FE)	.733 (χ2) (A)	.290 (FE) (A)	.970 (FE)	.218 (FE)
Region	.953 (FE) (B)	.998 (FE) (B)	.587 (FE) (B)	.947 (FE) (B)	.651 (FE)	.945 (FE)	.957 (FE)	.662 (FE)
Relationship	.368 (FE)	.567 (FE)	.275 (FE)	.422 (FE)	.275 (FE)	.305 (FE)	.078 (FE)	.093 (FE)
Education	.569 (FE)	.363 (FE)	.669 (FE)	.414 (FE)	.689 (FE)	.491 (FE)	.677 (FE)	.453 (FE)
Employment	.442 (FE)	.078 (FE)	.206 (FE)	.031 (FE)	.756 (FE)	.483 (FE)	.959 (FE)	.464 (FE)
Ethnicity	.614 (FE)	.813 (FE)	.521 (FE)	.251 (FE)	.611 (FE)	.267 (FE)	.116 (FE)	.778 (FE)
Income	.903 (FE)	.874 (FE)	.134 (FE)	.696 (FE)	.788 (χ2)	.531 (FE)	.853 (FE)	.126 (FE)
Ever been pregnant	.494 (FE)	.236 (FE)	.468 (χ2)	.028 (FE)	.623 (χ2)	.015 (χ2)	.136 (FE)	.037 (FE)
How many pregnancies	.969 (FE)	.026 (FE)	.931 (FE)	.721 (FE)	.516 (χ2)	.838 (FE)	.577 (FE)	.245 (FE)
Concerns or issues in pregnancy								
- Nausea or vomiting	.780 (FE)	.745 (χ2)	.491 (χ2)	1.000 (FE)	.212 (χ2)	.954 (χ2)	.778 (FE)	.919 (χ2)
- Headaches	.366 (FE)	.612 (χ2)	.808 (χ2)	.308 (FE)	.717 (χ2)	.117 (χ2)	.165 (χ2)	.239 (FE)
- Insomnia	.085 (FE)	.679 (χ2)	.589 (χ2)	154 (FE)	.103 (χ2)	.660 (χ2)	.101 (χ2)	.143 (FE)
- Miscarriage	.405 (FE)	.537 (χ2)	.710 (χ2)	.449 (FE)	.905 (χ2)	.092 (χ2)	.691 (χ2)	.540 (FE)
- Bleeding in early pregnancy	.080 (FE)	.182 (χ2)	.443 (χ2)	.503 (FE)	.012 (χ2)	.017 (χ2)	.606 (χ2)	.539 (FE)
- Threatened premature labour	.884 (FE)	.125 (χ2)	.632 (χ2)	.038 (FE)	.636 (CS)	.793 (χ2)	.277 (FE)	.120 (FE)
- Hypertension	.532 (FE)	.782 (χ2)	1.000 (χ2)	.077 (FE)	.023 (χ2)	.002 (χ2)	.054 (χ2)	.011 (FE)
- Breech	.816 (FE)	.184 (χ2)	.930 (χ2)	.742 (FE)	.258 (χ2)	.766 (χ2)	.439 (FE)	.761 (FE)
- Induction	.698 (FE)	.599 (χ2)	.034 (χ2)	.162 (FE)	.043 (χ2)	.399 (χ2)	.386 (FE)	.241 (FE)
- Failure to progress	.506 (FE)	.586 (χ2)	.719 (χ2)	.903 (FE)	.071 (χ2)	.166 (χ2)	.901 (FE)	.938 (FE)
- Posterior position	.367 (FE)	.408 (χ2)	.397 (χ2)	1.000 (FE)	.589 (χ2)	.186 (χ2)	.568 (χ2)	.242 (FE)
- Analgesic pain relief	.748 (FE)	.059 (χ2)	.173 (χ2)	.802 (FE)	.479 (χ2)	.947 (χ2)	.911 (FE)	.671 (FE)
- Epidural	1.000 (FE)	.699 (χ2)	.498 (χ2)	.227 (FE)	.061 (χ2)	.194 (χ2)	.085 (FE)	.450 (FE)
- Instrumental delivery	.664 (FE)	.832 (χ2)	.285 (χ2)	.004 (FE)	.140 (χ2)	.146 (χ2)	.129 (χ2)	.038 (FE)
- Emergency caesarean section	.814 (FE)	.722 (χ2)	.137 (χ2)	.160 (FE)	.002 (χ2)	.045 (χ2)	.082 (χ2)	.154 (FE)
- Postpartum haemorrhage	1.000 (FE)	.246 (χ2)	.621 (χ2)	.855 (FE)	1.000 (χ2)	.774 (χ2)	.913 (FE)	.401 (FE)
- Severe after birth pains	.578 (FE)	.932 (χ2)	.227 (χ2)	1.000 (FE)	.102 (χ2)	.341 (χ2)	1.000 (χ2)	.502 (FE)
- Mastitis	.708 (FE)	0.480 (χ2)	.172 (χ2)	.050 (FE)	.853 (χ2)	.818 (χ2)	.433 (FE)	.471 (FE)
- Birth Trauma	.577 (FE)	0.270 (χ2)	.182 (χ2)	.839 (FE)	.238 (χ2)	.540 (χ2)	.849 (χ2)	.066 (FE)
Ever had acupuncture	.371 (FE)	.700 (χ2)	.237 (χ2)	**p < .001,**	**χ2 (2, n=304)=18.28,**	**χ2 (2, n=304)=16.76,**	.008 (χ2)	**χ2 (2, n=304)=25.23,**

				V = .201	**p < .001, V = .245**	**p < .001, V = .235**		**p < .001, V = .288**
Ever had acupuncture in perinatal period	.934 (FE)	.073 (χ2)	.426 (χ2)	.023 (FE)	.012 (χ2)	**χ2 (2, n=206)=15.083, p < .001, V = .271**	.028 (FE)	.266 (FE)
Consider acupuncture in perinatal period	.116 (FE)	.042 (χ2)	.787 (χ2)	**p < .001, V = .256**	**χ2 (2, n=304)=20.95, p < .001, V = .262**	**χ2 (2, n=304)=16.94, p < .001, V = .236**	**p < .001, V = .297**	**p < .001, V = .289**
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women		**p < .001, V = .561**	.898 (FE)	.326 (FE)	.541 (FE)	.222 (FE)	.789 (FE)	.927 (FE)
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	**p < .001, V = .561**		.879 (FE)	.032 (FE)	.591 (χ2)	.193 (FE)	.399 (FE)	.771 (FE)
The results of acupuncture by a midwife are due to the placebo effect	.898 (FE)	.879 (FE)		.705 (FE)	.483 (χ2)	.681 (FE)	231 (FE)	0.553 (FE)
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	.326 (FE)	.032 (FE)	.705 (FE)		**p < .001, V = .273**	**p < .001, V = .407**	**p < .001, V = .328**	**p < .001, V = .452**
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	.541 (FE)	.591 (χ2)	.483 (χ2)	**p < .001, V = .273**		**χ2 (4, n=304)=64.79, p < 0.001, V = .326**	**p < .001, V = .268**	**p < .001, V = .244**
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	.222 (FE)	.193 (FE)	.681 (FE)	**p < .001, V = .407**	**χ2 (4, n=304)=64.79, p < .001, V = .326**		**p < .001, V = .269**	**p < .001, V = .448**
Acupuncture by a midwife is a threat to public health	.789 (FE)	.399 (FE)	.231 (FE)	**p < .001, V = .328**	**p < .001, V = .268**	**p < .001, V = .269**		**p < .001, V = .392**
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	.927 (FE)	.771 (FE)	.553 (FE)	**p < .001, V = .452**	**p < .001, V = .244**	**p < .001, V = .448**	**p < .001, V = .392**	

Appendix 17: Findings – Belief statements of trying acupuncture and a midwife providing acupuncture during the perinatal period

	I would try acupuncture for common discomforts of pregnancy such as nausea, vomiting, headache or insomnia	I would try acupuncture for complications in pregnancy such as breech presentation, pregnancy induced hypertension or threatened premature labour	I would try acupuncture from 37 weeks' gestation to prepare for labour	I would try acupuncture to induce labour	I would try acupuncture for pain relief in labour	I would try acupuncture to reposition the baby in labour	I would try acupuncture for after birth pain relief
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	.164 (FE)	.373 (FE)	.661 (FE)	.066 (FE)	.450 (FE)	.112 (FE)	.422 (FE)
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	.015 (FE)	.196 (FE)	.937 (FE)	.110 (FE)	.713 (FE)	.498 (FE)	.953 (FE)
The results of acupuncture by a midwife are due to the placebo effect	.05 (FE)	.594 (FE)	.668 (FE)	.962 (FE)	.959 (FE)	.605 (FE)	.288 (FE)
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	.005 (FE)	**p < .001, V = .174**	**p < .001, V = .269**	**p < .001, V = .206**	**p < .001, V = .309**	**p < .001, V = .225**	**p < .001, V = .181**
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	.007 (FE)	.01 (FE)	.005 (FE)	**p < .001, V = .193**	**p < .001, V = .191**	**p < .001, V = .178**	.007 (FE)
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	**p < .001, V = .448**	**p < .001, V = .354**	**p < .001, V = .275**	**p < .001, V = .292**	**p < .001, V = .264**	**p < .001, V = .400**	**p < .001, V = .191**

Acupuncture by a midwife is a threat to public health	.579 (FE)	.155 (FE)	.064 (FE)	.408 (FE)	.002 (FE)	.028 (FE)	.013 (FE)
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	**p < .001, V = .360**	.017 (FE)	.003 (FE)	.003 (FE)	.016 (FE)	**p < .001, V = .176**	**p < .001, V = .217**

Appendix 18: Statistical significance of belief statements to trying acupuncture during the perinatal period

Belief statement with statistical significance	
I would try acupuncture for common discomforts of pregnancy such as nausea, vomiting, headache or insomnia	
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .448$)
	A midwife offering acupuncture for common discomforts of pregnancy being a welcome option ($p < .001$, $V = .360$)
Belief statement with statistical significance	
I would try acupuncture for complications in pregnancy such as breech presentation, pregnancy induced hypertension or threatened premature labour	
	Have you ever been pregnant? ($p < .001$, $V = .254$)
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .174$)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .354$)
Belief statement with statistical significance	
I would try acupuncture from 37 weeks gestation to prepare for labour	
	Region ($p < 0.001$, $V = .218$)
	Have you ever had acupuncture? $\chi 2$ (2, n=271)=28.73, $p < 0.001$, $V = .326$
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .269$)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .275$)
Belief statement with statistical significance	
I would try acupuncture to induce labour	
	Have you ever had acupuncture? $\chi 2$ (2, n=271)=17.16, $p < .001$, $V = .252$
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .206$)
	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife ($p < .001$, $V = .193$)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .292$)
Belief statement with statistical significance	
I would try acupuncture for pain relief in labour	
	Have you ever had acupuncture? $\chi 2$ (2, n=271)=13.53, $p < .001$, $V = .223$
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .309$)

	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife ($p < .001$, $V = .191$)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .264$)
Belief statement with statistical significance	
I would try acupuncture to reposition the baby in labour	
	Have you ever had acupuncture? $\chi 2$ (2, n=271)=24.61, $p < .001$, $V = .301$
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .225$)
	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife ($p < .001$, $V = .178$)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .400$)
	A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy ($p < .001$, $V = .176$)
Belief statement with statistical significance	
I would try acupuncture for after birth pain relief	
	Have you ever had acupuncture? $\chi 2$ (2, n=271)=20.51, $p < .001$, $V = .275$
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .181$)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial ($p < .001$, $V = .191$)
	A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy ($p < .001$, $V = .217$)

Appendix 19: Statistical significance of belief statements of a midwife providing an acupuncture treatment during the perinatal period

Belief statement with statistical significance	
Having acupuncture by a midwife available in pregnancy and birth would be beneficial for women	
	My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth ($p < .001$, $V = .561$)
Belief statement with statistical significance	
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	
	Having acupuncture by a midwife would be beneficial during pregnancy and birth ($p < .001$, $V = .561$)
Belief statement with statistical significance	
My local birthing service or hospital should offer acupuncture by a midwife during pregnancy and birth	
	Having acupuncture by a midwife would be beneficial during pregnancy and birth ($p < .001$, $V = .561$)
Belief statement with statistical significance	
A midwife offering an acupuncture treatment during labour as a pain relief option would be valuable for women	
	A woman ever having had acupuncture ($p < .001$, $V = .201$)
	A woman considering having acupuncture during the perinatal period ($p < .001$, $V = .256$)
	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife ($p < .001$, $V = .273$)
	Acupuncture by a midwife to turn a baby being beneficial ($p < .001$, $V = .407$)
	Disagreement to acupuncture by a midwife being a threat to public health ($p < .001$, $V = .328$)
	A midwife offering acupuncture during an antenatal visit for common discomforts would be a welcome option ($p < .001$, $V = .452$)
Belief statement with statistical significance	
Improved birth experiences and outcomes would have nothing to do with an acupuncture treatment by a midwife	
	A woman ever having had acupuncture $\chi2$ (2, n=304)=18.28, $p < .001$, $V = .245$
	A woman considering having acupuncture during the perinatal period $\chi2$ (2, n=304)=20.95, $p < .001$, $V = .262$
	A midwife offering acupuncture during labour for pain relief being valuable ($p < .001$, $V = .273$)
	Acupuncture by a midwife to turn a baby being beneficial $\chi2$ (4, n=304)=64.79, $p < .001$, $V = .326$.
	Disagreement to acupuncture by a midwife being a threat to public health ($p < .001$, $V = .268$)
	A midwife offering acupuncture during an antenatal visit for common discomforts would be a welcome option ($p < .001$, $V = .244$)

Belief statement with statistical significance	
An acupuncture treatment by a midwife in labour to turn a baby into the optimal birthing position would be beneficial	
	A woman ever having had acupuncture $\chi 2$ (2, n=304)=16.76, p < .001, V = .235
	A woman having had acupuncture during the perinatal period $\chi 2$ (2, n=206)=15.083, p < .001, V = .271
	A woman considering having acupuncture during the perinatal period $\chi 2$ (2, n=304)=16.94, p < .001, V = .236
	A midwife offering acupuncture during labour for pain relief being valuable (p < .001, V = .407)
	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife $\chi 2$ (4, n=304)=64.792, p < 0.001, V = .326
	Disagreement to acupuncture by a midwife being a threat to public health (p < .001, V = .269)
	A midwife offering acupuncture during an antenatal visit for common discomforts would be a welcome option (p < .001, V = .448)
Belief statement with statistical significance	
Acupuncture by a midwife is a threat to public health	
	A woman considering having acupuncture during the perinatal period (p < .001, V = .297)
	A midwife offering acupuncture during labour for pain relief being valuable (p < .001, V = .328)
	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife (p < 0.001, V = .268)
	Acupuncture by a midwife to turn a baby into the optimal birthing position being beneficial (p < .001, V = .269)
Belief statement with statistical significance	
A midwife offering an acupuncture treatment during an antenatal visit for common discomforts of pregnancy would be a welcome option	
	A woman ever having had acupuncture $\chi 2$ (2, n=304)=25.23, p < .001, V = .288
	A woman considering having acupuncture during the perinatal period (p < .001, V = .289)
	A midwife offering acupuncture during labour for pain relief being valuable (p < .001, V = .452)
	Disagreement to improved birth experiences and outcomes having nothing to do with an acupuncture treatment by a midwife (p < .001, V = .244)
	Acupuncture by a midwife to turn a baby to the optimal birthing position being beneficial (p < .001, V = .448)
	Disagreement to acupuncture by a midwife being a threat to public health (p < .001, V = .392)