

WHAT ROLE DOES THE DECISION  
SUPPORT TOOL “MYBIRTHPLACE” PLAY IN  
WOMEN’S INFORMATION GATHERING AND  
DECISION MAKING ABOUT PLACE OF  
BIRTH?

DAISY WIGGINS

A thesis submitted in fulfilment of the requirements of  
Bournemouth University for the degree of Doctor of  
Philosophy

OCTOBER 2017

BOURNEMOUTH UNIVERSITY

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## **Abstract**

Health professionals and women accessing health care are increasingly recognising the importance of shared decision making (SDM) within pregnancy. Despite recognition, implementing SDM and truly supporting an informed choice is suggested to still be lacking in clinical exchanges. Literature focuses on creating ways and tools to support SDM in health care. One possible way is to incorporate Decision Support Tools (DST) into practice. Evidence within the context of general health care shows they improve knowledge and satisfaction with information, however less is known about DST use in pregnancy.

MyBirthplace was developed by a National Health Service (NHS) Trust in response to both a local and national call for information in accessible formats and to enable women to be more informed about their choice regarding place of birth; as hospital birth is still seen as the norm.

The primary aim of this thesis was to assess how effective a new DST called MyBirthplace is in helping make this decision. The impact of the DST was assessed using the Stages of Decision Making Scale (SDMS) (O'Connor 2000). Secondary aims were to; identify when women make a decision about place of birth; explore women's information gathering and decision making behaviours during pregnancy to understand women's views and opinions about using the DST; and to determine the use of the DST by their midwives.

A mixed method, multiphase, sequential exploratory design was conducted with 172 pregnant women within one large urban NHS Trust. The study involved three phases. Phase 1 utilised questionnaires given to the participants' pre and post the first appointment with the midwife where they had access to the DST. Phase 2 followed up these women via a survey sent at 28 weeks of pregnancy. In phase 3, face to face interviews were conducted with 12 women purposively chosen from the initial two phases. Finally, data were retrieved from the hospital database to identify actual place of birth.

This study provides new evidence that the use of MyBirthplace positively affects women's decision making. The DST resulted in a positive increase in decision making (reduced conflict) and by the 28 week follow up there was a significant shift with greater decision-making. Women's views showed a division in the level of information they found acceptable, but in general they valued

MyBirthplace as a source of information to help make them aware of their choices. Women highlighted the role a midwife plays in supporting them to be proactive in accessing MyBirthplace and the way in which midwives frame information affects women's choices. Unfortunately, for some women the midwives acted as a barrier, making them rethink their birth options or not providing women with information about MyBirthplace.

These findings provide a unique view of both the effectiveness of MyBirthplace and women's views regarding choice for place of birth. The findings fill the gap highlighted by the recent maternity review that asked for more information to be given to women and to be available in different formats. DSTs have been found to be valuable in aiding women in decision making about place of birth but only when the midwives are engaged, supportive and women are introduced to MyBirthplace at the first appointment.

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## Acknowledgements

The concept and funding for the study was secured by Professor Vanora Hundley and Gill Walton (Director of Midwifery at the study site). The Research was jointly funded by Bournemouth University and Portsmouth Hospital Trust, involving the Centre for Midwifery Maternal & Perinatal Health, Faculty of Health & Social Sciences.

Words cannot express how grateful I am to my supervisors, Professor Vanora Hundley, Professor Carol Bond and Dr Carol Wilkins. For being supportive, giving me focus and continued gentle coaching in the right direction. For never making me feel like my questions were stupid, always believing in me and making me believe in myself.

Vanora for your direction, valuable critic, support in all areas both personal and professional, your endless quantitative knowledge and always making me strive to be better with wanting a “wee more”.

Carol B for your emotional grounding, thoughtful words and qualitative point of view. I also want to sincerely thank you for staying on and seeing me through to the end after an exciting change in your career. I wish you all the best.

Carol W for being available to pop in the office for a chat, for listening and always knowing what to say and of course your qualitative input. I will be forever thankful for having three amazing people, with the patience of saints and hearts of gold - helping me through.

All those at Portsmouth Hospital who would ask about and showed interest in the research; thank you for listening. Special thanks go to Gill Walton as my clinical supervisor for always sounding excited about what I was doing and the hug for reaching my recruitment target. Also Graham Halls as R and D lead for putting up with numerous phone calls and “are we there yet” questions when waiting for NIHR approval.

I would also like to thank Professor Peter Thomas and Dr Zoe Sheppard for the statistical support and expert advice.

This study would not have been possible firstly without the women who gave their time and views in their pregnancy, Thank you. And the community midwives who came to the rescue when the sample size seemed impossible, you know who you are.

To my family for being there, patient at the lack of my presence and eternally supportive I love you. To Emily you are a wonderful best friend that kept me going.

Finally to Daniel, my rock, my biggest supporter – I wouldn’t have got through this without you. Thank you for being you and supporting me (and for all the proof reading).

# Chapter 1 Introduction and background of the MyBirthplace study

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## 1.1 Introduction; context of choice of birthplace

Choice of birth place has been a topic of promotion by the government, National Health Service (NHS) and the National Institute for Health Care Excellence (NICE) for more than two decades (Sandall 2011). Most recently this issue was again highlighted in the National Maternity Review (Cumberledge et al. 2016). Although women were generally positive about the care they received, one of the major exceptions is the extent to which women were offered choice regarding their birth place. The maternity review highlighted that women want to be able to choose the care that is right for them and their family; however what is clear from the Care Quality Commission (CQC) maternity survey (2015) is this choice is not always offered. Their survey highlighted that 16% of respondents were not offered any choice; those that were (14%) stated that the choice was insufficient.

These findings are not a surprise as similar results and issues have been continuously raised by numerous government reviews over the years. In 2014 just over a quarter of women were aware of all four choices for place of birth: at home, in a free standing midwifery led unit (FMU), in an alongside midwifery led unit (AMU) or in an obstetric unit (OU) (National Perinatal Epidemiology Unit (NPEU) 2014). A further 40% were aware of two or three options, with just over a third with one option. The study found that there had been minimal improvement in knowledge from the previous survey (2010), when 80% of women were not aware of all four options and there was regional variation in the choices women reported being aware of (NPEU 2010).

With very little change in the last decade and the reason for such an intense and continued focus on this topic being linked to the increasing rates of intervention and caesarean sections seen nationally, there is clearly room for research looking at interventions that increase awareness about birth place options.

## **1.2 Why does birth place choice matter?**

Between 2014 and 2015 a total of 166,081 caesarean sections were performed in the United Kingdom UK, with a current national average of 26.2% (Health and Social Care Information Centre (HSCIC) 2015) this is an increase in caesarean birth of 0.3% from the previous year (2014) and reflects a trend with a 0.7% increase from 2013 (Royal College of Obstetricians and Gynaecologists (RCOG) 2017). This is also 16.2% to 11.2 % above the “ideal rate” generally considered for caesarean sections of between 10-15% which has been set since 1985 (World Health Organization (WHO) 2015). Vogel et al. (2015) identified a consistently rising rate of caesarean section in high income countries, and this is likely to continue to rise as countries income and urbanisation increase (Roberts and Nippita 2015). As a consequence, it could be argued, a significant number of women are receiving unnecessary intervention.

It is understandable that some of these women would have been considered high risk or in clinical need of intervention, such as women with induced labour (29.9% were primiparous women; 21.3% were multiparous women) or pre-labour (3.3% were primiparous; 12.7% were multiparous) (RCOG 2016). However, Sandall (2014) suggests that at the end of pregnancy approximately 45% of women are eligible for midwifery led care. Given that statistics show that nationally 87% of women give birth in an OU (HSCIC 2015), one must question whether women are receiving the information that they need to make an informed decision.

A similar picture is seen locally within the study hospital; in 2012 of the 6292 babies born, 90% were delivered within the large urban hospital in the study; 72% of those were on the main obstetric unit and 18% were within the alongside midwifery unit (PHT 2014). Some could question why having a choice of birth location and knowing the options matters; the implication of women’s choice is key.

There is a strong body of evidence showing an association between intervention rates and birth location with an increased risk of intervention for low risk women who labour on a high risk unit (NPEU 2016). The Birthplace in England Research Programme found that for planned birth in a FMU or AMU,

there were no significant differences in adverse perinatal outcomes compared to an OU (Hollowell et al. 2011). Giving birth in an FMU or AMU resulted in significantly fewer interventions for low risk women compared to their low risk counterparts who birthed on the OU (NPEU 2016). Full definitions of an AMU and FMU are given later.

Unnecessary obstetric intervention, specifically caesarean section, is a concern. Rates above 10-15% are no longer associated with reduced mortality; instead there are risks of infection and complications from surgery that are potentially dangerous in settings that lack facilities or capacity (World Health Organisation (WHO) 2015).

Similar concerns were raised by the government and health authorities in relation to instrumental delivery rates (Betran et al. 2016). The national rate of ventouse or forceps births increased from 12.9% in 2013-14 to 13.1% 2014-15 (HSCIC 2015). Serious maternal trauma including third degree tears was the most commonly associated maternal morbidity in a comparison of intervention and caesarean section in the second stage of labour (Murphy et al. 2001). Other studies highlight the risk of urinary and faecal incontinence (Johanson et al. 1999). Further morbidity is caused when the instrumental delivery fails and an emergency caesarean section is needed. Fetal morbidities include scalp injury, haematoma and retinal haemorrhages, however serious neonatal morbidity and mortality is rare in this age with the availability of evidence based practice and obstetric skills (Murphy et al. 2001).

In the light of the high proportion of births in OUs and the clear evidence that low risk women birthing in an OU are at an increased risk of having an unnecessary intervention, it is important to establish how decisions about place of birth are made.

### **1.3 Whose choice is it?**

Davies (2013) suggested that lack of choice and information could play a part in more women birthing in the OU. Choice in terms of place of birth has not always been available. Prior to the 1950s the majority of women had their babies at home, as this was the only option if the woman had a roof over her head and access to running water (Davis 2013). Depictions of birth at this time can be

seen in the popular BBC broadcast “*Call The Midwife*”. This was at a time when midwives were seen as the main caregivers in all low risk births and the process was seen as ‘natural’. In 1958, following a rise in birth rates after the Second World War, the Cranbrook committee suggested an extension of the number of hospital beds, because the shortage of beds resulted in women who were deemed unfit for home birth being forced to give birth at home; however birthing in hospital was to be used in conjunction with the domiciliary service already provided (Savage 2009).

With the 1970s came the revolution of birthing with the majority of births occurring in hospital (Davis 2013). The move to hospital birth arose as a result of a perinatal survey that showed that low risk women who were cared for by their General Practitioner (GP) had poorer outcomes than those in hospital (Savage 2009). This could be argued to be the tipping point that led to the Peel Report recommending extending hospital delivery to 100% of women (Department of Health Social Security (DHSS) 1970). Tew (1985) suggested this was without evidence; arguing instead that those in power used misinformation to attribute birth at home with being unsafe. This, she stated, was the key attribution that led to the medicalisation of childbirth and the move away from maternity units to the hospital. What is clear is that birth was seen from a paternalistic perspective; and home birth or birth outside of hospital has never been viewed in the same way since.

Historically decisions have been made for women; medicine was male dominated and the view was paternalistic (Levy 1999). As has already been ascertained, women were expected to birth in the hospital and there was a significant lack of discussion and choice. William and Fahy (2014) identified the high value placed on the ‘good obstetric patient’, implying that women, within the medical paradigm, should do as they are told (Godfrey-Issac 2017). The paternalistic view is that health care practitioners know best (Davis 2000). Previously there was a lack of communication instead practitioners would tell patients their recommendation for care/ treatment. From a health professional’s view this way of practising could be perceived as being less time consuming. However it is known that within this practice philosophy and context, patients feel unable to ask questions and experience a lack of control and autonomy. It

is argued that this type of practice has no place in modern health care (Coulter 1999).

Women were told that hospital birth was the safest option, even though these claims have subsequently been shown to lack substance (HCHSC 1992).

During this time a poll found 98% of women said they were not offered choice of place of birth, but that 72% would have liked a choice (Savage 2009).

As chapter two goes on to discuss, and where similarities can be drawn to women and childbirth, many patients express disappointment about the lack of opportunity to participate in decisions about their care; whilst not every patient wants an active role, the majority do (Flynn et al. 2006). Although evidence suggests that those with lower levels of health literacy tend to defer to clinicians to make decisions, if given the appropriate support by a clinician, patients from all socioeconomic groups can engage with choices about their care (King et al. 2009). In fact, those from disadvantaged groups have the most to gain from choice. The government tackled this paternalism in health care and launched numerous campaigns that asked health professionals to engage with patients and for patients to be involved with decisions about their care (Department of Health DOH, 2009; DOH, 2010, NHS England, 2016).

Mold (2013) highlights how the move away from paternalism meant putting the patient at the heart of care. Changing this was based on two important developments; the first acknowledging patient autonomy and secondly, the evolution of consumerism in health care, both of which support one another.

Autonomy, which is discussed in chapter two, is the concept of an individual being able to make decisions this case about treatment or care. Autonomy is seen as being "*the central idea that patients could be thought of as consumers of health care*" (Mold 2013, p. 225).

Consumerism in health care is:

*"a political movement that promotes patients interests, joining with health professionals when they act in patients interests"*

(Williamson 1999, p. 151),

that seeks to redistribute power away from the paternalistic health setting where health professionals were seen to take control, instead giving the power to the patient through the concept of participatory health care. Smith et al. suggest that we are:

*“in the midst of one of the most rapid profound shifts in the history of medicine”*  
(2013, p. 20),

linking the change to individuals having access to more information, greater use of smart phones and access to networking via social media. This has led to a shift in dynamic and more patients having a say about their healthcare.

Consumerism brought consideration to the fact that patients have rights and their contribution can be valuable. However consumerism in health care has not always been championed; hostility to patients being seen as consumers is because healthcare is seen differently to shopping or other such markets, and this links back to health professionals being seen as ‘knowing best’. However, this thought is changing consumerism means that patients are not kept out of the loop in terms of making decisions regarding their health; gone are the days of patients being enrolled into research studies without both their knowledge and consent and along has come complaints procedures and the Health Service ombudsman (Mold 2015).

Consumers in health care are seen to have similar expectations to those consumers in other areas such as sales, and this is the delivery of expectations, making life easier and offering value (Hospital Health Network 2017). Significant advancement has been made in places such as the United States of America (USA) however this could be attributed to the fact that patients there are actually customers because in general they are more aware that they pay for their health care. It could be argued that British people pay taxes, some of which are used to fund the NHS, and this is why such pressure is being placed on leaders and the Government to deliver patient choice and move away from paternalistic care.

A significant shift in thinking has also been seen in maternity care regarding women’s choice; women are now scrutinising the passive technological birth that was brought about following the Peel Report as discussed above. The

National Childbirth Trust (NCT) was one of the first consumer groups representing women accessing care; women were framed as service users or consumers and this change in culture and viewpoint within the NHS made the government begin to have a key focus on choice. This was seen in reports that include *Changing Childbirth* (DOH, 1993), *Maternity Matters* (DOH 2007) and more recently in the *Better Births National Maternity Review* (NHS England 2016). *Changing Childbirth* recognised the need for women to be offered choice and that midwives should be at the forefront of normal pregnancies and births (Clews 2013). Maternity pressure groups lobbied for women to be fully informed and involved in the decision making process; furthermore the current Maternity Services Review (2016) suggests that women should have more access to unbiased information. This is the latest report in a long line of historic recommendations by those involved in the health sector to recognise that women are becoming more involved and asking for change with regards to choice of place of birth which will be discussed further in Chapter two.

Lagan et al. (2011) detected a growth in the number of women accessing information from sources other than their midwife or clinician. This may reflect individuals' attempts to become more autonomous in information gathering. A NCT review (2009) which explored women's experience of maternity services, including information on choice of birth location, found that 49% of women were dissatisfied with the amount of information they received about where to give birth. Without adequate information, women cannot make an autonomous choice; therefore there is a need to look for new ways to provide women with the information to support choice. One way to empower women and facilitate this information provision and support women's choice is the idea of Shared Decision Making.

#### **1.4 Shared decision making**

Shared Decision Making (SDM) is the notion that health professionals and patients come together to discuss the needs and overall wellbeing of patients in relation to their health, medical condition, treatment or care (NHS 2012). It can be defined as:

“Two way information giving (medical and personal) between the clinician and the patient concerning all the options available, and where the final decision is made jointly with both parties in total agreement”

(Jordan et al. 2002, p. 2).

Coulter and Collins (2011) identify that, although health professionals may have more knowledge, patients bring different but equally important knowledge. Barry and Edgman- Levitan (2012) suggest that SDM is vital to supporting patient-centred care and that clinicians and medical professionals should shift focus away from treating the disease/ illness which has always been the traditional way, to address the individual’s needs and experiences as a whole.

‘Treating the illness’ focused discussion is known as the biomedical model of health care with the patient passive and receptive while the physician is always the informer and leader of the discussion (Wade 2004). This is very similar to the paternalistic model whereby patients are assumed to have limited knowledge and therefore the experts in the field, those being health professionals, should take the lead (Redsell and Buck 2009). The same can be seen in maternity care; Porter and Macintyre’s seminal work identified that women have a tendency to accept the “status quo”. (1984, p. 1200). This was further supported by Bluff and Holloway (1994), whose research identified that women trust midwives and they are seen as experts who “know best”. This meant that historically women have given professionals the authority to make decisions on their behalf.

Moving on to better information sharing saw the information giving model (Kiger 2004) come into the health care system, whereby both the health professional and patient would share information, making a positive move away from the paternalistic model. However, in the information giving model the patient would then be left to make a decision on her own about the treatment or care and the model did not factor in the older population who very much relied on the input from the health professional. It also made the assumption that all individuals process information in the same way and can use this information to make a conscious and rational decision.

Neither of these models put the patient at the centre of the decision. Hence the creation of the more patient focused ‘Decision Making Model’ (Charles et al. 1997), the main concept of which is that both the health professional and patient work together to “build a consensus” ending in a mutual agreement.

This concept was supported by Jungerman and Fischer (2005) who believed that patients should be fully involved in decision making about treatment, or care options. The NICE guidelines (2012) quality statement suggests that all patients should be actively involved in decisions relating to their treatment or care and thus the SDM model was created. The SDM model is conceptually seen as the middle ground between the traditional paternalistic model and informed choice model (Chong et al. 2013).

With service users expecting greater involvement in choice, the Government white paper *Equality and Excellence* discussed how liberating the NHS should involve promoting the slogan “no choice about me without me” (DOH 2010).

This was pushing for a shared discussion to become the norm of practice, something that had previously been considered to be a luxury and offered on a ‘postcode lottery’ based on who and where you were cared for; it stressed the need for professionals to be putting patients first. Coulter and Collins (2011) believed that SDM should be viewed as an ethical imperative by professional regulatory bodies with clinicians supporting patients to make decisions in partnership and involving them whenever possible; order to enable active management of care for patients and better outcomes.

More recently the Health Foundations (2017) *Making Good Decisions in Collaboration (MAGIC)* program looked at how to create best practice in relation to SDM. The program’s two phases ran from August 2010 to October 2013 where it worked with frontline health care professionals in numerous clinical settings on different ways that SDM was learnt and then encouraged its spread across the caring community. Initially the programme began in Cardiff and Newcastle with areas that included prostate drugs, breast cancer choice between mastectomy and breast conserving surgery, neck cancer, antibiotic prescribing and in an obstetric unit with the choice relating to repeat caesarean section. This programme sought to promote different ways of increasing SDM and implementing the concept within the NHS (Elwyn et al. 2010).

The government has clearly shown commitment to giving patients greater choice and control of their healthcare with the very constitution of the NHS stating that: "the NHS belongs to the people" (DOH, 2015, p 12.), and White Papers and their "choice framework" (DOH 2016) providing an outline of what choices people have.

It is clear that there are positive associations between SDM and adherence to both treatment and medication (Nunes et al. 2009). There is also favourable evidence towards SDM in other areas, including mental health (Chong et al. 2013). This association stems from patients wanting more information (Coulter and Collins 2011), for clinicians to listen as well as explain (Coulter and Magee 2003) and to be treated as a whole person (Ridd et al. 2009). Overall SDM is seen as the joint and collaborative discussion between health care professionals and patients, coming to a mutual decision; the outcome being a positive improvement to care. However, the literature shows that although progress has been made through the generations, with an increase of 56% of physicians using SDM (Health Foundation 2016), there is still room for improvement. The concept of SDM is critically evaluated on p. 69 of the thesis.

#### **1.4.1 Shared decision making in midwifery**

Tupara (2008) encourages the use of SDM in midwifery and it has become a core issue for midwifery practice, supported by the NICE guidelines (2012) quality statement that suggests that patients should be actively involved in decisions relating to their treatment or care. When patients are involved in the discussion, the most appropriate decision based on their needs can be made. Health professionals and women accessing health care are increasingly recognising the great importance placed on SDM within pregnancy and it is suggested that women are now seeking more involvement in choices regarding their care (Stevens and Miller 2012).

SDM in midwifery is seen as a partnership between the midwife and the woman and relies heavily on good communication between the two. This relationship and information exchange is seen as one of the most unique relationships and different to that of a doctor / patient relationship because of the deep and meaningful bond that is made, sometimes in short periods of time.

Ideally the midwife should provide information about treatment or care options and discuss them equally. They would then help the woman decide which option she wants to go with, based on personal preference, her views / desires and with an understanding of outcomes / consequences (Jordan, et al. 2002). This discussion should be supported with evidence based information (Coulter, et al. 1999) and this should be represented to a good level that can be understood and taken in by the woman. The options should be discussed and a mutual decision should be reached by the woman and the midwife.

Health professionals should see women as individuals and thus the shared discussion should factor into individualised care (Tupara 2008). Options that are favoured by some women may be the complete opposite to the beliefs of others and thus understanding a decision maker's weighting for individual values and preferences is important (Hibbard and Peters 2003).

When brought together, SDM in health care and midwifery is associated with compliance to treatment and care and greater satisfaction of patients / women (Bryant et al. 2013). One must then question how professionals can facilitate a shared discussion.

Technology offers clinicians the opportunity to develop new approaches to tackling the challenge of SDM. (King et al. 2009). Examples include mobile applications (Apps) for health conditions which have been known to engage patients in either treatment or intervention (Buhi et al. 2013; Nundy et al. 2014). There are a broad range of apps in midwifery; apps to allow women to track their pregnancy and learn about baby's development are being used more widely and women wanting more information are capable of seeking it from modern technology or online media platforms such as Facebook and online support groups such as Netmum (Sinclair 2012).

With technological growth in everyday health care and midwifery, health professionals are increasingly using apps to support clinical decision making (Olff 2015). However uptake of the technology remains dependant on feasibility, acceptability and ease of use (Fitzgerald and McClelland 2017) with some being more effective than others in creating change. The key from this discussion however, is that generally patients want to be involved in decisions about their care, while health professionals are attempting to find ways in which their

discussions with patients can be improved. The National Maternity Review (2016) called for information to be made available to women in more interactive formats; one such way is the use of Decision Support Tools.

### **1.5 Decision Support Tools and the creation of MyBirthplace**

Decision Support Tools (DST) are defined as:

“interventions to help people think about choices they face, they describe where and why choice exists; they provide information about options”

(Elywn et al. 2010 pg 4).

DSTs can take numerous formats, from simple one page sheets outlining choices, to computer programmes, Digital Versatile Disk (DVDs), interactive websites or apps (Coulter and Collins 2011). Coulter and Collins (2011) believe that if patients are to play a role in the decision making process, the key is to have clear and comprehensive information about the topic, treatment or condition. It is conclusive that this must be based on reliable research evidence and provide an unbiased view of the outcomes, pros and cons and this can be:

“prescribed to patients to review and absorb at home, before returning to discuss their preference”

(Coulter and Collins 2011, p. 4).

DSTs are becoming more widely used in health care settings which will be discussed in Chapter four. It is clear that times and information technology are changing and midwifery is following suit.

This led to the creation of MyBirthplace. MyBirthplace is an interactive DST that provides information and statistics about the local options available to women as well as national data on what is known about birth in different facilities. Originating in a large urban hospital in the South of England, the context for the development of the app was that the Director of Midwifery felt that too few women were receiving their choice of place of birth and that the caesarean section rate needed tackling (Walton, 2014).

The app was developed by the Director of Midwifery at the creating NHS Trust in response to a rising caesarean section rate and a lack of women birthing in

the available free standing midwifery led units, the alongside midwifery led unit and at home (NICE 2014). Furthermore she felt that birth place information can be very confusing for women and that MyBirthplace would provide women with the information in a simple format so that their choice could be truly theirs. Further details are provided in Chapter 4.

With the development of MyBirthplace and greater emphasis on involving women in decision making and choice in relation to birth place, it is important to identify whether DSTs have a place in the provision of information and whether they are effective in supporting a decision. This thesis evaluates the effectiveness of one such DST MyBirthplace, to support women's decision making and the role it has in SDM with the midwife.

## **1.6 Research objectives**

### **1.6.1 Primary aim**

The following aims were developed from the findings of the literature review (See Chapter 3). The primary aim of the study was to identify how effective the DST is in helping women to make a decision about place of birth.

### **1.6.2 Secondary aims**

The secondary aims of this research were to:

1. identify when women make a decision about place of birth
2. explore women's information gathering and decision making behaviours during pregnancy
3. understand women's views and opinions about using the DST
4. explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion
5. explore their feelings about how well the DST supported them to make a decision
6. explore women's views around its usefulness

## **1.7 Outline of this thesis**

The thesis begins with the background to birth place choice further developing the history and cultural context already mentioned above (Chapter 2). The chapter discusses options that should be available to women when choosing their birth place. It raises ways to involve women in SDM and introduces DSTs as a potential way of making SDM feasible. This then develops into the literature review looking at DST use in both health care and midwifery (Chapter 3) and sets the context of why the specific DST, MyBirthplace, was created. Chapter 4 introduces MyBirthplace and provides details about its development and specifically identifies the content within the app.

The thesis moves on to identify the study design chosen and the approach taken to collect the data. It is broken into two distinct sections; the quantitative phases and the qualitative phase (Chapter 5). The study's quantitative findings are presented (Chapter 6) followed by the qualitative findings that emerged from women's interviews (Chapter 7). The thesis advances to discuss both the qualitative and quantitative findings and how this study's results fit within the evidence already available (Chapter 8), before discussing the contributions to the field of both DSTs and midwifery and bringing the thesis to its conclusion (Chapter 9).

# Chapter 2 Birthplace choice: The social and cultural context that led to the creation of MyBirthplace

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## 2.1 Introduction

This chapter begins by introducing the background literature on choice, by discussing the difference between a choice and a decision (2.2) and decision making in general (2.3). Following this it looks at the impact of choice within health care (2.4) and focuses on midwifery within the specific context of place of birth (2.5). It provides an overview of current birth place options (2.6) whilst linking to both internal and external influences that may affect choice (2.7) highlighting how we can facilitate informed decisions (2.8). By the end of this chapter the reader will have a greater level of understanding as to why choice of birth place is so important and how changes in discussion about birth place choice, and the influences over women's decision making, has led to the use of decision support tools.

## 2.2 Choice or decision making?

A choice can be defined as:

"the outcome of a process which involves assessment and judgement; that is the evaluation of different options and making a decision about which options to choose"

(Beresford and Sloper 2008, p. 2).

How an individual makes a choice depends on the situation that they are in at the time and the information available to support that choice. As such, an informed choice can be argued to be a process by which an individual chooses options based on accurate information and knowledge. These options are developed by a partnership consisting of; in this case midwife and woman, that will empower women to make decisions (Jepson et al. 2005).

A choice ultimately leads to a decision. Choices are made every day and anyone can make a choice. It is the rationale and reasoning behind the choice that makes it a decision.

A decision is;

“One where a reasoned choice is made by a reasonable individual using relevant information about the advantages and disadvantages of all the possible courses of action, in accord with the individual’s beliefs”

(Jepson et al. 2005, p.6).

Whilst this thesis looks at choice of place of birth in theory, ultimately what needs to be considered is how a woman makes a decision about where she will give birth. Therefore, in the next section choice and decision will be grouped under the umbrella heading ‘decisions’.

### **2.3 Decision making in general**

In everyday life making a decision is down to the individual, weighing up the risks and benefits of the decision and ultimately making the best one for themyou (Palma et al. 2008). Sometimes the individual will decide based on the information that is presented, taking it at face value.

In contextual terms, consider choosing between different bands of chocolate bar. This may be a simple decision when taken at face value. The decision may be immediate; based on what you like and what you would prefer at that time. This may not be a situation where you need alternative information or even consider that you need to make a decision.

However, making a decision is not always simple and can factor in others areas that need to be considered. In terms of the chocolate bar, if the person is diabetic they must consider the implications; this now becomes a more complex decision as it holds more value and consequences for a poor decision. This is a value standard decision (Hansson 1994), where alternative information may be needed; consideration is given to both the positives and negatives of making that decision. A phrase used when making a value decision would be chocolate bar A is ‘better than’ or ‘worse than’ chocolate bar B.

What initially may have been a simple choice becomes a decision that will need to be both reasoned and rational. Rational thinking and reason will be different

for every individual, as potentially the outcome will be. Sometimes seen as normative decisions, these are by no means the only or even the most important decisions, however they arise when a foundation of ethical and political knowledge around decisions is already established (Hansson 1994). For example, a rational decision for chocolate bar A over B is that it is the cheapest and therefore most reasonable if the buyer has limited funds.

Furthermore, a concept to consider is transitivity; this is in general terms a preference (Voorhoeve and Binmore 2006). In decision making preference relations are used to find the best alternative, for example wanting a chocolate bar and being diabetic, the best alternative could potentially be a sugar free bar or a healthy alternative option.

More serious decisions such as choice of treatment often involve trading off costs and benefits, certainty or risk and the now versus the future (Palma et al 2008). In an ideal situation all choices in life will be a well-informed ones; however this is not always the case and thus poor decisions are made.

Another key concept is outcomes and states of nature; these are factors outside of the decision maker's control, also known as external factors (Hansson 1994). This is important because when considering choice in relation to maternity and place of birth, external factors play a key role in decision making. A decision about one facility over another has many external factors to consider. One such factor that can impact on a decision is autonomy.

Autonomy quite literally means "regulation by self", the idea that a decision is made by determining how this would impact on oneself (Ryan and Deci 2006). This view is supported in early literature by Cote and Levine (1987) who argued that one's ego played a significant role in the decision. The ego's role is making sure the decision maker feels safe and secure by playing the subconscious protector; it is linked to basic survival, recognition, validation and self-esteem (Cote and Levine 1987). One may decide not to pick a chocolate bar because of the recognition that they have not taken their medication or alternatively they know it will affect their diet, thus ultimately their self-esteem.

Schwartz (2005) felt that the act of autonomy was an endorsement by self, but incorporates values and interests. Decisions that incorporate values and interests are considered to be those decisions which:

“enable each person to pursue precisely those objects and activities that best satisfy his or her own preferences within the limits of their own resources”

(Schwartz 2005, p. 272).

Both internal and external motivators play a role in decision making. Glasser (1984) explains that decision theory is the belief that individuals are internally and externally motivated; what drives people to choose is the notion of what is important and satisfying to us.

Limits may be decided by the individual; for example, their values may mean that an individual chooses one instead of two chocolate bars. Morality can also be a factor in an individual’s choice; for example, the decision to steal or pay for the chocolate bar.

Each decision, Schwartz (2005) considers, is a testimony to their autonomy; however he also recognises that some choices can influence one’s autonomy. In the light of the example given above of whether to steal or not, potentially one’s autonomy could be affected not only by one’s self and her morality but also by the choice of others. That is, if this individual has grown up with adults that steal and have no regard for consequences, it is more likely that this will impact on the morality of that individual.

The basis of all decision making theory is the concept of the decision either being normative or descriptive (Bell et al. 1988). Descriptive decision making is concerned with “how and why people think and act the way they do” (Bell et al., 1988 p.16).

Whereas normative decision making considers how people *should* behave when they are confronting risky decisions, in effect assessing how rational and well thought out a decision is before it is made (Over2004). This is particularly pertinent to childbirth where society offers a paternalistic and often judgemental view of the decisions made by pregnant women. Risk as defined by medical

experts often influences what a ‘responsible’ decision should be; a mother choosing a different option to that suggested by the health professional, ultimately questioning or ignoring the risks identified, is labelled a bad mother (Snowden et al. 2011). Furthermore Snowden et al.’s study highlights that experts’ accounts are disguised as informed choice and often fail to challenge the dominant discourse. To some extent the ‘status quo’ belief system persists this is the idea that a healthy baby trumps all and the end justifies the means” (2011, p. 40).

The term rational appears when making a decision. As previously mentioned, within health an individual can only make a decision if that person is deemed mentally capable of the decision. In terms of the theory, the way an individual approaches a decision comes under the decision making model.

There is a rational decision, presented by the rational model (Holyoak and Morrison 2013) which can be broken down to;

1. identify the value and objectives
2. analyse all possible alternatives for achieving objectives
3. research and select information based on the efficiency or effectiveness of alternatives
4. make a comparison between alternatives based on their consequences
5. choosing the alternative that maximizes the values and objectives
6. implementation
7. feedback

The process of making a rational decision favours logic and analysis over objectivity and insight (Leoveanu 2013). It assumes that an individual will make a choice that increases benefits and reduces risks. A rational choice can only be made with full knowledge and information surrounding it. It does not consider factors that:

“cannot be quantified such as ethical concerns, personal feelings, loyalties or obligations”

(Leoveanu 2013, p. 43).

This is seen a lot more regularly in health care, especially when decisions are made by health care professionals. However there are reasonable thoughts around using intuition in decision making which is when thoughts and “gut feelings” are used (Lamond and Thompson 2000). Intuition is also seen in all health professionals to some extent but is related more readily to the more experienced practitioner (Benner 2000).

In summary decision making is a process that involves a significant amount of contemplation and is affected by a number of factors. It is beyond the scope of this thesis to look in-depth at the theory around decision making; however these concepts all influence how an individual makes a decision and that is important to understand. The next section of this chapter looks at how these concepts apply to health and then more specifically to midwifery.

## **2.4 Decision making in relation to health care**

The National Health Service (NHS) came about at a time when innovation, new technologies and drugs were emerging (Rivett 2016). However, treatment was based on improving lives and reducing infectious diseases, not choice and patient involvement with decision making. This came from the founding of Margaret Thatcher’s government (Rivett 2016); in its infancy it was the idea that patients would have the right to choose their general practitioner (GP), have a choice of services and the option to seek treatment privately. This basic level of involvement evolved into practice and protections in the form of specific legal frameworks, including the Mental Health Act (1983), which were introduced to restrict the extent to which health professionals could treat patients without their consent. A number of professional bodies, such as the General Medical Council (GMC) introduced good practice guidelines (1985), as did the Nursing and Midwifery Council (NMC) (2004)

The (GMC) *Good Medical Practice Guidelines* (1995) highlighted the professionalism required from their doctors. One such requirement is that they not only listen and respect patients, but respect their rights to be fully involved in decisions about their care. They discuss at length about how doctors should provide informed consent:

1. listen to patients and respect their views about their health

2. discuss with patients what their diagnosis, prognosis, treatment and care involve
3. share with patients the information they want or need in order to make decisions
4. maximise patients' opportunities, and their ability, to make decisions for themselves
5. respect patients' decisions.

(GMC 2008, p. 6)

Despite government and professional recommendations for greater patient involvement, there continued to be variation in clinical practice and abuses of power in that poor care was overlooked. This led to the NHS redesigning care (DOH 2000); the NHS Plan developed a ten-year strategy in which patient centred care and personalised care would become standard.

The key aim of the NHS plan of patient centred care was not recognised in some hospitals and a number of adverse events resulted in high profile public enquiries. One such report included the Francis inquiry (Francis 2013). This report highlighted numerous failings; where patients were not heard or listened to and hospital had inadequate processes to deal with complaints (Francis 2013).

In an attempt to learn from such reports and ambitions for patients to be at the centre of care the government published the NHS five year forward view (NHS England 2014). This set out a “*New Shared Vision*” whereby the patients would be involved in service change and gain “far greater control of their own care” (NHS England 2014, p. 4). This was a key move away from a ‘one size fits all’ model to one that is tailor-made to meet individual needs.

What is clear from the numerous government reports, White Papers and public enquiries is that although patient choice and control is the main priority there is still a drive for quality patient care. There will always be a minority of cases where those priorities and policies fail patients (Foot et al. 2014) but it is an important responsibility for all involved in the provision of health care to protect patients. This is reflected in the *NHS Act* (2006) which brought in regulations

that state it was each health authority's duty to involve users in their care. (Chapter 2, Section 242A).

Personalised patient care makes a patient's individual needs and preferences imperative; as with decisions made in everyday life - decisions in health care are part and parcel of everyday practice and discussion should be had before any treatment is given to a patient. It is acknowledged by many that health professionals are the main participants in supporting patient choice from "the cradle to the grave" (Jepson et al. 2005, p. 92).

## **2.5 History of government/ policy documents in relation to women's choice in midwifery context**

A review of Government papers (House of Commons 2003; DOH 2010) indicates a repeated failure to honour promises of greater choice and involvement in decision making for women over the years.

One could suggest that the change came as early as the 1950s. As history shows prior to the 1950s the majority of births happened at home. In a public paper midwife Mary Cronk said "as long as they had a home with warmth and running water we could deliver a baby at home" (Haywood 2012). However, with the revolution that was the NHS came a cascade of changes including review of maternal health care in 1956 following the Guillebod inquiry and the review by the Earle of Cranbrook in the Cranbrook report; a target of 70 % of all births to take place in hospital was set (Ministry of Health 1958).

These changes could be attributed to the new obstetric knowledge and methods gained from the NHS being established. Others have argued that power was also at play. Doctors were seen as superior to midwives and wanting greater control over birthing women; there was a lack of consultation of what women wanted and in that short time birth did a complete turn; from being human and natural to medical and unsafe (Davis 2013). Missing in this discussion was the involvement of women and their preferences.

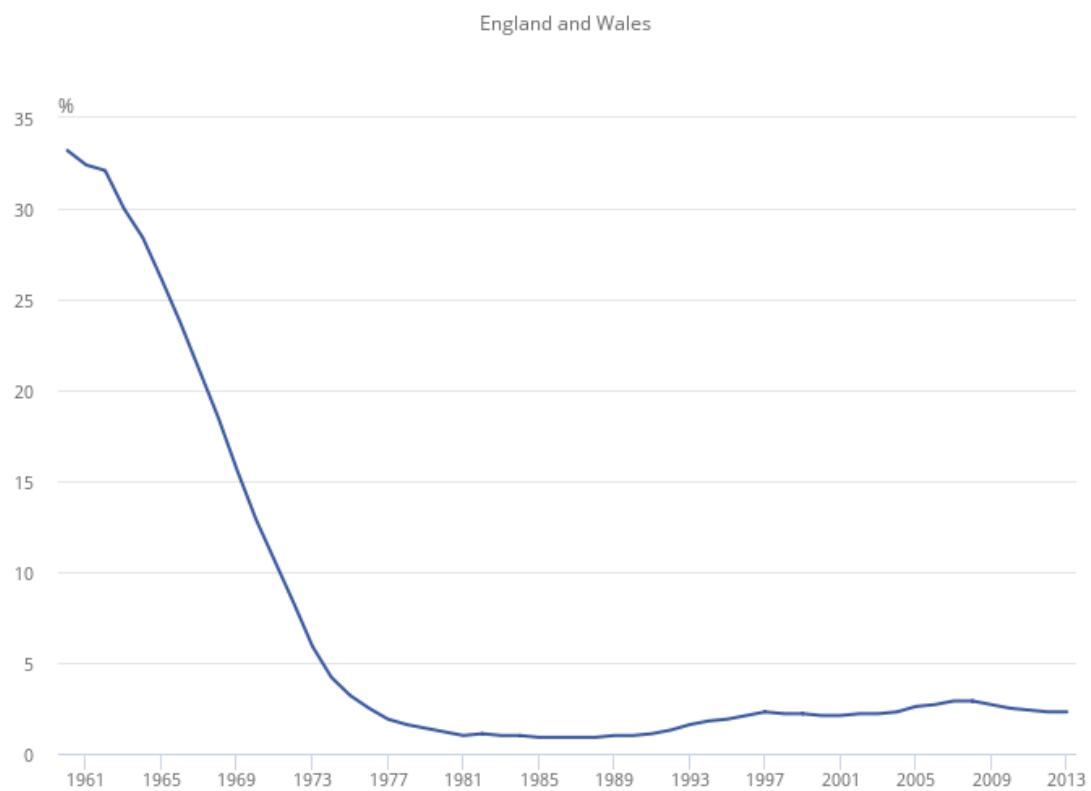
Due to this dramatic change from home to hospital and only 30% of births being within the community the Maternity and Midwifery Advisory Committee was brought in to assess the future of the maternity services and this resulted in the Peel Report (Davis 2013).

The Peel Report (1967) resulted in a dramatic shift from home to hospital as the recommendation was for 100% of births to be hospital confinements, as this was believed to be the “safest”. Subsequent research has criticised the policy for lack of evidence and consultation of what women wanted, but the result was that the rate of hospital births rose from 68.2% in 1963 to 91.4% in 1972 (Davis 2013). These changes were not without their challengers and it was these challengers that created childbirth advocates; specifically organisations including National Childbirth Trust (NCT) and the Association for Improvement in the Maternity Services (AIMS).

It was pressure from these groups and growing public campaigns that slowly but surely gained a political response and in 1980 the Maternity Services Advisory Committee was created. Although a step in the right direction for the organisations and the rights of women, health professionals continued to view birth as a medical risk and between 1985 and 1988 the lowest homebirth rate of 0.9% was seen in the UK (Office for National Statistics (ONS) 2014)

Figure 1 is taken from the data provided by the ONS and represents the decline in homebirth rates between 1960 and 2013

**Figure 1: Home birth rates between 1960 and 2013**



Source: Office for National Statistics

By the 1990s choice of birth was back on the political agenda and the pressure from groups, such as AIMS, resulted in the Changing Childbirth report (DOH 1993). This report highlighted that using “safety” as a reason to remove choice and cause a woman to have unwanted and unnecessary intervention would be criticised.

With the publication of the Changing Childbirth report in 1993 came a degree of optimism that choice and control over where to give birth would become part of everyday practice (Madi and Crow 2003). However, even with government backing, women were not receiving basic information about childbirth options (Davies et al. 1996), let alone being involved with the choices available to them (Hundley et al. 2000; Hadjigeorgiou et al. 2010). Also the current home birth rate remains the same since 2012 at 2.3% (ONS 2016).

Stewart et al.'s (2004) review recognised that although maternity services became more centred on individuals following Changing Childbirth, the lack of choice being offered to women was a persistent issue. In a survey of 2300 UK women Lavender and Chapple (2005) found there was little knowledge or understanding of birthplace choices and in fact 50% were not offered a choice.

The study highlighted the main barriers to choice of birth place being staff shortages, lack of experience and lack of valid information.

In 2007, the DOH White Paper '*Maternity Matters*' promised four national choice guarantees:

- Choice of how to access maternity care;
- Choice of type of antenatal care;
- Choice of place of birth;
- Choice of postnatal care.

(DOH 2007, p.12)

*Maternity Matters* (DOH 2007) stated that by 2009 women, depending on their circumstances, had the right to choose where they give birth and that this choice should be supported. The same year an NCT (2009) study showed that 95% of women did not feel that they had access to real choice regarding place of birth and only 51% felt they had received sufficient information to make a decision.

*Midwifery 2020* highlighted the need to provide a social model of midwifery care that was focused on the needs of the women rather than the organisation, thus providing women centred care. It also suggested that choice of birth place should take into account women's needs, beliefs, risks and outcomes (DOH 2010).

It is clear that maternity care and provisions changed exponentially after the introduction of the NHS and with the move away from home birth to medical care, consultant led units and birth within the hospital. The majority of papers and government literature acknowledge a lack of information and lack of choice as an area of concern and made recommendations to indicate that care givers should be providing women with both. What remains evident is that there is still

room for improvement to empower women to have choice. The next section will set the context to identify the current provisions that women have as choices.

## 2.6 Current birth place options

Birth place choice is a topic in midwifery that is constantly under the research spotlight (RCM 2011) and the information collected is ever evolving. Birth place choice refers to the options available to women when deciding where to birth their baby (Dodwell 2009). In theory, in the UK the NHS provides midwifery care to the pregnant population in a manner that is tailored to individual needs. Each hospital (subject to availability) should have alternative birth place options available for women. At present in the UK 38.2% of women give birth within an obstetric unit (OU) / consultant led unit (NHSDigital 2015), which is:

“A unit in which care is provided by a team, with obstetricians taking primary professional responsibility for women at high risk of complications during labour and birth. Midwives offer care to all women in these units, whether or not they are considered at high or low risk, and take primary responsibility for women with straightforward pregnancies during labour and birth. Diagnostic, treatment and medical services, including obstetric, neonatal and anaesthetic care are available on site”  
(Public Health England 2016, p. 1),

A further 29.2% of women give birth within the OU in a co-located unit without differentiation (NHS Digital 2015).

The majority of these units are based in the main hospital for that geographical area and are located within close vicinity to both neonatal and anaesthetic teams. In emergency situations all teams would be called to provide care to ensure the safety and wellbeing of both mother and baby.

McCourt et al.’s (2011) study looking at the maternity facilities in the UK in 2007 it showed that 66% of cities had consultant led units only. The other 34% provided the choice of both OU and AMU. Now two thirds of British OUs are co-located with an AMU county wise this is 68% in England, 38% in Scotland and 100% in Wales. The number of OUs overall has decreased by 13%, whereas the number of midwifery led units (some of which have opened and closed) has increased by 13% (RCOG 2017). It is acknowledged that it is unrealistic to offer

all the options in all geographical settings. Currently 77% of NHS Trusts offer home birth and at least one FMU and an OU. However 19% of areas do not have any FMU's and 3% do not have an OU (Care Quality Commission 2013).

Ideally there should be options available to women when it comes to deciding where to give birth. Alternatives to the main OU include giving birth at home, in an FMU, or in an AMU (Barber et al. 2006).

An FMU is classed as a unit that is separate from the main maternity hospital and care is provided by midwives (Coxon et al. 2014). These are sometimes also called "birth centres" and are normally only for women that are classed as being at low obstetric risk, that is being less likely to develop pregnancy or obstetric related complications. In 2011 around 12000 women had their baby in FMUs across England representing about 2% of all births (Coxon et al. 2014). This is a lower cost alternative to birth in hospital although home birth remains the most cost effective; FMU costs around £1,435 compared to £1631 for hospital even when costing for a transfer (Birthplace in England Collaborative Group 2011; NICE 2014; Coxon et al. 2014).

Transfer rates for a planned FMU are currently 1 in 5, with primiparous women more likely to transfer than multiparous women (Birthplace in England Collaborative Group 2011). Some possible transfer examples include, a delay in the first or second stage of labour, fetal distress or pain relief (Birthplace in England Collaborative Group 2011)

An AMU is a midwifery unit that is co-located, normally in the same facility as the OU or next to the OU (Tanday 2014). An advantage is that it provides a similar environment as an FMU or homebirth; that is one that is less obstetric looking and more homely and inviting. Normally midwives run the AMU.

However the main advantage is the transfer of women from the AMU is less time costly because of the proximity; it also means that obstetricians and the neonatal team are available in an emergency. For women who are at slightly higher obstetric risk and who want to birth in a low risk setting, the AMU provides a compromise between a friendlier environment whilst being close to obstetric care.

A home birth is defined as “giving birth to a baby in your home or place of residence” (Dekker 2012). These births represent just 2.3% of women who choose home birth in the UK (NHS 2017), although 40% of home births may be unplanned (RCOG 2007). Also termed as babies Born before Arrival (BBA), In such cases labour is usually quick and birth happens before a midwife or emergency personnel can attend (Dekker 2012).

It is believed that if women had true informed choice the rate of birth at home would be around 8-10% (RCOG 2007). Home birth should be offered to all low risk women, however the homebirth rates are lower than desirable, with the RCM aiming to increase the rate to 10% by 2020 (RCM 2014).

One suggestion could be that the publication of the ‘Peel Report’ took away women’s choice, induced fear and made the birth process turn from normal to high-risk and thus women were unaware that they had control of their options. Such conclusions were drawn by Tew (1986) who argued that the Peel Report’s claims that hospital birth over home birth significantly reduced mortality rates were inherently untrue. Instead Tew (1986) made the link between health status and risk factors, showing that women who had a better standard of living, quality diet and shelter were statistically less likely to die than those that are of poor health (Tew 1986). Others have suggested that women’s choices are not being facilitated due to staff shortages (RCM 2014) or safety levels of the unit, midwives not feeling able to facilitate home birth or women concerned with safety. This will be discussed in depth a little later in the chapter.

It could be argued that the reduction in home birth may be due to the medicalisation of childbirth and the move to technologies and equipment. Van Teijlingen (2005) highlights the misuse of the medical model, arguing that childbirth in general “straddles the boundary between illness and health” and deciding if the woman should be treated as ill or well often legitimatises intervention and control. It is accepted in today’s society that pregnancy is not a disease or illness, but is a state of being that does not necessitate treatment.

Alternatively the reduction in home birth could be viewed as reflecting the rising co-morbidities of women in England; for example, obesity and diabetes rates are increasing (Public Health England 2014). With rising morbidities it is clear

that these would have an impact on treatment and thus it is understandable that this has a further implication on organisation of maternity care including the place of birth and preferred birth attendant.

A qualitative study commissioned by the RCM (Houghton 2008) found that choice of birth place was important to both women and professionals. However, both groups seemed to assume that birth would take place in a hospital setting, because it was presumed safer. The report highlighted the need for accurate information and attempts to address these misconceptions to truly engage women in a birth place discussion.

Home birth emerged again in 2010 as an issue of contention following the study by Wax et al. (2010) when safety was again brought into question. Wax et al. (2010) concluded their systematic review of the literature by stating that there was an association between planned home birth and the rate of neonatal mortality. Despite the weaknesses in the methodology of the meta-analysis considerable public impact was gained.

Further adverse publicity regarding “normal birth” can be seen following the publication of the Kirkup Report (2015), which found failings in the care by midwives and the maternity unit, part of Morecambe Bay NHS Foundation Trust, that led to the deaths of eleven babies and one mother. The report stated that some midwives were seen to contribute to unsafe deliveries due to their desire to see the women give birth without medical intervention “at any cost” (Kirkup 2015, p. 7). Factors that contributed to this were failures to risk assess and inappropriate care planning that led to unsafe care.

It is accepted that in certain circumstances home birth may not be medically advisable and health professionals may recommend against such choices to ensure the safe delivery of care to mother and baby. Women should, however, still be provided with all the information in order that they can make an informed choice.

The NICE guidance on intrapartum care (2017) advises that women should be offered the choice of planning birth at home, midwife led unit or an OU.

Midwife appointments are when a shared discussion should take place, coming to a mutually beneficial decision (NICE 2017); not just accepting low risk women

birthing in an obstetric, high risk environment. With nearly two thirds (61.7%) of hospital births being normal spontaneous deliveries in 2013 (Health and social care information centre 2013), one might question how many of those women birthing in the hospital needed to be there and how many were given a choice. Not only should there be support for informed choice and taking into account women centred care but women should be informed of the safety of the alternative options. Hollowell et al. (2011) highlight that planned births in FMUs and AMUs show no significant difference in adverse perinatal outcomes compared with planned births in an OU. This is reflected in the newly published NICE (2017) guidelines that recommend home birth and birth in midwife-led units as safer than hospital care for women having a straightforward, low risk, pregnancy.

However, both in England and in Scotland the majority of women are still giving birth in hospital settings. In a study commissioned by the Scottish government (Scottish Government 2014) it was found that the majority of women gave birth in an OU, with only 3% giving birth in a community midwife led unit and a further 1% at home.

What we know is that birth outside of the OU for low risk women reduces the rates of intervention and complications associated (Hollowell et al. 2011); however, hospital birth continues to be the dominant place of birth and women seek more information about their options.

In summary, the literature indicates that women want more information about their birth options and that although the government are trying to implement informed choice, women still feel that this is not happening. In order to identify underlying reasons for this we need to explore how information is affected by both internal and external influences (Dodwell 2009). it is not always a lack of information that causes women to choose high risk care over home birth.

## **2.7 Factors that influence birth place choice**

As already identified there is a unique complexity involved in decision making in childbirth. It is not as simple as the doctor patient interaction as described above, because decisions involve more than one person. Noseworthy et al. (2013) feel current ideas of autonomy and decision making within the midwife-

woman relationship do not fit because of the complex social, cultural and uncertainty that birth represents. Findings from their research suggest that women and their midwives develop expectations from each other based on desires, understanding and recognition of social and cultural influences that facilitate a decision. This suggests a dynamic process and a relationship based on factors that influence women. It is important to establish factors that women consider when making decisions and when ultimately choosing where they give birth.

### **2.7.1 Fear**

One internal influence on place of birth seen in much of the literature is women's fear. Fear is defined as:

“An unpleasant emotion caused by the threat of danger, pain, or harm”  
(Oxford Dictionary 2015, p.1).

This emotion causes a normal physiological reaction known as the ‘fight or flight response’ (Berczi, 2017) to deal with the problem; once the fear stimulus is removed, the individual returns to her normal state (Schaefer et al 2014). The issues start when a normal response to a dangerous stimulus becomes a pathological fear and the individual is without the relevant coping or behavioural strategies, which can result in changes in physical and/ or emotional wellbeing (Steimer 2002). In the average person repeated pathological fear and anxiety can lead to stressors that not only impact individuals mentally, but are also linked to the exacerbation of illness such as high blood pressure, depression, sickness or diarrhoea (Kaplan et al. 2013).

In terms of choosing where to give birth, this fear can overrule the evidence and women state the need to feel safe, choosing hospital over FMU, AMU and home birth. The need to ensure the safety of the baby is a paramount consideration for most women (Rennie et al. 1998). A further discussion of safety will follow.

Pregnancy and childbirth is a time of many emotions due to the hormonal changes that come with being pregnant (NCT 2012) and individuals will react differently depending on their emotional circumstances at the time. This will

influence how pregnancy is experienced, with some women experiencing happiness whilst others will experience anxiety and fear. Research by Rennie et al. (1998) found that women's priorities for intrapartum care are complex and their priorities can change depending on the time when they are asked.

It is considered that fear is the most common emotion formed during pregnancy (Melender 2002). This manifestation is most often seen in a concern for the unborn baby's wellbeing, however screening concerns, fear of pain and the unknown may also arise (Melender 2002).

Fear is common in pregnancy with women worrying about pain, safety of baby and the upcoming delivery. However in a small number of pregnancies this fear affects the women so adversely that they develop secondary morbidities such as anxiety or insomnia that may be classed as 'tocophobia'. This term specifically relates to the fear felt when considering childbirth, labour and pain (NCT 2012). O'Connell et al. (2015) class tocophobia as more than a simple fear, defining it as:

"A severe anxiety disorder characterised by an extreme, irrational fear of childbirth, which provokes a physiological response."

(O'Connell et al. 2015, p. 175).

Tocophobia can affect both primiparous and multiparous women, for differing reasons. Nulliparous women are believed to develop tocophobia in childhood or adolescence because of past sexual abuse or as a result of hearing stories of traumatic birth from family and friends or seeing birth videos as a child (O'Connell et al. 2015). In contrast, multiparous women more often develop tocophobia from past traumatic pregnancies or births, for example having a caesarean section, stillbirth or birth trauma (O'Connell et al. 2015).

Stress causes problems for individuals if experienced over long periods and there is evidence that stress during pregnancy can be just as harmful (Sable and Wilkinson 2000; Dole et al. 2003; Talge et al. 2007). Dole et al. (2003) identified that women who experience what they class as a negative life event / stress at 24 and 29 weeks were more likely to have a preterm birth. The negative effects of stress may also impact the baby. Talge et al. (2007) identified that babies of stressed mothers were more likely to have emotional

and cognitive delays in early childhood. A case control study of 2378 mothers in America looked at their perceived stress and its effect on having babies with a low birth weight (Sable and Wilkinson 2000). The study identified that mothers who stated they “almost always feel stress” were one and one half times more likely to have a very low birth weight baby. They found specific stressors increased the odds; these were getting back with a partner or husband (1.7), pregnancy denial (1.4-1.6), major injury/ accident/illness (1.3) and unhappiness about the pregnancy (1.3).

With the number of women experiencing tocophobia now being better reported; the current rate suggested is between 6-10% (Wiklund et al. 2008). The concern may be that these women might opt for a caesarean section or birth on OU because of their fear. NICE (2017) intrapartum care guidelines allow women with severe birth related anxiety, such as tocophobia, to request a caesarean section only after they have had a discussion regarding benefits and risk and only after a referral and discussion with a health professional with expertise in providing perinatal mental health support to address this anxiety. This decision is sometimes pre-set in women’s minds prior to seeing a midwife and careful consideration needs to be given to how this discussion is then handled. As requests for caesarean section have increased, so has the rise in specialised clinics.

These clinics were created to support women that have had a previous caesarean section and women that are requesting a caesarean section. Vaginal birth after caesarean section (VBAC) clinics suggest that VBAC is a safe alternative to repeat caesarean, and are considered to be a key way of reducing the overall caesarean rates (Bragg et al. 2010).

National VBAC rates are likely to reflect an individual hospital’s approach to clinical policies and subsequently the clinicians’ approach to decision making and choice. Currently the UK average is 52.2% VBAC in NHS trusts with a variation of attempted VBAC between 33%-94 % (Tolmacheva 2015). Clarke et al. (2015) suggest that if women are supported with a shared decision about the pros and cons around VBAC that this has the potential to dramatically reduce the rate of caesarean sections and thus improve maternal and neonatal mortality and morbidity.

Shared discussion plays an important role in supporting women to come to an informed decision. Nama and Wilcock (2011) suggest that women with tocophobia requesting a caesarean section should have a shared discussion to assess the cause of the phobia and suggest counselling or access to the specialised clinics to try and reach a shared decision.

Women choosing to birth in an OU rather than a FMU or AMU may do so because they feel that hospital birth is the only option available (Madi and Crow 2003). It is not clear whether this is because their previous baby was delivered in hospital, because they know of no other options or because of societal expectations. Hadjigeorgiou et al. (2011), acknowledges that women's choices may be limited by their belief that hospital birth is safest. One cause of this could be due to the depiction of birth through media and the television where birth at home or in a community setting is rarely seen and when it is; is either distorted or dramatised (Clement 1998).

Similar findings were seen more recently by Luce et al. (2016), whose literature review identified television constructing birth for its entertainment value. and hence the shows are predominantly promoting a more medical model of birth, where key priorities are placed on suspense and drama rather than depicting what more often than not is a long, slow but normal physiological process.

In the USA a study by Morris and McInerney (2010) found that the media rarely showed women birthing without medical intervention. This is not surprising in a country that is well known for a high rate of medical intervention and lower segment caesarean section (LSCS), and whose rates are known to be somewhat higher than those of the UK. In the UK the media publicise and/or televise information/ scenarios that sell or cause an emotive response, which can result in increased fear and anxiety regarding the childbirth process (Bick 2010).

One of the most talked about UK television shows depicting the process of birth and the stories of the family behind the births is '*One Born Every Minute*'. The majority of the families on the show give birth in hospital and this is what the women watching are seeing. Otley (2012) suggests that being exposed to this type of show is invaluable for women as they are able to "familiarize themselves with the hospital environment" (Otley 2012, p. 25). However, Otley (2012) also

recognises that this could potentially be causing performance anxiety, with women wanting to replicate a specific type of birth that has been depicted in these shows, for example labouring with no pain relief.

Since television is about the drama, these shows may not make clear that labour is sometimes long and thus women may feel dismayed if they then have pain relief. This is supported by Morris and McInerney (2010), whose American study found more than one third of the women felt more worried after watching a similar childbirth reality show, specifically when complications arose.

It could be argued that the portrayal of risk for the sake of drama could lead to women choosing a setting that the majority of programmes depict and could be a contributing factor to what seems to be a fear of childbirth and rates of tocophobia. However Luce et al. (2016) found no evidence of this.

It is understandable however those women, especially those experiencing pregnancy and birth for the first time, may experience some anxiety/ fear. Similarly women that have had previous problems with pregnancy and birth may express anxiety. These fears would be valid coming from women that do not have access to a health professional and the information and guidelines that we have in today's society; so the question is why women remain concerned about birth and where to have their baby. There has to be careful consideration as to why these women continue to have fear and two internal considerations are women's perception of risk and their previous experiences of birth. The external consideration is whether they trust health professionals which will be discussed later in the chapter under the heading 'midwives'.

### **2.7.2 Women's perception of risk**

Risk perception and choice has been discussed in many papers (Cheyney 2008; Coxon et al. 2012) with qualitative data linking women's considering the likelihood of "the worst case scenario" before choosing where to give birth (Coxon et al. 2012, p. 1). This is the idea that women plan for all the things that could possibly go wrong when deciding where to give birth. This may be to ensure the safe delivery of their baby. McCutcheon and Brown (2012) found that safety was also linked to cultural choices and recognised that the

unpredictability of birth outcomes was a reason for women choosing hospital rather than home birth.

According to Coxon et al. (2015), women associate birth as either natural or technological. Those women that want to experience home birth associate it with natural processes in an environment that they are used to and conducive to positive labour. This is very much opposite to those women that believe hospital to be the safest place to give birth and believe that involvement of medical intervention is not necessarily a negative aspect but rather as a means to help deliver safely (Coxon et al. 2015). Again, this can be linked back to the medical model of care whereby society is risk adverse and due to its nature, birth can only be seen as safe in retrospect. Thus, many women are inappropriately treated on the basis of their potential risk (van Teijlingen 2005).

Women's views of the different options available to them may also be altered by their "heightened perception of risk" (Coxon et al. 2015, p. 55). In the study by Coxon et al. (2015), 25 of 41 women had chosen to give birth in the OU, 11 of whom had risk factors that clinically indicated that they should deliver in the OU. The other women were considered to be at low obstetric risk and yet their choice was to deliver in the OU. This could be due to a multitude of reasons, however the study highlighted that some women were "sceptical of out of hospital birth being safe for them" (Coxon et al. 2015, p. 58). Some women have such strong feelings about birthing in an OU that they potentially would be willing to pay for the privilege. A study using willingness to pay as a method for assessing the strength of women's preference found that 55% of women expressed a preference for care in an FMU or AMU, however the strength of preference was strongest in the group for an OU. (Donaldson et al. 1998).

It could be argued that women that are having a low risk pregnancy should be told that childbirth is a natural occurrence and to reduce fears and women's perception of risks, evidence based statistics should be used to have an informed discussion and an attempt to elevate women fears should be made (Sidebotham 2012).

Some women may not be able to deliver in their chosen location; for example if a woman is deemed to be at high obstetric risk such as a woman with severe

pre-eclampsia (NICE 2010). Again, this questions whether in this circumstance there is any choice at all.

What is clear is that existing research shows that an individual's risk perceptions regarding birth do not always align with the clinical risk assessment of the health care provider (Lee et al. 2012) and this can result in low risk women birthing in the OU, which in itself has implications for interventions. Similarly high risk women may not perceive the risk as extreme and plan to birth against medical advice such as "free birthing". This is defined as "without help from anyone or anything" (Oxford Dictionaries 2015, p.), meaning without medical or midwifery help being present. This is different to those individuals that birth before medical help from a skilled/ recognised birth attendant (midwives or paramedics) can arrive; it is those individuals that pre plan to deliver without a midwife or clinician being present.

Feeley and Thomson (2016) found that women sought to validate their decision to free birth, by conceptualising risk instead of idealising the homebirth as a life event that is special. The majority had had a negative experience of maternity care in the past.

### **2.7.3 Previous birth experience**

There is a plethora of evidence that identifies the influence of a woman's previous birth experience on future birth place intentions. Initially findings suggested that women would be more open to birth outside of the OU in future pregnancies if current circumstances were positive (Coxon et al. 2014).

Dahlen et al. (2010) suggest that women experience first births as "novices reacting to the unknown" (p.11) and that mediating factors that influenced experience are preparation, choice and control. Coxon et al. (2015) identified that women expecting a first child, who planned birth in a non-obstetric unit were less likely to achieve this. In their postnatal interviews the nulliparous women's reflections indicated that experiencing hospital births reinforced subsequent birth in an OU. Women tend to be uncritical of which ever care system they have used and tend to say "what is must be best" (Porter and MacIntyre 1984, p.1198).

Women who had a previous birth, especially if that birth was perceived as a “traumatic birth”, are more likely to use their experiences when it comes to future choices in a negative way, including in extreme cases to avoid childbearing (Gardner 2003 ; Beck and Watson 2010). Those that experience intervention or birth trauma are associated with increased likelihood of request for caesarean birth due to fear of repeating history (Jolly et al. 1999; Olieman et al. 2017). Fear and risk are normal perceptions that most women experience and these feelings should not be taken lightly. However what is important is how this is managed and the key external factor that can either inhibit or contribute to fear is the influence of midwives.

#### **2.7.4 Midwives**

The biggest external factor affecting choice of place of birth is midwives' involvement in the decision (Madi and Crow 2003; Dodwell and Gibson 2009, Hadjigeorgious et al. 2011). Ashley and Weaver (2012) recognise that midwives are either facilitators or barriers to choice, and this is largely dependent on the midwives' views and clinical knowledge. It can be assumed that if midwives are knowledgeable and positive about the full range of choices available to women, and are able to present evidence to support the decision, then they are more likely to give balanced opinions regarding birth place options. Edwards (2008) supports this theory, acknowledging that midwives often create their own barriers to justify their discouragement of women's choice.

A survey commissioned by the (RCM (Munro and Jokinen, 2011), identified that the main obstacles from midwives' perspectives to providing a home birth service were on call demands, staffing levels and other midwives' lack of confidence. Such factors have the potential to negatively impact on the discussion midwives have with women about the option of home birth.

Midwives' views of home birth showed that the majority of midwives were positive about the importance of home birth and their skills in this area, with 87% stating that they were very confident or confident about attending a home birth (RCM 2011). However, it is important to consider the potential for response bias with midwives who are interested in home birth being more likely to respond to a survey about home birth. It is interesting to note that when

midwives were asked about women's information about home birth 41% of midwives thought that women did not receive adequate information and should be more informed.

A keen group of midwives happy to inform women of their options were the Albany midwives. The Albany model of midwifery care was a form of caseload midwifery based in an inner city of London in 1997-2007. The practice employed a team of seven midwives and two support workers providing care to women; this model provided continuity of midwife and was both open to and supportive of home birth. Most importantly women were encouraged to keep their birth place choice open until active labour (The Albany Model 2007).

The practice of delaying the timing of the decision regarding place of birth is very different to a lot of the midwifery services provided by UK hospitals whereby the discussion is made early in pregnancy and a decision is required prior to active labour. What is also interesting is that the Albany model statistics for 2004 showed a higher home birth rate (57.5 %) than hospital birth rate; a fact that they attributed to visiting women at home in labour and keeping their options regarding place of birth open until labour is established (The Albany Model 2007). This is compared to a UK home birth of 2.7% in 2006 (Nove et al. 2008).

When looking at home birth rates and choice of home birth it is important to consider whether this is an option truly available to the women. What was interesting about the RCM (2011) study was that only 58% of the services represented in the study provided a home birth service all of the time and 2% never provided it. This means that some of the time 42% of women potentially missed out on their choice of home birth because provisions could not be met. Therefore no amount of informed discussion could rectify this issue if, when it came to delivery, their choice could not be met because of the lack of provision.

McCourt et al. (2011) recognised that deployment of community midwives potentially could be an issue when supporting place of birth. In today's media maternity services are discussed in a negative light with constant reference to more midwives being needed to safely cover services (RCM 2015), therefore accurate provisions of care is one of the issues needing consideration. Coverage of care is an issue for clinical managers ensuring safe services of

labouring women. Some women report that scare tactics of no midwives being available is used to dissuade women from delivering in a FMU or at home; however the NMC (2006) highlights that a midwife has a duty of care to attend a women and that withdrawal of a home birth service is no less significant than not providing a midwife at a hospital birth.

When looking at the discussion had between midwives and the women it is important to identify the reason that some midwives feel that women could be more informed. Antenatal care follows NICE guidelines that set out when women should be seen during pregnancy. Furthermore the topics of discussion at those appointments are normally pre-set either by NICE guidance or by specific hospital protocol and therefore the appointments can seem forced and non-conversational. Many midwives in the study by Stapleton et al. (2002) stated that there was limited time for discussions and this played a role in how much of a shared discussion could be had with the women.

Pre-set topics and limited time for valuable discussions could be impacting on how informed women feel about choice of place of birth. A qualitative synthesis by Coxon et al. found that planning place of birth should not be treated as a simple decision or discussed at only one point, such as the booking appointment; instead they suggest their decision “may be open to change” (2017 pg 9).

The synthesis identified that there was little evidence to indicate whether women’s preferences are fixed or not (Coxon et al. 2017). This PhD study addresses this in some way by looking at women’s decision making over three time points in pregnancy which will be further discussed later in Chapter 5. Findings within this review also point to the influence midwives have on women considering options.

Historically midwives were seen as the main provider of information until the medicalisation of childbirth (Cooper, 2011) brought in shared or consultant-led care, meaning that midwives had less autonomy and consultants took the lead in medical decisions. In today’s provision of maternity care midwives are still considered experts in low risk care (Healy et al. 2016), however it is important to acknowledge that women may still be processed through a risk based system and risk management has the potential to dominate. As women are becoming

more aware of this and more knowledgeable in their understanding which Coxon et al. liken to being “risk managers over themselves and their children” (2016 pg 3); they are seeking information and thus are able to challenge the information they receive from health professionals. However it is clear from the research by Pollard that some midwives still feel it is “unreasonable for women to insist on a course of action that challenged medical perceptions of risk and safety” (Pollard 2011, pg 13).

Due to the cultural shift women now want more control of their health and care that they receive, which mirrors what is happening in all areas of health as discussed above. A study of 301 low risk pregnant women in Scotland found that 48% wanted control over decision making with a further 42% at least wanting involvement in the decision; only 1% of women wanted staff to make the decision for them (Hundley et al. 2001). Similar evidence was found in other studies that clearly highlights that women express a preference for more autonomy in decision making (Longworth et al. 2001; Redshaw and Henderson 2015).

This cultural shift of individuals wanting to be autonomous and take control of their health means that those individuals attempt to know all the information about their condition. Research by Hewitt-Taylor and Bond (2012) identified individuals with diabetes become experts in their condition and in some ways the same can be said about pregnant women, they are the ones going through the process and a constant in their pregnancy; this is at a time when potentially they could be seeing numerous different midwives. This was very evident in the recent Birthrights survey of disabled women, Hall and colleagues (2017) found that over half (57%) were dissatisfied with the overall understanding that service providers showed of women’s specific situation.

Lagan et al. (2011) suggest that there is a growth in the number of women accessing information from sources other than their midwife or clinician. This may reflect individuals’ attempts to become more autonomous in information gathering and decision making. A study by the NCT (2017) found that only 55% of women were satisfied with the amount of information they received about choosing where to give birth and that this satisfaction is not the same as having

enough information to have autonomy. Furthermore only 46% felt that home birth was a realistic option, which is significantly down from 68% in 2013.

The supporting documentation and information regarding that treatment or care options should be relevant, accurate, unbiased and from a high quality source. Woolf et al. (2005) however recognize that clinicians are no longer the sole providers of health information; patients are now more active in finding information about their condition treatment or care from other sources. Lagan et al. (2011) found that more pregnant women were accessing the internet during their pregnancy in an attempt to gather information to be more autonomous. Kraschnewski et al. (2014) identified Google as a stop gap between antenatal visits for women who had concerns and were unable to contact a professional. This could be linked to women seeing less of their community midwife or because of their desire to have more information.

In today's society in the UK there are specific groups of women that choose not to follow medical advice if it deviates from their choice of birth place or type of birth; advocating in their social groups for the normal and spiritual and advocating the autonomous choice. For example one group Positive Birth Movement, is a group of pregnant and postnatal women seen nationally as well as in the local area, that discuss their thoughts, opinions and experiences of care and pregnancy. These women use social media, such as Facebook, to chat to one another and the group has now developed into a valuable support network for the women. They specifically focus on promoting normality and normal physiological birth in a calm and supportive environment. They share stories and research about normal birth for example delayed cord clamping, how to naturally turn a breech baby and whether to vaccinate or not (Positive birth group Portsmouth 2015).

Research shows that although women may be bound by risk adverse sociocultural resistance to birth outside of a hospital setting, those that know someone who had given birth in a non OU setting or at home, were more positively influenced toward that facility (Coxon et al. 2017). Giving birth at home may be seen by women as normal and empowering and they relate this to those that they talk to or from experiences friends and family members had before them. Their discussions with each other sometimes go against medical

advice and also clinical guidelines; however in consideration of the right to choose where an individual wants to deliver this is an area of hot debate within the midwifery community. This debate being the delicate balance between; supporting women with their choice of birth, even if this is supporting a high risk women birthing outside the recommended environment and the midwives upholding their duty of care in relation to both their NMC pin and hospital guidelines.

### **2.7.5 Control**

Holton and Miranda (2016) identified that women believe that true autonomy cannot happen in the hospital, and that birthing at home increases their autonomy. However, a small number of women believe that true autonomy can only happen at home specifically in an unassisted environment because midwives are also seen as permission givers (Hill 2014).

They also found in the literature that there is a resistance to the biomedical model, with women believing that professional guidelines, thought to protect the health and wellbeing of both mother and baby, are too restrictive and instead protect and serve the needs of health care professionals rather than individual women (Fraser 2008; Nolan 2008; Wickham 2008). The NCT 2017 study found that 14% of women were told where they had to have their baby, despite their preference. This may explain why some women choose to deliver outside of hospital and these women are often vocal in sharing their birth experiences.

These social groups can sometimes be sources of information for other women and for women to share experiences. However, they may also share negative experiences of midwives or care and this could be as influencing. In some posts individuals can be seen promoting unassisted births, also known as free birthing which was described above.

Women who birth outside the system have an overall low satisfaction with maternity care (Chalmers 2011). Feeley and Thomson (2015) highlight that these women seek to reject the medical and midwifery models of birth to allow choice and control to prevail, which they feel is hindered by midwives. Here it might be believed that midwives are associated with technology and protocol which can be seen as taking the risk-based approach to childbirth rather than

the mothering and “with women” approach (Hart 2003). Furthermore, free birthing women see midwives as unnecessary stating that midwives unduly influence women’s ability to birth naturally (Cameron 2012). This could be linked to midwives practicing in a defensive manor due to the fear of repercussions.

This also links to the blame culture seen in obstetrics at the end of the twentieth century, when the medicalisation of childbirth happened (Kirkham 1990; Johanson et al. 2002). With the fear of blame increasing midwives tendency to practice more defensively (Symon 2000). Defensive practice is; “the notion that a practitioner’s actions are determined at least in part by a consideration of legal scrutiny” (Symon 2006, p. 542). Midwives now attribute fear of blame and repercussion with how and why they practice the way they do (Symon 2006). Potentially influencing the discussion they have with women and their partners about the choice of place of birth.

A shift in practice has seen midwives face complex tasks, being professionally accountable means that for a midwife blame and repercussion comes from uncertainty within care and the outcome can generate a midwife balancing the holistic birth with possible poor outcomes (Skinner and Maude 2016).

Coxon et al. (2017) found that in a lot of studies women experienced challenges if their preference was for a birth setting other than the hospital. In such circumstances, where home birth could be seen as alternative, women reported that they were taking on a battle to get their choice. When introducing another person such as the midwife in decision making consideration has to be given to the relationship, the weight of the individuals in the relationship and balance of power.

### **2.7.6 The balance of power**

All discussions between midwives and women can be seen as a power play. There is much literature that discusses the relationship a woman and a midwife hold during the pregnancy continuum, the majority of which is in relation to the service provisions and the differing type of midwifery care (Dove and Muir-Cochrane 2014; Garratt 2014). It is argued that caseload midwifery care and one to one care provided by a known midwife is the ideal option for women as professionals know that this increases continuity, satisfaction with care and the

formation of relationships (Fleming et al. 2007). Continuity of health professional in this case by a midwife on a one to one basis is seen to improve both experience and outcomes for women (Saultz and Lochner 2005). In an ideal world a woman would see the same midwife antenatally that would then be there for her during the labour and birth and provide postnatal support; however with the changes to postnatal care and more responsibilities given to maternity support workers as well as the pressures on midwives and maternity services, this is no longer the norm (Marlow et al. 2013).

Antenatally, women will be caseloaded by the midwife covering the GP practice and be seen at predefined points in pregnancy (in low risk pregnancies). Unfortunately due to sickness and stress sometimes the women will be seen by more than one midwife during her pregnancy and more than likely will not be the midwife she sees at birth (Nock 2004). With changes to postnatal provision of care and the increasing use of maternity support workers (MSW), women may only be seen a couple of times by a midwife before her discharge. Therefore the relationship between the midwife and woman may be changing as the role of the midwife evolves and limitations to service provision are made.

What should remain the same within this relationship are the shared discussions the midwife and woman have when making important decisions. These discussions could potentially be had about labour analgesia, screening and in terms of this thesis the choice of place of birth. This is important in assessing the midwife woman relationship in terms of shared discussions.

The term midwife is defined as “a person qualified to assist women in childbirth” (Dictionary 2015 pg. 1). The meaning of the word “midwife” originated in 1250-1300 with the English term of mid meaning “with” and wife meaning “woman” translating quite literally that a midwife is “with woman”. It has always been considered that the majority of the role of a midwife is to provide both physical and emotional support to women throughout the childbirth continuum, as well as providing encouragement, showing care and remaining compassionate in every task. Midwives were always seen as advocates for women’s rights (Sandall 2012) as a way of counteracting the disempowering effect of medicalisation (van Teijlingen 2000) in fact a group of midwives who were instrumental in

developing a radical change and instrumental in working alongside women, were the Association of Radical Midwives which was formed in 1976.

This led to women going from being seen as patients to consumers (MacIntosh 2009) and women were seen as getting a product, in this case the practical care. Thomas (2009) highlights that it is important to build a rapport and engage an individual for that person to be satisfied.

However the midwife's role has adapted to the changes implemented over the years and it is now understood that the role of the midwife is diverse. Midwives are considered to be the main care givers; a clinician, a friend and there to provide women with support through pregnancy as well as providing information that is evidence based (RCM 2015). They also have public, sexual and mental health roles. Alongside all of these parts that make up a midwife's role, they are also considered a mediator; liaising with other health care professionals in order to provide a safe service for their women. What has remained the same however is the idea of the woman being at the centre of a decision especially at the time of birth with the concept of Humanizing birth (Wagner 2001). This concept puts women in control and sees them as decision makers; it also suggests that the focus of maternity services is community based and not hospital based with doctors and midwives working together.

This is in contrast to previous research that saw woman's role is seen as either the "doer" or the passive receivers of care and information (Pairman et al. 2015). Some women were happy for the midwife to take the lead in both care and the individual appointments. This is very much in accordance with the medical model of care whereby the "patient" listens and respects the physician in what they are saying. However there has been societal change since the public enquiries into midwifery services at Mid Staffordshire hospital and also the University Hospital at Morecambe Bay (Kirkup 2015) concerns of serious incidents in maternity services at the University Hospital of Morecambe Bay including death of mothers and babies (DOH 2015) because of major failures of care. Furthermore the report set out that there was a strong mentality of midwives characterised as 'musketeers' who wanted normal birth at all costs. Amongst recommendations were for wider involvement and access to information by women and their families. There is a rise in the women wanting

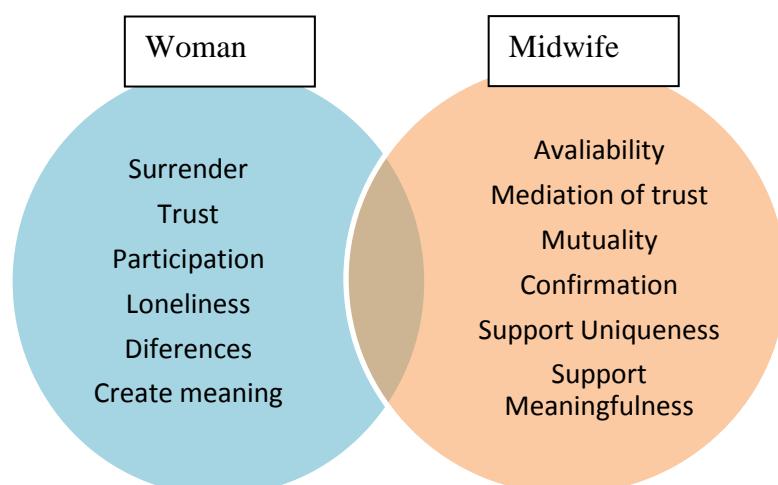
more involvement and women centred care has come to the forefront rather than midwives having all the power. It could be argued that public inquiry into inappropriate care is to thank for the switch in power; increasing critic of media and information availability thanks to the internet mean that women are more aware of what type of care is right (Gillespie et al. 2002).

In terms of the relationship there have been many expressions of how best to explain the manner in which two individuals come together; it is a relationship that is quite unique in healthcare and very much depends on the type of midwifery care provided. What is important to ascertain for the outcomes of this thesis is how the midwife woman relationship affects decision making and eventually will discuss the more specific nature of decisions about choice of birth place.

Freeman and Griew (2007) highlight that the relationship of the midwife and woman is achieved by working towards the same aim and this could potentially be achieved by attempting to create a relationship based on obtaining and sustaining a mutual agreement. They also suggest the relationship needs to show clearly defines roles, responsibilities and respect (Freeman and Griew 2007).

In Sweden a review of qualitative studies (Lundgren and Berg 2007) identified central concepts between the relationships showing them in a very poignant image (figure 2).

**Figure 2: The give and take of the relationship between the midwife and the woman**  
**(Adapted from Lundgren and Berg 2007)**



Clearly defined roles are highlighted and the relationship is very much based on trust and understanding (Lundgren and Berg 2007). However again there is a suggestion that the midwife has the power because women “surrender”. This idea of power play is that the midwife is seen as knowing more; women experience midwives exercising power and because of a lack of belief in their own ability to know what is best and women allow this (Lewis 2015).

Edwards (2003) looked at women’s decision making around home birth and found that midwives experience difficulties in giving women true informed choice because of restrictive policies and guidelines. Stapleton et al (2002) found that midwives’ language was thought to signify power and control in that the midwives delivered information in such a way as to ensure women conformed.

A number of studies have looked at the relationship between the woman and midwife at specific time points in the continuum the main being the support provided in labour (Tumblin and Simkin 2001; Olafsdottir 2009; Beake et al 2010). The consensus is that women place more significance on midwives being present than on the actions; with the majority of women believing that a midwife should be honest, respectful, sensitive and prepared to listen (Callwood et al. 2016). Satisfaction in relation to the midwife relationship has also been explored in depth (Gerbaud et al. 2003; Goodman et al. 2004; Ford et al. 2009) with women said to be most satisfied when given continuous personalised care by a regular midwife. Here again the psychological care is seen as more important than the physiological care (Macpherson et al. 2016).

Midwives are seen as childbirth educators (Lothian 2008) having the role of helping women sort out information and figures to work out what is best for the women and enable informed choice. Nonetheless Edwards (2000) believes that informed choice is not a level playing field but one that is limited by physicians, hospitals and their policies. Midwives are seen as halting discussions (Houghton et al. 2008) giving limited information or getting women to prove their ‘aptness’ for a birth outside the OU (Jomeen 2007) . Levy (1999) has described how information can be shaped and framed by the midwife or health professional to affect choice. She considers “gentle steering” to frame the process of what she describes as midwives coaxing women to choose what the

midwife is comfortable with. As a result midwives could be argued to be the biggest external factor affecting choice of place of birth.

Porter and Macintyre's seminal work (1984) suggests that women believed that whatever arrangements they had experienced were the best for them. The midwife in this situation holds the power because she is seen as "knowing best" (Bluff and Holloway 1994, p. 161) and there is a great belief in listening to expert advice. Edwards (2005) suggests that even when women are knowledgeable and assertive it's difficult for them to resist obstetric coercion. Thus midwives may conduct discussions in a certain way because it is "how we've always done it" (Melnyk 2016 p.15) rather than in a way that facilitates real choice.

Hunter (2005) believes that relationships between women and their midwives should vary considerably from those identified by Porter and Macintyre (1984). She proposed a model to identify the relationship in which reciprocity can be defined by four key situations;

- Balanced exchanges
- Rejected exchanges
- Reversed exchanges
- unsustainable exchanges

The concept of balanced exchanges, based on the balance of give and take between both parties, is believed to be the most emotionally rewarding type of relationship. However, this balance requires trust and as such is normally built and formed by community midwives who are known to the women. Otherwise exchanges can become rejected. Hunter (2005) suggests this normally happens when the woman is not receptive to what the midwife has to say; this can result in non-attendance at clinics or ignoring medical advice.

On the other end of the scale are those reversed exchanges where the woman becomes the leader or provides the support to the midwife. This could be seen in an example from a woman with a disability; the woman has lived with and been to appointments about her disability all her life, she may make the midwife aware of these findings. In doing so she provides the midwife with information about how she can be supported. This is normally contradictory to how

midwives are taught to practice and the fear of women being “over familiar” can become a concern (Hunter 2005, p. 6). Alternatively rejected exchanges can occur, these are seen when women become unresponsive to or hostile towards the midwife. This again can be related back to those women who want to birth without medical support; those who deem the midwives input as hindering or negative towards their chosen birth preference (Hunter 2005).

Finally unsustainable exchanges are seen as those that evolve around unrealistic expectations. As discussed earlier some women’s choice of birth location may be contrary to medical advice and in these situations Hunter (2005) research shows that midwives become critical of the women because of their unrealistic expectation and the level of support expected in the situation. In other cases midwives become over involved, which can become unsustainable (Stevens and McCourt 2002).

### **2.7.7 Maternity system**

The structures of the maternity system itself can also influence women’s choices as they navigate through other constraints including care provider, distance from the alternatives to traditional hospital and availability of the midwives. In August this year The National Maternity and Perinatal Audit (NMPA 2017) published its first report on the organisation of the NHS maternity and neonatal services in the UK; it mapped availability of units nationally and locally and found that they were open to constant changes (NMPA 2017). Importantly there has been a steady increase in AMUs however 19% of Trusts do not have any midwife led units and a further 3% do not have OU’s. This means that some women are limited to the choices within their local facility, or potentially have to travel to get their choice. Furthermore areas that are more densely populated are potentially limiting their options as a result of staffing concerns, which may result in women having to travel some distance to the next available unit.

Lothian (2008) suggests that women’s choices are further limited by the withholding of information, and the application of protocols on birthing outcome rather than evidence based practice. With all the above mentioned constraints it is important to consider whether women have a choice, because Lothian (2008) believes that women have little to no choice and that is down to the

maternity care system and the restriction it places on women's autonomy. There is limited evidence about the link between staffing and maternity outcomes, however in health there are positive relationships between increased staffing levels and improved outcomes (Sandall et al. 2011).

What is clear is that midwives play a major part in the relationship with women and their choice of place of birth, how much information they provide and their views on women's choice of birth place location can impact on an individual's decision. However, it is not just midwives' opinion that can influence women's choice and impede their decision-making.

### **2.7.8 Peer influence over choice of birth place**

It is accepted that others such as friends, peers or family can have influence on a woman's decision regarding place of birth and therefore this must be considered further.

A qualitative study by Houghton and Lavender (2008) identified that almost all women had a personal experience, knew someone or knew of a dramatic event around birth that they felt influenced their decision.

Peer influence is a very well-known concept in research specifically amongst teenagers and adolescents for topics such as sex, relationships and the use of drugs (Maxwell and Chase 2008). In terms of pregnancy and peer pressure, topics that are very emotive have been well researched for example; breastfeeding (Ingram 2013) drinking alcohol (Xueqin et al. 1998) and teenage pregnancy (Arai 2007). However, there is little to no evidence looking at role of peer influence on place of birth. Considering the impact of peers on the above topics it could be suggested that similar impacts could be brought across to the topic of birth and birth place choice in high income countries. Qualitative research by Borrelli et al. (2017) found that women mentioned friends and family as having an influence over them choosing a birth location. However, research conducted by Griggs et al. (2014) shows that only 9% of women in New Zealand feel family have an influence over birth place decision. A further 8% feel friends had an influence suggesting that they do not have a large influence over choice. There is limited evidence as to how much influence

friends and family have, but there is no debating that partners have an impact on decision-making.

### 2.7.9 Partners

Partners are a significant part of the childbirth journey. When considering their role in the pregnancy, Maurer sees the role of the father as to “love, celebrate and support the mother of their child every step of the way” (2014 p. 66). They are very much parts of the process and as part of the social model of midwifery (Bryers and van Teijlingen 2010) partners are considered as involved in a shared discussion.

It is well known that partners’ views and opinions are an important influencing factor in women’s decisions about whether or not to breastfeed (Mannion et al. 2013) therefore it is likely that their opinions may influence other decisions made during the childbirth continuum specifically where women decide to give birth. Pearson and Marshall (2014) recognised that the majority of the fathers that completed the survey played a role in their partners’ choice of place of birth. A total of 82% of the fathers stated that the decision was a joint collaboration between themselves and their partner. It is interesting to note the reasons that they provided for their choice which included considerations of safety (61%), experience of family/ friends (16%) and the availability of epidurals (13%) (Pearson and Marshall 2014). One remarkable point is that all of the women were low risk and therefore eligible for home birth, however all but one woman started their labour and delivered in hospital. The one woman starting labour at home was transferred into the hospital for medical reasons.

Low home birth rates could be contributed to partners’ views that the hospital is safe and in general men prefer a medical environment (Bedwell et al. 2010). Nolan et al. (2011) found that 180 of 250 fathers in an online survey expressed feelings of anxiety while their partner was labouring at home. Most (65%) highlighted these worries as fears for the wellbeing of both their partner and baby, while 68% were concerned about their partner being in pain (Nolan et al. 2011). This echoes the findings of a subsequent study by Redshaw and Henderson (2013) that also identified that expectant father’s greatest concerns were the health and safety of the mother and child. There is significant potential for partners to influence women’s decision over choice of birth place, women

may intentionally be swayed by their partners' views; there is also concerns around blame that if the outcome were to be negative this may impact the relationship (Bedwell 2011).

Of concern to partners, even in the early stages of labour, were worries about getting to the hospital or birth centre in time; 52% of fathers expressed these concerns (Nolan 2011). Considering Bedwell et al.'s (2010) statement that men prefer a medical environment, it is important to then understand the idea of repercussion and blame in terms of choice. If the father is encouraging a hospital birth but the woman births at home Bedwell et al. (2010) suggest that this is done so with women considering the consequences if the outcome is less than desirable and how this will affect the relationship. This is supported by Chamberlain et al. (1994) who recognised that women who choose to give birth at home do so potentially in an environment of discouragement or with the threat of blame from partners. This links back to a potential lack of information obtained from antenatal appointments and the shared discussion with the midwife, that hospital birth is the safest option when this may not be the case. It also supports the idea that partners should be included in antenatal care and the discussion about choice of place of birth. In light of all these factors next it must be considered how health professionals can facilitate an informed decision.

## **2.8 Facilitating informed decisions**

One way for women to increase their awareness of the options available for place of birth is through discussion with their health professional. In the history of health care as previously stated the level of involvement of patients within the discussion has varied from health care professionals taking the lead to a more shared approach that is seen today (NHS England 2017). Currently expert recommendation and research has seen a push for greater patient involvement in decision making (Whitney et al. 2004); however there are still those that disagree (Salmon and Hall 2004). Also there is no general consensus for the level of autonomy that is best (Flynn and Smith 2008) with patients from diverse research studies producing wide variation regarding their preferences for participation in discussion about both treatment options and decisions (Flynn and Smith 2008).

Most patients want to have a discussion with their health care professionals; however those that do not want to participate may not know the benefits of participating (Robinson and Thomson 2001).

Alternatively it may depend on their willingness to participate; it is known that some patients still value the doctor deciding with 52% of respondents' in the study by Levinson et al. (2005) preferring to leave the decision to the physician. Chawla and Arora (2013) link this with patients trust in the physician. Patients' are seen as either active or passive when it comes to the discussion; research by Flynn and Smith (2008) found that no deliberative delegators which are those individuals that are more passive are likely to be female, older and from rural area's compared to the active patients. They also found that agreeable individuals were less confrontational with doctors and allowed decisions to be made on their behalf which very much assumes the paternalist role that once was the routine.

Passive patients take a back seat allowing doctors to make the appropriate decision on their behalf. Doctors making decisions can be because this is the request of the patient; in this case this is still a patient decision to allow the doctor to take control. If the decision is made on behalf of patients, also known as a decision of "best interest" there is potentially no decision for the patient. In this case consideration is given to the fact that individuals are unable to make an informed decision; this may arise if the individual is mentally incapable and would be considered appropriate to do under the Mental Capacity Act (2005), or where an individual is too sick or is unconscious and unable to give consent to a procedure.

However if the patient is conscious and mentally capable of giving consent, it is the health professional's responsibility to give as much information as needed in order to allow the patient to give consent prior to any treatment or care. Health professionals have a professional duty to uphold patients' rights to informed choice and consent (Tupara 2008). Decisions of best interest occur less frequently in discussion within maternity care because in most circumstances women are not seen as unwell and in the majority of cases are capable of being involved in the discussion. This may only present in cases where mental health is considered a concern.

Non directive decision making is regarded as desirable; it supposedly allows exploration in and around decisions without influencing the decision outcome (MacInnes et al. 2015) reducing bias. However can information giving truly be unbiased?

The subjective expected utility model by Wroe et al. (1998) proposed a balance when it comes to decision making by giving consequences of the negative and positive aspect; focusing on the patient. Research suggests that the provision of information on the positives and negatives can influence the overall outcome and thus that information is important and should be balanced to allow consent (White et al. 2003).

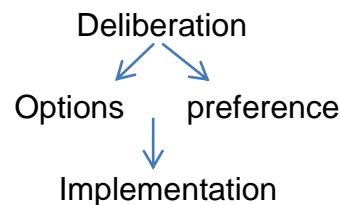
Another key concept to consider with decision making is the amount of information that is given during the discussion. In order to provide consent a patient should be informed of the risks, benefits and any side effects of having the treatment as well as the consequences or benefits of not accepting the treatment or care (GMC 2008). This is normally discussed in the liaison between the patient and the health professional, but information to support and facilitate the decision should also be given in written form.

Studies of health care and therapy looking at the importance of practitioner support for autonomy and informed decision making show that support leads to greater involvement, adherence and maintaining changes in behaviour such as smoking cessation, weight loss and exercise (Williams 2002). One way to facilitate an informed decision is through shared decision making (SDM).

## **2.9 Shared decision making: critical evaluation**

SDM is the promotion of discussion between patients and health care professionals (Charles et al. 1997). There is strong evidence in favour of SDM with a systematic review of the literature suggesting it supports patient centred care by improving patient knowledge and professional communication (Legare et al. 2011; Stacey et al. 2014; Shay et al. 2015). SDM has been defined as “a collaborative process through which a clinician supports a patient to reach a decision about their treatment” (NHS England 2017. P.11); the patient and health professional come together to bring their knowledge and preferences with the aim of making an informed decision.

At its most simplistic level SDM was depicted by Elwyn and Charles (2009) as Information exchange;



It has been referred to as a key component of patient care with some going as far as saying that it is the “Crux of patient care” (Godolphin 2009 p.3). NHS England (2017) suggests that SDM leads to better decisions and outcomes for both the patient and the clinician, and this has been found by some major reports (Bristol Royal Infirmary inquiry 2001; DOH 2002). Some suggest that healthcare is the most difficult area in which to have SDM because of the benefit/ harm ratio and scientific uncertainty (O'Connor et al. 2004). The concepts involved in treatments and the number of options increase the complexities for the patient in making a decision and this even more obvious when the outcome has some uncertainty. In some cases this leads a patient to revert back to the physician to decide, or to ask for more information; this can be costly in terms of time and availability of resources. A review of consultations between physicians and patients in 1999 found that only 9% of physicians were offering SDM (Braddock et al. 1999); however by 2013 this had increased to 56% (The Health Foundation 2016). More recently studies have found that clinicians ask for patient preferences in medical decisions only 50% of the time (Leet et al. 2012; Zikmund-Fisher et al. 2010). Numerous obstacles to SDM were identified by Levit et al. including emotional, financial and logistics, the complexities of health literacy and lack of experience with the health care system (2013). These factors can limit the degree to which patients and families engage with SDM.

The importance of SDM can be seen in the Montgomery Case (BMJ 2017), which brought about a change in how informed consent is viewed. In 2015 a

woman with diabetes and of small stature suffered a shoulder dystocia during vaginal delivery; a complication that led to a hypoxic insult on her son resulting in cerebral palsy. Montgomery sued the doctor for negligence arguing that an increased risk of diabetes is having a large baby and subsequently may lead to shoulder dystocia, something that was not disclosed by the doctor. She stated that had she known about this increased risk, a caesarean section would have been requested. The court ruled in her favour in March 2015 (BMJ 2017). This ruling established that the patient should be informed of all of the relevant information, not just what the doctor or other health professional thinks the patient should be told. This landmark ruling brought SDM into the forefront of healthcare decisions and it is now considered an ethical and legal imperative.

Although SDM is recognised as an ethical and legal imperative, studies indicate that there are significant barriers that hinder the process of implementing SDM (Joseph-Williams et al. 2014). These include time (Beaver et al. 2005) and continuity of carer (Doherty and Doherty 2005) and patient characteristics such as older age (Adler et al. 1998), ethnic background (Peek et al. 2009) and lower levels of education (Agard et al., 2004).

Joseph- William et al (2014) feel that attitudes of both the health professional and patient that are “deep rooted” (pg 3178) need to be changed in order to prepare patients for a discussion with health professionals that encompasses a shared approach. Patients may be familiar with a more paternalistic style of health provision, which may inhibit discussion. Consideration needs to be given to challenging the traditional paternalistic dynamic between a patient and physician. Although this approach is considered to be diminishing over time, the asymmetry of power may still be felt by both patients and physicians (Judson et al. 2013) as was examined earlier within the section on power play within the woman-midwife relationship (section 2.7.6). Health professionals may also be reticent to give up a degree of autonomy in order to share decision making. Nimmon and Stenfors-Hayes (2016) link this to the Bourdieu concept of doxa, which is a conceptual tool that can be used to make sense of how physicians subconsciously accept and internalise attitudes, knowledge and values of the institutional and organisational culture of medicine without knowing they are doing so (Eagleton and Bourdieu 1992).

As an example a woman may want a home birth but has a large Body Mass Index (BMI), the hospital policy states that women with large BMIs should birth on the OU. A doctor then tells the woman that she will be giving birth on the OU. Rather than give the positives and negatives of a home birth and the OU, a decision has been made by the doctor without a shared discussion with the woman. This may occur because this is how things have always been done or could be due to the physicians internalising their position of power, as shown in research by Baker et al (2011) where physicians described themselves as leaders and decision makers.

Further consideration needs to be given to whether information provision to enable a shared discussion is ever enough to address the power imbalance. As already mentioned some patients feel unable to speak up in discussions due to feelings of anxiety, intimidation and vulnerability (Judson et al. 2013), in which case any level of information provided may not improve SDM if a patient feels unable to discuss this. Judson et al identifies this as “white coat silence” (2013 pg 2325), which is a reluctance to vocalise concerns to a physician or to challenge views. Another difficulty that can be seen with SDM and informed consent is the framing effect (McNeil et al.1982). This is the idea that information could be put to women by midwives or other health care professionals in a way that influences them to make a particular decision or to choose one option over another. In such cases this influence ultimately affects decisions; the woman may feel that she is being told information, but it is done in a way that ultimately leads her to making the choice that the health professional wants.

It can be argued that midwives’ conversational styles and pressures on their time may reduce the level of information that they provide women with (Coxon et al 2017).This time restriction affects the opportunities for pregnant women to access the evidenced-based information they need to participate more effectively in decision-making processes (Stapleton et al, 2002). This may mean that women feel that they are a burden or a trouble maker if they question midwives or ask for further information, resulting in a similar position to the aforementioned research on physicians in what is known as white coat silence. This may not always be the case; there are individuals that feel capable of challenging health professionals for further information, with some even bringing

information to aid discussions, known as health information seekers, (Kneale et al. 2015) however adaptations to SDM must allow for all types of individuals and their requirement for information to enable an informed decision.

Joseph- Williams and colleagues (2013) feel that knowledge is not power especially not on its own; patients require knowledge and power to participate in SDM. Part of increasing knowledge is by providing accurate information at an appropriate time; findings show that early provision of information (before consultations) was reported by some patients as an important aspect for being prepared for SDM (Skea et al. 2004). Medical information is rapidly evolving (Fox et al. 2011) and it can be difficult for some patients to keep up to date with relevant information, especially if information gathering and information provision is not collaborative or supported by health professionals. However there are individuals who access information with ease and take ownership of gathering health information (Diaz et al. 2002).

An individual's capacity to participate in SDM links to their knowledge and power and their perceived ability to influence the decision making (Edwards et al. 2012). In some situations capacity to participate in SDM may be affected.

This links back to the Montgomery ruling; one challenge with this ruling in maternity care is in cases of emergencies, where some people argue that emergencies are a situation where SDM cannot operate (BMJ 2017). There are certain situations and individual cases where SDM may not be appropriate; some of these have been discussed previously and include mental incapacity and unconsciousness. Ability to utilise SDM should be assessed on a case by case basis and depending on the nature and timing of emergencies (BMJ 2017). The GMC guidance states that the consent process is an ongoing one and that planning for emergencies is essential.

Although increasing, not all individuals currently receive SDM. It is interesting to note that not all patients expect SDM, research suggests that the elderly and those from lower socio-economical backgrounds are more likely to allow the decision to be made by the doctor. Some patients may want SDM, but Towle et al. (2013) found that patients did not object to the lack of involvement in decision making because they prioritised a good relationship with the health professional and so felt unable to be assertive. This is the idea that "doctor

knows best” and the perceived unacceptability of asking clinicians questions or raising concerns for fear of undermining the professional (Frosch et al. 2012) suggesting mistrust or lack of respect (Adler et al. 1998) or ultimately that questioning a health professional may affect their care. A systematic review by Joseph-Williams et al (2013) suggests that a large number of patients currently cannot participate in healthcare decisions due to a lack of knowledge and power, and not because they do not want to, which is a view taken by many professionals.

This links back to considerations about a patient either being passive or active in the discussion. The SDM Model is made up by four different components:

1. Two participants, normally the patient and the health care professionals, begin the discussion.
2. They are both involved with information sharing. It is not a one way road; the information can come from either participants and all information should be considered.
3. Both participants take steps in building to a consensus. This directly contradicts the paternalist model and the information model whereby only one (either the health professional or the patient) makes the decision. This is a mutual discussion to some to a consensus.
4. An agreement that is mutually agreed on is made regarding treatment or care. (Charles et al. 1997).

There are barriers to using SDM, but that does not mean that physicians and healthcare professionals should not be involving patients with the decision. These barriers are thought to be time constraints and the skills of the health care professional to communicate in the above way (Goldophin 2009). In addition, habit plays a significant role with the idea that ‘this is how we have always done things’ determining decisions.

A number of initiatives have explored ways to bring SDM into routine care one such programme known as MAGIC (Making Good Decisions in Collaboration) looked at ways of overcoming the aforementioned barriers (The Health Foundation 2017). There are hopes that MAGIC has the potential to improve

experiences, with patients being able to feel more involved and listened to. Consideration has to be given to the challenges that a programme like this faces. One such challenge was touched on above and that is attitudes; Joseph Williams et al use the saying “skills trump tools and attitudes trump skills” (p. 1744). Implementing a SDM or DST may work if the clinician has the skills to facilitate a shared discussion however if that clinician believes that it is not something patients want to be involved in then the programme will not take off. Joseph – Williams et al (2017) argue that change is required not just on an individual clinician basis but that there is a cultural issue within the whole of the NHS. Furthermore a cultural shift is needed within society, so that patients are seen not as the passive receivers of information, but instead are encouraged to actively participate. Instilling some onus on patients to share the burden of information and decision making with clinicians may make SDM and informed consent more likely to happen; however approaching patients with the importance and benefits of SDM is a challenge that will need a sensitive approach (Hargaves et al. 2014).

For those exchanges, SDM should follow set criteria.

These criteria are;

- Developing a partnership with patients
- Establish patient preference for information (amount and format)
- Establish patient preference for role in decision making including risk discourse and decisional conflict
- Ascertain and respond to patients ideas, concerns and expectations
- Identify choices
- Present evidence and alternative decisions (in relation to patients values and lifestyle)
- Make or negotiate a decision in partnership
- Agree on plan and arrange follow up (Goldophin 2009)

SDM is increasingly included in government policies and is well recognised in the current NICE (2017) guidelines about decision making. Its professional acceptance in midwifery is considered by some to still be developing (Patel and Rajasingam 2013; Gee and Corry 2012). SDM differs from that of normal decision making and can be seen across the context of health but even more so in midwifery due to the unique relationship between the woman and the midwife (Jefford et al. 2010). Page and Hutton attributes evidenced based discussion and SDM in midwifery as “a process of involving women in making decisions about their care and of finding and weighing up information to help make those decisions” (2000, p. 9).

It is known that participation in decision making in maternity care has a positive impact on childbirth experience (Nieuwenhuijze et al. 2014). However the difficulty relates to the fact that childbirth is a dynamic process and SDM cannot be done at just one time point but instead is carried through the childbirth continuum: antenatal period, birth and postnatally. Decisions can also be shaped and changed with the possibility of unexpected or urgent decisions needing to be made as the birth process can be fluid. It is clear that women want to be involved in decisions and are seeking responsibility for both their health and the wellbeing of their baby (Seefat-Van Teeffelen et al. 2011).

There is little research into birth place choices that directly looks at SDM. It has already been established that, if a woman has been brought up in a family where all the women have given birth in a certain location then this is likely to impact on their decision. It is also known that choice and autonomy can be affected by other factors. Ryan et al. (2006) suggest that factors include processing needs, constraints and sensibilities. This is supported by Deci et al (1999) that recognise coercion, social controls, pressures and fear of punishment can also impact on choice. If for example the whole of the family have given birth in the hospital there may be pressure and fear of choosing an alternative Coxon et al. (2017) also found that some women are seen as alternative or hippy if they birth in a way that family or society is not used to such as birthing at home.

Canadian researchers found that women's decisions regarding place of birth were often made before pregnancy (Murray Davis et al. 2014). There is also

evidence that women preferences for attributes of labour care are affected by norms and availability of services (Hundley et al. 2001). Equally for societal norms the geographical location factors into decisions and this can be seen in the home birth rate.

Expectations also play a significant role in choice of birth place. Many women have thoughts and have formed their preferences prior to attending for care. A study conducted in Scotland found that the majority of women preferred maternity units that offer continuity of care giver, more methods of pain relief and homely appearance (Hundley et al. 2001) however these attributes were not all of equal importance. This comes back to transitivity whereby a woman may perceive that option one, such as continuity of carer, is more important and therefore overtakes option two of having a homely environment. Strength of preference for different attributes plays an important role in how women make decisions on which place of birth is more important.

The choice theory is the notion that at a basic level an individual always has some choice (Glasser 1984); some researchers such as Schwartz (2005) believe that we may actually have too much choice. Too many choices can be problematic in itself, Baumeister, et al. (1998) argue that making choices is energy draining and ego depleting and thus having too many choices can be harmful.

“One can have many options and not feel autonomy but instead feel overwhelmed. Alternatively one could have only one option; fundamentally no choice, and yet feel autonomous so long as one truly endorses that option” (Ryan and Deci 2006 p. 1577).

The same can be said for when people have no choice. No choice can cause anxiety and become unbearable (Schwartz, 2005). In such circumstances those individuals may make a rash decision to attempt to create choice. In relation to choice of place of birth for example if the maternity service in a woman’s area only provides consultant led care and she deems herself to have no choice, i.e. no other facility, no transport for out of area options and no money for a private midwife, this means she has no choice.

Despite progress, actually achieving SDM within the NHS and midwifery is slow. Women potentially then attempt to find information elsewhere to satisfy this need to be involved with decision making. This comes back to the discussion of autonomy earlier in this chapter; women are expected to make an autonomous decision but to do so all the information is needed to make this decision as is involvement with care.

To become more involved evidence shows women are utilising the internet, discussion forums and networking sites to gain the information they seek (Hewitt Taylor and Bond 2012). With the internet's scope to reach an infinite amount of individuals it has potential to impart great influence.

Currently 90% of households in the UK have access to the internet (Office for National Statistics, 2017) with 76% of them accessing the internet daily. Studies suggest that the majority of women access the internet for pregnancy related information with figures varying from 60% (Hameen-Antilla et al. 2013) to 97 % (Lima-Pereira et al. 2011). This may reflect individuals' attempts to become more autonomous in information gathering and decision making.

With over 3.5 million hits for a Google search using the word "health" what is of concern is the different forms of information varying from government sites to academic peer reviewed information to forums by patients, and the associated credibility varies exponentially since the monitoring of the information becomes difficult (Risk and Dzenowagis 2001). With increasing variation of where women access important pregnancy information comes the potential for biased, incorrect, uneducated medical advice and information and this can be a cause of concern for many professionals (Sikka et al, 2007), as individuals may be unable to identify the difference between evidence-based information and opinion. This push for a shared discussion and as previously mentioned the need to provide more information, led to the creation of Decision Support Tools (DST).

DST might be the mechanism to support a shared decision. Research studies have shown that providing patients with access to health information via DST can enable more active participation in the process that leads to health benefits and medical outcomes (Jimison and Sher 1999). This was the reason why the study hospital created MyBirthplace.

MyBirthplace is a DST that provides women with information around the facilities available to them within the study area. It is meant to be used in conjunction with and to facilitate a shared discussion with the midwife. It was developed in response to greater information wanted by women and to improve the decision making process for place of birth. The study reported in this thesis sought to assess the effectiveness of this tool but before this is described, the literature needs to be explored to understand what is already known about the use of DST in both health care and childbirth and how it led to the gap that MyBirthplace would fill.

# Chapter 3 The use of Decision Support Tools

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## 3.1 Introduction

The term '**decision support tool**' (**DST**) is used to describe "an active knowledge resource that uses patient data to generate case-specific advice which support decision making about individual patients by health professionals, the patients themselves or others concerned about them" (Lui et al. 2006 p. 7).

Lui et al. (2006) consider decision support tools, decision support aids and systems to be one and the same thing and should be seen as such, especially in terms of health technologies.

DSTs originated in the early 1960s evolving from two distinct areas; organisational decision making at the Carnegie Institute of Technology and Economy (Shirm et al. 2002), before branching out into both the business and financial industries. DSTs are now becoming increasing available in the field of medicine. Initially available to support the management of data entry, the field has expanded into diagnostic decision support (Haug et al. 1999), whereby the DST is used by the clinician to facilitate choices about correct treatment.

More recently DSTs have moved into supporting patient decision making, stemming from the patients need and desire to play a role in decision making (Coulter and Collins 2011). Clinicians have evidence based guidelines to support their decision, however these are aimed at clinicians, not patients. . Identifying and making a decision can be difficult for patients and, as explored in Chapter 2, information given to patients by clinicians has the potential for bias. A decision often involves understanding complex information and DSTs are thought to help patients understand options to enable an informed decision (Health Foundation 2017).

The NICE website lists 27 health based DST and one midwifery DST based on birth after caesarean section (NICE 2017). It is thought that the availability of DSTs has increased because of the increasing demand from patients (Naylor et al. 2015). They needed clear evidence based information similar to the guidelines for clinicians, but in a comprehensive easy to understand format

(Foot et al. 2014). Historical delivery of this information was in a verbal discussion; however with challenges faced by clinicians within the NHS, a detailed discussion providing all the information cannot always be achieved (Collins and Coulter 2011).

A systematic review found that in 63% of the articles, most patients wanted to be active in participating in decisions about treatment or care; this trend has been rising, but variations can be seen in relation to age and education level (McCarthy 2013). Younger and well educated individuals are more likely to want to actively participate, with the older generation still wanting significant input from the health professional (Nutbeam 2000).

DSTs are different to more traditional informational materials given to patients, in that they are meant to provide all possible information and facts for the patients to deliberate about their options. Coulter and Collins provide an overview of what is usually contained within DSTs:

- Description of topic, condition and symptoms
  - Likely prognosis with and without treatment
  - Treatment and self- management options with outcome probabilities
  - What evidence is currently known including uncertainty
  - Illustrations
  - Means of helping people to clarify their preferences
  - References and other sources of information
  - Authors' credentials, funding sources and declarations of conflict of interests
- (2011, p.5).

Commissioned by East of England Strategic Health Authority, NHS Direct developed and acquired a range of DSTs and included prostate cancer support, and prostatic hyperplasia, with more are planned (Elwyn et al. 2010; Coulter and Collins 2011).

Another publically available DOH funded website, *NHS Choices*, provides detailed information on diseases and treatment, with several pages designed to facilitate shared decision making. Whether or not these sites themselves are considered to be DSTs is questionable, because what constitutes a DST is difficult to ascertain. As such, the International Patient Decision Aids Standards (IPDAS) collaboration was created with the purpose of enhancing the quality of DSTs. The IPDAS created a set of criteria for evaluating a DST.

A good DST, based on the criteria created by Elwyn et al. (2006), provides the users with the information about options in sufficient detail; describing the health condition, listing the different options, describing procedures, benefits and risks, any harm involved in that choice, side effects and includes the chance of positive and negative outcomes. It then goes on to consider if the probabilities of outcomes are presented in an unbiased and understandable way, and includes a substantial checklist and evaluation of the quality. What a good DST does not do is encourage one treatment approach over others (Agency for Healthcare Research and Quality 2015).

The guidelines created in collaboration with researchers, clinicians, patients and policy makers, are set to make sure the standards, reliability and unbiased information in the DST are upheld. These guidelines, also known as quality criteria framework (Elwyn et al. 2006), identify the format of the DST, such as leaflet, interactive media, video or audio tape. The minimum requirement of the information it contains “information about the options and their associated relevant outcomes” (Barratt et al. 2006, p.1). What also needs to be considered is what constitutes a DST and the format that it might assume. As previously stated, DSTs can come in a variety of formats including leaflet, touch screen and audio guide, mobile apps and websites.

The term “app” is short for application which is “a self-contained program or piece of software designed to fulfil a particular purpose” (Kao and Liebovitz 2017, p106) and which is usually available for use on mobile devices. This is also known as mobile health (mhealth); however where they differ is that mhealth apps can be used to collect data, access patient records and use social media. Such apps relate to health with the aim of improving patients’ health (Kao and Liebovitz 2017) and the majority are in fitness, lifestyle management,

diet and nutrition or chronic disease management. MyBirthplace is a DST, designed to provide information on the different birth location options including reasons for and against delivering in each. It is underpinned by both local and national research to provide a robust evidence base around their choices and outcomes of the facilities.

The format, although available in both an app and website version, is considered a DST as it is directed at the patient (pregnant women) and unlike mHealth, it does not collect data, connect to social media or use their health records. As stated above, there are set criteria that align information provided to women as a DST and these criteria must meet the set guidelines; MyBirthplace meets the majority of the criteria (see Chapter 4).

DSTs used to aid shared decision making are available internationally (O'Connor 2001), but in the UK have been less widely used (Coulter and Collins 2011) and are limited to a small number of clinical topics. The reason behind this limited use is unclear. Coulter and Collins (2011) suggest that there could be a number of reasons, including lack of knowledge of DST by clinical teams, including the evidence to support their use and where they should sit within the care pathway. Another reason they suggest is that clinical teams believe that they have limited time and availability to use decision aids or lack the training to use them.

Whatever the reason there is a growing body of evidence to support their use in healthcare with a Cochrane systematic review by Stacey et al. (2014) highlighting that DSTs have a positive impact on knowledge scores, decisional conflict scores and patient practitioner communication when compared to usual care. Interventions such as DST have also been found to increase patients' satisfaction with consultations and result in better outcomes. Additionally, they empower patients to make decisions, increasing compliance around treatment and care (Agency for Health Research and Quality 2015).

The evidence for their use in health care seems to be well established with a positive increase in knowledge about surgery(Hawley et al. 2016; Stacey et al. 2015), diabetes management (Bailey et al. 2016) and now NICE has a list of 28 patient DSTs to help patients make a decision (NICE 2017). However, DSTs in

midwifery are considerably less common in both the topic areas that they cover and also the research that supports their use.

More DSTs are available now than 10 years ago within health and social care and midwifery is following suit. DSTs are used to inform women of a variety of topics within pregnancy providing accurate evidence based information (Dugas et al. 2012). It is hoped that using these DSTs within a shared discussion will aid decision making.

The DSTs within the childbirth continuum cover a variety of subject topics, with choice of vaginal birth after caesarean section being the most popular for utilising a DST (Montgomery et al. 2000; Montgomery et al. 2000; Shorten et al. 2005; Frost et al. 2009; Schoorel et al. 2013, Eden et al. 2014). DSTs have also been used to inform parents of prenatal testing (Graham et al. 2000; Nagle et al. 2008; Kuppermann et al. 2009 Edelman et al. 2014), labour analgesia (Raynes-Greenow et al. 2010), and breech presentation at term (Nassar et al. 2006).

A variety of sensitive topics have been tackled with DSTs in health care and also in pregnancy including: antenatal down syndrome screening (Bekker et al. 2004; Bjorklund et al. 2010; Edelman et al. 2013), learning difficulties (Porter et al. 2009) termination methods (Wong et al. 2007), counselling (Hunter et al. 2005) and probability of preterm delivery (Guillen et al. 2012). All have helped to inform the direction of discussion and help pregnant women at a time when a decision can be difficult.

Amongst the DSTs, choice of place of birth is a topic that has limited coverage, thus providing areas for expansion as a key gap identified. Three other DSTs on birth place choice exist; havingababy.org (Queensland Centre for Mothers & Babies 2014) is a computerized interactive format accessible by the internet, while Coxon (2014) developed “Birthplace And You” as a leaflet, but also available online. The popular “WHICH?” website looks at different places to give birth. Although these DSTs are readily available on the internet, currently no study has been conducted on the impact of a DST for birthplace choices and provides a gap in the literature.

### **3.2 Literature review**

A systematic review was undertaken to examine DST use in obstetrics and midwifery; it was conducted in order to understand the current state of knowledge in relation to maternity DSTs and to provide grounding for the study. The findings provide an evidence base for why MyBirthplace was created, in turn giving justification for this study to assess its effectiveness.

A preliminary search identified a number of previous reviews of DSTs. These have looked at the effectiveness of different DSTs on knowledge, anxiety, decisional conflict, final choice and final outcome in the specific context of pregnancy and birth (Say 2011; Dugas et al. 2012). Since the first review published in 2011, there has been considerable advancement in DSTs and thus it was considered in need of updating. This review by Say et al. (2011) looked to identify the effect DSTs have on clinical and psychosocial outcomes. The review did not specifically focus on the effectiveness of the actual decision made. In addition, both these reviews were broad, including any and all types of DSTs. One of their suggestions for further research was to explore women's views of using a DST and their acceptability.

The world is now becoming more responsive to technology, with increasing use of the internet and continuous creations of new apps. No other review has looked specifically at DSTs that utilise interactive mechanisms. Therefore the key focus for this systematic review was to assess computerised DST in the context of midwifery based decisions with women as the main user. Secondly, this answers a call from the previous review by Say et al. (2011) highlighting the need of future work to look at effectiveness.

This review provides a unique focus on DSTs in computerised format by assessing effectiveness as an actual decision made; studies that have utilised the gold standard randomised control trial (RCT) to extract this information will be sought.

### **3.3 Mapping the process**

#### **3.3.1 PICO question**

The Population Intervention Comparison Outcomes (PICO) model was used as a framework to identify key concepts and scope to formulate the question. This model provides a simplistic but effective outline for creating a specific and precise question (Aslam and Emmanuel, 2010). This was chosen over both the Population Effect and Outcome (PEO) and the four p's (People, Problem, Program and Phenomenon) because of its acceptability within the research field and its use by Cochrane and the National Institute of Health and Care Excellence. The specific research question was:

*Are computerised Decision Support Tools used with women in pregnancy effective in terms of assisting the woman to make a decision?*

The primary outcome was specified as the decision made. A DST is usually created to help an individual make an informed choice which is the primary reason for providing the information in this format; therefore any paper assessing the use of DSTs in theory should identify the actual decision made. Secondary outcomes were knowledge, satisfaction and effectiveness.

#### **3.3.2 Search strategy**

The strategy used to structure this review evolved from guidance offered by Aveyard (2007). Advanced searches for peer reviewed literature published in English Language undertaken using the electronic discovery service provided by EBSCO which provides coverage of key health and social science databases such as MEDLINE, Ovid, CINHAL, Science Direct, Web of Knowledge and the Cochrane Library. Further searches were carried out of the Randomised Control Trial Register.

The thesauri of each individual database was utilised to collect the appropriate search terms to ensure all available papers were uncovered. The Boolean operators AND (for combining the important search terms) and OR (to obtain other specified results which is helpful when a term can be referred to in numerous ways such as decision tool or decision aid) were used. The search

terms were used in all possible combinations. Table 1 shows the PICO terms and alternative terms used on each database.

**Table 1 PICO and alternative search terms**

Population	Intervention	Comparison/ control	Outcome
Pregnant Women	Computerised Decision support tool	leaflet / Standard care	Effectiveness in Decision made
Alternative search terms			
wom*, pregnan*	App , Mobile app, appomed intermediary, presentation, computerized decision tool, decision aid	Paper based tool, standard education	decis*

The population, in this case the pregnant woman, needed to be the main user of the intervention. Any other user of the DST, such as health professionals were excluded from this review. This is because the outcome of effectiveness needed to relate to decisions made by the woman. The intervention is a computerised DST; other reviews have looked at DSTs in other formats and therefore to be unique and relate to the specific research question, the effectiveness of a computerised format will be assessed. The comparison was slightly more open in that the control group could be given routine care or an information leaflet. The most important factor is that the intervention was computerised or involved the woman in an interactive way. The outcome, as previously identified, is effectiveness in terms of actual decision made.

Due to the limited evidence in the field of DSTs, the searches did not produce unmanageable numbers and searching the titles and abstracts was managed by the researcher. Searches were combined to again reduce the number of results found. Figure 3 provides an example of one of the many search strategies conducted.

**Figure 3: Example of search strategy adopted**

1. (S1)(Computerized decision making tools) = 85 results
2. (S2)(s1 and s5) = 1 result **1 duplicate**
3. (s3) (Computerized decision making tools) AND (midwifery) = 0 results
4. S4) (decision analysis tool)=3,652 results
5. S5) ~~Pregnant\*~~ 2,273,810 results
6. S6) (S4 + S5 ) = 11 results **2 duplicates 9 excluded**
7. S7) App =513,372 results
8. S8) decision making = 1,584,365results
9. S9) (s7 + s8) = 1,243
10. S10) (s9 + s5 ) = 3 results **3 excluded**
11. S11) (s10 + women) = 32 results **5 duplicates 27 excluded**
12. S12)Mobile technology = 89,802
13. S13) (S12 +S5)= 50 results **3 duplicates 42 excluded**
14. S14) decision assisting aids = 12 results **12 excluded**
15. S15) (s14+ s5) = 0 results
16. S16) decision assisting tool =281
17. S17) (s16 +s5) = 1 result **1 duplicate**
18. S18) (s16 + s5 =1 result **1 duplicate**
19. S19) information access\* = 310,709 results
20. S20) (s19 + s5) = 2319 results
21. S21) (s20 + s8) = 139 results **16 duplicates 121 results excluded**
22. S22) (s20 + s16) = 0 results
23. S23) Touch screen technology = 2027 results
24. S24) (s23 + health) = 92 results **7 duplicates 83 excluded**
25. S25) (s24+ women) = 7 results **7 excluded**
26. S26) (s24 +s5)= 0 results
27. S27) ( s23+ s8) = 8 results **8 excluded**

### **3.3.3 Selection criteria**

All inclusion and exclusion criteria were predefined prior to conducting the database searches and documented within the Search Protocol (Appendix 1).

### **3.3.4 Methods**

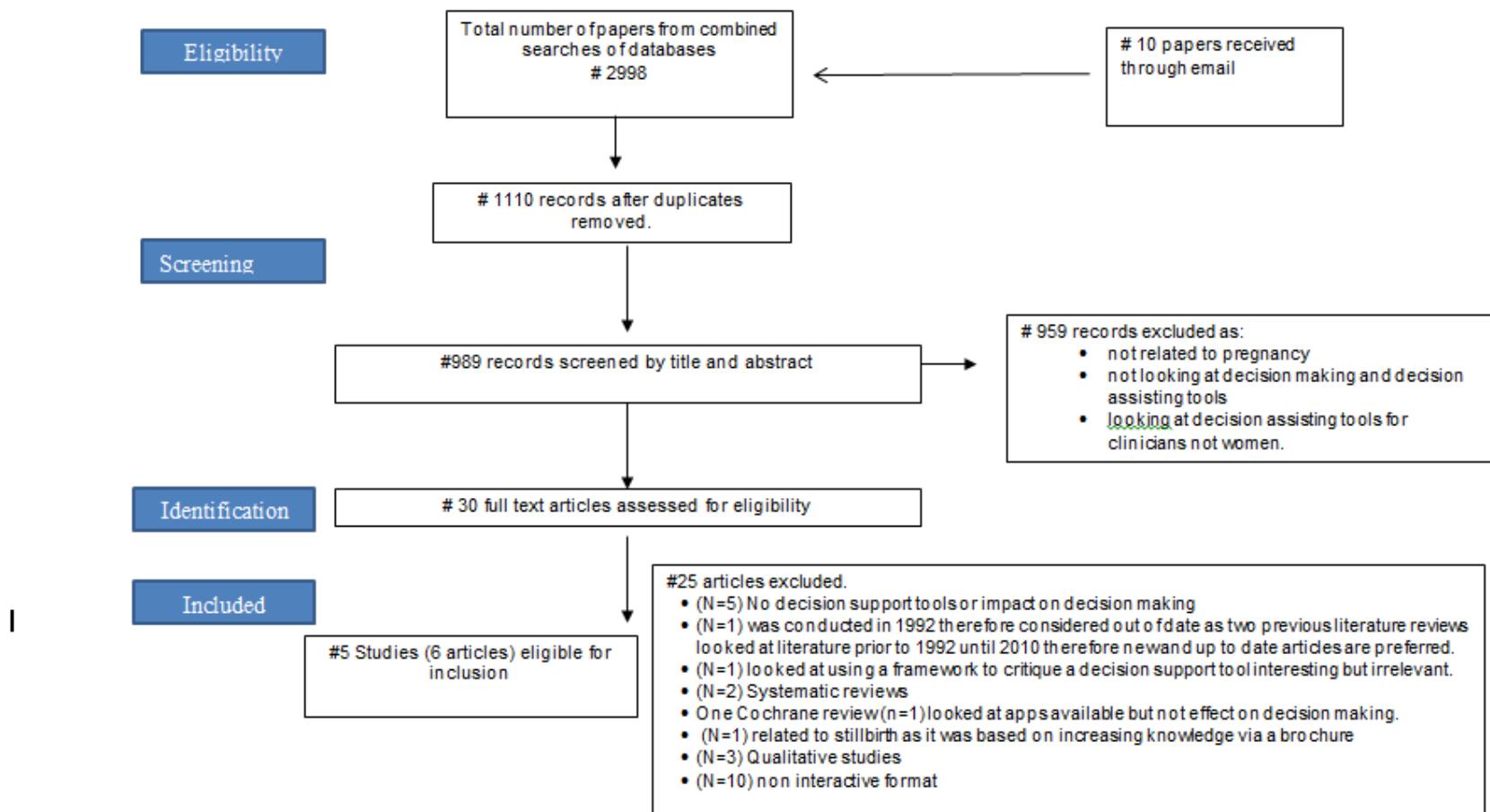
Databases were searched between September 2013 and January 2015. Further searches to obtain new papers were conducted up until July 2017, which then allowed time to write up the findings of the search. Databases that were searched included: CINAHL complete, PuBmed, MEDLINE, PsycINFO, Ovid, MyiLibrary, NHS Evidence, the Cochrane database, National Institute of Health and Care Excellence, the Meta Register of Controlled Trials, Royal College of Obstetricians and Gynaecologists and Popline.

A further search for grey literature using the OPENGREY database, Penn library and the Kings Fund database was conducted without any relevant papers presenting. The researcher also hand searched journals and looked at the reference lists of relevant papers to search for further relevant literature.

### **3.3.5 Study identification and data extraction**

A total of 2998 citations were found. Removing duplicates left 1110 articles that appeared relevant. Further screening of the title and abstract excluded 989 articles in line with the Search Protocol for reasons that included: not relating specifically to pregnancy; the health professional being the main user of the DST rather than the woman and not looking at decision making as a concept. Figure 5 shows this process in a simple flow diagram. Those 30 papers were put through a data extraction tool created for this review, which can be seen in Appendix 2.

**Figure 4:** Flow diagram for identification and screening of studies



All studies that made it to the identification stage were critically appraised using Critical Skills Appraisal Programme (CASP) tools ([www.casp.net](http://www.casp.net), 2007), Oxford UK. The review specifically used the RCT tool, which is tailored to appraise the reliability and validity of each of the studies. Once selected, the papers were then imputed into a unique data extraction tool created specifically for this review (Appendix 2). Each phase of the review was done methodically and systematically, ensuring rigor to reduce the risk of bias or error in order to enable a quality review.

### **3.4 Results**

#### **3.4.1 Characteristics of publications including in this review**

It was quickly noted that although there are many studies looking at DST, only a small number assess computerised DSTs and even fewer utilised RCTs as the method of assessment specifically for the outcome of decision making. This meant that what appeared at first to be a large pool of quality studies was reduced leaving just 5 studies (6 papers) that met the criteria and were included in this review (Table 2).

**Table 2 Papers included in the Literature Review**

Source	Location of study	Participants/ context of use	Intervention / type of DST	Control	Primary outcome measures
Kupperman et al. 2014	USA	496 women 20 weeks or less  Prenatal testing	Interactive computerised educational booklet	Standard health booklet	Actual decision made DCS  Satisfaction
Yee et al. 2014	USA	150 women  prenatal genetic screening and the use of an educational based tool.	Interactive educational prenatal testing	Standard education	Informational understanding and knowledge levels
Graham et al. 2000	UK	875 pregnant women  Prenatal testing	Touch screen	Leaflet	Satisfaction  Knowledge  Uptake of screening (actual decision)
Eden et al. 2014	USA	131 pregnant women  considering VBAC	Interactive DST	2 Educational leaflets	DCS, satisfaction
Hollingshurst et al. 2010  Montgomery et al. .2007  (DiAmond Study)	UK	742 pregnant women with 1 previous caesarean section  to consider VBAC	Decision analysis	Usual care, Usual care plus informational leaflet	Actual decision made and cost analysis in relation to the decision.

All 5 studies identified a form of computerised DST needing to be accessed via laptop or touch screen technology and the prevailing topics were either choice of vaginal birth after caesarean section (Montgomery et al. 2007; Eden et al. 2014; Hollighurst et al. ) or prenatal testing (Graham et al. 2000; Kuppermann et al. 2009; Yee et al. 2014).

The studies included in the review originate from either the USA or UK (Table 2); these two countries differ in how they provide midwifery care and thus this has to factor into the analysis and how their differing care may have impacted on the results.

A combined total of 2394 pregnant women participated in the studies included in this review and the mean average age across all studies is 31.8 years of age. This is about average for giving birth in high income countries; in 2014 in the UK, over half (52%) of all live births were to mothers aged 30 and over (Office of National Statistics 2015).

### **3.4.2 Decision made**

Only Kupperman et al. (2014) and Graham et al. (2000) had decision made as their primary outcome in terms of screening; both used uptake of screening as a measure of decision made. Eden et al. (2014) and the Diamond studies both used mode of delivery as the measure of decision made in terms of choice of birth option following a previous caesarean section. Yee et al. (2014) did not measure decision made, focusing instead on knowledge about screening. Table 3 shows the assessment of effectiveness by each paper in the review; this is done by showing the tool used to evaluate decision made and the measure for the studies.

**Table 3 Assessment of effectiveness; measures and tool used in the papers**

Source	Measure of decision	Tool	Duration of intervention /follow up	Quality	Blinded?	Conclusion
Kupperman et al 2014	Use of invasive diagnostic testing	Pre and post intervention 23 item Questionnaires	Routine antenatal visits	CASP =Low Jadad = 0	Yes	No statistically significant difference (70.7% compared with 58.6% p =1.0)
Yee et al 2014	No measure; instead looked at correct answers (Knowledge)	Two validated scales that assessed health literacy and electronic health literacy, 18 item True False and three open ended questions designed to assess knowledge of prenatal screening.	Paper information	Moderate Jadad = 3	Unclear	150 women were randomised into two groups of 75; Intervention group mean of 69.4% of the questions were answered correctly statistically more significant than those in the control group (p is less than 0.001).
Graham et al 2000	Uptake of screening	Three Questionnaires Spielberger State-Trait Anxiety Inventory	Baseline at 16 with 2 <sup>nd</sup> questionnaire post intervention, follow up at 20 weeks	Moderate Jadad = 3	None	Detailed anomaly scans were significantly higher in the intervention group (DST use) than the control
Eden et al 2014	Mode of delivery VBAC or not	Questionnaires pre and post intervention Decisional conflict scale	Delivery of intervention by research assistant on laptop. One time point before and after accessing either intervention or control	Moderate Jadad = 3	Yes	41% of DST intervention group had VBAC, 37% in the brochure group. Significant relationship between preferred route of delivery post intervention and actually birth of their baby (p <0.001).
Hollinghurst et al 2010 Montgomery et al 2007 (DiAmond Study)	Mode of delivery VBAC or not	16 item questionnaire degree of uncertainty about mode of delivery to; utilising multivariable regression models adjusted for maternity unit, initial preference and mode of delivery as a baseline. Decisional conflict scale And actual mode of delivery	Delivery of Intervention by computer at participant home Recruitment at booking 10-20 weeks	High Jadad = 5	Yes	Rates for vaginal birth were higher for women in the DST group compared with the usual care group

### **3.4.3 Measures used**

All five studies used questionnaires to obtain data; they just differed in the timing of the administration (Table 3). Kupperman et al. (2014) used questionnaires before and after the intervention to identify change to specific questions that they had made to evaluate the different primary outcomes. For the other primary aims, Kupperman et al. (2014) found that the intervention group were more knowledgeable about prenatal testing and the risks and ultimately had less decisional conflict as measured by the Mann-Whitney tests. There were significant differences observed for most of the primary and many of the secondary outcomes compared with controls immediately after the intervention. Again, the significance was intervention by age; those women of 35 years or older were more likely to opt for screening, however one could suggest this is down to the increased risk that comes with age and thus they are more likely to want to have genetic testing and be aware about the information around screening.

The same measure was used by Eden et al. (2014) and Montgomery et al. (2007), utilising the Decisional Conflict Scale (DCS) and compared birth preference on the post questionnaire after the intervention with actual route of delivery. Furthermore, Montgomery et al. (2007) looked at the degree of uncertainty about which mode of delivery to take; utilising multivariable regression models adjusted for maternity unit, initial preference and mode of delivery as a baseline.

Yee et al. (2014) did not directly look at decision made; instead they looked at information levels by testing the number of correctly answered questions. They used two validated scales that assessed health literacy and electronic health literacy, they also had an 18 item True/ False and three open ended questions designed to assess knowledge of Ante natal screening. Their sample of 150 women were randomised into two groups of 75; of those in the intervention group a mean of 69.4% of the questions were answered correctly, which is statistically more significant than those in the control group ( $p$  is less than 0.001).

### 3.4.4 Reported outcomes

Table 4 shows the outcome data for the 5 studies / 6 papers included in the review.

**Table 4: Outcome data for decision made and knowledge by papers in the review**

	Decision Made					Knowledge			
	Intervention		Control	Effect size RR (CI)	Significance	Intervention		Control %	Effect Size
	%	%	95%	p=	%		CI 95%	p=	
Hollinghurst et al. 2010 and Montgomery et al. 2010	37	30/29	1.42 (0.94-2.14)	NS	69.7	57.5	-	-	
Eden et al. 2014	41	37	-	.001	96.4	46.0	-	0.001	
Yee et al. 2014	NA	NA	NA	NA	9.6	8.4	-	0.34	
Kupperman et al. 2014	5.9	12.3	0.45 (0.25-0.80)	.005	9.4	8.6	0.34-1.31	0.001	
Graham et al. 2009									
*Anomaly scan	95	97	-	NA	87	94	-7 (-11 to -3)	0.001	
*Amniocentesis	40	42	-	.003	9	7	-2 (-6 to -2)	0.246	
*blood test	-	-	-	-	60	59	-1 (-6 to 9)	0.658	

Graham et al. (2000) showed that uptake of detailed anomaly scans were significantly higher in the intervention group (DST use) than the control (see Table 3), as did Kupperman et al. (2014) for decision made (Table 3).

The primary outcome for Eden et al. (2014) and the DiAmund studies was the decision made regarding mode of birth after Caesarean section (VBAC). They looked at whether the tool for women with prior caesareans assisted them in deciding whether to have a trial of labour or another caesarean section. Both studies found a difference in decisions amongst the intervention groups. Eden et al. (2014) found that 41% of the women who had used the DST had a VBAC compared to 37% in the brochure group. They acknowledged that there was a significant relationship between preferred route of delivery after the intervention and how the women actually ended up birthing their baby ( $p < 0.001$ ).

Similarities were seen in the DiAmund trial; both papers (Hollingshurst et al. 2010; Montgomery et al. 2010) showed rates for vaginal birth were higher for women in the DST group compared with the usual care group; however the effect size was smaller and not significant (Table 4). A total of 742 women were randomised with outcome data (mode of delivery) available for 713 (96%). They found that decisional conflict scores reduced in both intervention groups compared to usual care with 95% confidence interval (27.8 usual care compared with intervention 23.6 Mean Standard Deviation (SD) on DCS).

Three studies used computer based interventions (Kupperman et al. 2014; Yee et al. 2014; Eden et al. 2014). However, one was an information programme providing information about outcomes associated with the options and health outcomes for both mother and baby (Yee et al. 2014); it provided both numerical and pictorial formats. In contrast, the Diamond studies used a computer based intervention that included value attachment for women to rate each possible outcome in a decision tree (Hollingshurst et al. 2010; Montgomery et al. 2010). Women then received a printout and were encouraged to discuss this in subsequent antenatal visits. There was no difference in decisional conflict between the two different interventions. There appears to be no difference (Eden et al. 2014; Hollingshurst et al. 2010) but not all studies, measured the decision made (Yee et al. 2014). Comparison of outcomes for each of the studies can be seen in Table 4.

### **3.4.5 Secondary outcomes**

Secondary outcomes were similar across all five studies. Kupperman et al. (2014) and Yee et al. (2014) showed improvement in knowledge levels among the intervention groups compared to the control. Graham et al. (2000) showed improvement in one domain (anomaly scan) however the other two showed no difference in knowledge in the intervention group.

The DiAMOND studies reported higher knowledge scores in all three groups at 37 weeks' gestation; however women in the two intervention groups had higher scores than women in the control group. (Information versus usual care CI 12.8 (9.7 to 15.9) <0.001) and (Decision analysis versus usual care CI 11.2 (8.1 to 14.2) p<0.001). This shows that DSTs increase knowledge levels amongst those that access them.

### **3.4.6 Quality of methodology**

The methodological quality of each of the studies were assessed by the Jadad Scale which assigns a numeric score for randomisation, blinding and description of dropouts adding to a maximum score of 5 points (Jadad et al. 1996). To further confirm the quality, each study was evaluated using the RCT CASP tool, rating the study from very low quality to high quality. Three of the studies were ranked at 3 on the Jadad scale with one study scoring 0 and one scoring 5 (See Table 2). Although none of the studies were double blinded, the nature of the intervention meant that this was impractical. Four of the five studies did, however, identify that the women were blinded to the intervention. However, in one case, a limitation raised by the study indicated that this could not be verified because of the environment and prior engagement with care received by women in the control (Yee et al. 2014).

All five studies were RCTs but they were affected to some degree by factors such as selection bias, and response bias. Three of the five studies included in the review had relatively large sample sizes, while Eden et al. (2014) and Yee et al. (2014) both had less than 300. There were some concerns with loss to follow up in the study by Graham et al. (2000) and low response rates in Kuppermann et al. (2014). Acknowledgement was given by all authors to these limitations, however findings of decision made were positive overall with both

Kuppermann et al. (2014) and Eden et al. (2014) showing a statistically significant difference following the intervention.

Kupperman et al. (2014) conducted a fairly well rounded RCT; however as they state, there is a degree of selection bias due to the recruitment rate being just over 50%. They also had a higher proportion of women with college degrees; because of one of the outcomes was electronic health literacy it was deemed the higher education level would alter the result and this is reflected in the quality score, thus affecting the overall generalisability.

Montgomery et al. (2007) produced a well-rounded and comparatively large RCT with high levels of recruitment and a low rate of loss to follow up. A weakness that the team identified is that the intervention was given to women on a laptop provided by the researcher and thus the women could potentially have known that they were receiving the intervention; however the researchers state that women were blinded.

Two of the other studies were clearly blinded (Eden et al. 2014; Kupperman et al. 2014). Graham et al. (2000) did not discuss blinding and it was difficult to ascertain if women were blinded or not in the study by Yee et al. (2014) (Table 2). Yee et al.'s (2014) study was limited to knowledge in terms of increasing correct questions based on screening; there was no attempt to look at the actual decision made. The sample was relatively young and thus electronic health literacy could be seen as bias, because of the generation change and more young people having access to electronic devices. There was no control for the amount of genetic counselling received from health professionals prior to randomisation and thus the increase in knowledge scores must be judged accordingly.

A problem for Graham et al. (2000) was the loss to follow up. Of the 1050 participants, 670 (64%) returned all three questionnaires, 743 (71%) responded to only the first two questionnaires, and 710 (68%) responded to only the first and last questionnaires. At baseline this equated to 18.2% drop out in the control compared to 15% in the intervention. At the second questionnaire a further 11.1% in the control and 12.5% in the intervention dropped out. Finally at the third questionnaire 6.2% dropped out in the control compared to 3.3% in the intervention group. This is a known issue amongst longitudinally collected data

and with the authors acknowledging this gave reassurance to the quality of the study as does the similarities in characteristics among those that return the questionnaires and those that did not. On the other hand, Eden et al. (2014) had a sufficient number of women and no loss to follow up that was mentioned. They stated that their sample size calculation, which was based on estimates from a similar trial and produced a size of 64 women per group with an 80% power to detect a size of 0.5 with a significance of  $p<.005$ ; they recruited a sample of 131.

Overall four of the RCTs were conducted fairly well (Graham, et al. 2000; Eden et al. 2014; Yee et al. 2014 DiAmund studies), there are some minor concerns around sample size and loss to follow up, however the researchers had elicited to these limitations. Only one did not directly look at decision made (Yee et al. 2014); however, of the outcomes observed, a positive improvement can be seen when looking at use of a DST.

### **3.5 Studies' contribution to knowledge**

Overall the papers included in the DiAmund study suggests a possible reduction of 4000 caesareans sections if the intervention was widely implemented creating a direct clinical relevance to care of women (Hollinghurst et al. 2014; Montgomery et al. 2014). However a weakness with their study is that participants were slightly older (32.9 years versus 31.9 years  $p=0.05$ ) and less deprived ( $p=0.020$  than those who didn't participate).

Eden et al.'s study highlights that using a decision aid later in pregnancy decreased decisional conflict for women, thus showing benefits when making that decision about which option to go with (2014). What the research does not address is the likelihood of success of vaginal birth based on individual factors; however, they do suggest this as an opportunity for further research.

Graham et al. (2000) evaluated that a touch screen DST reduces the barrier of information exchange by placing women at the centre of control. They found that uptake was significantly increased, as did Kupperman et al. (2014). However Graham et al. (2000) found no additional benefits to the information being in a DST compared to usual information leaflets.

This is only a small literature review because of the specific inclusion criteria that stated that the DST needed to be computerised or interactive and this clearly shows the limited number of studies. In order to provide a robust review of the literature the researcher will bring into the discussion some of the other research, although these DSTs were not computerised. The discussion will also consider findings from qualitative studies in order to understand women's views of using a DST.

### **3.6 Discussion and conclusion of literature review**

The number of DSTs used to support shared discussions and help inform women's decisions in pregnancy and childbirth is increasing in the UK. This review complements the findings of Dugas et al. (2012) review, which found that DSTs had a positive influence on DCS (Kupperman et al. 2014; DiAmond studies 2014; Graham 2009) and knowledge (Yee et al. 2014) scores. The number in this review is small because of the specific need to look only at computerised DST's and for the studies to be of high quality represented by the RCT.

Studies of poorer quality or those that looked at other formats of DST appear to support the findings in this review. The exception is two studies conducted in relation to screening, which show less uncertainty about a decision (Nagle et al.2008; Bjorklund et al.2012); however, neither of these studies were computerised.

DSTs are seen to reduce anxiety in women who are given counselling about prenatal diagnosis (Nagle et al. 2008); improves satisfaction scores (Bekker et al. 2004) and lead to a reduction in DCS; the weight of the evidence suggests that they would be valuable in supporting women (Shorten et al. 2005). However, their effectiveness is not unchallenged; there were a number of studies that failed to identify a difference between groups with regards to "decision made" (Schoorel et al. 2013; Wong et al. 2006).

One study, (Raynes-Greenow et al. 2010) found no difference in DCS for labour analgesia however a different method of assessing decision made was used compared to the other studies included in the Literature Review. A "Stages Of Decision Making Scale" was utilised, which looks at where a woman is with regards to her choice. It is a tool used over time to show changes. This scale

showed that the majority of the women in the DST group had made some choices, but were willing to reconsider (Raynes-Greenow et al. 2010, p 6). However, from the study's data it appears that this scale was only used at baseline and the follow up was assessing what the women actually used in terms of pain relief. There was no reported significance in birth outcome between the groups and there was no significant difference in regards to analgesia use.

Knowledge was shown to be an outcome which has the potential to be improved by using a DST. Qualitative literature by Porter et al (2009) showed a positive increase in knowledge using their DST compared to usual care or paper based information. One participant identified the DST as "really good" (Porter et al. 2009, p.314) at providing information. This increase in knowledge was also seen in the study conducted by Frost et al. (2008), who found that women in the decision analysis group were able to identify more specific risks associated with vaginal delivery and caesarean section after a previous caesarean section. Numerous qualitative studies identified knowledge as a theme and showed positive outcomes; however in both the study by Porter et al. (2009) and Guillen et al. (2012) there were significant questions raised regarding the reliability of the results. Firstly Porter et al. (2009) showed no knowledge scores prior to the DST and Guillen et al. (2012) could potentially be seen as limited because of a ceiling effect. A ceiling effect is thought to justify when

"a measure possesses a distinct upper limit for potential responses and many of the participants are in this upper section"

(Hesseling et al. 2004,).

The link between DSTs and increase in knowledge was supported by the majority of RCTs, with all showing a statistically significant increase in knowledge in the intervention group (Bjorklund et al. 2012; Nassar et al. 2006, Montgomery et al. 2007; Hunter et al. 2005; Wong et al. 2006; Raynes Greenow et al. 2010; Shorten et al. 2005).

However, again none of these assessed computerised DST; there were only a small number of RCTs assessing computerised DSTs, as seen in this review,

and one of those had no data on decision made (Yee et al. 2014). This gap in the literature provides a clear justification for the study presented in this thesis.

The studies in this review support the use of DSTs for women in pregnancy in terms of supporting a decision about screening options or choice of birth following caesarean section, but not about implementing an DST such as MyBirthplace for choice of place of birth, because no other study has been done.

As identified previously, the papers included in this review originate from either the USA or UK. One of the key differences is how these countries provide midwifery care (van Teijlingen et al. 2009) and this raises the question of whether the findings from USA studies can be applied in the UK context.

However, the increase in knowledge and satisfaction scores will potentially translate into an increase in patient satisfaction with care and this is what the Maternity Review (NHS England 2016) is striving to achieve for women.

To summarise, few studies have assessed the use of a computerised DST, and none of these have looked at place of birth. It is reasonable then, to conclude that there is a need for further assessment of DSTs in terms of decision made about place of birth. This provides a clear justification for why MyBirthplace was created and for this study to assess its effectiveness in terms of decision made.

### **3.7 Conclusion of chapter**

It is clear from looking at the DST literature that their use provides individuals with support with decision making in terms of decisional conflict and increases satisfaction with the decision made. Prior to using DSTs with women in practice there is a need to assess their effectiveness. MyBirthplace has not been assessed for its effectiveness in supporting women to make a decision about place of birth and neither has it been reviewed with women for their opinion on its usefulness. This signifies the originality of the study at its core. Before discussing the methodology used in this study it is important to give an overview of MyBirthplace from its conception to what women see when they access it. The next chapter (Chapter 4) will provide the reader with insight into MyBirthplace and the information it provides.

# Chapter 4 The creation of MyBirthplace

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## 4.1 Introduction

MyBirthplace originated in a large urban hospital, located in the south of England. The Trust's maternity service cares for more than 6000 mothers and babies each year. The acute service is based at the OU, which has an AMU, inpatient antenatal, postnatal and labour care, obstetric scanning, fetal medicine and consultant obstetric care with access to a level 3 Neonatal Unit.

This is one of the largest acute hospitals in the country, with a local population of 650,000 (NHS Hampshire 2011). The catchment covers a wide area and thus the demographics vary considerably. It provides cover for one of the most densely populated cities in the UK and its surroundings. The catchment includes some of the UK's most socially deprived areas whose families rely on income and various other social supports to areas of high income (Hampshire County Council 2015). As per the 2013 assessments, the ethnic breakdown of the city's population is: 86.4% White British, 1.7% Chinese, 3.8% other White, 1.6% Indian, 1.3% Mixed-Race, 1.2% Bangladeshi, 1.0% other ethnic gathering, 0.9% Black African, 0.7% White Irish, 0.6% Other South Asian, 0.4% Pakistani (UK Population 2016).

The community services provide midwifery and obstetric services from community units, Children's Centres and General Practitioner (GP) practices. There are also three FMU centres, one located within the city, one in the west and one north of the hospital site, providing community antenatal and postnatal care, parent education and a home birth service.

The context for the development of the app was that the Director of Midwifery felt that too few women were receiving their choice of place of birth and that the caesarean section rate needed addressing. They therefore brought into effect the Nurture Programme (PHT 2014), which fundamentally saw a move from women centred care to family centred care.

Family centred care is an approach to the planning, delivery and evaluation of health care that encourages beneficial partnerships between health care professionals, women and families and is the “belief that patients and their families should participate in decisions related to their own health care” (Galvin et al. 2000. p.625).

One of the main objectives for reform was for one to one midwifery care in all settings. The Trust ensured that their birth centres were further developed into local maternity centres that were open 24/7. This saw births at the FMU and at home increase and the number of women denied their choice of place of birth decrease. However, two years on the Director of Midwifery felt that despite offering women choice and a flexible midwifery workforce to support 1 to 1 care in labour, the number of women making a conscious choice to give birth in either the FMU or at home was low compared to those delivering on the OU. Women were also saying that the information they were receiving about safety and facilities for place of birth were often subjective and influenced by health professionals, the internet, media and friends and family (Shine 2014). The local birth rate at the time (2012) demonstrated a high number of women delivering in the OU (75% of 6292 births) (Shine 2014); in addition they were also not registering a preference about where they wanted to deliver until 36 weeks; As previously discussed, this can be either too late or cause problems when prioritising care (Shine 2014).

The maternity care team wanted to offer women choice, unbiased evidenced based information and engage them in an SDM process (NICE 2014). They also wanted to ensure that the information women received about their birth place options was consistent between the localities and midwives Funding was awarded by the Health Foundation Shine scheme (2012); to develop the app: MyBirthplace.

#### **4.2 Development of MyBirthplace**

MyBirthplace is an interactive DST that is an app accessible from mobile devices or the internet. It was developed by the Director of Midwifery and team because they felt that women were unaware of the choices that were available to them and the actual risks associated with each location. (Shine 2014) This was created just after the 2011 evidence (Hollowell et al. 2011) which

highlighted that the risks associated with birth outside of the OU were low for women that were low risk. Even in mothers experiencing their first pregnancy, the risk of a home birth, although raised compared to mothers having their subsequent child, is still relatively low in comparison to the potential intervention rates seen on the OU. MyBirthplace was developed using national birth place research and local data to provide women with risk and safety statistics relating to the different options available. Research suggests that apps created by a health professional or academic are more likely to be effective in securing behaviour change in their users (Fitzgerald and McClelland 2017).

The aim was to give women greater information to make an autonomous decision about place of birth (PHT 2014). Local women were involved at each stage of the development process, using their feedback to refine what they wanted for the overall look and data obtained in MyBirthplace.

The DST provides decision pathways for primiparous women (first time mothers) and multiparous women (women having subsequent babies). The information available to them is based on local statistics and data obtained from the recent birthplace study (Hollowell et al. 2011). It is available to women to download as an app but also can be accessed on other smart devices, phones, iPad or laptop.

The pilot conducted during the creation of the DST by the hospital showed that of 166 women that were included in the pilot 75 (45%) had decided where they wanted to give birth at 12 weeks; this increased to 143 women (86%) at 36 weeks (PHT 2014a). Looking at women's views during the creation of the DST 85% of those who responded to surveys sent following access to the DST stated that it was easy to use (PHT 2014).

The app complemented guidelines published at the time by NICE (2014) that recommended homebirth and birth in midwife-led care as it is safer than hospital care for women having a straightforward, low risk, pregnancy. The DST is now introduced at the first appointment the women have with their midwife supported by a shared discussion. The hospital has also specified that their midwives must have a shared discussion at 36 weeks where the women will be asked where they want to give birth and a decision is documented in the notes. This is thought to provide women with closure about their options and also

support them with regards to what they then do when they go into labour. For example at the time of the study and prior to implementing the labour line, if they choose to give birth at home women need to contact the community coordinator and state they are having a home birth. This is to reduce the number of individuals getting to the point of active labour without knowing where they will be delivering.

MyBirthplace is interactive; women click to change pages and can choose information relevant to their parity. The pictures below show some of the visuals within MyBirthplace.

#### **4.2 Going through the app**

Opening the app the women are greeted with the Homepage (Figure 5). The design was conceived by the project team led by the Director of Midwifery and given to a technical designer, through an iterative process where the prototype was taken to women several times for revisions (Shine 2014). The logo depicts a couple holding a baby and a silhouette of a pregnant woman in the background. The visual appeal of an app and its attractiveness is increasingly seen as an essential factor in overall appraisal from a user's perspective (Silvennolnen et al. 2014). As the Homepage is seen first, aesthetic information is evaluated immediately and is the main component for first impressions (Tractinsky et al. 2012). Following a pilot of the app in the design phase, the app was reviewed and refined with the help of a graphics expert (Shine 2014). The final Homepage rolled out can be seen in Figure 5.

**Figure 5:** Home Page for MyBirthplace



© MyBirthplace held by PHT consent gained to use, 2017

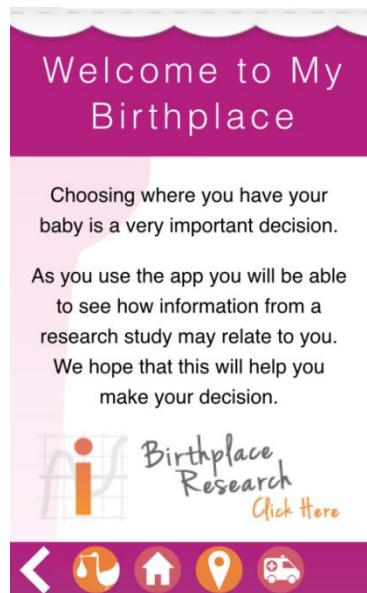
The women are then presented with the option of looking at the national birth place research (Figure 6). This provides the information from the birth place cohort study which was designed to answer questions about the risks and benefits of giving birth in different settings; with a particular focus on birth outcomes in healthy women with straightforward pregnancies (Hollowell et al 2011). As previously discussed in chapter two, this was to address the safety concerns that stem right back to the publication of the Peel Report in 1970's where birth outside of a hospital was considered unsafe.

Key findings from Hollowell et al.'s (2011) study are presented in MyBirthplace show that for low risk women the incidence of "adverse perinatal outcomes such as intrapartum stillbirths, early neonatal death, neonatal encephalopathy, meconium aspiration and other birth injuries was low 4.3 events per 1000 births" (Hollowell et al. 2011 p.16).

For planned birth in FMU and AMU there were no significant differences in the above outcomes compared with planned birth on an OU. In fact for those that plan birth outside of the hospital there are significantly fewer interventions (Hollowell et al. 2011). There is a risk for primiparous that they may need to be transferred to an OU during labour or after birth and there were 9.3 adverse

perinatal outcomes per 1000 planned home birth compared to 5.3 per 1000 in an OU. This section on the app provides women with the link to the research, it is an optional extra, and the link can be viewed by those wanting to further research choice of place of birth.

**Figure 6:** Welcome to MyBirthplace



It is on this page that the women have the option of adding the app onto the iPhone or smart device. When 'next' is pressed the app skips to the next section which is identifying any medical or pregnancy problems and stating that the hospital is the safest place in these cases (figure 7) it also has a virtual tour of the hospital in the study.

**Figure 7:** OU information and visual tour in MyBirthplace



It then discusses the birthing centres in the hospital study site followed by a map with addresses of the FMU. As previously stated the hospital provides three FMUs and an AMU to women accessing care from the hospital site. The app uses location data to provide the women with their closest option however also provides the other options in the local vicinity.

The app then provides the opportunity for women to differentiate themselves by parity so that the information that they access is relevant (Figure 8). This allows women to be given information that specifically relates to them. Research from Hollowell et al. (2011) found that there was a difference in women having a first baby on birth location. Allowing the women to choose which baby they are having allows them to access correct information.

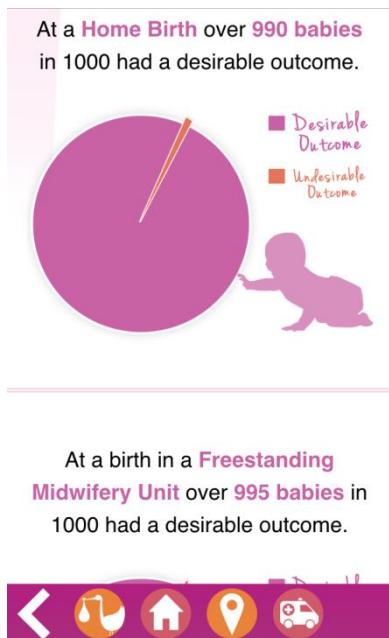
**Figure 8:** Pick your parity



Women are then given a number of pages with information related to their parity that change dependant on the location for example homebirth, FMU or AMU (figure 9) only home birth was chosen to give a visual of the page layout but information is available for all locations. Once women were told about the

desirable outcomes they are then given information about what is classed as undesirable; this is presented in percentage per 1000 (Figure 10).

**Figure 9: Homebirth statistics**

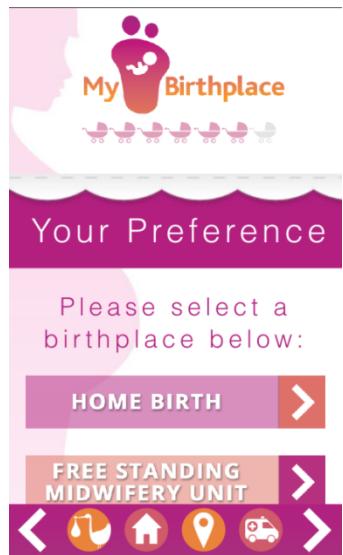


**Figure 10: Undesirable outcomes**



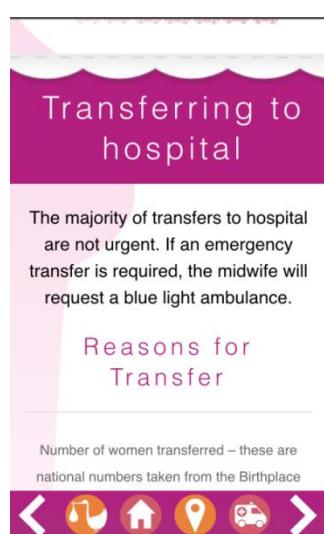
The following page gives the women information about what new mothers and midwives say about giving birth in each of the locations, alongside what is available at the locations. Again the team developing the app used focus groups of women and midwives to reshape the information (Walton 2014). Once women have read through all the information on the different localities the women are then given the opportunity to select their birth place choice (Figure 11).

**Figure 11:** Your preference page



If the women choose a birth place preference they are then asked to highlight either yes or no for various questions such as “do you know the benefits and risks of each of the different places” if all the questions are answered yes it gives women the final page of “congratulations on your preference” with the option of printing a PDF or emailing for which it then says to take the print out to discuss with the midwife. If one or more answers are no it is recommended that the woman talks to her community midwife. Women have a final information point at the bottom of the screen for ambulance transfers. This provides details about some of the reasons that women may be transferred from a FMU or AMU into hospital and the app also provides an estimated time of transfer for an emergency and non-emergency ambulance (Figure 12 and 13).

**Figure 12:** Reasons and timings



**Figure 13:** Transfer rates



### **4.3 Conclusion**

MyBirthplace was created in response to the local need to reduce the rising intervention and caesarean section rates and to address the call for more information in a format that was easily accessible to women. To be clear, the creation of MyBirthplace was not part of this study; the local Trust won funding from the Shine foundation to create the app which has now been rolled out to the local population of pregnant women. This study seeks to establish whether MyBirthplace is effective at supporting decision making regarding choice of place of birth. The methods to support this evaluation are reviewed next in chapter 5.

# Chapter 5 Research methodology

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## 5.1 Introduction

A mixed method sequential exploratory study was utilised to address the aims set out in chapter 1:

Primary aim:

- to identify how effective the DST is in helping women to make a decision about place of birth.

Secondary aims:

- to identify when women make a decision about place of birth;
- to explore women's information gathering and decision making behaviours during pregnancy;
- to understand women's views and opinions about using the DST
- to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion;
- to explore their feelings about how well the DST supported them to make a decision
- to explore women's views around its usefulness

This chapter describes how this method was chosen. It is split into the quantitative phase and qualitative phase. Describing the philosophical basis of the mixed methodological study (5.2) and approach utilised (5.3), Section 5.4 identifies the sample size needed with discussion of both the power calculation, justification of how this number was achieved and sampling strategy used.

Research tools (5.5), including their design, measures included and an overview of the pilot are presented to confirm their use within the study. The chapter then goes on to describe the recruitment procedures and the documents used in recruiting (5.6) and any changes that were made to the initial process (5.7). This is followed by method of analysis (5.8) and ethical considerations (5.9).

The second half of the chapter focuses on the qualitative phase with section (5.10) highlighting the research approach taken and the qualitative instrument used. It gives an overview of the primary and secondary aims (5.11) and how this relates to the qualitative phase, followed by a breakdown of the research

design (5.12). The analysis approach taken will be discussed (5.13) and finally the ethics for the qualitative phase in (5.14).

## 5.2 Philosophical basis of the chosen research methodology

Research studies looking at the use of DSTs in health, as discussed in Chapter 3, are becoming more frequent as the creation of DSTs continues to build momentum. A literature search identified that in the majority of cases a Randomised Controlled Trial (RCT) was the most frequently used method to assess their effectiveness.

An RCT was not possible in this study due to the wide availability of the app within the local NHS Trust and inability to randomise women or control for midwives exposing women to the app, which will be explored in more depth later, as will how the study ended up using a mixed method sequential exploratory design.

RCTs are considered the gold standard of evidence (Akobeng 2005) and the highest and most powerful research design in the hierarchy of evidence, because of their ability to answer research questions on the effectiveness of an intervention and statistically quantify the result. The majority of studies assessing a DST in healthcare used the RCT (Weymann et al 2013; Simon et al 2012; LeBlanc et al 2015) and the same could be said of DSTs used in pregnancy (Bekker et al 2004; Bjorklund et al 2012), albeit they are a lot less commonly used.

An RCT, when conducted in strict adherence to a non-biased protocol, produces the most reliable evidence because of the way risks are minimalised, participants randomly assigned and treated identically apart from receiving the intervention, thus meaning that any differences in outcome can be attributed to the intervention (McGovern et al. 2001). It was, therefore, an initial preference of the researcher to use this method; however this was not practical for a number of reasons.

The first was that the MyBirthplace DST was already in circulation in the NHS Hospital Trust and women were already being given access to it as part of routine care. This meant that randomising women to a control group would have been difficult and ethically it would have been challenging to justify why some

women were not given the DST. An additional NHS Trust could have been used as the control group; however the demographics and population of the study area are very diverse and different to any other location in the UK. Another alternative might have been to consider using a cluster RCT; this is when the unit of randomisation which is usually an individual participant is actually a cluster of individuals, for example in a certain school, area or in this case Comment DM44(Higgins and Green 2008). This design is usually chosen for its ability to evaluate the effect of an intervention on the group; examples include implementing a change with a group of individuals such as lifestyle interventions for gestational weight gain (Rauh et al. 2013) or vaccination information and delivery (Fu et al. 2016).

Cluster RCTs are often chosen for their administrative efficiency and enhanced subject compliance due to the fact that the whole cluster experiences the intervention or is the control (Donner 2004; Shourie et al. 2013). The cluster RCT represents a complex methodology with serious considerations needed for numerous areas including consent, acknowledging the appropriate level of inference and recruitment numbers.

Gaining consent is usually considered at an individual level; however, for a cluster trial it becomes more challenging. Edwards et al. (1999) identify the need for guardians, more commonly known now as gatekeepers, who may be the Trust Chief Executive, for example. Their consent must be sought first and their decision can be influenced by a number of outcomes such as whether it is in the best interest of those that they are safeguarding.

Obtaining consent for a cluster of individuals would represent a challenge to the researcher and takes time that was not available for the MyBirthplace study. For this reason, a cluster RCT was deemed outside of the scope of the doctoral study on both an ethical level and also a financial level because it is an expensive design (Christie et al. 2009).

The ability to control confounding factors makes the RCT important. The statistical power of the RCT is its ability to detect a difference between the groups and thus the sample needs to be large enough not only to have the power to detect a true difference but more importantly to control confounding factors and reducing chance, which is random error (Akobeng 2005).

Challenges arise in obtaining adequate sample sizes for cluster trials. Dormandy et al. (2005) found that their cluster trial did not replicate findings of early studies that looked at antenatal screening tests for Down syndrome and rates of informed choice. They put this down to an underpowered trial and suggested a multi centred trial. Giving this issue consideration, in terms of this study, obtaining a sufficiently large sample may have been possible because the study site had on average 500 referrals of newly pregnant women each month; however the limited time available to the doctoral researcher meant that other options had to be considered.

With review of quantitative studies and the rejection of both a cluster trial and RCT, this brought into the forefront quasi-experimental approaches with non-random assignment. A quasi experimental study is defined by King et al. as an “observational study with an exogenous explanatory variable that the investigator does not control” (1995, p.475).

The quasi-experimental design looks for causal hypotheses where an intervention is tested for its effectiveness in achieving certain objectives as measured by a set of outcome indicators (White and Sabarwal 2014). This is the design used when it is not possible to randomise individuals or groups and blinding is not possible. It is also sometimes referred to as a pre-test post-test intervention (Harris et al. 2006). Traditionally, most interventions were evaluated using a pre-test post-test or before after design and currently this is probably the most popular evaluation method in most fields (Harris et al. 2006). In recent years it is said that use of quasi-experiments in health care has increased and currently accounts for one third of casual impact evaluation published across all sectors (Rockers et al. 2017); a variety of designs exist.

The first design, known as the one shot case study (Campbell and Stanley 1963), is used more in education. This design involves a single group at one time period, after a treatment or intervention; it is seen as having almost no scientific value because of the absence of control (Campbell and Stanley 1963). Next is the one group pre-test post-test design, this is widely used in medical informatics and is chosen if no other quantitative test can be done (Campbell

and Stanley 1963). This is when the same group of individuals are tested before and after accessing a treatment or intervention with the hypothesis that the X (the treatment) caused the difference in whatever outcome is observed. It is acknowledged that the lack of control is still an issue; also consideration has to be given to the time in between the two tests because of the risk of events happening and having an influence on outcomes which cannot be determined.

Next is the static group comparison where a group that has experienced the intervention is compared with one which has not in order to establish any effect of the treatment. This can be done for example, with a group who watched the TV programme ‘One Born Every Minute,’ comparing them with a group that had not. The difficulty with using this study design would be that all women have access to Mybirthplace and therefore having a group that have not accessed it would be unethical or would involve a different study site that would not be socioeconomically the same because of the diversity of the study site.

A practical limitation of a quasi-experimental design is that methods are usually based on assumptions, therefore:

“conclusions about causality on the basis of such studies are less definitive than those made by a well conducted RCT”

(White and Sabarwal 2014, p.11).

Quasi- experiments also generally have a lower internal validity than RCTs’ on the other hand, they do produce higher external validity because they have been implemented using real life systems rather than those designed for the purpose of research (Geldsetzer and Fawzi 2017). White and Sabarwal (2014) argue that quasi-experimental studies can be well accepted if well conducted and presented clearly with explicit discussion of the limitations and how they affect the results. There are numerous advantages to using quasi-experiments, especially in public health, and their use in health care is continuing to increase (Barnighausen et al 2017). Geldsetzer and Fawzi (2017) recognise that quasi-experiments are most appropriate when a program or policy (in this case the DST) has already been implemented and no RCT has been conducted.

Shadish et al. say that a researcher needs to explore explanations for each outcome one by one to:

“decide which are plausible and then use logic, design and measurement to assess whether each one is operating in a way that might explain any observed effect”

(2002, p.14).

The World Health Organization (WHO) has adopted the GRADE (Grades of Recommendation, Assessment, Development and Evaluation) system to judge study qualities (WHO 2012) because one of the major weaknesses of the quasi-experimental design is the lack of random assignment.

The pre-test post-test design allows identification of the groups' answers given before and following the intervention. Because the intervention is given at a set appointment, the time between the pre-test (in this case pre appointment scores and post appointment scores) are likely to meet some requirements of causality (Dimitrov and Rumrill 2003), because the DST precedes the measurement of the outcome. The researcher does however, acknowledge that this does not imply causal association, especially if studies are poorly designed.

Recognition is also given to maturation and temporal trends and the threat it has on the validity of concluding that the DST caused an outcome, it is accepted that natural changes that participants experiences (especially over time) can have an effect on an outcome (Dimitrov and Rumrill 2003).

Bryman (1988) identifies that in choosing a methodology the researcher needs to provide a clear justification, with statements to address the primary and secondary aims. The researcher felt that a quantitative approach was needed to ensure this study stood up in comparison to other DST literature, especially as the research question was to assess the effectiveness of the DST to support decision making. It is for these reasons that the quasi-experimental design was chosen over the RCT, and the pre-test post-test with the same group of women was chosen. However it was clear that the secondary aims of looking at how women felt using the DST, and looking at the relationship between woman and midwife brought a different methodological stance and would be best answered by a qualitative approach therefore a mixed method approach was, therefore, appropriate.

### **5.3 Approach introduction**

Green and Thorogood (2009) state the importance of choosing the right method to complement the research question, aims and highlight the positive relationship between choosing the right method and ensuring rigour.

This is the first DST created to support a decision about choice of place of birth and therefore one of the outcomes was to understand women's views of its support of their knowledge and whether they thought it was helpful in having a shared discussion with the midwife. Previous studies have used qualitative approaches to explore women's views of using a DST in choice of birth after a caesarean section (Frost et al. 2008) and counselling a parent with suspected premature delivery (Guillien et al. 2012). Again quantitative methods have been used in previous DSTs as described in Chapter 3.

Mixed methods research is considered by many as the third paradigm (Creswell 2003; Johnson et al. 2007; Johnson and Onwuegbuzie 2004; Descombe 2008). The method uses its own platform, views and techniques, but with the core ideas complementing both qualitative and quantitative research approaches. Johnson et al. (2007) say this enables the researcher to gain a greater depth and grounded understanding of the area being studied.

The names, as well as the definitions, have varied as the paradigm has evolved over the last 60 years from Campbell and Fiske (1959) naming it multitrait / multimethod research, which is a combination of a number of "traits" of qualitative and quantitative methods. It has also been known as methodological triangulation or a hybrid, which is the coming together of qualitative and quantitative viewpoints as one (Ragin et al. 2004; Morse 1991), and more recently the name and definition known now and agreed by Creswell (2003) and Johnson et al. (2007) as mixed method research. This is defined as:

"an approach to research in the social, behavioural and health sciences in which the investigator gathers both quantitative and qualitative data, integrates the two, and then draws interpretations based on the combined strength of both sets of data to understand the problem"

(Creswell 2003b p.2).

Mixed methods research is considered the paradigm that can offset the weaknesses of a single research method by combining the strengths of both qualitative and quantitative methods (Creswell 2003). Williams (2007) states that quantitative methods alone lack the depth, richness and understanding that qualitative research provides. Quantitative designs collect structured and numerical data about the topic being researched; in the majority of cases a questionnaire / survey is the method chosen to collect these data.

There are numerous strengths to using a quantitative design; it allows researchers to measure and compare (Seale 2004) and allows a confidence in the data when the protocol is adhered to correctly because of the statistical sampling. Thus the findings are more likely to be representative of the wider population. One key negative of the strictly quantitative approach is the lack of depth to the data; there can be no explanation of why and therefore it is unlikely to truly give representation to the views, experiences and feelings of those participants. Qualitative data, on the other hand, cannot produce measurable results, but instead provides a depth of understanding that some suggest quantitative research cannot (Steckler et al. 1992).

A qualitative design allows clarification and exploration that some say cannot be gained by quantitative data alone. It is especially appropriate when researching topics that can be viewed as particularly sensitive. However, no method comes without a disadvantage and qualitative designs are criticised for their lack of reliability (Silverman 2006) and the problem of anecdotalism whereby the researcher takes small sections that are then used to make a connection that fits (Bryman 1988).

Malterud (2001) takes the view that rather than considering qualitative and quantitative strategies as incompatible, they should be seen as complementary. As mixed methodology is not limiting itself to one or the other, the weaknesses associated with the different methodologies used in their singular state (either qualitative or quantitative designs) are a lot less significant. It is said that the strengths of both combined outweigh the weakness, however the value of combining the two as mixed methods research is still a well debated subject.

### **5.3.1 Justification**

Health care research is considered by Cathain et al. (2007) as having multiple levels of complexity and requires the comprehensive understanding that is achieved when both qualitative and quantitative methods are used.

Health care has seen a move from traditional quantitative research to mixed methods, with the latter increasing from 17% in the mid-1990s to over 30% in the early 2000s (Cathain et al. 2007). This could be due to greater emphasis being attributed to patient and service users' opinions, where a qualitative approach is favoured for its ability to allow opinions to be explored in more depth. In addition, service providers are increasingly feeling the pressure to provide high quality care delivered through evidence-based practice that is influenced partially by the data from quantitative research that includes RCTs. There are four major designs under the mixed methods heading; triangulation, embedded, explanatory and exploratory (Cameron 2009). Given that the use of DST in healthcare research is fairly new, the exploratory course seemed the most fitting to take and would enable the researcher to gauge the effectiveness of the DST in terms of the SDMS and what women think of the usefulness of the MyBirthplace app.

As its name dictates, the exploratory design gives the ability to explore women's information gathering and decision making with the ability to follow the direction of the data (Bell 2010). Although the collated data will not produce conclusive answers in terms of effectiveness, Bell (2010) states that it allows a better understanding of the problem or study matter.

A sequential exploratory study design is a popular approach in the health sciences, being most appropriate to use when testing elements of an emergent theory (Creswell et al. 2003). Sequential exploratory design uses quantitative data that is then analysed and used to inform the second phase of qualitative data collection. Table 5 shows the processes that could be utilised for both sequential and concurrent designs.

**Table 5 Time order decision**

	Concurrent	Sequential
Equal Status	QUAL + QUANT	QUAL → QUANT QUANT → QUAL
Dominant status	QUAL + quant  QUANT +qual	QUAL → quant Qual → QUANT  QUANT → qual quant → QUAL

Footnote. "qual" stands for qualitative, "quant" stands for quantitative, "+" stands for concurrent, "--→" stands for sequential, capital letters denote high priority or weight, and lower case letters denote lower priority or weight. (adapted from Johnson and Onwuegbuzie 2007)

Creswell et al. (2005) state that in both the concurrent and sequential design, qualitative and quantitative methods are utilised; however, the weight and flow differs depending on the design. It can be used first as long as one builds or is generated by the other design. Plano Clark (2008) goes onto explain that in the concurrent framework, the qualitative and quantitative phases are combined, but the weight can vary between encompassing an equal status, where both are considered equally important, to the dominant status where more weight is placed on either the qualitative or quantitative methods.

In comparison, the sequential framework has phases that follow on from each other, building upon data derived from the previous phase, and can commence with either qualitative or quantitative methods (Creswell et al. 2005). The weight can again have an equal status where all components of the phases are considered important in their own right, or one method can dominate.

Choosing a sequential over a concurrent design for this study allowed the initial phase to be exploratory, gaining a new quantitative viewpoint of women's experiences of decision making and information gathering. It also allowed time to use the data to develop key concepts before proceeding to the third phase where these views were explored in more depth using qualitative advances. Conversely, concurrent design would have required combining the data, and thus not allowing the data to inform the following phases; this could also potentially cause bias. Taking this into account, a sequential equal status design was chosen and was the most appropriate method to allow the development of the phases and ensure that all phases were represented equally (Creswell and Plano Clark 2010).

One weakness of mixed methods research and specifically sequential design is the inability to appropriately weigh each method. This could potentially be seen as bias and result in an unbalanced analysis of data, resulting in invalid conclusions (Ivankova et al. 2006). To address this, data were analysed after each phase and each given the care and attention required for analysis followed by a balanced discussion to show that each phase was given an equal weight overall.

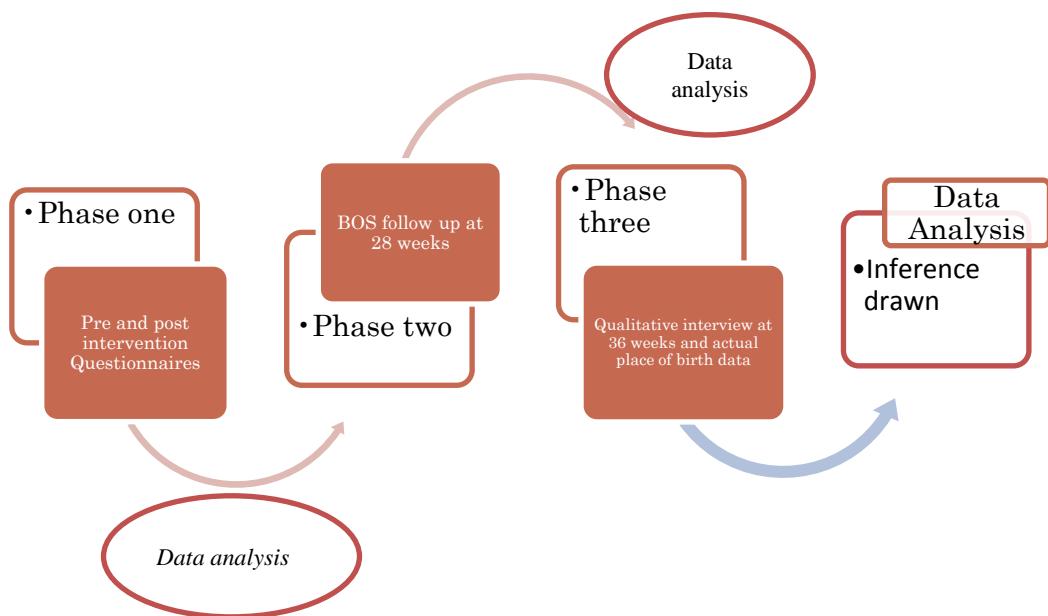
Another weakness is the time challenge that the sequential exploratory design entails. Due to the multiple phases, it was important to plan carefully within the project timeline to ensure that each phase was given an adequate time allowance. The researcher acknowledged this as a potential issue and developed a Gant chart (Appendix 3) at an early point in the study to ensure good time keeping.

Creswell and Plano Clark (2010) state that the strength of this design lies in its clear and straightforward processes, thereby allowing easy explanation of the phases. This subsequently meant that it could easily be applied to the study and followed by the reader. Overall the researcher felt that combining the qualitative and quantitative methods in a mixed method design would allow weaknesses and strengths to be balanced and addressed, which provided a well-rounded piece of research that specifically addressed the primary and secondary aims of the research questions. Below is a diagram that depicts how the researcher combined those methods (Figure 15).

### 5.3.2 Method/design

This was a three phase mixed method sequential exploratory study. Figure 14 shows how the above was adapted by the researcher to dictate a sequential exploratory equal weighted design for this mixed methods study: Is the DST MyBirthplace effective at supporting women's decision making and information gathering in pregnancy.

**Figure 14:** Process of MyBirthplace and the three phases



Footnote: The phases are shown in the square boxes, indicating the method either qualitative (phases three and four) or quantitative / mixed (phases one and two), along with the data collection method chosen. The circles represent where data analysis occurs in the process. Following collection of the pre and post questionnaires, the researcher analysed the data prior to the completion of collecting the 28 week survey. This allowed key identifiers from the responses to be built on that informed the direction of the qualitative interviews.

Phase one involved a quantitative survey of newly pregnant women. Women were asked to complete the survey before and after accessing the DST, which was given to them by their midwife at the initial booking appointment. This addressed the primary aim of the study, which was to assess how effective the DST was in helping women to make a decision about place of birth. This was assessed using the stages of decision making scale (SDMS) (O'Connor 2000), found in the pre test post test questionnaire and 28 week follow up.

Phase two was a follow up questionnaire survey at 28 weeks. This questionnaire was administered either online via Bristol Online Survey (BoS) or as a traditional paper version sent by post, depending on the participant's preference.

Phase three was qualitative and involved face to face interviews with women purposely sampled from the first two phases. The interviews were conducted at 36 weeks. The study was concluded by collating data on where the women actually gave birth. These three phases were designed to address the research question and primary aim. The secondary aims are addressed by the qualitative findings (Chapter 7).

#### **5.4 Sampling and sample size**

Participants were newly pregnant women between the ages of 16 and 45, who accessed care within the areas covered by the study hospital. They were referred to the Community Midwife by their General Practitioner (GP) and had yet to be seen by the midwife.

The sample size was determined by a power calculation that took into consideration factors such as previous use of the SDMS within DST research, as well as local research conducted within the hospital being studied to understand response rates. The average number of pregnancy referrals received by the hospital and locality of recruitment was also considered. Due to the quantitative nature of phases one and two, and the inclusion of the SDMS, it was important to have a sample size calculation to underpin the study.

The study size was based on answers women gave for the SDMS through the three phases and how receptivity to decision making is affected (if at all) by the DST.

The sample size allows identification and comparison of the change (whether positive, more certain, negative, less certain) for each individual participant. In essence, the sample needed to be large enough to compare how each participant's decision changes (if at all) through the study phases when deciding where she wishes to give birth, based on the responses from the SDMS. When using the word 'change' the researcher considers change to be an increase or decrease in all identifiable scores given by the women on each different

question before and after having access to the DST. This meant comparing the pre appointment questionnaire with the post appointment questionnaire to identify if there was a difference (Becker 2000).

Statistical significance was assessed using the Sign test; this was decided following a lengthy discussion with a statistician and an experienced researcher. This tests for differences in the size of paired groups (median differences); in this case, it is comparing the pre, post and 28 week responses to the SDMS with the ability to understand:

1. Those whose score on the scale improved;
2. Those whose score on the scale remained the same;
3. Those whose score on the scale got worse.

The Sign test is one of the two most popular non parametric tests that compare outcomes between matched pairs or groups (Sullivan unknown). This non-parametric test was chosen over a t-test, because the outcome (decision making on the SDMS) cannot be assumed to follow a normal distribution. This is why another popular test, the Wilcoxon test, was rejected because the data are not interval scaled (Shier 2004). Such an assumption was not possible because this is the first study looking at the effects of the MyBirthplace DST.

A Sign test is commonly used in pre-test post-test designs. It goes with the assumption that if the number of differences in the group is equal, the intervention makes no difference because zero differences are not considered; therefore, if there are more positive differences' then the intervention has made a difference. Alternatively, if the probability is more than 0.5 for a sign to be negative, then the difference in terms of the intervention is not significant (Conover 1999). To aid calculation of the power to detect change, the researcher first had to identify in research how women make a decision and any research that found any links with decision making and the use of a DST.

In general, women tend to be fairly decisive regarding the place of birth. Research by Murray- Davis et al. (2014) suggests that most women have made the decision about place of birth before pregnancy or within the first trimester. This is supported by Grigg et al. (2014), whose research highlighted that many

women have already decided by the booking visit and thus it seems unlikely that women will be more indecisive following use of a DST; this is also how the appropriate gestation to commence phase one was decided.

Previous studies found that decision-making improved following access to a DST (Shorten et al. 2005; Nassar et al. 2006; Montgomery et al. 2007; Raynes-Greenow et al. 2010). The number of women remaining unsure tends to be small, between 1% and 4%. None of the studies stated that there were any women who became undecided or indecisive following access to the DST. As this was only one of a handful of times the SDMS has been used to test a new DST, it was difficult to predict what percentage for each group was needed in order to allow for the margin of error.

Two previous studies have used the SDMS with a DST; Grant et al. (2001) showed that 9 (64%) of 14 initially undecided patients opted for donation of blood following access to the DST. The proportion of patients having made a decision also increased from 69% to 76%. Raynes-Greenow et al. (2010) found that only 3.3% of women had not considered their options following DST use; however, in this study a large number had already decided prior to DST use (54.3%). Both of these studies supported the likelihood that women were not going to be more indecisive with the DST.

This is supported by the data produced from the SHINE project conducted by the hospital when the Mybirthplace DST was being created and data collated and where 45% of women initially made a decision. This rose to 86% following access to the DST (PHT 2014).

Upon review of the above data and current literature available on the use of the SDMs, it was decided in conjunction with support from a statistician that the calculation would depend on two areas. With consideration that if the app had no effect then the number of women in group 1 and 3 above would be identical and the Sign test tests whether this is the case, the first would be;

- (a) The ratio of the number of women in group 1 to group 3. A ratio of 1; 1 means that there are the same numbers of women in each group (i.e no difference). Suggesting a ratio of 70:30 means that for every 70 women who improve on the scale, there are 30 who get worse.

(b) The percentage of women in group 2 (who remain the same). As previously stated, these women would not contribute to the analysis, but there is a need to account for them in the sample size (Thomas, personal communication, 2015)

Because the DST being assessed is new, it was difficult to gauge what this percentage would be. The sample size was therefore determined by a power calculation, which took into account a ratio of 70:30 identified above. This meant that for every 70 women whose scores improved using the DST it would allow for 30 participants to be more indecisive than previously indicated. Assuming a two sided 5% level of significance and allowing for a 20% loss to follow up, it was calculated that 169 participants were needed in the sample.

#### **5.4.1 Inclusion and exclusion criteria**

Inclusion criteria for the study were based on women accessing care from the NHS Trust in the study. They needed to be:

- Age 16-45 years of age
- Newly pregnant and not yet booked by a midwife

Women were excluded if:

- They were below 16 years old and above 45 years old.
- They were unable to speak, read or write English due to the DST being written in English and access to a translator being beyond the scope of the study.
- They were deemed incapable of giving consent.

There were only three exclusion criteria that were pre-set prior to the study. The first was women that were unable to speak or read English; the reason for this is because the Mybirthplace app is only available in English. This was based on the limitation of the study and more specifically that of funds. The cost of hiring a translator on the three occasions that the participants were needed was considered out of the realms of the study's ability. The second exclusion criterion was those individuals that lack mental capacity as deemed by the Mental Health Act (2005). The researcher took on the responsibility to assess

each individual prior to gaining consent assessing capacity and excluded those that had a previous history of mental health problems, those that were unable to paraphrase what was required of them in the study or those that lacked understanding following extensive explanation. Careful consideration was given to the capacity of those under the age of 18 because they are considered children (NSPCC 2017). In relation to this study they are over the legal age of sexual consent of 16 years of age, which is why those under 16 years of age were excluded. Nevertheless, they are still considered vulnerable and required a considerate ethical review. The researcher felt it was important to include 16 to 18 year olds because they provide valuable insight (Williams 2017)' especially in relation to this research looking at DST because they are of the generation that are most likely to use apps and technology. Where appropriate, consent was sought from an appropriate adult also known as a 'gatekeeper' (GMC 2017)

The overall sample was open to and did not intentionally exclude women based on races and religious beliefs. Additionally, women of all socioeconomic status with varying degrees of education and women of all parities were included. If women were known before booking to be high risk, they were excluded; however, as with complications that arise during pregnancy, this was not always clear. Additionally, some recruited women were high risk, but still wanted to participate. Some women within the study site who are high risk choose to birth outside the OU, therefore potentially they would have found information in the MyBirthplace app useful. True informed choice means that women should be supported with their chosen birth place option, even if this goes against hospital policies.

All women recently referred to the intervention site by the GP were sent Participant Information Packs (PIP) to invite them to participate; this type of sampling is called convenience sampling. Convenience sampling is a non-probability sampling method that relies on data collection from a group of individuals who are appropriate to the study and available to participate (Farrokhi and Mahmoudi-Hamidabad 2012). As the definition suggests, one advantage is that participants are readily available and thus in a time bound research study, it is the most appropriate form of sampling. A major disadvantage of this form of sampling is the potential for self-selection (Farrokhi

and Mahmoudi-Hamidabad 2012). The fact that individuals select to participate in research adversely affects the sample statistics and therefore consideration needs to be given to bias.

When using convenience sampling, the researcher needs to consider both the topic being researched and also locality. The topic of DSTs is fairly new in terms of their use within midwifery and more poignantly in choice of place of birth, with this being the first research study into its effectiveness. Convenience sampling is often used to test elements of an emergent theory and also in pilot studies. Secondly, although the DST MyBirthplace is only available in this Trust, making it difficult to estimate its generalisability to the overall population, it is likely that it gives a general opinion on women's views on the usability of MyBirthplace. Therefore, this type of sampling was deemed acceptable for its use within this study. However, these considerations will be discussed further later in the chapter. Recruitment challenges and changes implemented will also be considered.

## **5.5 Research tools**

The majority of quantitative studies utilise either questionnaires or surveys to obtain quantitative data, and this is considered as the most common form of data collection (Harris and Brown 2010; Mohsen 2014; Parahoo 2017) allowing a large number of people to be asked the same questions in order to gain data on a given topic.

A questionnaire is a tool that uses questions in order to collect and record responses about a particular subject or topic, in this case women's decision making and information gathering. Questionnaires can encompass both open questions, collecting qualitative data, and closed questions for more quantitative data. There are several advantages to using questionnaires; it is less expensive than interviews, as it can be administered collectively, more convenient for researcher and the participant, as well as providing the opportunity for anonymity. Not all questionnaires are anonymous (Kumar 2011), as is the case in this current research.

The type and quality vary dependant on the experience of the individual creating the questions and the type of questions being asked. A lack of

experience can result in errors, and therefore the researcher undertook training to heighten knowledge on how to form the appropriate questions and avoid bias, using the experience of colleagues and supervisors to also increase knowledge. This addressed the researcher's lack of knowledge and helped support the creation of the questionnaire. A pilot study was conducted to assess the validity of the questions and the views of the respondents in terms of appropriateness, time taken to complete and ease of understanding. The results of the pilot study will be discussed later.

A weakness of questionnaires is that they are self-reporting and thus answers can be conflicting and contradict other answers which, unlike interviews, the researcher cannot follow up or probe for clarity (Harris and Brown, 2012). The form and type of questions included in a questionnaire ensure that the participant follows the flow, reducing the chances of contradicting themselves. Another disadvantage of questionnaires is the possibility of a low response rate. A low response rate is generally considered to be 50%, but can also be as low as 20% (Kumar 2011). However, this is less of a problem when the questionnaire is administered in a collective manner (it was administered to the participants when attending the clinic). To acknowledge this, questionnaires were administered in person prior to the initial booking appointment, thus limiting the drop out.

Literature on the use of self-administered questionnaires considers the presence of the researcher and the effect it will have on the completion of questionnaires (Harris and Brown 2012b). Being present can limit non-completion and potentially prompt individuals to answer questions that they may otherwise leave blank, although it can also have a negative effect. Webster (1997) suggests that being present when the participant is completing a questionnaire can influence the response where potentially participants may not feel that they can leave negative comments. To combat this, the researcher kept a distance so that the participant did not feel that she was being observed or overpowered; it also allowed the participants to be left alone to complete the questionnaire before handing them in.

Philips et al (2013) highlight four other potential issues that can arise; these are coverage error, sampling error, non-response and measurement errors.

Coverage error can occur when participants have not got access to the internet. This can lead to a number of the population being missed, thereby limiting the results. However this was limited in this study by offering paper based questionnaires by post to individuals who were unable to access the survey online.

Sampling errors occur when “a subset of a population is targeted for response rather than the entire population” (Philips et al. 2013, p.14). It is recognised that sampling error is a limitation to this study. Of the sample included in this study, the questionnaires were only distributed to those participants who agreed to complete it. Consent is essential and therefore individuals cannot be forced to participate.

The 28 week questionnaire was similar to the questionnaires received following access to the DST. This was to gauge any difference in the SDMS since the initial appointment. The gestation of 28 weeks was chosen as it allowed enough time for women to explore the DST. It also allowed adequate time following the 12 and 20 week scan; both are considered to be difficult and emotional times for women, where decisions may be changed or altered.

Surveys are considered a cost effective and reliable approach to collecting data from a wide population (Albaum et al. 2011). In terms of this research, the population were pregnant women accessing the study site facilities for birth. Although this geographical area is not large, recruitment was staggered, therefore the time that each individual was 28 weeks pregnant varied. Using the online survey reduced travelling issues and provided a platform that was versatile and allowed a range of design options.

Initially the researcher was going to use Survey Monkey to distribute the 28 week survey questions; it was felt that individuals would recognise this as a survey and that it was well recognised as a convenient and simple survey platform. However upon further consideration the choice was reconsidered. Concerns were raised over the security of data in Survey Monkey due to it being a US based company and not subject to UK data protection standards. As a result, Bristol Online Survey was used instead.

Those participants that opted out of completing the questionnaire were supported and no reason was requested because they had a right to decline; nevertheless non respondents affect the study's generalisability.

To assess the impact of non-response, a comparison was made of the demographic characteristics of the respondents with the total sample and with the population using known characteristics from other sources. This involved looking at the distribution of ethnicity, income, and education from completed questionnaires compared with census data for the area in which they were gathered (Philiber et al. 1980). These data will be discussed in Chapter 6. Research by the Birthplace in England Collaborative Group (2011) suggests that women who plan a home birth are likely to be older, white, have a fluent understanding of English, and live in a more socioeconomically advantaged area, compared to women who choose a birth centre birth.

Questionnaires are relatively simple to distribute, so as well as the researcher's need to gain data before and after the MyBirthplace intervention, questionnaires were considered the most appropriate method of data collection. They do, however, depend on how well they are designed, which will be discussed next.

### **5.5.1 Design of questionnaires**

The design and development of questionnaires and survey are sometimes more important than the study itself, due to the temperate nature of designing an effective layout to keep participants interested and wording appropriate questions that not only answer the research aims but are non-leading, because a questionnaire can never be truly devoid of bias (Oppenheim 2000)

Consideration was given to the different types of bias identified by Choi and Pak (2005) in an attempt to minimise these biases. The researcher created the three data collection tools because there were no other questionnaires available that met the requirements of this study; this is the case for an emergent DST. The researcher looked at the research question, aims and objectives and the results gained from the DST literature review (Chapter 3) and began the process of creating the questionnaires and survey as a pragmatic process.

With the methodology being sequential and using the quantitative phase to build the qualitative interviews, the questionnaires were predominately made up of

quantitative questions. Only a few questions required an open ended box for the participant to expand on their answer. The process was iterative with the questionnaires going back and forth from an idea to mind mapping to a draft. During this lengthy process the questionnaires went through a four phase validation process to assess for rigour.

- Review by the supervisory team
- Review and amendments by a member of staff from the Carers Service user Group for Bournemouth University who provided expert service user knowledge
- Review by PhD peers
- Pilot study by antenatal women

They were also reviewed by the Local Research Ethics Committee (LREC); following the panel discussion a question on previous mode of birth was added to questionnaire 1 (Q5 page 2) to identify data of high risk women.

The final stage of the design process was a pilot study to truly understand if the final version yielded the required data in a simple easy format, with language understood by the participant (Oppenheim 2000).

### **5.5.2 Piloting of questionnaires**

Researchers support the use of a pilot when forming or designing a data collection tool, in this case questionnaires (Baker 1994; van Teijligen and Hundley 2002). This is in order to identify any uncertainty with the type and wording of the questions asked. It also enabled feedback on the ease or otherwise of completing the questions. It is at this time, prior to the start of the research, that any problems can be resolved by making changes (Hundley and van Teijligen 2002).

The pilot study was conducted with a small group of antenatal women ( $N=7$ ). The women were accessed through the Trust. They were recruited from a routinely given antenatal class. The women had mixed backgrounds; the majority were White British ( $N=4$ ), with the others being White Spanish ( $N=1$ ), White Brazilian ( $N=1$ ) and Black African ( $N=1$ ). All had at least A level or

equivalent (N=4), with one having a first degree and the other having a higher degree. Employment varied from full time (N=3), self-employed (N=2), to part time (N=1) and one participant unemployed due to redundancy. Their ages ranged from 27 to 35 years old and all provided their informed consent upon recruitment.

All participants stated the PIP was easy to understand and they were aware of what would be required if they were part of the main study. All of the participants stated that the questionnaires were easy to complete. All the questionnaires; were completed correctly, which showed that the layout did not cause confusion. One woman stated that the questionnaires were a little repetitive. However, the researcher explained that the questionnaires would be given at different points during pregnancy in the main study to enable any changes over time to be assessed, which the woman accepted. The participants all stated that the questionnaires took less than 10 minutes to complete in total, with the majority of them stating they individually took 3- 5 minutes to complete. One woman suggested that NVQ be added to the list of qualifications (Questionnaire 1), which was added.

Responses in the pilot to the previous mode of birth question indicated that a tick box with the list of delivery options would be easier to understand. Additionally, in Questionnaire 2 women felt that if they had not received / accessed MyBirthplace then it should be made clear that Section 2 would not be relevant, therefore a sentence was added to Section B of Questionnaire 2 on pg 3.

Overall the pilot study was positive; the questionnaires were updated in line with participant comments through the validation process and incorporated to ensure that the questionnaires were suitable for their use within the MyBirthplace study.

### **5.5.3 Measures**

#### Stage of Decision Making Scale

The primary outcome data came from the SDMS (O'Connor 1999). SDMS refers to the individual's willingness and ability to engage in decision making, how they then progress into making a decision or choice, and how receptive they are in considering / reconsidering their options (O'Connor 2000). This is

especially significant when considering how decision making changes when the individual has access to a DST. The tool involves one set question that asks “at this time would you say you ...” Participants are given 5 options that range from *haven't begun to think about the choices* to *have made a decision and are unlikely to change my mind* (O'Connor 2000). During the design phase it was felt that the wording should be altered to ensure understanding for the participants for which consent was gained (Appendix 4) from holders of the copyright. Figure 15 shows the SDMS following this alteration.

**Figure 15: SDMS included in the three questionnaires**

Q16) Thinking about where you want to give birth, would you say .....? (Please tick one)

I have not begun to think about the choices	<input type="checkbox"/>
I have not begun to think about the choices but I am interested in doing so	<input type="checkbox"/>
I am considering the options now	<input type="checkbox"/>
I am close to selecting an option	<input type="checkbox"/>
I have already made a decision but am still willing to reconsider	<input type="checkbox"/>
I have already made a decision and am unlikely to change my mind	<input type="checkbox"/>

Footnote: Adapted from O'Connor 2000

Although this scale has been used in a number of studies within health and thus validates its use within decision making studies, only one previous study related to midwifery (Raynes Greenow 2010). The SDMS is the only decision making tool that has the ability to assess women's decision making at various points and allows for changes. This is key for pregnancy, which can be a period of time that encounters many changes in the health and wellbeing of both mother and baby. Having the answer to the SDMS allows a clear understanding of how the participants feel about the decision they have to make through different stages of the study. It also addresses the primary aim to understand how and when women come to make a decision. It allowed an understanding of when the decision was made, if there was any difference in timing among women with different socioeconomic status and factors that affect this decision and will be reviewed over the 3 questionnaires.

The SDMS was chosen over tools including the DCS because it allows for assessment of the individual's “willingness to consider and reconsider their options” (Ottawa Hospital Research Institute 2015, p.1). It also assesses

receptivity to change, which is valuable in this study due to the various stages that the women were exposed to the scale, and to events which may change a decision such as the first or second trimester scan. It also allowed for those women that make a decision prior to their first appointment (Davies et al. 2014).

It allowed an understanding of when the decision was made, whether there is any difference in timing among women with different socioeconomic status and factors that effect this decision and was reviewed over the three questionnaires.

The scale was utilised because of its simple and accessible format, i.e. the use of a non-graded scale that looks at the stages of decision, from '*haven't begun to think about the choices*' to '*already made a decision*'. Responses gave a description of participants' early thinking on place of birth. Determining the stage a woman is at in terms of making a decision prior to any intervention, enabled the post DST questionnaire to identify any change in thinking.

Although the SDMS is not scored, the psychometric properties identified in the user manual identify that the construct (in this case women's choice on the scale) is "associated with decisional conflict measures in a hypothesized direction" (Ottawa Hospital Research Institute, 2015 p. 2). This means that early stages of decision making (e.g. not considering options) have been found to be associated with higher decisional conflict, while later stages (e.g. having already carried out choice) are associated with reduced decisional conflict (Murray et al 2001; Taylor- Clapp 2001). The internal validity of the scale has also been tested in clinical studies involving patients receiving blood transfusion and patients considering cardiovascular risk reduction (Grant et al. 2001; Lalonde et al. 2003; O'Connor et al. 2003; Murray et al. 2001). It is therefore considered that any changes in women's SDMS response may be taken to indicate that they have 'less decisional conflict' or 'more decisional conflict' with regard to place of birth.

#### Information accessed before MyBirthplace

In order to understand the decision making process in more depth, women were asked to identify where they accessed health information about where to give birth and how they rated their satisfaction with this source by using a 5 point scale. Response options in the questionnaire were based on previous research

(Aaranson et al. 1988) which suggested that women access information from sources that included the internet, friends, family and the media.

#### *Level of knowledge*

Women's knowledge and understanding of the options available for place of birth within the local area covered by the maternity unit were assessed both prior to and after their first appointment. Improvement in this knowledge is expected to be seen in women reporting more options after their appointment compared to before. This is part of the shared discussion midwives should be having with women.

#### *Influencing factors for a decision*

Choice is affected by a number of variables, such as partners (Pearson, 2014); therefore women were asked to identify what is important to them when choosing where to give birth. This was assessed through an open ended question in order to see what factors women deem important when it comes to choosing a birth facility.

#### *Evaluation of the MyBirthplace DST*

In the post-appointment questionnaire and 28 week follow up women were asked to score their satisfaction with a number of concepts related to MyBirthplace; this included whether the app is visually appealing, easy to understand, and easy to use. This was assessed by a set of scaled questions that asked women to score their responses with 1 being 'strongly disagree' and 5 'strongly agree'.

In order to show a clear link between the measures and how the questionnaires link to the aims, Table 6 shows how each question in each questionnaire related to the research question and aims.

**Table 6 Questionnaire questions in relation to aims**

Research Aims	Pre Questionnaire Questions	Post Questionnaire Questions	28 Week Follow Up Questions
Primary aim: Effectiveness of MyBirthplace on Decision making	Q11 (SDMS) Thinking about where you want to give birth would you say ...	Q16 (SDMS) Thinking about where you want to give birth would you say ...	Q12 (SDMS) Thinking about where you want to give birth would you say ...
Secondary aims 2: Explore information gathering behaviours	Q6 Where do you get your information on birth place options Q7 How satisfied are you with the information sources indicated?	NA	Q1 how many times have you looked at the MyBirthplace app since your first appointment with your midwife and now? Q11 What other resources have you found useful?
Secondary aims 2: Prior information access	Q8 Since finding out you are pregnant, how many times have you looked at information relating to where you can give birth?	NA	NA
Secondary aims 2: Knowledge about local birth place options	Q9 What options are you aware of in [Study site] for places you can give birth in?	Q13 What options are you aware of in [Study site] for places you can give birth in?	NA
Secondary aims 2: Factors that influence choice	Q10 What factors are important to you when making a decision about where you want to give birth?	NA	NA
Secondary aim 3: Women's Views and opinions on using MyBirthplace	NA	Q10 The MyBirthplace app ... Q11 What do you think is good about the MyBirthplace app? Q12 What was not good about the MyBirthplace app?	Q2 How have you accessed the MyBirthplace app? Q3 Was it easy to access? Q4 Have you used the MyBirthplace app with anyone else? Q5 Where have you used the MyBirthplace app? Q6 MyBirthplace is ... Q7 Please give your views on what is good about the MyBirthplace app Q8 Please give your views on what is not good about MyBirthplace app

Secondary aim 4: How the DST was given by the midwife	NA	<p>Q2 Did you and your midwife discuss birth place options      Q3 Did your midwife ...      A tell you that you have options about where to give birth?      B give you information about the MyBirthplace app?      C hand you a leaflet about MyBirthplace app?      D give you the QR code?      E go through the MyBirthplace app with you?      Q4 How well did the midwife explain how to use the MyBirthplace app?      Q5 How well did the midwife demonstrate how to use the app?      Q6 How confident are you about accessing the MyBirthplace app on your own?      Q7 Do you feel the midwife had enough time to discuss the MyBirthplace app?      Q8 Did you want further information about options from your midwife?</p>	NA
Secondary aim 6 Views around usefulness	NA	<p>Q14 Has the MyBirthplace app given you any new information about where you might give birth?</p>	<p>Q9 Do you think the MyBirthplace app is useful?</p>

The pre appointment questionnaire (Appendix 11) was formed of both open and closed questions and assessed: the normal process of how women make a decision, where they find health related information and how they use this information to make a decision. It also looked at what affects decision making. The SDMS was included in the questionnaire to assess where in the process women were with respect to making a decision (Ottawa Hospital 2014). The pre-appointment questionnaire begins with demographic questions on parity and previous birth.

The remainder of the demographic questions including age, occupation, marital status, education level and postcode to gain a background of those willing to answer the questions were put at the end of the questionnaire. There is much debate regarding where to place demographic questions and the effect placement has on response rates. The study by Teclaw et al. (2012) suggested that demographic questions placed at the beginning of the questionnaire increased response rate without affecting the response to the following questions. This was shown by a decrease of completion by participants of 10% from 97% if at the beginning, to 87% if at the end. However research by Savino (2009) suggested that there is no difference to response rate to sensitive demographic questions, whether they were at the beginning or the end. There was however, a greater response rate for non-sensitive questions seen when the demographics were at the end. This could be interpreted as individuals being happy to answer normal questions prior to the demographics, thus being less likely to be put off. Some individuals may be reluctant if education or age is the first question they are faced with.

The 28 week survey (Appendix 13) identified whether the participant accessed the DST, how many times, where and with whom and then includes scaled questions that allowed the participant to rate different aspects of the app. It concluded with allowing the woman to identify herself as interested in talking at greater depth with the researcher. This was included as a way for the researcher to screen for the 36 week interview.

## **5.6 Recruitment procedures and documents**

Recruitment took place over 9 months from April 2016 till December 2016. All phases were conducted within a large urban hospital in the UK and recruited

women who were accessing maternity care from this NHS Trust. This location and Trust was the focus of this research study due to the fact that the Trust is the creator of MyBirthplace and it is used within these localities.

The woman's name and address were used to send out the PIP, which included a covering letter (Appendix 5) describing the purpose of the study and the reason that the woman was being written to. The letter invited her to participate and advised her to read the information included. The information leaflet was in the form of a trifold leaflet (Appendix 6) describing the study, including how the questionnaires would be administered prior to the booking appointment. Prior to the booking appointment was considered to be the optimal time to recruit women because it was the earliest opportunity to engage women before they had seen a midwife or the DST.

The information leaflet was designed to be visually appealing; information was presented in easily digested segments across the leaflet.

In research, as the Health Research Authority (2016) identifies, the information in a leaflet is extremely important because it aids individuals to understand and entices the person to enquire about a study. The information sheet introduced the researcher with an "About the Researcher" section followed by a section explaining the reason the research was being conducted and giving a clear overview of what participation would mean to the woman and how much time each phase would take. It then discussed how this would not impact on their care directly but how the research may support information gathering and decision making for women in future pregnancies. Finally the information explained participant confidentiality and the process of contacting the researcher or supervisory team.

The pack also contained an 'opt in' form (Appendix 7); women willing to participate would return this in a prepaid envelope (also included) detailing the best way for the researcher to make contact.

On receipt of the 'opt- in' form the researcher contacted the women to discuss the study and any issues they had. A meeting was then arranged to obtain consent to participate in the study. The consent form included in the pack (Appendix 8) provided women with the opportunity to read the statements prior

to discussing them with the researcher at their appointment. It contained tick boxes that women were encouraged to tick once the statement was read and understood. The woman was then asked to print and sign at the bottom with the date which would then be repeated by the researcher. A copy of the consent form was given to the participant and the other was filed by the researcher and stored securely on the hospital site.

Following the consenting process the researcher then provided the pre appointment questionnaire prior to them seeing the midwife. For the majority of participants recruitment was undertaken 10 minutes prior to their appointment. On rare occasions, if the researcher was double booked or the woman was unable to come any earlier to the appointment, the questionnaire alongside the consent form was sent to the woman to complete and the researcher met the woman after her appointment as standard practice to provide the post appointment questionnaire and retrieve the pre appointment questionnaire (Appendix 9) and consent form. When meeting women, the researcher attempted to be in a quiet and secluded area, however in clinical areas this was not always possible. This meant that in some instances the midwife was aware that recruitment was taking place but not necessarily which woman, as the clinical areas holds multiple midwife clinics.

Women were then given the post appointment questionnaire (Appendix 10) to complete, whereby they were then asked if they would be happy to have a 28 week follow up and whether they would prefer to receive that survey by post or email. Women were then thanked for their time and given parking reimbursement if they had parked on the hospital site.

As part of the Trust's research and development department protocol, a copy of the women's consent form was placed inside the hand held notes, a study identity number inside the front cover and a Trust identity sticker placed on the outside to identify participation in the study.

A study register was kept on the hospital site with participant's names addresses and contact details. On a separate page were the list of women's names and dates indicating when the women were at 28 weeks gestation, this ensured that the researcher was on time when sending out the 28 week survey

(Appendix 11). This entry also indicated what form the women had chosen (either postal or online). The date that the survey had been sent was noted to allow a follow up to be sent two weeks later. Once the follow up survey had been returned, the researcher checked to see if the participant was happy to be contacted for interview; if they declined that was noted. If the participant indicated that they were happy to be contacted, their name was added to another section of the register that indicated they were happy to be contacted, when they were contacted, when the interview was arranged for and when it was completed and transcribed. Birth place data were recorded for all women (Appendix 23).

## **5.7 Changes to recruitment**

During the recruitment phase of the study, two amendments had to be made to the recruitment strategies. To ensure transparency, these amendments will now be discussed.

### **5.7.1 First substantial amendment**

As the recruitment phase progressed, it quickly became apparent that the initial recruitment plan to recruit on average 28 women per month over the target 6 month period was not achievable. The numbers of 'Opt in' replies were significantly less than expected. Calculating the trends suggested an average recruitment of 11 women per month, and thus achieving the recruitment target of 169 women would have taken approximately 15 months. On this basis, a request for substantial amendment was made on 6<sup>th</sup> July 2016. This amendment encompassed three changes; the first and most significant change was to utilise the midwives as gatekeepers.

Gatekeeper is a term attributed to an individual who has some power and control - and responsibility - to protect potentially vulnerable people (Lee 2005). Utilising a gatekeeper comes with many ethical considerations. First, there is a consideration of whether the individual is in a position to be able to act as a gatekeeper. In theory, any individual can act as a gatekeeper depending on who the possible participants are. Usually research in health deems the gatekeeper to be those involved in the care, such as GPs, nurses or in this case

midwives. In terms of the MyBirthplace study the gatekeepers, midwives, were asked during their normal role of making an initial appointment with the woman if she would be happy to be contacted by the researcher to discuss the study. This was considered acceptable because this was already part of their role and midwives would have to contact the women in order to make arrangements for their care.

In some cases, the midwife had met the women in their previous pregnancy and thus had a ready founded relationship and therefore this process was deemed to be non-persuasive and non-threatening. The researcher also considered that this was a good way of overcoming the “opt in” slip as women were either too busy to return the “opt in” slip or forgot. This amendment did not change the consent process that was already in place. If women were happy to participate, the midwife informed the researcher who initiated the process of calling the woman to discuss the research, sent the PIP and organised the appointment to gain written consent.

The other amendment was to introduce a poster (Appendix 12) in clinical areas to advertise the research study and inform women of how to become involved. The posters were placed at all the clinical bases. Additionally social media posts based on the information pertained to the poster were posted on to the Trust webpage, Twitter account and Facebook. It also gave the women contact details for the researcher to enquire more about the study.

A picture of the researcher was also included in the PIP (Appendix 13), this was on the basis that it would make the researcher relatable and the participant would be able to identify with the researcher.

This substantial amendment was granted firstly by the REC on behalf of Hampshire B on 11<sup>th</sup> August 2016 followed by the Health Research Authority (HRA) on 22<sup>nd</sup> August 2016. The changes were implemented after receiving approval from both bodies. Unfortunately there was a significant delay in processing and receiving the approval for the amendment, which of course

impacted on the recruitment; and contributed to the recruitment period being extended until September 2016.

### 5.7.2 Second substantial amendment

As the study neared the projected end point of recruitment, it was evident that it was considerably short of the required numbers. As a result, a proposal to incentivise midwives was brought in. This was agreed internally gaining University REC approval at the end of September 2016, followed by approval from the Trust Research and Development department and the Director of Midwifery. The research team decided that gift vouchers would be provided to the first ten midwives whose gate keeping led to 10 women actively participating in the research. This incentive was required because initially the number of referrals from midwives were low; it was felt by the researcher that an incentive would entice the midwives to support the research.

Initially this was slow to take hold and only a small handful of midwives actively engaged by calling women. However by the end of the study the midwives' referrals were the main source of referrals. Figure 17 shows the recruitment methods used in each of the months of the study.

**Figure 16:** Recruitment methods utilised at each month of recruitment

METHOD	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Researcher	X	X	X	X	X	X	X	X	X
Gatekeeper					X	X	X	X	X
Social Media						X	X	X	X
PIP changed					X	X	X	X	X
Posters							X	X	X
Incentive for (MW)								X	X

## **5.8 Methods of analysis**

An analysis plan was created prior to data collection to ensure understanding that for each piece of data the appropriate test was planned thus ensuring complete review of the research question and aims (Appendix 14).

Data from each individual questionnaire were entered into SPSS by the researcher. First the data were cleaned by running simple distributions for each of the variables to check for completeness, thus ensuring the accuracy of the data entry. A total of 5 errors were found and corrected. Next the researcher randomly chose 10% of the data set to go back through to check for errors when the data were entered. This was done by randomly selecting 17 participants' pre and post questionnaires and checking for errors. In the check only 2 errors were found. Taking into account the number of variables and the number of people, this resulted in 2 errors per 1173 entries, which gave an error standing of 0.001. This was felt to be acceptable and therefore analysis was commenced.

Descriptive analysis was then used on each of the questions in all of the data sets to provide frequencies and used to calculate the mean, for example between ages. Descriptive analysis also produced measures of central tendency for each of the questions that had continuous data (Greasley 2008). Frequencies were used to look at different aspects of women's views including, satisfaction with sources of information and knowledge. For the open ended questions, such as factors that women consider important, responses were reviewed for common comments and recoded to represent these. For the post appointment questionnaire, the interaction with the midwife questions were also analysed for frequencies as were women's views of using the app and the Likert style questions assessing satisfaction.

Relationships between key variables were also explored using chi –square test (Greasley 2008). Cross tabulations were used to analyse the relationship between key areas of interest, for example those women who wanted further information and how this related to the discussion with the midwife and their access to MyBirthplace.

Respondent characteristics in Phases one and two were compared. The key statistical test conducted was to answer the main aim of the study comparing women's decisional conflict on the SDMS both before and after accessing MyBirthplace and the post and 28 week results; this was done using a Sign test. Results of these analyses are given in Chapter 6.

## **5.9 Ethical considerations**

### **5.9.1 Principles of ethics within research**

The second section of this chapter delves into the ethical issues that came to the forefront for the researcher. It will look at the overriding issues the researcher faced both prior to and during the study.

Some of the main issues included maintaining a clear line between the researcher's roles as a midwife and researcher, the age range of the participants and also conducting research on an NHS hospital site. The researcher wanted to provide a separate section for these issues because ethical practice within a study is important and clear discussion of the issue at hand and the solution put in place will hopefully reassure the reader of her care during the proceedings of this study.

There are a number of ethical principles that need to be taken into consideration when carrying out a research study. Ethical issues consider situations where competing values are at play (Cotterell and Mckenzie 2011). Generally for all researchers', ethical consideration is a balancing act between the ethical and moral stances. A researcher had to balance the two roles of midwife and researcher in the case of this study.

This was one of the first considerations, as a recently qualified midwife, the researcher had pre-set concepts of the typical considerations for ethics, these being consent and confidentiality, but one of the biggest conflicts between the roles was disclosure.

As a midwife, there is a responsibility to disclose information if it is deemed to have the potential to harm oneself or be harmful to others (Chan 2013), for example in the case of puerperal psychosis whereby the woman may potentially harm herself or her baby. Another example would be if a woman stated she was going to free birth without medical intervention, it would be a midwife's role to disclose this to a senior midwife manager or a supervisor of midwives. This is because there is a potential for harm to either the woman or her baby. However, following numerous discussions with the supervisory team, it was identified that the lines were more blurred for a researcher. Confidentiality is of the upmost priority and this is only broken if the individual discloses actual harm. It was highlighted that although the woman may be going against medical advice if she decided to freebirth, it was within her choice and as a researcher the priority remains to keep confidentiality. As a researcher you can only suggest to the woman that she discusses this choice with the person responsible for her care. It was, therefore, included in the consent process that if at any point the woman discussed concerns about her care that she discussed this with her community midwife or the supervisor of midwives. The women were also given contact numbers for the supervisory team in case they were unhappy with any encounter with the researcher.

### **5.9.2 Ethical approval**

With all studies conducted within the NHS with human participants, researchers must protect participants' rights and at all costs avoid harm. Consideration was given to all aspects of contact with the participant and to gain approval from the relevant bodies.

Due to the research being conducted with the NHS and with women accessing the service, ethical approval was also sought from the local and National Research Ethics Service (NRES). An application was put forth via the Integrated Research Application System (IRAS) to the NRES. This was viewed by the local REC Hampshire B, application number 15SC0506. Ethical permission was granted in December 2015 (Appendix 15).

Ethical approval and permission to conduct the study was also put forth to the Science, Technology & Health Panel of the University Research Ethics Committee (UREC) at Bournemouth University who are responsible for promoting best ethical practice in relation to research. UREC is responsible for the over-arching university-wide research ethics policies and procedures (Bournemouth University 2014). Ethical approval from UREC was granted in December 2015.

Approval was also sought from the hospital's research and development department, who approached the Director of Midwifery and Director of Obstetrics and Gynaecology. This was to ensure that they were happy with the research taking place and to utilise the local maternity units. There was a delay in this process, because the study was taken onto the National Institute of Health Research (NIHR) portfolio; this was significant for the Trust as they received funding associated with recruitment but meant that Trust approval was not received until late March 2016.

As this research does not involve medications or medical based interventions it was considered that there was minimal potential for harm, as the women were only assessed for their views and opinions and the outcomes measured from the routine collection of data. However, continued consideration was given to any change in circumstance and any issues that arose were re-evaluated for the potential to harm.

### **5.9.3 The participants**

Participants were recruited around the time of booking with a midwife, which is discussed in Section 5.6 (p.133). Women were made aware that their participation was voluntary and that their care would not be affected during the study or if they withdrew from participating. Exclusion criteria are described in Section 5.4.1 (p.121).

The REC panel wanted further clarification of the excluded group of women that was defined as women unable to read and speak English. It was thought that a study should be inclusive of all individuals for a fair opportunity to participate.

Although the researcher wanted to be inclusive for all women, it was decided that regrettably women unable to speak / read English would be excluded. Firstly this is due to MyBirthplace only being available in English as this is how it was designed by the NHS Trust. This meant that those women unable to read English would not have been able to access MyBirthplace and understand the information provided. Secondly, due to limited resources, accessing a translator was deemed to be outside the realms of the study due to the cost implications of hiring the appropriate translator to not only go through MyBirthplace with the participant, but also to be present at all three stages where the participant would need to provide a verbal and written response.

An initial risk that was considered, was contacting a participant that had suffered a miscarriage or loss. In this instance it would be intrusive and painful for the women to then have further participation leaflets sent. The researcher needed to consider how those individual's would be indentified to protect them. The researcher therefore liaised with the GP surgeries and the link midwife where a system was already up and running in the hospital study site whereby a notification system was utilised. Miscarriages and terminations are stored in a book which is updated daily. These notifications are received from all healthcare provisions that may come into contact with those women; for example the early pregnancy unit (EPAU), accident and emergency (A+E) or maternity assessment unit (MAU). Miscarriages or terminations will be clearly documented on the participants' forms to cancel future follow ups.

Another issue identified during the early formation of the study was the age range of participants. The age range was set at 16 to 45 years of age. There were some concerns raised regarding the lower limit identified. The REC panel was concerned about how those individuals would be protected in terms of them providing data. They felt that, due to the issues that present with utilising under 18 year old participants, careful consideration was needed to assess both their mental capacity and understanding of the research study. To acknowledge this concern, the researcher identified a pathway that not only considered those less than 18 years of age but also assessed capacity of all individuals considering participation.

The process used for assessing capacity was:

- Recruitment was done by the researcher, meeting the participant and assessing her general personal ability and responsiveness to the study.
- The women were given the PIS and time to think of any queries.
- When attending the clinics the participants were asked about their general understanding about the PIS. An overview of what the woman understood her participation meant was required. Any questions were answered (if the woman failed to understand she would be deemed as incapable and excluded).
- Any mental health issues identified would also exclude that woman.
- Those under the age of 18 underwent the same process, however where possible, consent was obtained from the responsible guardian.

All women deemed capable were included; any women raising concern about her mental capacity were excluded. The researcher, in order to understand recruitment and mental capacity, attended both the Mental Capacity Act Workshop and the Good Clinical Practice course (GCP) provided by the Trust. It is felt that this adequately prepared her for any issues that arose and also gave her the appropriate processes and individuals to contact to elevate those issues.

#### **5.9.4 Birth place choice; a sensitive topic**

Whilst completing the IRAS application system and deciding whether the request would be put in for a full or partial review by the REC another issue needing careful consideration presented itself. This was whether discussing choice of birthplace was a sensitive topic. Sensitive topics that could cause trauma or harm to women would need a full review by the REC rather than the subcommittee. With some subjects it is easy to clarify whether a topic is

sensitive or not, for example discussion of stillbirths, mental health issues and screening choice. These are significant impact topics within midwifery and therefore easy to classify, however, choice of place of birth was more challenging. Careful consideration was given to what was being asked of the participants and how this could impact on their emotional and physical health. This issue was discussed at supervisory meetings, and the concept was also discussed with midwives who were asked whether they felt this topic would be difficult for the participants. The researcher also approached an individual that has previously sat on a REC. After careful consideration, the researcher decided that it would be prudent to put the study through a full review because some women might have previously had a difficult delivery and therefore their choice this time might be emotion provoking; especially if they wished to birth in a place that was not medically advisable for them.

Another important consideration was the process that the researcher would follow if in the discussion a woman wanted to give birth in a place that was not advisable in her circumstances. In some cases, women's chosen place of birth was contraindicated due to medical or other social factors. Such discussions should be had with the woman's main provider of care and therefore any women that fell into this category were referred to their midwife or a consultant / supervisor of midwives to discuss the matter further.

### **5.9.5 Involving or blinding the midwives**

During the preliminary stages of the study design, consideration was given to whether midwives should be made aware of which women were involved in the study. This was also a topic of great discussion at the transfer viva, where the interviewers felt that midwives have a right to be informed of the participants' involvement because they are also then indirectly involved with the study.

Initially, it was decided that midwives would be informed of the study including why, where, when and how it was being conducted. A universal email was sent to this effect to ensure that they were aware. Letters were also placed in their individual postal boxes confirming when the recruitment period had begun and to re-enforce the email. However, midwives were not informed of each

individual woman participating in order to reduce the Hawthorne effect. It was felt that the midwives might perceive that their care was being assessed, which was not the case; therefore, it was decided that they would be informed that the study was taking place but not which individual case load women were participating.

As the study developed it became clear that the recruitment strategy first put in place did not result in the number of recruits desired per month and thus midwife involvement was reconsidered. It was decided by the researcher and the supervisory team that it was necessary to include the midwives in the identification of those women that would be happy for the researcher to make contact; thus the midwife would be acting as a gatekeeper.

The researcher acknowledges that this was a major U-turn in the study however the number of 'opt-in' reply slips was so low that this was considered a justifiable change. The same procedure was maintained after the midwife passed on the woman's contact details, the researcher would contact the woman to discuss the study, send out the PIP and meet prior to the appointment to gain written consent. Midwives were given feedback about their overall number of successful referrals not about individual women that were recruited.

An initial concern with utilising gatekeepers is the identification of participants being in someone else's hands. Chenye et al (2003) identified that 73 women in their study were not approached but no reasons were given by the midwives who were given the role to recruit women. This must have been challenging for the researcher and could potentially have affected the sample size and thus the study's ability to detect a difference. This is a concern when recruitment power is delegated outside of the research team and reliance is placed on those that may not fully understand the implication of clear reliable reporting. Similar issues were found in a pilot by van Teijlingen et al (2001) who found that using midwives to distribute questionnaires was unreliable because of a lack of communication on the number of questionnaires sent compared to those returned. However this was less of a concern for this current study because the

midwives were only used to identify interested women and were not used to consent women to the study, this remained the responsibility of the researcher.

## **5.10 Qualitative phase**

Qualitative methods were used to address the secondary aims 3-6 (as aims 1 and 2 are addressed in the quantitative findings);

3. to understand women's views and opinions about using the DST
4. to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion
5. to explore their feelings about how well the DST supported them to make a decision
6. to explore women's views around its usefulness.

The next section describes how the researcher came to the decision to use face to face qualitative interviews with the women at 36 weeks. A clear justification is given as to why a semi-structured approach to interviews was chosen over other well-evidenced methods. The decision to transcribe the interviews in house and to use an inductive analysis approach under the Braun and Clark framework (2006) will be justified.

### **5.10.1 Research approach**

There are many qualitative research approaches one can take with a vast literature to support each of them. They are broadly classified as interpretive (grounded theory, ethnography, phenomenology) or critical (action research, feminist research) (Cooper and Endacott 2007). Each of these approaches is distinguished by specific features that align themselves to one particular approach. Some suggest that having a strict adherence to a philosophical approach provides a study with rigour and credibility (Crossan 2003). However, attempting to align a study to an approach above all else including consideration to a research question can limit the applicability; for example, this study seeks to explore women's views and experiences of using MyBirthplace

with no requirement to examine cultural rules that ethnography seeks or to build a theory that relates specifically to grounded theory.

It can be problematic when a researcher has a research question that fits with a mixed methodological approach but the qualitative phase does not fit neatly within the confines of one single qualitative approach. Kahlke (2014) believes that this is where a generic qualitative approach can be considered. This is described by Caelli et al. as research:

“not guided by an explicit or established set of philosophic assumptions in the form of one of the known or well established qualitative methodologies”

(2003 p. 4)

and suggest there has been a growth in the number of studies that have no guiding sets of philosophical assumptions. This may be because the study's aims and objectives do not align with any one particular approach.

Thorne et al. describe this as “interpretive description” with a non-categorical approach (1997, p. 69), whereas basic or generic is wording used by Merriam (1998) and Sandelowski (2000). Merriam then goes on further to give the view that even though studies with no philosophical assumption are generic they epitomize the characteristics of qualitative research “seeking to discover and understand a phenomenon, a process or the perspectives or the people involved (1998, p.11). Instead, Caeli et al. (2003) believe that this type of study does one of two things; either combining several methodologies or approaches, or claim no particular viewpoint at all.

The advantages of a generic approach are that researchers are sensitive to the way they influence and interpret data (Cooper and Endacott 2007); because there is no alignment to one particular approach, there is a need for greater reflexivity and therefore one can consider a great depth of thought has been given to the overall process. Some find that strict adherence to an established

methodology results in stifled and hindered thinking, which is unnecessary (Atkinson 2005; Chamberlain 2000). The thought process of a generic approach can reduce this restriction and link itself to careful thought around all aspects of the research and where one stands in relation to the research question (Kahlke 2014). This is supported by Lim (2011) who suggests the need to develop new methodologies, especially when researching a new or developing field such as this study with the use of DST.

One of the criticisms of a generic approach is that having no overriding methodological standpoint creates a problem when it comes to assessing rigour. Because of the lack of methodological clarity the reader is left speculating about the approach adopted based on the data (Caelli et al. 2003). It also has the potential to affect the tool used to analyse the data as many are linked to a particular methodology.

Caelli et al. (2003) make it clear that a researcher pursuing a generic qualitative approach must give consideration to four key issues; a declaration of their position, the difference between methodology and method, a clear approach to rigour and explanation of their analytic lens, but most importantly, a design with consideration to the research question and aim.

The desire to understand women's experiences of using MyBirthplace meant that undertones of various methods were brought together in a pragmatic approach. This pragmatic approach was utilised to ensure the qualitative phase was guided by the aims of the research, as it felt inappropriate to apply one ill-fitting methodology. What follows is an explanation of what, where and who, by describing the different aspects of methodology used to create a pragmatic qualitative approach.

### **5.10.2 Qualitative instruments**

Instruments that are commonly used to collect qualitative data include, but are not limited to, participant observation, case studies, diaries, individual face to face interviews and focus groups. Individual interviews were chosen for this study because they facilitate a personal perspective - using a DST and an

individual's views of using one is very personal. Focus groups, known for collaborative group discussion (Wimmer and Dominick 2003) felt inappropriate because a lone opinion could be missed in the group overall. For example, where a group consensus about using the app was positive, the person that did not like using it might feel unable to come forward. Participant observation was not considered because of the nature in which the DST is delivered, where the clinical environment and time constrictions make observation difficult. However, a one to one interview can be a trusted way of obtaining a greater depth of understanding of people's views (Kvale 1996) and provide a way to gather a deep and rich understanding of phenomena being studied from women's experience.

An interview is "a managed verbal exchange", meaning that the effectiveness of the data depends on the communication skills of the interviewer (Newton 2010). Some of these skills are identified as the ability to structure questions (Cohen et al 2007) as encouragement for the interviewee to talk openly and honestly with a counteraction of the interviewer being able to appropriately pause, probe and prompt (Ritchie and Lewis 2003). Interviews remain the most common data collection method in qualitative research for a flexible way of exploring opinions and experiences (Moriarty 2011). Some researchers are critical of interviews, suggesting that they are over used (Anderson 2010) and thus quality is affected and is very much dependant on the individual skills of the researcher.

Research by Denscombe (2007) recognises a weakness to interviewing as the 'interviewer effect'. This is the consideration that the interviewer's sex, age and ethnic origin, among other things, have a bearing on the information the interviewee will divulge. This is supported by Gomm (2004), who recognises that women's responses can be influenced by the information that they deem the researcher requires about the given topic or situation. Consideration was given to this in the planning phase of this study. As a midwife, there was potential for this role to influence how open the women would be during the interview. To combat this, it was made clear to the woman prior to interview that the researcher presented as such. The key was to gain an open and honest opinion. The researcher took steps to make the interviewee feel at ease. This

was done by giving the participant the choice of where she wanted the interview to take place. When it was not conducted in the woman's home, the environment was made to feel informal and tea and biscuits supplied.

Participants were made aware that they could take comfort breaks or stop the interview entirely if they so wished. Each participant was made aware that at no point would participation or stopping the interview affect care. A discussion was had with the women that their name would be changed to protect their anonymity and that information disclosed about the midwife or care would be confidential.

There are a number of ways of conducting interviews. Telephone interviewing is considered by van Teijlingen (2014) to be an easy approach to organise and allows personal contact, with the potential for people to relax and disclose sensitive information, which may otherwise be difficult. Mann and Stewart (2000) highlight the wide geographical access that telephone interviewing allows. However a difficulty with telephone interviews is that some individuals may not have telephones. Although valuable, telephone interviews were not considered appropriate in this study because of the lack of visual cues which has the potential to result in lack of rapport and inappropriate interpretation of responses. Furthermore the level of interaction with face to face interviews is missing from telephone interviews. It is also important to consider who may be present with the interviewee during the interview and whether this might influence the answers they give. Additionally, the ability to audio record telephone interviews involves expensive equipment that was unavailable at the time.

Another form of interviewing is that of Face to face (FtF) interviewing. FtF interviews are stated by Shuy (2003) to be good at building rapport and encompass a natural encounter with the participant allowing open and honest responses. The method also allows data to be enriched, building upon non-verbal cues and behavioural changes when thinking about the questions. It is the opinion of Irvine et al. (2012) that being face to face with an interviewee allows for silences, that can be filled with verbal tokens such as "um" and "yeah" or nodding of the head, which the interviewee cannot recognise on the phone

as being a sign of interest. Another advantage is that interviews can be convenient for the interviewee; the interviewer can also create the right interview ambience. In this study conducting the interview in the women's homes ensured a sense of knowing and comfort which may benefit the feeling of the women. One disadvantage that is regularly considered by those that use face to face interviews is the cost of travelling to meet the participant or vice versa. This was not considered to be a big disadvantage in this study because of the close location of the study site. Additionally, women that were happy to travel were reimbursed for their travel/ parking and thus FtF interviews seemed the most appropriate method to use to meet the aims of the study.

Interviews can come in two forms: structured and unstructured (Ploeg 1999) Unstructured interviews are used when the researcher knows little about the topic; this allows exploration and movement that is led by the responses from the participants. Structured interviews, also sometimes called focused interviews, are a series of open ended questions based on a chosen topic area, that have the ability to provide opportunity to both the interviewer and interviewee to discuss some topics in more detail (Trochim 2006).

Being able to expand on and further explore some important comments if they have been made by the woman during the interview was considered important. The use of semi structured interview allowed this; having the ability to have an idea of the flow of the interview meant that this novice researcher was prepared, but it not being so structured with closed questions meant that women were able to expand on comments and the researcher could seek clarification. Moreover, some knowledge available from the data obtained in the quantitative phase was discussed.

## **5.11 Aims**

The qualitative interviews specifically related to secondary aims 3 to 6. Involving women that participated in the first and second phases of the research allowed a more in-depth understanding of how women's thoughts and feelings changed through the phases.

## **5.12 Research design**

Following on from Phase two; the women who had indicated that they would be happy to discuss their views further in the 28 week survey were considered for sampling for the face to face interviews.

### **5.12.1 Sampling**

In identifying a subset of women from the original sample, it was important to look at the theory of sampling for qualitative interviewing. A key quote when looking at sampling strategies within a mixed method study came from Patton (2002), who described it as selecting “samples within samples”. This meant from the initial sample of 172 women, a further number of women were needed for interview. Research by Palinkas et al. (2015) identified that sampling strategies for quantitative methods used in mixed methods research are well established; however strategies identified for qualitative methods are less explicit. A sample for qualitative research is more than just about the numbers, as it is in quantitative research; it involves identifying cases that add value to the research (Yardley 2000).

A sampling strategy for a mixed method study should stem logically from the research question and aims and be described in enough depth so that others that wish to replicate or follow will understand (Curtis et al. 2000; Teddie and Yu 2007).

Generally, purposive sampling is selected for its ability to generate “information rich” cases (Patton 2002 p.24) or convenience sampling on the basis of its ease of access or readiness; however these are not the only sampling options. Other possible options for sampling were considered before coming to the most appropriate for the research study. These are described below.

Criterion based selection involves the researcher identifying specific characteristics of the study population and Lecompte and Preissle (1993) suggest this is a good starting point for all research. This category encompasses two of the three options that fit this current research study and

were considered, those being maximum variation sampling and intensity sampling.

Maximum variation sampling, a form of purposive sampling, provides a diverse range of cases relevant to a particular phenomenon or event. The purpose of this kind of sample design is to provide as much insight as possible into the event or phenomenon under examination and participants are identified via particular attributes outlined by the researcher (LeCompte and Preissle 1993). This was considered relevant in this study because a variety of women can be accessed in order to construct a robust view of them using the DST from their perspective. This is important because this is the first time that a study has looked at the MyBirthplace DST and therefore there is no research that can identify which women would be best to sample. Attributes were identified from the information given in the questionnaires.

This form of sampling is a special kind of purposive sample. Normally, a purposive sample is not representative, and does not claim to be. However, a maximum variation sample, if carefully drawn, with a large enough sample can be as representative as a random sample. Criterion sampling is the most frequently used method in mixed methodological studies especially when the qualitative method is secondary to the quantitative phase (Palinkas et al. 2015). However this could not be used because the pool to select from was not large enough and it was not the intention to be truly representative, so consideration was then given to intensity sampling.

### **5.12.2 Intensity sampling**

Intensity sampling is when the “information rich cases” (LeCompte and Preissley 1993 p.5) are identified and selected in order to gauge an example of the phenomenon of interest; however compared to criterion sampling, this does not necessarily represent the extreme cases. This study was not looking for extreme cases and therefore a form of intensity sampling was considered. The information women provided in the quantitative phases was searched to look for information rich cases and then these were reviewed in relation to the convenience sampling described below.

### **5.12.3 Theoretical sampling**

Theoretical sampling is when the researcher examines a particular instance of the phenomenon of interest to enable elaboration and definition; choosing the cases that would yield the most valuable information for the refinement of a theory (Teddie and Yu 2007). The reason that theoretical sampling was not used for this study is that theoretical sampling is commonly associated with phenomenology and grounded theory which this study is not. It is also used to “fill out and extend theoretical categories” (McCrae and Purssell 2016, p.4) and there is an assumption that the researcher would have some hypotheses about the research; this is not the case for this study. Mixed method sampling strategies may employ all of the above, which come under probability and purposive techniques. However, creatively combining techniques from both convenience sampling and maximum variation sampling/ intensity sampling created a pragmatic approach for those women who had identified that they would be happy to be interviewed.

Convenience sampling is a type of non-probability sampling whereby data is collected from a specific population that is available to participate as such, the women identified on the 28 week survey would be classed as a convenience sample. Those women were then viewed in relation to the Teddie and Yu (2007) sampling frame which is “a resource from which you can select your smaller sample” (Mason 2010, p.140). The aim was to identify the different experiences that came across in women’s quantitative data. Those women conveniently chosen were compared to experiences seen in Table 7.

**Table 7 sampling frame for characteristics identified**

Woman interviewed	Parity Primip/ Multip	Use of app	Locality	Age	Education level	Previous Delivery area	Nationality	
“Annie”	✓	Yes	City	32	A level	x	UK	
“Jessica”		✓	Yes	West	24	NVQ	Study Site	UK
“Paula”	✓	Yes	City	34	Degree	x	UK	
“Olivia”		✓	Yes	City	33	Degree	Study Site	UK
“Dotty”		✓	Yes	City	34	Degree	Study Site	UK
“Sophia”	✓	No *	West	31	A level	x	UK	
“Abby”	✓	Yes	City	37	A Level	X	UK	
“Freda”	✓	Yes	West	30	Higher Degree	X	UK	
“Cara”	✓	Yes	North	40	Higher Degree	x	UK	
“Beatrice”		✓	Yes	City	30	NVQ	Study Site	UK
“Edith”		✓	Yes	West	28	Degree	Out of area	Demark
“Mia”	✓	Yes	City	41	Higher Degree	x	Germany	

\*Footnote Sophie stated that she had not looked at the app but it transpired during interview that she had seen MyBirthplace; it was just not in the format she was expecting.

Once the researcher had confirmed that the women varied from each other in terms of characteristics and experience as seen in Table 5, the researcher contacted the woman to confirm that she was able to be interviewed at around 36 weeks gestation. The timing was chosen because by that stage the women would have had their 36 week appointment and it is around this time when a decision about where they would like to give birth should be being finalised; this is a specification that has been made by the NHS Trust that created the app.

As the interviews were semi structured, prior to attending the appointment key areas were identified for discussion from the answers that were provided in the pre, post and 28 week survey. A core interview schedule can be found in Appendix 16, showing the general topics covered in each interview. An individual crib sheet was then created (Appendix 17), so that specific topic areas for each participant were available with an idea of the flow and direction of questions.

Initially ten women were interviewed; this was the number proposed at the initial design stage and is a practical reality of research. To gain ethical approval and to calculate funding in some studies this number needs to be set. With an idea of sample size the duration and resources could not be calculated (Robinson 2014). This number was seen as a satisfactory number for a qualitative phase (Sandelowski 1995). There is no real consensus on the number of participants for a sample. A paper by Baker and Edwards (2012) considered whether the question of “how many” is even an appropriate question in qualitative research. Qualitative studies vary from single participant case studies to studies that involve between five to three hundred and fifty participants in grounded theory (Robinson 2014). Baker and Edwards sought responses from 14 renowned social scientists who share expertise in qualitative research about how many participants is enough. They found that the majority of responses gave “it depends” as an answer. Those dependants were resources, funding, type of study, methodology and approach, to name but a few. Atran et al (2005) suggested that as few as 10 were needed to reliably establish a consensus. Although this study was not trying to establish a consensus, this number was deemed as a reasonable starting point for this study. The reason for this was

that there were both time and financial constraints and although these were not the main reasons behind the sample number, as Baker and Edwards (2012) make clear, outside determinants still have an influence.

Each interview was then analysed and key themes identified. The last 2 of the ten interviews brought up two new themes and it was considered that to build on these themes and relationships, two further women should be interviewed, enabling a greater exploration into areas that needed consolidation. Silverman (2010) suggests that there are “strong grounds” for monitoring data collection and being responsive to the practical realities,

After the 12 interviews consideration was given to whether an adequate sample size had been obtained and when to stop interviewing. This is a complex question one that has been discussed and considered by numerous researchers which will be laid out now.

Patton, (1990) recognises that studies usually use purposive sampling which seeks to deliver a source of information rich cases. However, many factors influence sample size, including characteristics of the population being studied, analytical approach, the resources available and of course, the research design adopted (Malterud et al. 2015; Bryman 2012; Morse 2000). Sandelowski (1995) highlights that samples are small or large; in qualitative research small samples are seen as reasonable in the light of the rich information that can be produced, but an inadequate sample size can undermine the credibility of the research findings. This therefore means a researcher needs to carefully balance the 2 scenarios and justify all decisions made. Most commonly the guiding principle of when to stop is saturation (Morse 1995).

Saturation is considered to have multiple meanings in qualitative research (Hennink et al. 2016). Initially created within grounded theory, the term was classified as “theoretical saturation” by Glaser and Strauss (1967). They state that saturation is a point in data collection when no additional issues or insights emerge from data and Hennik et al. agree, stating that saturation has been achieved when:

“all relevant conceptual categories have been identified, explored and exhausted”

(2016, p.2).

Sandelowski (1995) identifies this aspect of saturation as being and involving an iterative process of sampling, collecting and analysing the data, which is completed concurrently by the researcher. Since the concept of saturation was first used, many have sought to identify whether this is the most valid way of knowing when to stop interviewing; Guest et al. claim data saturation as the “gold standard” (2006, p.60). They feel that if the context of the interview studies conceptualise categories and pre-established existing theory then, as long as sampling is adequate, it is likely that content constructs have been “adequately populated” which is another form of defining saturated. Hyde emphasises that saturation of data:

“need(s) to be derived from a coherent and rigorous process of data condensation and interpretation that accounts for all possible expectation of the phenomenon”

(2003, p.48).

Hennink et al. (2016) suggest that when saturation is taken out of its methodological origin of ground theory, due process becomes problematic in that the iterative progression discussed above slips and therefore is open to criticism. Kerr et al. (2010) are those that identify unclear methods and justification of saturation as questionable, meaning that researchers state they have reached saturation but they are unable to prove it. This is further supported by Caelli et al. who argue that evidence of saturation “must be given in presentation of the data and discussed via the forums in which it was recognised during the analysis” (2003, p.13), meaning that the researchers must be clear on how participants were recruited, why that number was interviewed and justify the decision to stop recruitment.

Some researchers have taken a step further and believe the concept of saturation is inappropriate (Strauss and Corbin 1998; Dey 1999; O'Reilly and Parker 2012). Dey (1999) believes that saturation opens data collection to being closed early and only achieving partial coding. Strauss and Corbin (1998) say that the longer researchers examine and analyse the data, the greater possibility there will be for new themes to emerge.

Research by Francis and colleagues (2010) identified 18 papers within health and social sciences and medicine that mentioned data saturation. The findings showed that although the definitions were consistent with no new themes being identified, the papers lacked a clear discussion on how data saturation was decided. Bowen (2008) concurs in his naturalistic inquiry where he identifies claims of saturation that need support by substantiated clear evidence of occurrence.

Mason (2010), looking at sample sizes in PhD theses, found that the majority ended in 0 or 5 and most samples were the same as the number cited in the proposal. He believed this was not due to saturation being met as suggested in the theses, but more likely reflected the fear of stopping at less and not being able to defend the theses. The same can be attributed to a seemingly large sample size for the methodology again for fears of "not having enough" (Mason 2010, p.6). The author goes on to say that this is down to experience, and declares that a skilled researcher can get more out of 10 participants than a novice can from 50; a theory which is supported by Morse (2008).

One must consider, if the critics are to be believed, that saturation is an inappropriate method of justifying why a sample is achieved, or whether another method is available. Strauss and Corbin suggested that instead of considering saturation, researchers should be more concerned with reaching a point whereby the amount of data becomes "counter-productive" (199,8 p.136), that is, the new themes discovered do not add anything to the concept, theory or framework. Similar findings were reported by Hennink et al. (2016,) who decided to look at operational saturation, specifically code and meaning saturation. They found that for code saturation, which assessed new and

emerging themes or codes, more than half were generated during the first interview with the code book stabilising at 9 interviews, showing that early interviews produced the majority of the codes. This supports the work by Guest et al. (2006) who also suggested that saturation was reached by 9 interviews.

Hennink et al. (2016) then went on to assess if ‘meaning saturation’ was reached by 9 interviews. Meaning saturation is having a deep understanding of the codes or themes already produced. Their research found that although code saturation had been reached by 9 interviews, meaning saturation was achieved at 16 to 24 interviews.

What is clear from the critique is that at some point in qualitative research an interview has to be the last and the reason has to be justified. Whether it is because code saturation or meaning saturation has occurred or whether, as Strauss and Corbin (1998) put it, the amount of data retrieved has become counter-productive is relative: what is key is the justification.

An initial 10 interviews were identified as a starting point, based on evidence from Hennink et al (2016) and Sandelowski (1995). As stated above two new themes were identified which gave itself to further exploration. Two further interviews were conducted which added to previously identified themes but failed to produce new concepts or codes.

Since the sampling was based on both convenience and the aim to explore women’s experiences of using MyBirthplace, it is unrealistic to say saturation is reached because individual experiences differ and women could continue to be happy to discuss their experience. Instead of assessing the data for saturation, as suggested by Morse (1995), the justification to close the sampling was based on the fact that at 12 women a good level of code saturation had been achieved, as recommended by Hennik et al (2016), and the amount of data in terms of what Strauss and Corbin (1998) suggest as being counter-productive had been reached. Within the confines of the study and the researcher’s experience, this is the point that progression to formal data analysis was considered appropriate.

## **5.13 Analysis process**

Each individual interview was transcribed directly after the interview or as soon as possible, so that the discussion was fresh in mind. The decision was made by the researcher to transcribe the interviews herself rather than having another individual or company do them. This was felt to be beneficial to both learning and development, but also to the research. The transcripts benefitted from having the researcher type them up. Key non-verbal cues were documented and as they were transcribed, the researcher had thoughts regarding the themes. A decision was made early on to transcribe the interviews verbatim, also known as in the naturalism domain (Schegloff 1997). This is where every part of the interview is documented: every pause, stutter and utterance is recorded as an approach that represents the real world (Oliver et al. 2006). This approach was chosen over denaturalised transcription because removing the idiosyncratic elements may mean that there is a loss of flow and the possibility that it will affect the understanding of the original data. An extract of one of the interviews can be seen in Appendix 18.

### **5.13.1 Analysis approach**

When it came to deciding the type of analysis to use, 3 approaches were considered as they were appropriate to the research question and thus it is important to discuss why thematic analysis was chosen.

The first type of analysis considered was content analysis. This is described by Mayring (2000) as a technique for systematically describing written, spoken or visual communication. It focuses on bringing the advantages of quantitative content analysis but with a more qualitative interpretation. This means there is more structure and the data are analysed step by step, with adherence to the rules created in a procedure, so that each interview is done the same. However this analysis type was thought to be less appropriate for this research because the questions in the interview were explorative and thus analysing the data with restrictive categories might have resulted in the meaning of the interviews getting lost.

Content analysis would allow a step by step process but in order to truly gain the meaning of what the women felt about using the DST, a more inductive approach was appropriate when considering the research question.

The second approach considered was the framework approach of analysis, which emphasises transparency in data analysis whereby there is a series of interconnected stages that allow flow back and forth until a coherent account emerges (Smith and Firth 2005). An advantage of the framework approach is that data are organised but reduced, thus making it possible to combine cases if desired. Smith and Firth (2005) also suggest that it allows the researcher to retain a link to the data. However, it became clear there was a real danger of becoming process, rather than outcome, focused. The aim was to allow immersion in the data and exploration of the themes that were emanating from the data; thus only thematic analysis gave a balance of structure but maintained a closeness and ability to gauge the themes that were emerging.

Thematic analysis is a method for “identifying, analysing and reporting patterns” (Braun and Clarke, 2006 p. 6). This is a simplistic way of describing the process and Boyatzis (1998) suggests that it allows interpretation of different aspects of the research topic. Thematic analysis is often seen as “poorly branded” (Braun and Clarke 2006, p.6) in that many individuals utilise it as a form of analysis. However, there is no clear agreement of how an individual goes about using it (Boyatzis 1998; Attride-Stirling 2001; Tuckett 2005) and it is important to identify the theory and method with a clear logic before proceeding with data analysis. An advantage of thematic analysis is that it is suited to numerous research interests and theoretical perspectives and works with both large and small data sets. Its flexibility enables the search for common threads that extend over a set of interviews (Vaismoradi et al. 2013). This then allows appropriate evaluation and will support other researchers in the future as it provides clear logical flow of analysis of the data (Attride-Stirling 2001).

Thematic analysis was chosen for this study firstly, for the fact that it is not specifically related to any pre-existing theoretical frameworks and therefore it can be used with different methods, in this case a mixed method study. Braun

and Clarke (2006) suggest that it is important that the researcher makes clear the theoretical position that the research study is coming from. For the purpose of this study, an inductive approach rather than theoretical approach was chosen. This is the concept that themes and patterns within the data are looked at by the researcher in two distinctive ways. The inductive way is classed as the “bottom up” approach, with the themes produced from reading and coding the data itself rather than having a pre-existing coding frame. It is acknowledged that while the theoretical interest of the researcher is not appropriate, those interests cannot totally be free from this data and thus this is a bias that must be considered.

Secondly, thematic analysis was chosen for the ability to get close to the data while staying flexible (Boyatzis 1998). It allowed not only to remain close to the data, but to retain case identifiers. One of the critiques for the flexibility of thematic analysis is that this opens the research up to being branded non credible, having an ‘anything goes’ approach may result in fragmented data which is misinterpreted (Smith and Firth 2005). This may be valid for some research which is not considerate of guidelines; however here an attempt has been made to be clear and concise with the methods followed for the analysis and provides a clear logical sequence of how this was achieved, as described below.

### **5.13.2 Type of analysis**

The inductive approach to analysis produces a “rich thematic description of the entire qualitative data set” (Braun and Clarke 2006, p.11). This provides a sense of important and predominant themes. Some would consider this approach loses depth and complexities, however this type of analysis was chosen because it is most useful in cases where the topic under investigation is under-researched and this is the first DST that looks to support choice of place of birth.

Braun and Clarke’s (2006) six steps were chosen as a guide to thematically analyse the data gathered from the qualitative interviews. An overview of the steps is provided below, with elaboration of each step alongside a discussion of

how each step was conducted within the current study. Additionally in order illustrated how the study was conducted, examples will be given in the appendices. Although the examples given follow one interview through each of the steps, this process was followed for each interview and each set of data.

- Step one; Familiarisation of the data

In the first step Braun and Clarke suggests “immersion” (2006, p16) in the data; this should be to the extent that the researcher is familiar with the depth and breadth of the content. To achieve this, all the interviews were transcribed personally. This is recognised by Bird (2005) as a key phase of the act of interpreting. This meant that prior knowledge and thoughts during the interview would support the transcribing process. It also meant that the researcher would be reading and re-reading during this process. It was during this process that field notes, observations and reflections on thoughts and feelings experienced before, during and after the interview were documented.

Initially, this caused a struggle for the researcher, with listening to and typing every word, stutter and pause and the first few interviews took hours to transcribe. Heed was taken of Giorgi’s (1985) method in that the transcript was checked and rechecked to ensure it was accurate and represented exactly what had occurred. This again impacted on the time that transcribing took; this is acknowledged by Aveyard and Schofield (2002) stating that interviewing can prove costly in terms of time. The more interviews that were transcribed, the more proficient the researcher became.

- Step two; Generating initial ideas

Braun and Clarke (2006) then suggest that an initial set of codes should be produced. A code becomes the foundation for the themes that were going to be used by the researcher (Heading and Traynor 2005), either using a computer assisted qualitative data analysis program such as NVivo or by hand.

Software package use for qualitative data analysis has been reported by a number of researchers (Liebow 1993; Berger and Rosenberg 2008;), with many

believing that such packages are complex virtual environments that allow a researcher to do more than coding and retrieving data), enabling the researcher to think visually and make better meaning of the data (Lewins and Silver 2007). There are advantages to using these packages, including storing the data and the “speed of handling large volumes of data” (Seale 2000, p.155). Oliveira et al. (2014) suggest another advantage of NVivo as the option to note and save comments which can act as reminders, however consideration has to be given to other issues such as their compatibility with the principles of qualitative research (Roberts and Wilson 2002).

Qualitative research involves immersion in the data and a closeness of the researcher to the data; McLafferty and Farley (2006) argue that using an analysis package can stifle the flow and creativity of the research. Research by Miles and Huberman (1994) suggest that researchers do not always choose the most appropriate package for analyzing their data, relying instead on those used before and already familiar, thus affecting the results. A similar viewpoint is taken by Roberts and Woods (2001), who believe that the software fixes the codes and categories and that this inhibits data analysis. Others, such as Russell and Gregory (1993), state that the computer screen can put a strain on researchers seeing the picture as a whole, causing intellectual stifling and difficulties visualising the data. As such, Roberts and Wilson (2002) believe that the role of computer software in qualitative data analysis is limited.

It is also important to point out that whatever computer system used, the package cannot analyse the data. MacMillan (2005) found that the time spent on solving problems encountered with the software package was lost time that could have been better spent on coding. They felt that tasks could have been done as quickly and more easily using manual methods. It was for this reason, as well as the desire for immersion in the process and to maintain closeness to the data, that it was decided that a software package would not be used. Instead the researcher undertook analysis by hand, using highlighters and post it notes.

First each individual interview was looked at line by line. This reflected Braun and Clark's (2006) idea of repeated readings that allow a search for meaning and patterns. Notes were made in the margin at the end of most lines for each individual page of every interview; Appendix 19 shows an extract with initial coding. Anything that appeared interesting and relevant was marked with highlighters and comments were made. Tuckett (2005) sees this as the starting point of organising data into meaningful groups. Braun and Clark (2006) advise that at this point all potential themes and patterns should be coded. This meant that even if the data did not directly relate to the aims, the data were coded anyway. It is recognised that this can be time consuming, but will allow fuller analysis in the latter stages. The end of this step produced a long list of initial codes for each interview; Appendix 20 gives an example of the type of codes for one interviewee.

- Step three Searching for themes

The third step involves the progression from the initial coded data once step two has been completed to grouping and creating themes. This step is classed as:

“refocusing the analysis at the broader level of themes and involves sorting and collating all the relevant codes into identified themes”

(Braun and Clark 2006, p.19).

A mind map linking the initial codes and combining them to create emerging themes was created. The images of this stage can be seen in Appendix 20. At this stage in the analysis Braun and Clark highlight that themes can become “main themes” or “sub themes”. This was given due consideration. At this point it was also decided that a further two interviews would be conducted and so the previous three steps were repeated to include the data obtained from the final two interviews.

- Step four, Reviewing themes

In this step the themes were refined and coded data extracts were reviewed to ensure that they belong in the themes they have been put in. This involved a two level approach. First the main themes and sub themes were put into a table. Then revision of the original data was conducted to see if there was “enough data to support the theme” (Braun and Clark 2006, p.91). The important consideration here is that a theme may mean something different to one person than to another and it is at this point in the process that external validation from supervisors was sought to see if any alternative themes were produced. Braun and Clark (2006) highlight that this involves reviewing and refining, ensuring that all candidate themes fit and, if they do not, whether the theme itself needs to be reworked or if the data fit into a new theme entirely. This level of step four was particularly challenging, and the researcher found that the themes were broad and all-encompassing as demonstrated in the table in Appendix 21. It is noted that the table was very large and was not effectively transferred into this thesis. However, to show the progress, one theme from the table showing this phase in the analysis can be seen. The sub-themes sometimes merged with other sub-themes and the content became unclear and this was when the suggestion of going back to the original data set became the most useful. This then evolved into the second level of this step in that the entire data set was reflected on. This illustrates the point made by Braun and Clark, that coding is an “ongoing organic process” (2006, p 91).

By now the main data set had been returned to numerous times and it was at this point that confidence was felt that the “thematic map” (Appendix 22) fitted and that movement could be made to the next step. It was apparent that data coding could proceed indefinitely and re-coding could become an endless process, so the decision was made to stop and proceed to the next step. The next two steps are discussed together.

- Step five ;Defining and naming the themes and Step six producing the report

In step five there was a satisfactory thematic map that encompassed all the data and the themes had been set, the themes were named and refined to enable data analysis. Braun and Clarke (2006) state that it is not just about paraphrasing the content, but for each theme to identify the “story” of the data in relation to the research question. It was hoped that by the end of this step the themes were clearly defined and demonstrated the link to the research question and scope. They were also named in “concise, punchy ways and immediately give others a sense of theme” (Braun and Clarke 2006, p.23). As suggested by others (Ryan and Barnard 2003; Bradley et al. 2007), a theme name should identify the essence of what the theme is about but not be too diverse or complex. This initially took a lot of thought and reflection. A short story was written for each theme to show what the data were saying; this was done with thought as to how each theme would then relate to the next. If a sufficient story could not be told that pixelated the name and the name was changed.

It was at this point that a readiness was felt to illustrate the data and themes that make up the story in relation to the research question.

### **5.14 Ethical issues for qualitative interviews**

When conducting qualitative research, ethical issues that also need to be considered are:

- Autonomy
- Beneficence
- Non Maleficence
- Consent
- Confidentiality (Richie et al 2013).

The researcher was compassionate to the issues and each was considered to ensure care to both the participants and overarching aims of the research.

Autonomy, as mentioned before, is the idea of the participant having choice. Respect for autonomy in this study meant that women were told their participation was voluntary, based on consent and they knew that they had the right to withdraw (Pollock 2012). Autonomy also relates to personal privacy and in this case, personal identifying data. All identifiable data and interview transcripts were kept in a locked cabinet within the University. Electronic copies were stored on a password protected file on a University laptop.

Beneficence / non maleficence stipulate that the research does no harm (Pollock 2012) and furthermore relates to the privacy of individuals (Pollock 2012). As already discussed, this research is not believed to cause harm. It is recognised that birth place discussion may be a sensitive topic and any women that became distressed would be sign posted to the supervisor of midwives to discuss any concerns that they might have. Furthermore, women would be informed that their participation was private and that their midwife would not know that they were participating. Women's names were changed to protect confidentiality. Although the women themselves would not receive any benefit from participating, they were told that their views and opinions would have the potential to help inform the development of the app, which might subsequently help others.

To ensure their comfort, the women were offered the most convenient time, date and location, so they were not inconvenienced. Some women chose to have the interview conducted in their home. Others chose for the interview to be conducted in the local FMU. Either location was considered acceptable by the researcher. If the local FMU was indicated, the researcher ensured a private room was booked and a 'in use' poster was placed on the door to ensure that the interview was not disrupted.

Prior to commencing the interview a discussion was had with the women where they were informed of the reason for the interview, the nature of the research and the role of the researcher; this was to make it clear what capacity the researcher came to the interview in. Women were informed of their right to withdraw at any point of the interview. Consent was gained to audio record the

session. In addition, the women were informed of the concepts of anonymity and the use of pseudonyms for any names mentioned during the interview. Finally they were informed that they could stop the interview at any point without providing an explanation. The women also had contact details should they wish to make a complaint.

Women's were given a pseudonym to protect their identity and to ensure confidentiality; none of the names discussed in the result chapter represent those that took part. Names of others identified by the women, for example, the midwife or partner, were also changed.

### **5.15 Conclusion**

This chapter has identified and justified the research methods used in both the quantitative and qualitative phases of this mixed methods study. It has given explanation to how the sample size was calculated and how the data collection and analysis were planned. In depth recruitment details have been provided in order that, so that others may replicate the study if they so wished, and thus the recruitment documents, process and data collection methods have been discussed and justified. Finally, careful consideration has been given to the ethical issues and the researcher has frankly discussed the concerns raised by the REC and the safeguards put in place to protect the participants. It is the researcher's hope that the reader will identify the reflection before, during and after for all aspects of the methodology and ethics as a well-rounded and thoughtful methodology. Next, the results of this study will be presented; as with this chapter, the findings are divided into quantitative findings (Chapter 6) and qualitative findings (Chapter 7).

# Chapter 6 Quantitative findings

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## 6.1 Introduction

The quantitative findings answer the following:

- Primary aim:
  - to identify how effective the DST is in helping women to make a decision about place of birth
- Secondary aims:
  - 1. to identify when women make a decision about place of birth;
  - 2. to explore women's information gathering and decision making behaviours during pregnancy

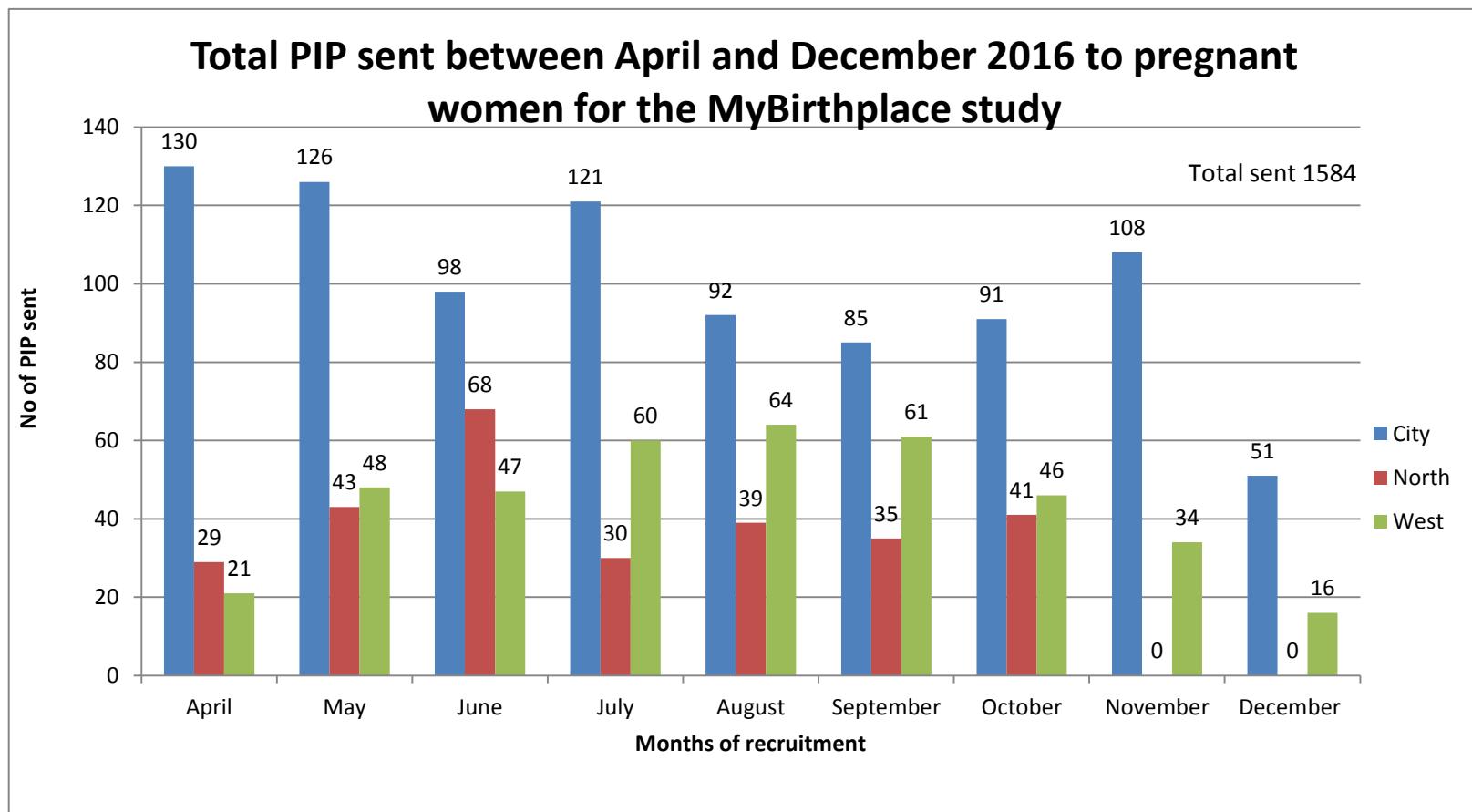
This chapter begins by giving a description of the sample (6.2) and providing an overview of response rates. This is followed by characteristics of those that responded to the invitation to participate in the study compared to those that did not (6.3), including social and obstetric characteristics. The sections are then broken down to show results for each of the study aims.

## 6.2 Description of sample

### 6.2.1 Response rate

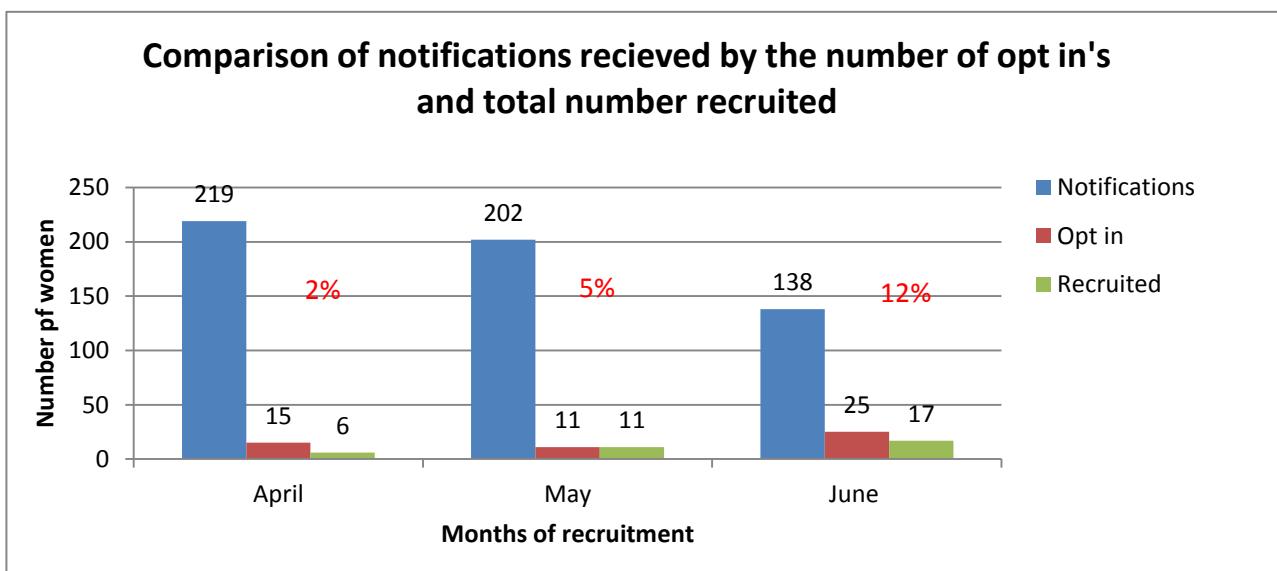
A total of 1584 Participant Information Packs (PIP) were sent to women during the 9 month recruitment period. The urban hospital is the central hospital to three main geographical areas classed below as City, West and North (Figure 17). The City represents one of the most densely populated city centres within the UK (Population City 2015). The West represents the towns west of the hospital, with 82,600 people in two of the boroughs that the hospital provides care to. The North represents the areas surrounding the hospital and those towns north of it.

Figure 17: The number of PIP sent between April and December 2016 by area



A total of 219 notifications of pregnancy were received in April from whom six women were recruited. This gives a participant return rate of 2% in April; similar rates were seen in May with 202 notifications yielding 11 recruits, equating to a 5% recruitment rate. Finally, the 12% recruitment rate in June reflects 138 notifications yielding 17 recruits. The slow rate significantly impacted the time frame initially given for recruitment. Figure 18 represents the above data and was submitted to the NRES Hampshire B Committee as justification for the submission of an amendment as described in Chapter 5.

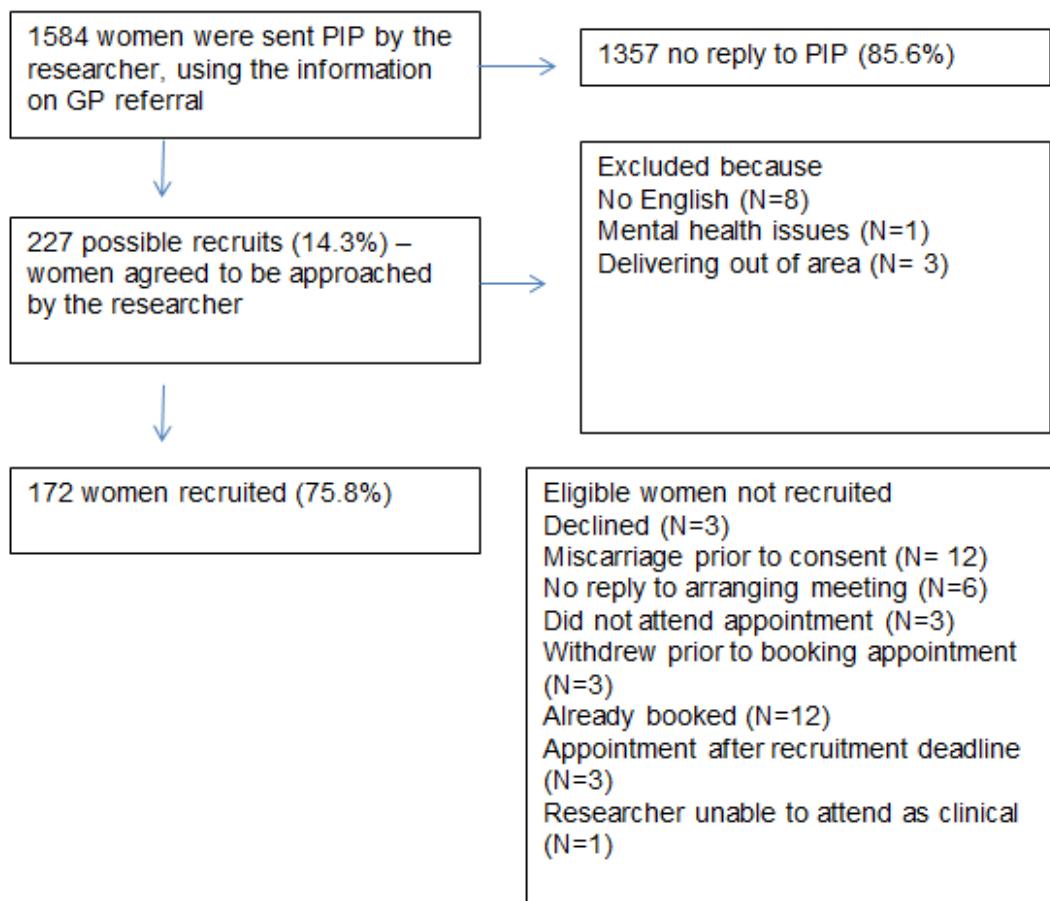
**Figure 18: Comparison of notifications received by the number of opt ins and total number recruited**



The ethics committee approved the amendment, which enabled the involvement of midwives as gatekeepers. This had an impact on recruitment and enabled sufficient women to be recruited to the study.

Of the 1584 PIP sent, a possible 227 women indicated that they would be happy to be contacted to arrange a meeting prior to their first appointment. This represents just a 14% response rate to the PIP. However, the conversion rate once they were contacted by the researcher was considerably higher at 76% (Figure 19).

**Figure 19:** The overall process of recruitment and exclusion for the study



Of the 227 women who expressed an interest in participating; 97 women (42.7%) were identified by the midwife who contacted the woman to see if she would be willing to participate. The other 130 women opted in themselves.

The study achieved a good recruitment rate once women had agreed to meet the researcher. A total of 172 of the 227 women (75.8%) were recruited face to face by the researcher to participate in the study. Table 8 identifies the reason that the 53 were not recruited.

**Table 8 Reasons for non-participation in the MyBirthplace Study.**

Reason	Frequency
Miscarriage	12 (23.5%)
No reply to attempt to arrange meeting	8 (15.6%)
Did not attend arranged meeting	3 (5.8%)
Withdrew prior to consent *	3 (5.8%)
Unable to attend apt. due to clinical	1 (1.9%)
Excluded due to:	
No English	9 (17.6%)
Declined consent	3 (5.8%)
Mental health	1 (1.9%)
Already booked	12 (23.5%)
Delivering outside designated hospital	3 (5.8%)
Appointment after recruitment deadline	3 (5.8%)
Total	53

\*Of the three women that withdrew one of the women had brought forward a holiday. The other two women felt the study was not for them personally.

Of the 1584 women who were sent a PIP and did not reply, no information is available for reasons that they did not want to participate. An overall demographic picture is given in Table 9; this was created from data routinely

collected by the study hospital using their Protos system. This was collected to show any differences between those that took part and those that did not, by looking at the normal population and demographics for that locality.

**Table 9 Demographic data of study site compared to recruited sample**

	Study Sample	Recruitment site population
Maximum N	N=172	N=4991
Age	(N=172)	
teens	3 (1.7)	125 (2.5)
20-24	23 (13.7)	761 (15.2)
25-29	50 (29.1)	1358 (27.2)
30-34	67 (39.0)	1613(32.3)
35-39	21 (12.2)	881 (17.6)
40+	8 (4.7)	252 (5.2)
Parity	(N=109)	
Primip	63 (36.6)	2170 (43.4)
Multip	109 (63.4)	2821 (56.6)
Number of Babies	(N=109)	
One	73 (67.0)	2171 (43.4)
Two	24 (22.0)	729 (14.6)
Three	11 (10.1)	281 (5.6)
Four or more	1 (0.9)	237 (4.7)
		1573 (31.7)
Employment	(N=171)	
Working	115 (66.9)	1781 (36.0)
Self employed	20 (11.6)	25 (0.5)
Unemployed	15 (8.7)	259 (5.0)
Sickness (Temp or Permanently)	3 (1.7)	6 (0.1)
Other	19 (11.0)	11 (0.2)
Housewife	1 (0.6)	427 (8.5)
Full time mother	3 (1.7)	0 (0.0)
Unknown / Blank	0 (0.0)	2431 (48.7)
Full time education	0 (0.0)	50 (1.0)
Ethnicity	(N=172)	
White English/British/Welsh/Scottish	162 (94.2)	3704 (74.2)
Mixed/ Multiple	6 (3.5)	403 (8.0)
Asian/ Asian British	4 (2.3)	135 (2.7)
Unknown	0 (0.0)	749 (15.7)

Footnote: This data was based on women booked in the same period (April – Dec 2016). The hospital does not store data of every referral received and therefore the researcher was not able to use this for comparison. No documentation was available for marital status and education.

The study sample is similar to the population of the study site. It is acknowledged that the study sample has a largely White representation and a higher number of working individuals.

### **6.2.2 Response rates to phase one**

All 172 women completed the pre-appointment questionnaire, while 169 women (98.3%) completed the post-appointment questionnaire. Three women that were recruited did not return the post-appointment questionnaire, despite two reminders being sent to them by post. It was subsequently discovered that one of these women had moved out of area and was no longer under the care of the study hospital.

A 28 week survey was sent to 157 women (91.3%). Three women declined a follow up on their post questionnaire and 12 women miscarried after completing the post-appointment questionnaire.

Of these 157 women, 95 (60.5%) returned the questionnaire. The characteristics of the responders in both phases are shown in Table 8.

## **6.3 Characteristics of the study population**

### **6.3.1 Social characteristics**

The mean age of women was 30.0 years (range 18 years to 43 years, SD=5.1) Table 10 shows demographic characteristics of the sample. The majority of the women (56.4%) were married / in a civil partnership, the second largest group were those that had a partner/ cohabiting (39.5%),

More than three quarters of the women were working; just under half (48.8%) were in paid full time work, a smaller proportion were in paid part time work (17.4 %) and (11.6%) were self-employed. Compared to the study population, the sample has a higher working population (Table 8).

Women had various levels of qualification, as expected because of the diversity of the population within the area that the hospital provides care to. The highest proportion of participants had a degree or equivalent (32.6%).

**Table 10 Demographic Characteristics of the sample**

	<b>Phase one</b>	<b>Phase two</b>
<b>Maximum N</b>	N=172	N=95
<b>Age</b>	(N=172)	
teens	3 (1.7)	0
20-24	23 (13.7)	12 (12.6)
25-29	50 (29.1)	25 (26.3)
30-34	67 (39.0)	44 (46.3)
35-39	21 (12.2)	12 (12.6)
40+	8 (4.7)	2 (2.1)
Mean age	30.0 (SD 5.12)	30.3 (SD 4.54)
<b>Locality</b>	(N=172)	
City	108 (62.8)	54 (56.8)
West	37 (21.5)	23 (24.2)
North	27 (15.7)	18 (18.9)
<b>Parity</b>	(N=109)	
Primip	63 (36.6)	39 (41.1)
Multip	109 (63.4)	56 (58.9)
<b>Number of Babies</b>	(N=109)	
One	73 (67.0)	38 (67.9)
Two	24 (22.0)	15 (26.8)
Three	11 (10.1)	3 (3.2)
Four or more	1 (0.9)	0
<b>Marital status</b>	(N=172)	
Single living alone	5 (2.9)	2 (2.1)
With partner/ cohabiting	68 (39.5)	40 (42.1)
Married/ civil partnership	97 (56.4)	51 (53.7)
Separated or Divorced	2 (1.2)	2 (2.1)
<b>Employment</b>	(N=171)	
Working	115 (66.9)	63 (66.3)
Self employed	20 (11.6)	11 (11.6)
Unemployed	15 (8.7)	6 (6.3)
Sickness (Temp or Permanently)	3 (1.7)	2 (2.1)
Other	19 (11.0)	13 (13.7)
Housewife	1 (0.6)	
Full time mother	3 (1.7)	
<b>Level of Education</b>	(N=172)	
No formal Qualification	5 (2.9)	1 (1.1)
NVQ	29 (16.9)	14 (14.7)
GCSE/ Equivalent	25 (14.5)	13 (13.7)
A Level / Equivalent	28 (16.3)	18 (18.9)
Degree / Equivalent	56 (32.6)	33 (34.7)
Higher Degree	23 (13.4)	12 (12.6)
Foreign Qualifications	6 (3.5)	4 (4.2)
<b>Ethnicity</b>	(N=172)	
White English/British/Welsh/Scottish	162 (94.2)	89 (93.7)
Mixed/ Multiple	6 (3.5)	5 (5.3)
Asian / Asian British	4 (2.3)	1 (1.1)

### 6.3.2 Obstetric characteristics

The majority of women were multiparous (63.4%), but most had not given birth in the study hospital before. Table 11 provides obstetric information for the participants.

**Table 11** Obstetrics descriptive data for 172 participants

	Frequency (N=)	Valid percentage %
<b>Parity (N=172)</b>		
Primip	63	36.6
Multipip	109	63.4
<b>Number of Babies (N=109)</b>		
One	73	67.0
Two	24	22.0
Three	11	10.1
Four or more	1	0.9
In study site	93	85.3
Out of Area	16	14.7
<b>Type of Birth (N=109)</b>		
Normal Vaginal	70	64.2
Assisted Delivery	17	15.6
Elective Cesarean	2	1.8
Emergency Cesarean	20	18.3
<b>Number of Weeks Pregnant (N=168) (at time of Post Questionnaire)</b>		
6-8 weeks	20	11.9
9-11 weeks	133	79.2
12 or more	15	8.9
<b>Number of times looking at information on place of birth (N=167)</b>		
None	90	52.3
1 time	44	25.6
2-4 times	28	16.3
5 or more	5	2.9

A larger proportion of women previously had a normal vaginal delivery (64.2%) with a combined 35.7% of women having had an intervention. The average number of weeks when booked was 9-11 weeks (79.2%), which is the target gestation the hospital set for the first appointment. Just over half (52.3%) had not looked at information on place of birth.

### 6.3.3 28 week follow response rates

Of the 157 questionnaires sent, a total of 95 (60.5%) were successfully returned. Table 12 shows the demographic characteristics. There were some difficulties with 6 email addresses not recognised and unable to send; this was following repeated checking with the original written by the women. In these instances postal addresses were used instead.

**Table 12 Responders and Non-responders to the 28 week survey**

	<b>Responders (N=95) (%)</b>	<b>Non responders (N=77) (%)</b>
<b>Age</b>	<b>(N=95)</b>	<b>(N=77)</b>
teens	0 (0.0)	3 (100.0)
20-24	12 (52.3)	11 (47.8)
25-29	25 (50.0)	25 (50.0)
30-34	44 (65.7)	25 (34.3)
35-39	12 (57.1)	9 (42.9)
40+	2 (25.0)	6 (75.0)
<b>Parity</b>		
Primip	37 (58.7)	26 (41.3)
Multip	58 (53.2)	51 (46.8)
<b>Locality</b>	<b>(N=95)</b>	<b>(N=77)</b>
City	54 (50.0)	54 (50.0)
West	18 (66.7)	9 (33.3)
North	23 (62.5)	14 (37.8)
<b>Marital status</b>	<b>(N=95)</b>	<b>(N=77)</b>
Single living alone	2 (40.0)	3 (60.0)
With partner/ cohabiting	40 (58.8)	28 (41.2)
Married/ civil partnership	51 (52.6)	46 (47.4)
Separated or Divorced	1 (100)	0 (0.0)
<b>Employment</b>	<b>(N=95)</b>	<b>(N=76)</b>
Working	63 (55.3)	51 (44.7)
Self employed	11 (55.0)	9 (45.0)
Unemployed	6 (40.0)	9 (60.0)
Sickness (Temp or Permanently)	2 (66.7)	1 (33.3)
Other	13 (68.4)	6 (31.6)
<b>Level of Education</b>	<b>(N=95)</b>	<b>(N=77)</b>
No formal Qualification	1 (20.0)	4 (80.0)
NVQ	14 (48.3)	15 (51.7)
GCSE/ Equivalent	13 (52.0)	12 (48.0)
A Level / Equivalent	18 (64.3)	10 (35.7)
Degree / Equivalent	33 (58.9)	23 (41.1)
Higher Degree	12 (52.2)	11 (47.8)
Foreign Qualifications	4 (66.7)	2 (33.3)
<b>Ethnicity</b>	<b>(N=95)</b>	<b>(N=77)</b>
White English/British/Welsh/Scottish	89 (54.9)	73 (45.1)
Mixed/ Multiple	5 (83.3)	1 (16.7)
Asian/ Asian British	1 (25.0)	3 (75.0)

Characteristics of non-responders to the follow up were compared with those that responded, to assess if there were any differences (Table 22).

There is no difference between primiparous women who responded (38.9%) compared to multiparous women (61.1%). Again, there was no difference between the age of non-responders and responders [Pearson Chi-squared 10.2, 0.068 2 sided].

## 6.4 Results

### 6.4.1 Effectiveness of MyBirthplace

The SDMS was used to identify how effective the DST is in helping women to make a decision about place of birth (primary aim). The woman's decision, as measured by the Stages of Decision Making Scale (SDMS), was compared pre and post accessing MyBirthplace (Table 13).

**Table 13 Women's SDMS measures before and after accessing MyBirthplace**

Scale categories	Pre	Post
	N (%)	N (%)
I have not begun to think about the choices	18 (10.5)	8 (4.7)
I have not begun to think about the choices but I am interested.	41 (23.8)	31(18.0)
I am considering the options now.	40 (23.3)	44 (25.6)
I am close to selecting an option.	2 (1.2)	10 (5.8)
I have already made a decision but I am still willing to reconsider	27 (15.7)	29 (16.9)
I have already made a decision and I am unlikely to change my mind	44 (25.5)	47 (27.3)
Missing	0	3 (1.7)
<b>Total</b>	<b>172</b>	<b>169</b>

Data show that a quarter of women prior to their first appointment had already made a decision regarding place of birth and were unlikely to change their minds N=44 (25.5%). The second largest grouping of women were not thinking about their options but were interested in their choice N=42 (23.8%), with "considering the options now" following closely with N=40 women (23.3%). Following completion of the pre-questionnaire women then went into their first appointment with the midwife. This is where women should have been given access to MyBirthplace.

Table 14 below shows how women's decision making changed from the SDMS before and the SDMS after the first appointment. For most women (69.8%), the stage of decision making did not change.

**Table 14 Level of decisional conflict on the SDMS**

	Frequency N= 169	(%)
Greater decisional conflict (negative differences)	10	(5.9)
Ties	118	(69.8)
Lower decisional conflict (positive differences)	41	(24.3)

However, in 24.3% of cases, there was a positive increase in the post questionnaire suggesting that women had greater certainty in their decision. This is a significant statistical difference ( $P <0.0001$ ) [ $Z = -4.201$  SD 1.077].

It was then important to see if there was any relationship between the positive increase and whether or not the woman had access to MyBirthplace. A cross tabulation was used to compare the new variable "level of improvement" with MyBirthplace accessed in the first appointment (Table 15).

**Table 15 Relationship between level of decisional conflict and access to MyBirthplace**

Level of Decisional conflict	MyBirthplace accessed N=31 (%)	MyBirthplace not accessed N=136 (%)
<b>Greater decisional conflict N=10</b>	3 (9.6)	7 (5.1)
<b>Tie N=116</b>	17 (54.8)	99 (72.7)
<b>Lower decisional conflict N=41</b>	11 (35.5)	30 (22.0)

Women who accessed the app were more likely to have improved decision making (35.5%), as evidenced by lower decisional conflict, compared to those who did not access the app (22.0%). Statistical testing was not conducted due to small numbers. Those women whose SDMS stayed the same were more likely to not have accessed MyBirthplace (72.8%). It was then important to see results for the SDMS at the 28 week follow up.

The SDMS was completed by 92 of the 95 women that returned their follow up survey. Three women left this scale blank. Results show (Table 16) that by 28 weeks, just over a third of women (36.6%) had made a decision and were unlikely to change their minds.

**Table 16 Comparison of SDMS completed in Phase one's pre and post questionnaires andPhase two 28 week survey**

<b>Scale categories</b>	<b>Frequency N (%)</b>		
	<i>Pre Questionnaire</i>	<i>Post Questionnaire</i>	<i>28 week follow up</i>
I have not begun to think about the choices	18 (10.5)	8 (4.7)	1 (0.6)
I have not begun to think about the choices but I am interested	41 (23.8)	31 (18.0)	0 (0.0)
I am considering the options now	40 (23.3)	44 (25.6)	5 (2.9)
I am close to selecting an option	2 (1.2)	10 (5.8)	2 (1.7)
I have already made a decision but I am still willing to reconsider	27 (15.7)	29 (16.9)	20(11.6)
I have already made a decision and I am unlikely to change my mind	44 (25.5)	47 (27.3)	63(36.6)
<b>Missing</b>	<b>0</b>	<b>3 (1.7)</b>	<b>80 (46.5)</b>

By 28 weeks most women's decisions had improved on the SDMS. Only 2.9 % of women had greater decisional conflict (Table 17).

**Table 17 Women's decisional conflict difference at 28 weeks compared to post appointment questionnaire**

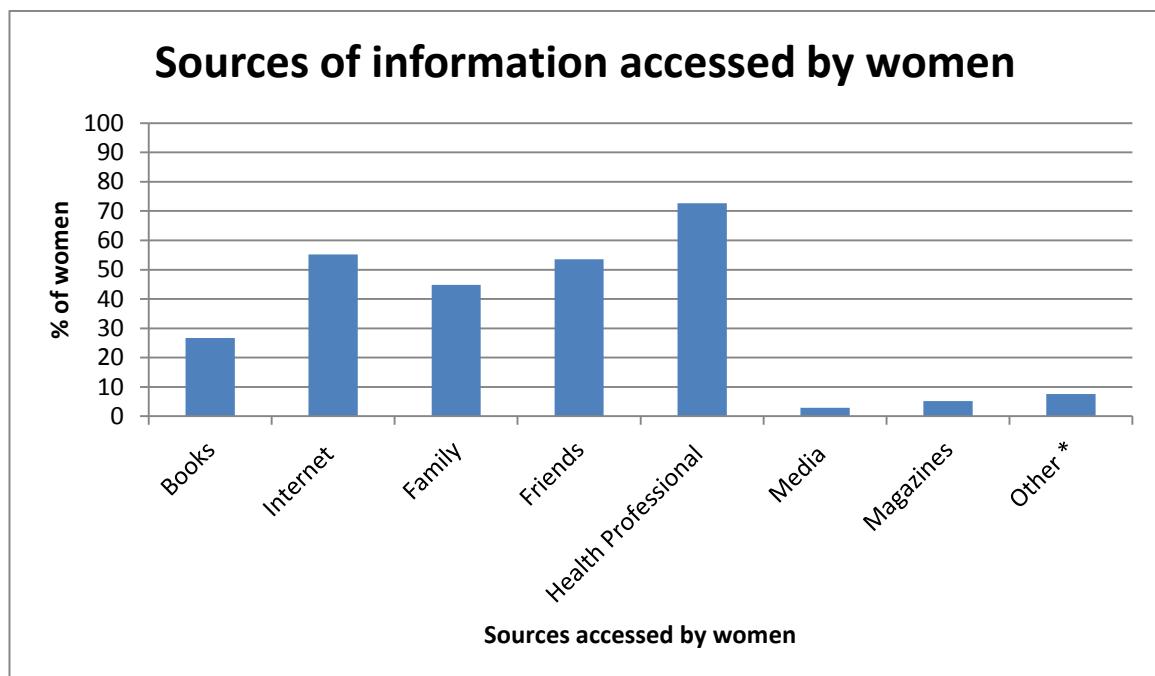
<b>Difference (Max N=92)</b>	<b>N</b>	<b>%</b>
Greater decisional conflict	5	2.9
Same	28	19.2
Less decisional conflict	59	53.5

Results show that MyBirthplace, has a positive influence on women's decision making, making them more certain with their decision. By 28 weeks the majority of women had made a decision about their birth place with only one woman (0.6) not having thought about their choice, suggesting that MyBirthplace is effective in supporting decision making.

#### **6.4.2 Secondary aims 1 and 2: to identify when women make a decision about place of birth and to explore women's information gathering and decision making behaviours during pregnancy**

Figure 20 below shows the accumulative total of the sources of information the women had said they accessed. The majority of women accessed information from a health professional (N= 125, 72.7%) with media being the least accessed source (N=6, 2.9%).

**Figure 20: Sources of information accessed by women**

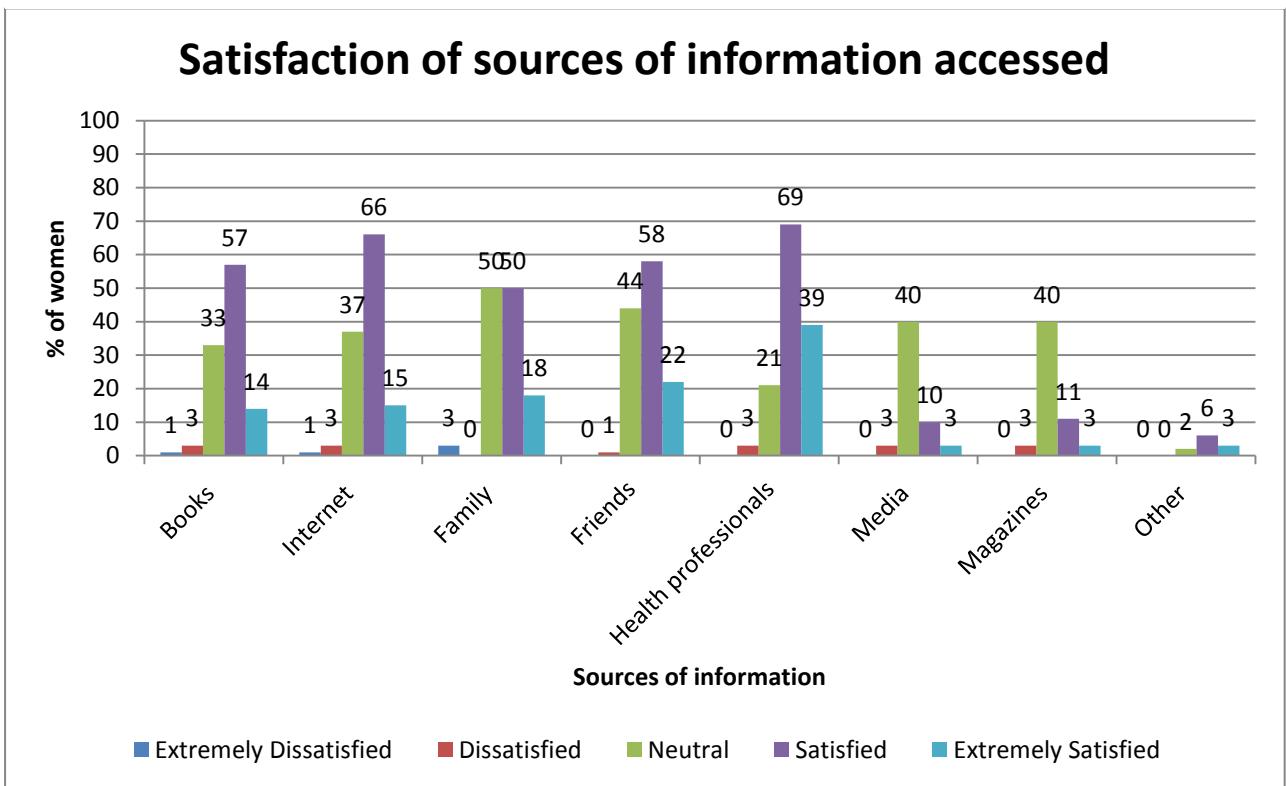


\*Of the “other” sources of information identified, NCT classes appeared the most popular (N=7). Of note, is the fact that one woman had identified using the MyBirthplace app prior to having her first appointment with the midwife. Two women accessed the midwife, for another two women no answer was given. Yoga N=1 and Royal Navy supplied RN N=1 were each mentioned.

##### **6.4.2.1.1 Satisfaction with Information sources**

Women were asked to rate their satisfaction with the source of information on a Liker type rating scale with 1 being “extremely dissatisfied” to 5 being “extremely satisfied”. Figure 21 looks at women’s satisfaction.

**Figure 21 Satisfaction scores for the different sources of information accessed**



In general women were satisfied or very satisfied with most sources of information. The greatest satisfaction was expressed for information from health professionals, with 69 (40.1%) women indicating that they were satisfied and a further 39 women (22.7%) indicating that they were extremely satisfied.

#### **6.4.2.1.2 Knowledge level of birth facilities**

Women were asked to identify all options of birth facility that they were aware of in the local area. A large proportion of women (59.3%), were unaware that homebirth was an option within the study area prior to their first appointment (Table 18). This largely remained the same post-appointment, with one woman who had previously mentioned it before the appointment failing to mention it afterwards.

The majority of women were aware of the main maternity hospital (87.2%), however only 33 women (19.2%) were aware of the two different facilities within the hospital; that being the labour ward and the AMU. Table 18 shows the options women were aware of for birth facility prior to and after the first appointment.

**Table 18 Birth options identified before and after the appointment**

Birth options identified	Pre N = (%)	Post N= (%)	Change
Home	70 (40.7)	68 (39.5)	-2
Hospital	150 (87.2)	149 (86.6)	-1
AMU	33 (19.2)	36 (20.9)	+3
City FMU	90 (52.3)	87 (50.6)	-3
West FMU	19 (11.0)	35 (20.3)	+16
North FMU	16 (9.3)	23 (13.4)	+7

Before and after scores for knowledge were tested to assess if there was a difference using the Sign test (Table 19). Results show that overall there was no statistical difference between women's knowledge scores, however there was a statistically significant difference in women's knowledge about the FMU in both North and West. Women were more aware of the West FMU ( $p<0.0001$ ) and the North FMU ( $p<0.041$ ) after the appointment.

**Table 19 Women's change in knowledge scores pre-appointment questionnaire and post-appointment questionnaire**

	Home N=169	Hospital N=169	AMU N=160	FMU City N =169	FMU West N=169	FMU North N =169
Less knowledge	14	12	7	21	0	5
Same	142	142	151	132	152	151
More Knowledge	15	17	13	18	19	15
P value =	1.000	0.187	0.263	0.320	0.000	0.041

#### **6.4.2.1.3 Important factors when deciding place of birth**

Women were asked to consider factors that were important to them when choosing a birth location (Table 20). This was an open question and the degree of response varied, some women put one or two words, however some put large comments. These data were reviewed and recoded, highlighting the main factors that women considered important; women could give more than one factor.

**Table 20 Factors women consider important when deciding where to give birth**

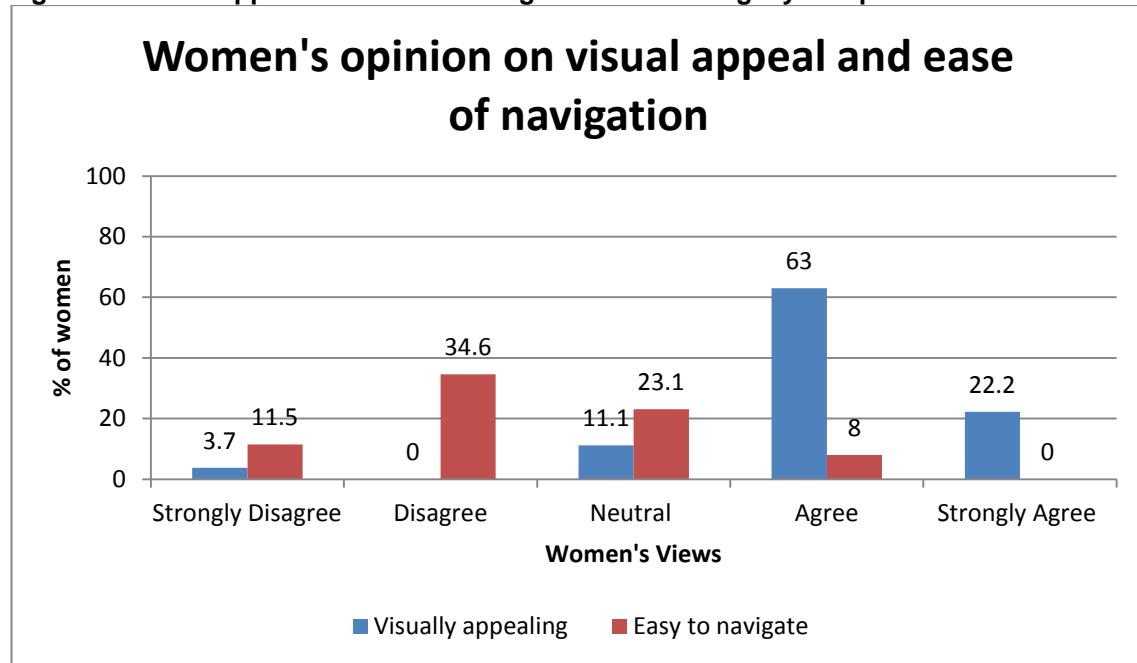
Factors considered	N=172	(%)
Safety	77	(44.7)
Services / facility	49	(28.4)
Support	37	(21.5)
Locality	34	(19.7)
Atmosphere	27	(15.6)
Doctors and NICU	23	(13.3)
Pain Relief	17	(9.8)
Cleanliness	12	(6.9)

The results show that safety was the main factor that women considered as important, with the facilities and services that the location offered being the second largest proportion; this encompassed having access to emergency equipment, breastfeeding support and a birthing pool. A number of women (N=27) mentioned the atmosphere as being important; this was in relation to feeling calm and relaxed. Support was mentioned in many forms including support from midwives and health professionals as well as support of their birth plan and choices.

## 6.5 Secondary aim 3: Views and opinions of women using MyBirthplace

Women were asked to rate different aspects of using MyBirthplace. Most women 17 (63%) found the MyBirthplace visually appealing (Figure 22). However, fewer found MyBirthplace easy to navigate (8%).

**Figure 22 Visual appeal and ease of navigation when using MyBirthplace**

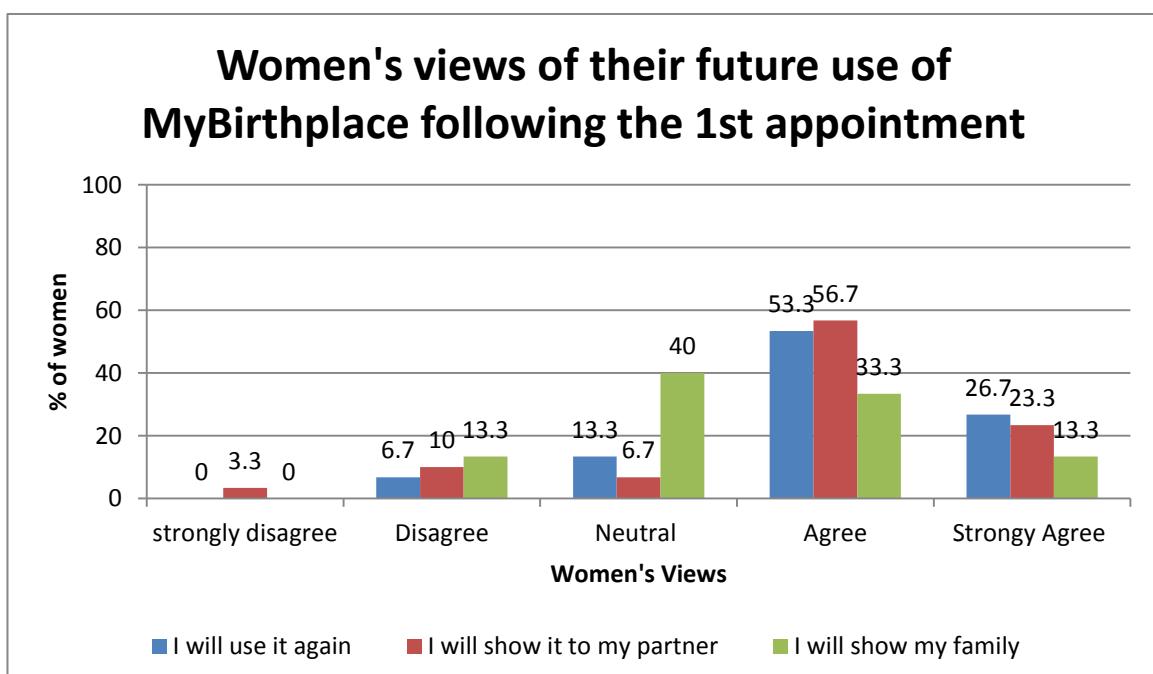


Most women agreed 20 (74.1%) or strongly agreed 3 (11.1%) with the statement “MyBirthplace told me everything I needed to know” (Figure 27).

Similarly, most women agreed that MyBirthplace helped them to think about their options; agreed (57.1%) or strongly agreed (32.1%). This is displayed above in the statement “did not help me understand my options”, with the majority either strongly disagreeing N=10 (37%) or disagreeing N= 13 (48.1%) and “MyBirthplace made me less confident” with 15 women (55.6%) choosing disagree.

When women were given a negative statement about MyBirthplace such as “had statistics that were difficult to understand”, over half of women disagreed with the statement (51.9%). Similar results were seen with “made me less confident”, with over half disagreeing (55.6%). Women were then asked to score statements about their future use of MyBirthplace including whether or not they would use it with others (Figure 23).

**Figure 23 Women's views of future use of the MyBirthplace app following the 1<sup>st</sup> appointment with the midwife**



When presented with the statement “I will not suggest it to friends” 23.3% strongly disagreed; only a small proportion strongly agreed (3.3%) that they would not suggest it to friends. Two fifths of the women were neutral to this statement (40%).

Women were asked their opinion on both good and bad aspects of the app. Only 15 women wrote comments in the “what was not good” box, with only 5 of these being negative (Table 21).

**Table 21 Negative comments women gave about MyBirthplace**

<b>Negative opinions about MyBirthplace</b>
“Does not go through all risks”
“Isn’t available on app store”
“Lots of statistics that were confusing. Also couldn’t find app on app store had to go through NHS website. Very Confusing”
“Not very informative good on the basics but did not tell me very much that I did not already know”
“Sometimes it gives me [Study Location] options but sometimes it takes my location and shows me options [outside study site]”
Nothing, not applicable (n=9)
I found it all good (n=1)

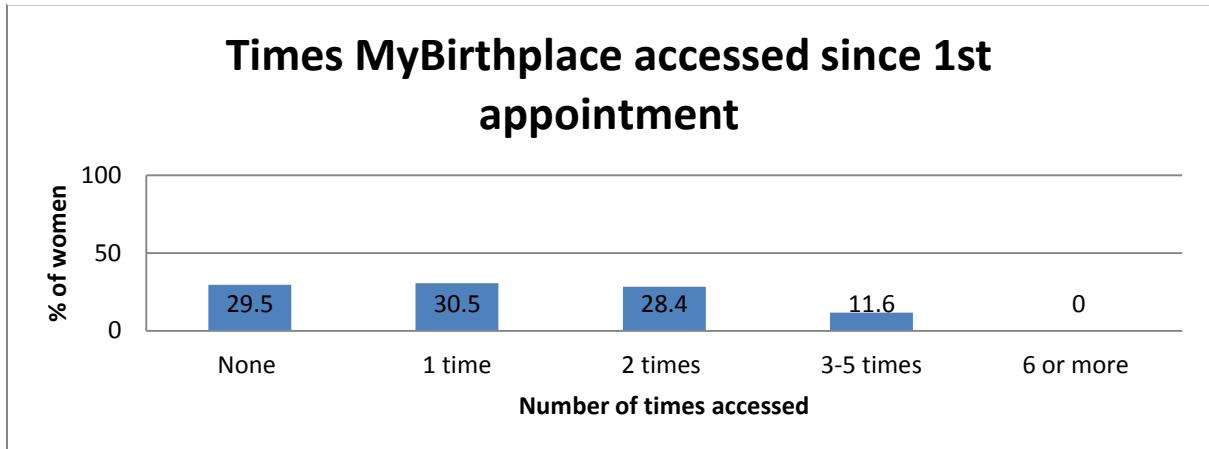
Women were asked what was good about MyBirthplace (Table 22); the largest proportion felt that it provided options (50.0%).

**Table 22 Positive comments women gave about MyBirthplace**

<b>Good about the app</b>	<b>N=18</b>	<b>(%)</b>
Providing options	9	(50.0)
Level of information	7	(38.9)
Easy to use format	5	(27.8)
Simple and clear	5	(27.8)
Online tours	2	(11.1)
Use in own time	1	(5.6)
Providing Choice	1	(5.6)

Following their pre test post test questionnaire, women were then given the 28 week follow up survey. Women were asked about the number of times they had accessed MyBirthplace following the first appointment (Table 23).

**Table 23 Number of times women accessed MyBirthplace since their first appointment**



More than two thirds of women had accessed the app at least once (Figure 23). Most women had accessed MyBirthplace once since their first appointment. Only a small proportion of women (11.6%) accessed it on more than two occasions.

Those women that did not access the app at all ( $N=28$  29.5%) were unlikely to agree to a follow up discussion about why this was the case; only four women suggested they would be happy to be contacted, but did not respond to the request. These women were contacted to ask the reasons for not looking at it.

The responses varied; one woman said:

“Yes the main reasons were that I was going to have an elective section so thought it didn't really apply to me and that my midwife didn't talk to me about it” [Maggie]

Another said:

“To be perfectly honest with you I a) have completely forgotten about the MyBirthplace app and b) midwife has never mentioned it to me at all in any of my appointments.” [Meredith]

The overriding themes from the women were that they either forgot to look at it, that it did not apply to them normally because of the risk related reason or that the midwife did not discuss it again and therefore they did not look at it.

The majority of women accessed MyBirthplace on the phone (44.9%), with smart devices coming in second (Table 24).

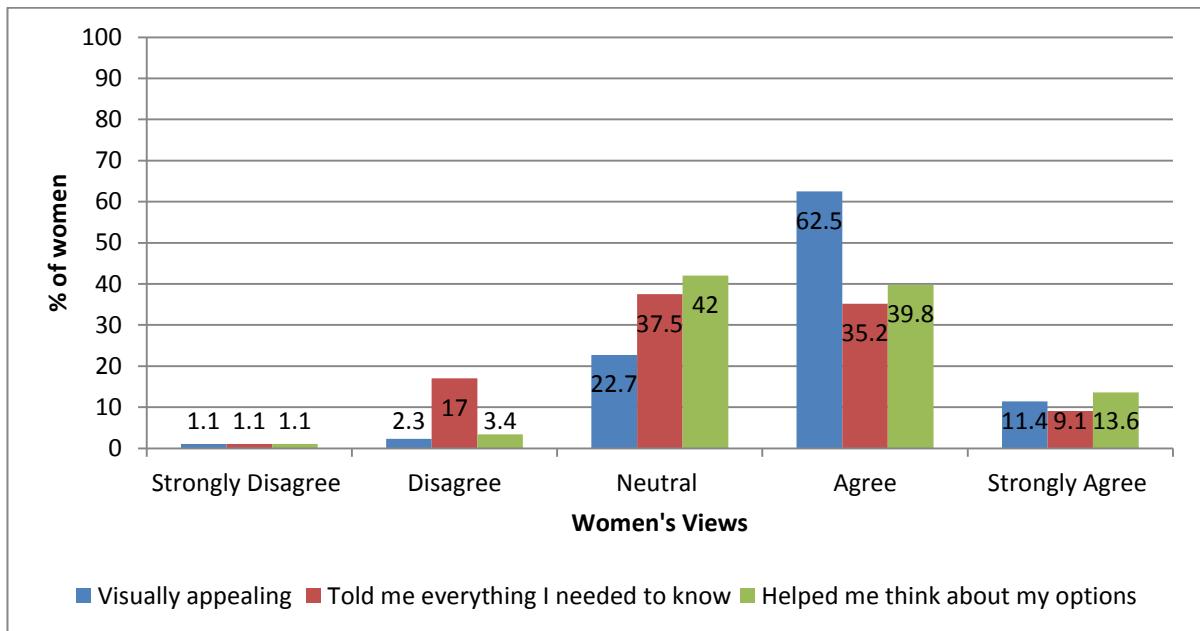
**Table 24 Use of MyBirthplace**

Variable	N	%
<b>How have you accessed MyBirthplace (N=60)</b>		
by phone	31	44.9
by smart device	19	27.0
by Internet	10	14.4
by other	0	0.0
<b>Ease of Access (N=67)</b>		
Yes	63	94.0
<b>Accessed with others (N=67)</b>		
Yes	18	26.8
<b>Where have you accessed MyBirthplace (N=67)</b>		
At a friend's	2	2.9
At home	56	83.5
In hospital	0	0.0
On the go	6	8.9
At work	3	4.4
In other location	0	0.0

The majority of women found MyBirthplace easy to use and preferred to access it at home (83.5%). Only 26.8% of women used MyBirthplace with others; the most likely person was husband or significant other. ‘Mother’, ‘friend’ and ‘in a group’ were also mentioned.

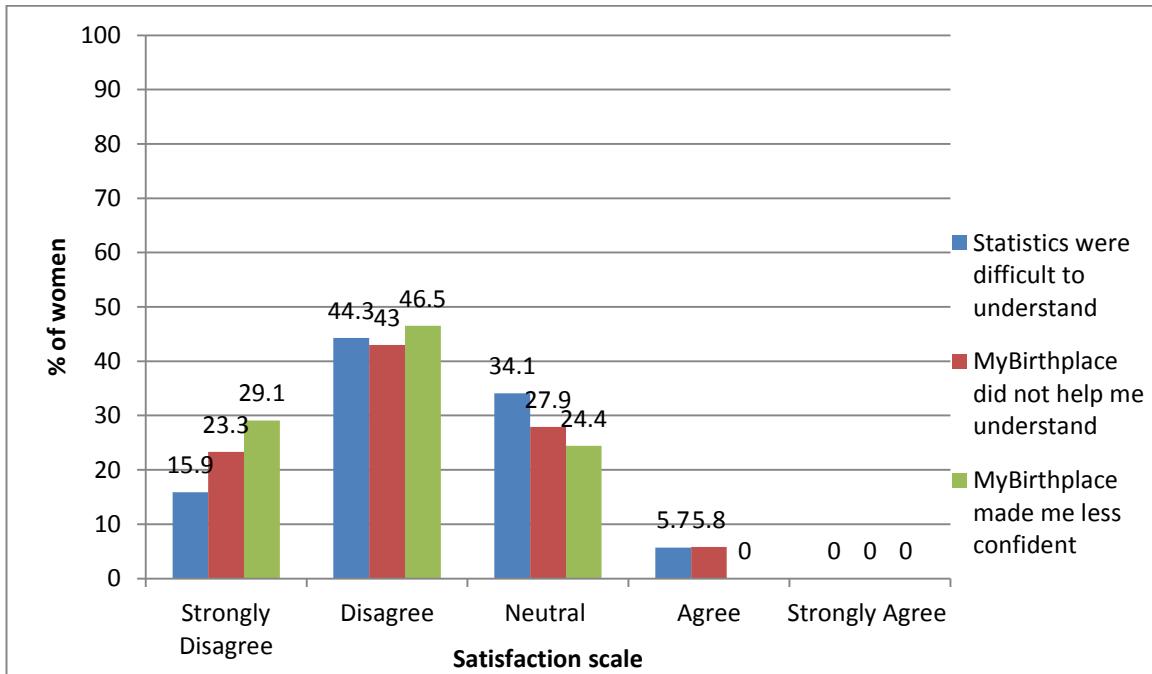
Women were then asked to revisit the Likert type scales to assess different aspects of the app; these results can be found in Figure 25.

**Figure 25 Ease of navigating MyBirthplace, information and thinking of options**



Nearly three quarters of women felt MyBirthplace was visually appealing (Table 26). Women were more likely to be non-committal when it came to MyBirthplace helping them think about their options, but more than half agreed or strongly agreed that it did (53.4%). The same can be said about their views regarding MyBirthplace telling them everything they needed to know, with 44.3% agreeing. The findings suggest overall satisfaction with using MyBirthplace (Figure 26).

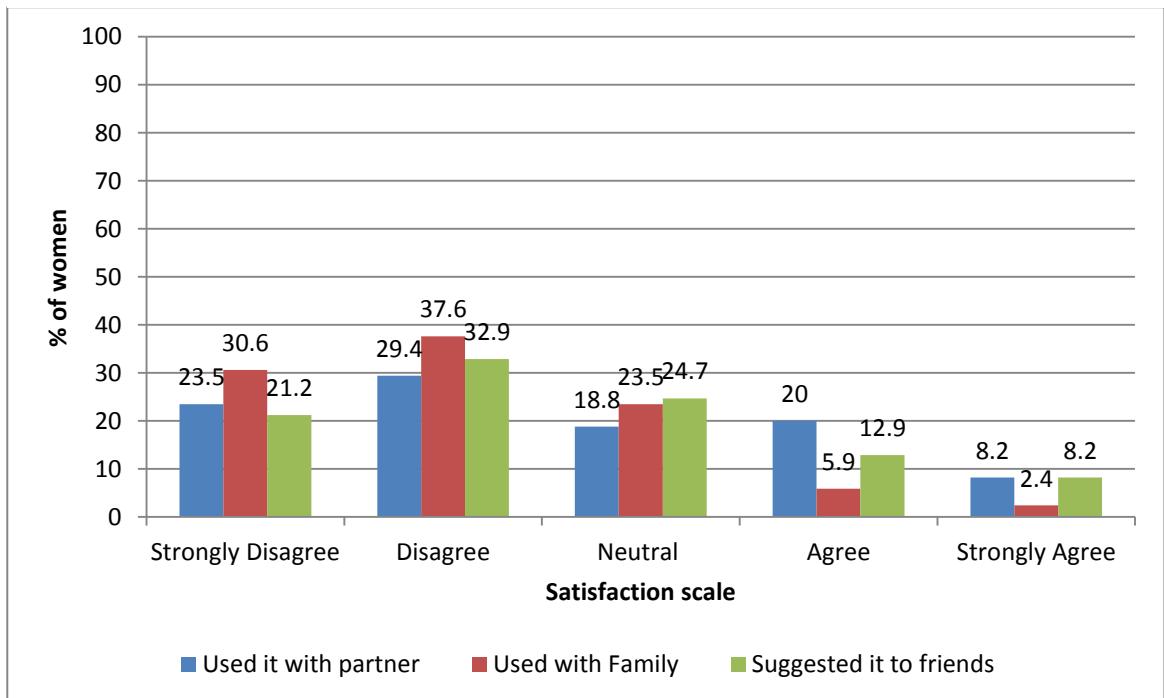
**Figure 26 Follow up views of MyBirthplace**



### 6.5.1 Use of MyBirthplace with others

Overall women either strongly disagreed or disagreed with whether they had shown family and their partner (Figure 27). The largest proportions of women were neutral that they suggested it to friends.

**Figure 27 Women's opinion on access with friends, family and their partner**



### **6.5.2 Secondary aim 4: to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion**

Following the appointment women were asked about the level of information given to them by their midwife (Table 25). The majority of women said that the midwife discussed birth place options (N=118, 70.2%) with the same proportion being told that they had options for choice of place of birth (120, 71.0%); however only 93 women (55.7%) were given information about MyBirthplace.

**Table 25 Level of discussion women had with the midwife about birth place options**

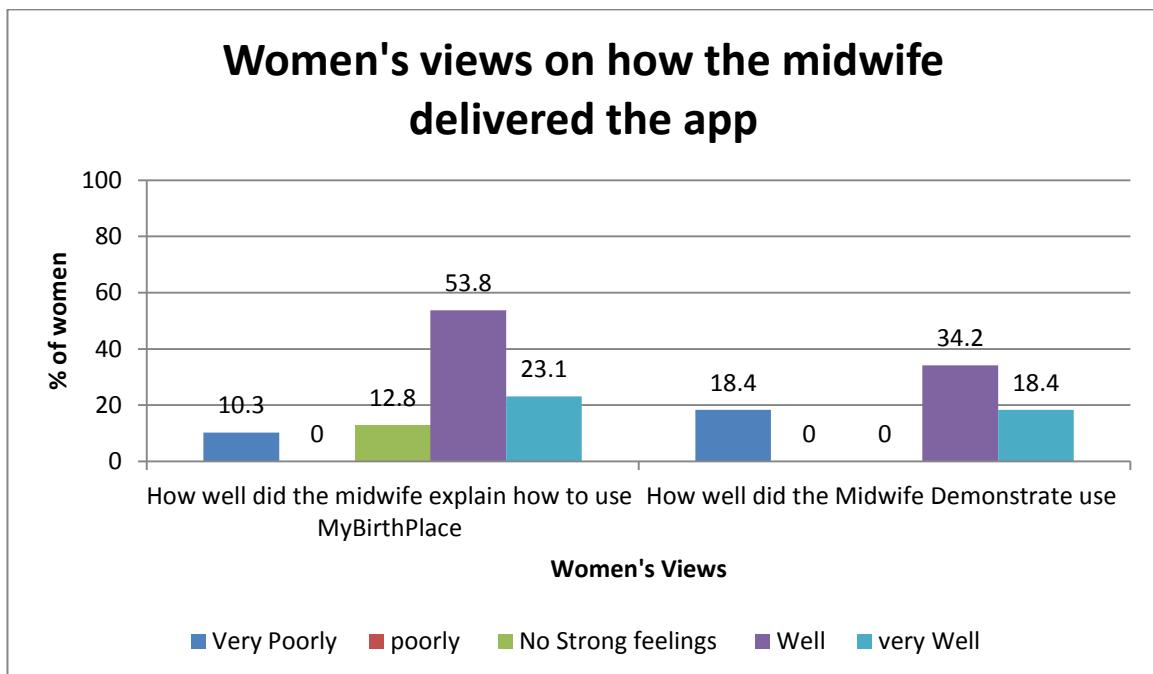
<b>Variable</b>	<b>N</b>	<b>(%)</b>
Midwife discussed birth place options (N=168)	118	70.2%
Midwife told them their options (N=169)	120	71.0%
Gave information about MyBirthplace (N=167)	93	55.7%
Gave a leaflet about MyBirthplace (N=165)	112	67.8%
Gave QR code to access MyBirthplace (N=165)	126	76.3%
Went through the MyBirthplace app (N=167)	31	18.6 %
Do you feel the midwife had enough time to discuss the MyBirthplace app? (N=163)		
No	36	22.1%
Yes	77	47.2%
Unsure	50	30.7%
Desire for further information about birthplace options from your midwife? (N=166)		
No	141	84.9%
Yes	25	15.1%

Note: The question about midwives time to discuss MyBirthplace is the only question that the women were given the option of indicating unsure. Research shows people's perception of time differs and is very much dependant on the emotion of the person at the time of being asked (Rudd et al 2012); therefore, women were given the option to be unsure.

Of the 36 women that felt the midwife did not have enough time to discuss MyBirthplace, most women (81.4%) were not given access to MyBirthplace, only one (2.9%) woman who stated a lack of time with the midwife did have access to MyBirthplace. Significantly, more women who wanted further information about MyBirthplace were not given access to the app (N=22, 88.0%) compared with three women (12.0%) who still wanted information following accessing the app ( $p <0.0001$ ).

Well under a third (23%) of the women reported that the midwife explained how to use MyBirthplace. Of those that had been shown MyBirthplace, just over half felt that the midwife explained how to use MyBirthplace well (53.8%) or very well (23.1%) (Figure 28). Dissatisfaction was low, but four women felt this discussion was very poorly delivered (10.3%).

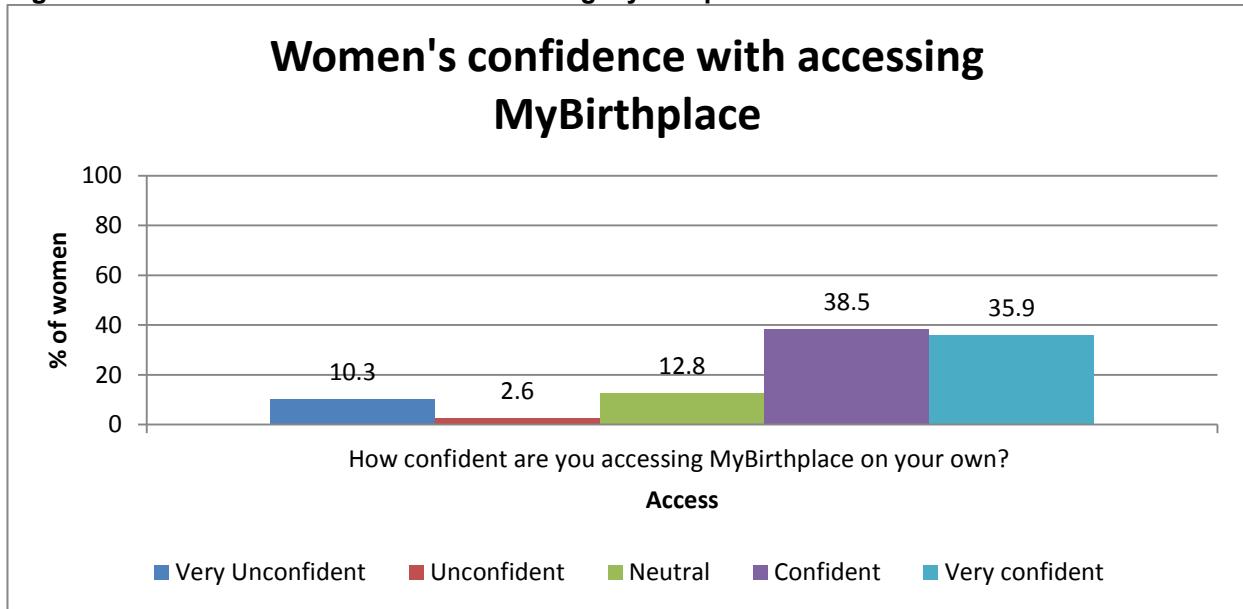
**Figure 28 Shows women's views on the interaction with the midwife at the first appointment**



Women had mixed views regarding how well the midwife demonstrated the use of MyBirthplace, with an equal number of women reporting feeling that it was very poorly demonstrated as reported feeling that it was demonstrated very well (N=7, 18.4%). The largest proportion of women (34.2%) felt that the midwife demonstrated it well.

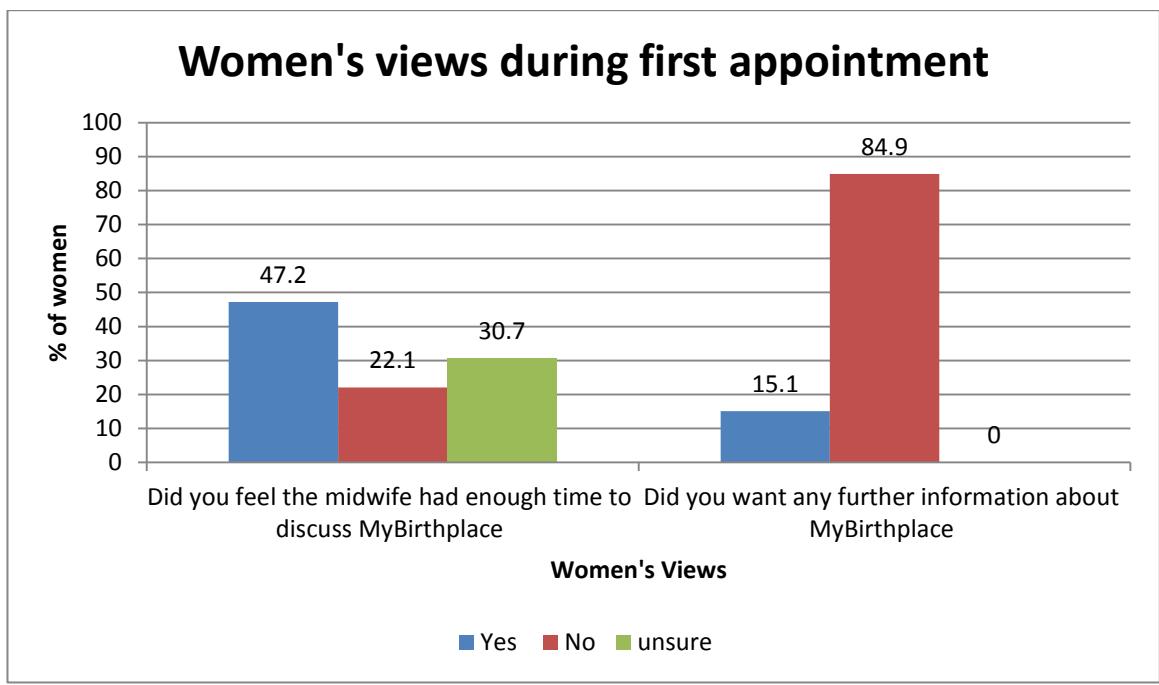
After the discussion, women were asked to rate how confident they would be accessing the MyBirthplace app on their own (Figure 29). Most women were either very confident (35.9%) or confident (38.5%) about accessing the MyBirthplace app on their own following the appointment. Only a small proportion were unconfident (2.6%) or very unconfident (10.3%).

**Figure 29 Women's confidence with accessing MyBirthplace on their own**



Women were then asked to judge if there was enough time for the midwife to discuss MyBirthplace; just under half of women (47.2%) felt the midwife had enough time (Figure 30). 36 (22.1%) women felt there was not enough time. A number of women were unsure about this question (N=50, 30.7%). When asked if they wanted any further information about MyBirthplace the majority did not (84.9%).

**Figure 30 Women's views on the discussion of MyBirthplace**

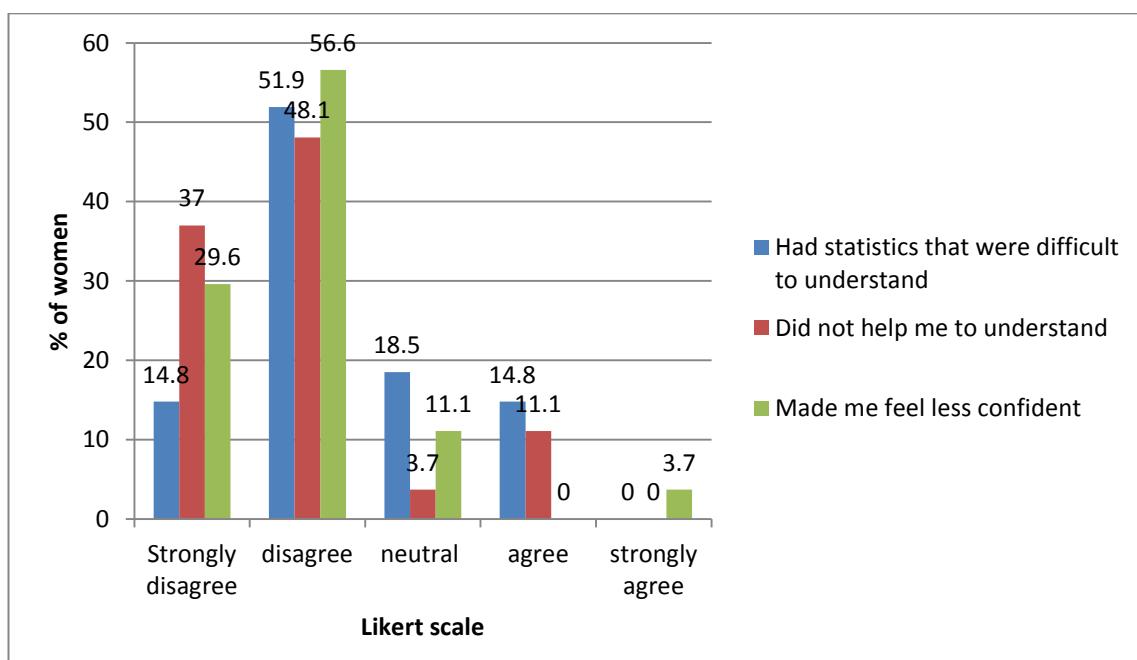


Women, who wanted further information (15.1%), were less likely to have discussed birth place options during the appointment with the midwife (Table 26). They were also less likely to have accessed MyBirthplace during the appointment or been given the QR code.

**Table 26 How further information was impacted by the first appointment discussions and information**

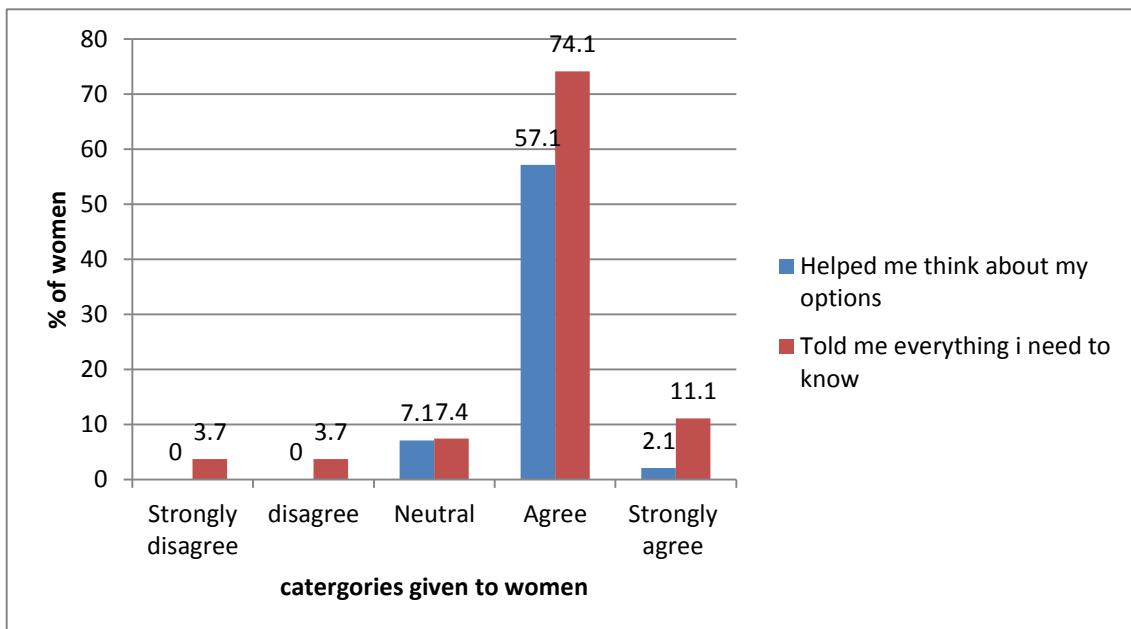
	Wanted further information (n=25)	Did not want further information (n=140)
<b>Discussed birth place options</b>	16 (64%)	100 (71%)
Told that you have options	17 (68.0%)	101 (71.6%)
Gave information about MyBirthplace	13 (54.2%)	80 (57.1%)
Gave the MyBirthplace leaflet	4 (16.0%)	48 (35.0%)
Received the QR code to access MyBirthplace	4 (16.0%)	35 (25.5%)
Accessed MyBirthplace in the appointment	3 (12.0%)	28 (20.1%)

**Figure 31 Women's views on MyBirthplace's statistics, supporting their understanding and how it affected confidence**



Generally women felt that the statistics were easy to understand as 56.6% of women did not agree with the statement in the questionnaire that the statistics were difficult. Furthermore, they felt MyBirthplace made them confident and helped to understand their options (Figure 31). Women were then asked whether the app helped them to think about their options and told them everything they needed to know (Figure 32).

**Figure 32 women's views of MyBirthplace information and whether or not it helped their decision making.**



Generally women agreed that Mybirthplace helped them with their options (57.1%) and told them everything they wanted to know (74.1%).

## **6.6 Secondary aim 5 and 6: to explore their feelings about how well the DST supported them to make a decision and to explore women's views around its usefulness**

Women were given open boxes to record their views on what was good and bad about MyBirthplace. These answers were reviewed and coded into the most common responses to emerge; these themes were then re-coded as 'yes' or 'no' variables to each theme. Table 27 below shows the results for what women considered was good about the app.

**Table 27 Women's views on what is good about MyBirthplace**

Good about the app (N=68)	N	(%)
Informative	35	20.3
Easy to use	20	11.6
Interesting stats	17	9.9
Not used therefore cannot comment	10	5.8
Clarity	9	5.2
Video	6	3.5
Other	5	2.9
Transfer/ outcome data	2	1.2
Pictures	1	0.6

Results show that the most common comment women gave was 'happy with the level of information MyBirthplace gave' (20.3%) closely followed by how easy the app was to use (11.6%); however many (N=10, 5.8%) gave no comment. Table 28 below identifies what women thought the negatives about the app were.

**Table 28 Women's views on what was bad about the app**

Negative views about the app (N=70)	N	(%)
More information wanted	18	25.7
No negatives	13	18.5
Further development needed	8	11.4
No information on high risk issues	8	11.4
Poor layout; difficult to use	7	10.0
Need an alternative platform	5	7.1
Not seen	4	5.7
Not an app	3	4.2
Statistics difficult/ confusing	3	4.2
No local options available	2	2.8
Inappropriate wording	2	2.8

The most common theme to emerge was that they wanted more information (10.5%). Many felt that the information was too basic or gave the bare minimum. Eight women felt that information about the labour ward and high risk complications should be available. Two of the women found that the wording on the app, particularly regarding undesirable outcomes, to be confusing.

Women were then asked their opinion of whether or not they felt that MyBirthplace is useful. The majority of women felt that MyBirthplace is useful (64.8%), with the second largest being unsure (27.3%).

Comments suggested that two women, as second time parents, already knew where they wanted to give birth or had the information. A further two women felt that the information available was the same as information that they could get elsewhere.

Three women felt that there was insufficient information and that they wanted more. Ten women, for various reasons, had not accessed the app. Seven women did not give a reason for their response, leaving this box blank.

Women's responses to the question about whether MyBirthplace had given them any new information about where to give birth indicated that the largest proportion of women were unsure (42.3%) (Table 29).

**Table 29 Women's views on MyBirthplace providing new information**

N=111*	N	(%)
No	44	39.6
Yes	20	18.0
Unsure	47	42.3

**Footnote** 61 women were missing because they did not receive MyBirthplace and therefore could not evaluate if it had been effective in providing new information.

Women were asked to provide other sources of information that they found useful (Table 30).

**Table 30 Sources women found to be helpful**

Sources found to be helpful	Max N= 90	(%)
Health professionals	33	36.6
Friends and family	20	22.2
Internet Websites	20	22.2
Mum blogs	6	6.6
NCT	4	4.4
Books	4	4.4
Antenatal classes	3	3.3

Health professionals were the source that most women felt was helpful during pregnancy (36.6%) with both friends and family and the internet being equally useful (22.2%). This is similar to the findings at booking.

## 6.7 Conclusion

This chapter has presented the findings from the quantitative part of the study. Findings show that the sample is fairly similar to that of the study population. In relation to the main aim, there is a statistically significant difference in women's SDMS response in the post appointment and 28 week questionnaire showing that women who accessed the app were more likely to have improved decision making compared to those that had not accessed the app. The findings show that lower decisional conflict exists following the booking appointment for the overall sample, (irrespective of whether they accessed the app), with a significant statistical difference. However, when this is further broken down to those that accessed the app, it appears that more women who accessed the app improved than those that did not, but the small numbers did not enable this to be tested statistically. Furthermore, improvement was not limited to those who accessed the app. Looking at those women that improved 35.5% had access to the app whereas 22.0% did not, therefore other reasons for this improvement need to be explored.

Overall, knowledge scores did not improve, however there was a statistically significant difference in women knowing both the North and West FMUs after the appointment. The majority of women had a discussion about their options during the appointment, however only 93 were told about MyBirthplace with less still being physically shown the app (18.6%). Women had mixed feelings about how the midwife demonstrated the use of MyBirthplace. In the next chapter the qualitative findings from the interviews will be reported.

# Chapter 7 Qualitative findings

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## 7.1 Introduction

The previous quantitative chapter addressed both the primary aim and all of the secondary aims from a quantitative perspective. For the qualitative interviews, the key was to explore the secondary aims in more depth and to enable women to provide further information on issues that they felt were important to them. As the qualitative interviews were analysed inductively, other themes emerged that were not initially considered, but that women felt were important, so were included. The chapter begins by describing those participants that identified that they were happy to be interviewed, followed by those that were interviewed. Then the overall themes will be presented in a table to show what will be discussed. Then each theme will be considered, incorporating key quotes from the women to give the themes meaning and an explanation of how these relate back to the aims.

### 7.1.1 Results

Fifty four (56.8%) women out of ninety five that responded to the follow up questionnaire indicated that they would be willing to discuss their views further. Twelve women were identified using Table 5, previously identified as a way to identify specific characteristics.

**Table 5 Sampling frame characteristics identified from the convenience sample**

Woman interviewed	Parity Primip / Multip	Use of app	Locality	Age	Education level	Previous delivery area	Nationality	
"Annie"	✓	Yes	City	32	A level	x	UK	
"Jessica"		✓	Yes	West	24	NVQ	Study Site	UK
"Paula"	✓	Yes	City	34	Degree	x	UK	
"Olivia"		✓	Yes	City	33	Degree	Study Site	UK
"Dotty"		✓	Yes	City	34	Degree	Study Site	UK
"Sophia"	✓	No *	West	31	A level	x	UK	
"Abby"	✓	Yes	City	37	A Level	X	UK	
"Freda"	✓	Yes	West	30	Higher Degree	X	UK	
"Cara"	✓	Yes	North	40	Higher Degree	x	UK	
"Beatrice"		✓	Yes	City	30	NVQ	Study Site	UK
"Edith"		✓	Yes	West	28	Degree	Out of area	Demark
"Mia"	✓	Yes	City	41	Higher Degree	x	German	

For this section, thought was given about how best to structure the themes of women's experiences to give them due consideration and to best address the aims. Approaching the analysis inductively meant that themes emerged from the data, and as such, the results will be structured as they emerged. Analysis of the 12 interviews identified eight overarching themes. Table 31 below identifies those themes and subthemes within them. These main themes are

examined in detail under the theme names; sub-themes within themes are then presented as sub headings.

**Table 31 Themes and subthemes that emerged from interview data**

Main theme	Sub Theme	Relation to aims
To be or not to be an app ... that is the question	<i>Not an app</i> <i>Not using power of an app</i> <i>It does what it says on the tin</i>	Relates to secondary aim 2 "understand women's views and opinions about using the DST" and 4 "explore their feelings about how well the DST supported them to make a decision".
Moving with the times	<i>Information you can trust</i> <i>Move forward or get left behind</i> <i>Generation game</i>	Relates to secondary aim 5: to explore their feelings about how well the DST supported them to make a decision.
How the app influences discussion with the midwife	<i>We'll discuss it later</i> <i>You've done this before</i> <i>What app?</i> <i>Take a look at that</i> <i>Check, check have I mentioned that?</i>	Relates to secondary aim 4: to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion
Who's in charge	<i>Midwife: She decided for me</i> <i>The women: The midwife is led by me</i> <i>Influence from others</i>	Relates to secondary aim 4 :to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion
Midwives impact on women's choices	<i>Don't get your hopes up</i> <i>Conflicting advice</i>	Relates to secondary aim 4: to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion
How the app fits	<i>Not a good fit</i> <i>Information aid or decision aid</i> <i>Making thoughts happen</i> <i>It the first version right?</i>	Relates to secondary aim 5 : to explore their feelings about how well the DST supported them to make a decision
Goldilocks and the three bears of information	<i>Too much or Not enough</i>	*relates to secondary aim 3: to understand women's views and opinions about using the DST
Content	<i>What's in a word: undesirable outcomes</i> <i>Left me wanting more</i>	Relates to secondary aim 6; to explore women's views around its usefulness and 3 to understand women's views and opinions about using the DST;

## **7.2 To be or not to be an app... that is the question**

This first theme relates to secondary aims 2 “understand women's views and opinions about using the DST” and 4 “explore their feelings about how well the DST supported them to make a decision”.

The Trust that created MyBirthplace advertises it as an app. What constitutes an app has previously been discussed in Chapter 4. This theme came to light during the sixth interview, and it was almost an effigy that came from the dissatisfaction of the woman who was searching for it. All the women prior to this referred to MyBirthplace as an app.

The first interview was conducted with Annie and from the beginning of the interview she referred to MyBirthplace as an “app”:

“Whereas on the app [MyBirthplace] I know exactly what's what, which made it easier” [Annie]

As did Paula, Olivia and Dotty:

“the way that the app just gives you the information and is really easy to look through.” [Olivia]

“And I think then I looked at the videos which I think then appear on the MyBirthplace app I think some of them have been copied and pasted over and FMU looked lovely but then I thought ahh it's just a bit too far ....” [Dotty]

Again the same understanding was reached by Freda, Cara and Mia who early on identified MyBirthplace as an app.

### **7.2.1 Not an app**

The interview with Sophia was the first occasion that MyBirthplace not being an app was considered. In the interview, Sophia says that she has never accessed it:

Sophia      \* Pause\* to be honest I never found the actual app ...

Interviewer Oh \*pause\* ok

Sophia ....I tried to get the app but I couldn't work out how to actually download it \* laughs.

Interviewer Right

Sophia and then I went to the app store on my phone and I couldn't find it so every time I've been on it I've been on it through the website

Sophia then asked to show the researcher what she's been looking at;

"(participant getting up and going to bag) So what I was trying to do, I was trying to look on play store erm and I tried it on my ipad as well nothing comes up on it. (Types in MyBirthplace no results show) and it's the same on my iPad on istore it doesn't come up" [Sophia]

The lack of accessibility when Sophia tried to search for the "app" in a way that she normally would with others meant that she thought she was not looking at an app; instead she called it a website. When the researcher explained that this was actually MyBirthplace, Sophia appeared confused and went on to say:

"Oh ok .....Oh right so I have been looking at it all along \* laughs so it's a website. I went through all this but I couldn't actually see, erm when I searched for it to be able to open the app to download I couldn't find it maybe it's just me" [Sophia]

When the researcher explained that this is why the midwife is expected to explain how to access MyBirthplace, Sophia said "Yeah that would have been useful, so I didn't waste time looking for it". Edith also had difficulty with MyBirthplace, experiencing frustration at how it did not behave like other apps, referring to it more like a book; this inductive sub theme was named "*not using the power of an app*".

### **7.2.2 Not using the power of an app**

"the biggest problem I had was that I couldn't pin it and go ok so I have looked at that I've done the first couple of steps and now I can oh I have to keep going back I couldn't pick.... It was like oh I want to read about that but I have to go all through it. It's like a book but not a book that you can actually skip ahead \* laughs I've got to go through everything every

single time and every time I've got a kid interrupting or pressing a button I had to restart from the beginning again" [Edith]

A lot of Edith's frustration comes from the usability and format of MyBirthplace; she described the inability to skip ahead makes the app feels like the content of a book had just been put into this format. Jessica and Freda also discussed the usability and how downloading it was difficult:

"It's a bit hard to download, what with like it not being on the app store. And I had to re download it, but that might just be mine, you know my connection. Also I didn't have the QR code thingy on my phone to begin with so yeah so if I had that it probably would have been perfect."

[Jessica]

"....I tried to get the app but I couldn't work out how to actually download it \* laughs." [Freda]

All the women interviewed shared their experiences of accessing MyBirthplace, and being in one of two camps: either finding MyBirthplace user-friendly which is the theme "*does what it says on the tin*", or difficult to use "*not using the power of an app*". As mentioned above, Edith was very much in the "difficult to use camp", making reference to the format of a book when it came to going through the information that was present. She went further to say that it felt old fashioned in the format. She was also very honest saying that she felt annoyed at how you have to use look at every page and go through the app:

"Yeah it felt a bit old fashioned, like someone has taken a book and put it into an app...it doesn't feel like a normal app, because apps these days are so interactive and it's not interactive I can only press forwards or backwards that's what I do with a leaflet and that is what I do with a book and that is what annoyed me" [Edith]

She went on to give an idea of how she felt it would be easier to use;

"Rather than going ok well modernly we could have a button and you can click what you're interested in like statistics or there's um this is the information sheet there was no \*Sigh\* it needs to be a bit more ... if I was designing it .... the way it was designed was step one ok we can put that

in step two we can put that in three that if I was designing it I would say ok this is my master and this is my information I am going to give you and then if you want that then put it in a flow chart like do you want the survey yes no more of a more interactive so you can pick and choose more of a flow through rather than just looking through a app leaflet”  
[Edith]

A similar thought process was had by Sophia: as described above, Sophia felt that MyBirthplace was not an app; she then went on to talk about ease of use. Edith and Sophia both felt that accessing specific pages that directly related to them would be more useful than having to go through each page.

“Erm it’s almost like you have to look at each section, erm it’s like you have to go to the next step ....\*Pause but then you can briefly look over it but maybe the possibility of choosing the section .... Erm and freedom maybe to choose what bits you look at erm I don’t know erm” [Sophia]

Jessica also had a similar experience to Sophia and Edith specifically focusing on downloading and the difficulties that she faced;

“It’s a bit hard to download, what with like it not being on the app store. And I had to re download it, but that might just be mine, you know my connection .....” [Jessica].

One woman showed real frustration in the interview about accessing MyBirthplace and looking for information specific to her needs:

“Erm so I thought I would go on the app and look at what equipment that they have got but then I couldn’t find it, I found it quite, I couldn’t find it. So if I’m honest I thought I can’t be arsed with this and just haven’t bothered looking. I thought this is stupid it’s difficult, I can’t find it so then I think I was seeing the midwife the next day or something so I just asked her and you know they had the same at AMU and at FMU”. [Dotty]

### 7.2.3 Does what it says on the tin

Other women felt that it was easy to use. One woman compared her ease of use with how used to using technology she is. She felt that because she uses smart devices regularly, this improved how she felt going through MyBirthplace.

"oh yeah oh it makes complete sense it's like a flow chart sort of just interactive and you know I think for I guess for some people that aren't you know particularly adept with smart phones or whatever maybe it wouldn't be but I use my phone for absolutely everything so ..... yeah I found it fantastic and very easy" [Annie].

She went on to say that she felt there were no teething issues:

"erm [pause] I don't think so to be honest there is nothing that came across as a teething problem that you can get with apps you know and erm I mean it was super user friendly it's so easy to use and then if you wanna kind of delve you know a bit further into certain options then you can erm but no I think, I don't, that's the thing \*Pause\* there are probably lots of bits of information that can easily be added to things like this and I think they start to get a bit over complicated". [Annie]

Olivia also considered the difference between how people react to using interactive apps or the internet for searching for information with how used to technology they are:

"well it's just more modern isn't it, this is what people use these days and if you know there's just an app I think it's just in a better format and more sort of modern format that people are going to use, not everyone .... I appreciate not everyone is as well not as proactive well not as pedantic as I was about checking through all the internet It wasn't there just presented for me in the way that the app just gives you the information and is really easy to look through" [Olivia].

This experience could be used to provide explanation for those that found MyBirthplace difficult to use. It may be that they are not used to using phones or smart devices. Interviews for Dotty and Sophia were reviewed to see if any mention was made of their knowledge or use of technology. Dotty had made it clear that she did not download apps often and that she could be seen as less tech savvy and this therefore this could partly explain why she found MyBirthplace format and use difficult. When specifically asked about the format she went on to say:

“Not ideal, the only reason for that is that I get \* Jacob’s old phones {laughs} he’s got my phone set up as an account on his so erm because of that I don’t really ever download apps or touch it or anything like that because I am worried it’s going to charge him or something \* laughs I just generally don’t use it for that its more kind of banking, Facebook that sort of thing”. [Dotty]

The above statement shows that Dotty may not be the most tech savvy and appears to not keep up with technology as it evolves; as she says, she settles for her partner’s old phones. Sophia, on the other hand, comes across as quite knowledgeable, talking about iPlay and the app store, going through with the researcher what she did to try and find MyBirthplace. This potentially could suggest that for some, accessing MyBirthplace may be difficult, especially if there was a lack of discussion about how to access it with the midwife. On the other hand, just under half of the women felt that it was easy to use, providing terms such as ‘user friendly’ and ‘straight forward overall’, ‘providing a positive experience’:

“Erm I actually quite like it, I found it really easy to use the going back and forth is good” [Abby]

Paula was not outwardly positive about its ease of use but said that there was nothing “frustrating”. Mia also found using the app easy, stating: “Yeah yeah good. No problems”. Annie went one step further showing both her mum and her partner, both of whom found it user friendly.

Cara found MyBirthplace useful, as suggested above, but she also preferred the format that it is in compared to paper based information that it would have been in the past, which was also mentioned by Paula:

“No it is really useful, I think it is a useful platform I like that it’s online and not like a booklet or paper but I think there is lots of room for expansion on it “[Cara]

“I don’t like handouts no not at all..... I don’t, I much prefer things electronically” [Paula].

When this was followed up with the question of whether she liked the format of MyBirthplace, she went on to say:

“Yeah absolutely, I can’t take that amount of paper it just clogs up my house and I don’t know what to do with it \*laughs so much prefer it. Yeah and then you have to find the time to get round to it as opposed to, if I have been sat at work and had a quiet minute or it’s my lunch break erm you know no one else is in the kitchen oh ill have a little look at something on my phone or look up information you know”. [Paula]

In summary, it was clear that the women were split almost fifty fifty as to whether they thought it was easy to use or not and this was also the case for the format. Some of the women experienced difficulty finding the app with one woman feeling that because it was not available on app store like other such apps then could it really be one. Those that felt it was simple, straight forward and user friendly appeared to have some level of smart device use. In one experience from Dotty, she acknowledges that she does not download apps because of the use of older phones and this could be linked to the reason that she experienced difficulty.

Freda was the third woman to identify that the online format was her preference compared to paper based leaflets. This brings us to the next main theme.

### **7.3 Moving with the times**

This theme was inductive from women’s thoughts around how technology is changing. It does not necessarily sit neatly into any of the secondary aims identified, however one could relate it loosely to how information gathering and decision making has changed (secondary aim 1) over time.

When explaining about her experience during pregnancy, Freda proposed that a lot of information is given in this format and it can be too much to go through. She even made reference to paper being “old school”.

#### **7.3.1 Paper is old school**

“Yes that’s it, paper is just so old school do you know \*pause\* you’re given so much information erm in pregnancy on paper that I, normally it you know gets put somewhere and that’s not looked at for a while.

Because the app is online you can access it easily and probably more likely to look at it" [Freda].

However when she was initially asked about sources of information she did say:

"reading lots of books, I'm sort of the person that likes to get information so I went straight down the library and got some books and you can sort of read more what different people have done and experiences they had in different places" [Freda].

This can be compared to Edith, who had previously said the format of books is quite old fashioned. This shows that everyone is different; one format that suits one individual will not suit another and this is a difficulty that health professionals face when it comes to delivering information and the best format to use.

Another sub-theme that emerged from the theme "*Moving with the times*" was the idea that information in the app was "*information that you can trust*".

### **7.3.2 Information you can trust**

Information that is reliable and trustworthy was mentioned by two of the women. In their interviews they brought together their reassurance with the reliable information.

"It's like that's one thing about the app I think it's really useful but erm and I think it's useful to have it from the hospital because I spoke to my sister and she said because you can see a lot of this information if you surf the web she said the thing about the app is that it is endorsed by the hospital so if you go onto that app you can be sure you are hearing the right thing. It's not just mums' net chat it is something that the hospital endorses so I thought that is a really good point.....You can be sure that it is coming from the NHS, I hope that it's the most recent information available". [Cara]

Cara suggests that there is some confidence in MyBirthplace because of the source that it comes from. The same concept was also suggested by Annie,

who began by explaining that when Googling about the local maternity centre, she couldn't be sure the information specifically related to that location;

"I don't know I found it difficult to get information that I am absolutely sure relates to [FMU].... whereas on the app I know exactly what's what which made it easier potentially because [Urban hospital] is the creator of the app" [Annie].

Here Annie suggests that the information in the app is easier to accept and understand compared to other information because of the reliability of the information. This is an important concept and one which will be considered in the discussion chapter.

### 7.3.3 Generation game

The other inductive sub-theme that comes under "*moving with the times*" is the idea of a "*generation game*". This is the concept that through the generation health information has moved forward and currently sources are very much different to what would have previously been available for pregnant women.

Annie mentions discussing MyBirthplace with her mum:

"Mum found it very user friendly, yeah she erm trying to dip erm dip her toe into the modern world erm ..." [Annie].

Abby also said that she used MyBirthplace with her mum:

"She was amazed because she had nothing at all like this when I was younger erm she can't remember erm being pregnant having information and having the caesarean anything at all not really not properly. She had no idea where the birth centres were what they had to offer erm so for her it was just eye opening and amazing and she has found the whole thing amazing she's been to antenatal classes too" [Abby].

She went on to say that in her mother's day, there was limited choice and not much discussion about the available options and therefore felt discussion had come a long way. Generations coming on is something that was also mentioned by two women, but rather than talking about the older generations they mentioned how the younger children, specifically their daughter and step

daughters were technologically more aware and able to use iPads and other devices:

"I think the generation is coming through are technology driven. My daughter is 3 and she can use an iPad just as well as I can, you know... Yeah she picks it up knows what she can and can't touch she knows where her games are and she can play them she is 3" [Beatrice].

"all that a 9 year old wants is to get on an I phone that's why we didn't download it umm you know because mmm what's this" [Cara].

Beatrice demonstrated here the assumption of how this advance in technology affects the medical professions;

"I think at the same time if medicine doesn't move with that they are going to be left behind and are going to be misinformed because they haven't got the technology to turn to which is where they feel comfortable but I think it is important to stress that it is an information thing and it is picked up on with your midwife GP whoever whatever process you are following because I think it is important to connect those links" [Beatrice].

Beatrice suggests this is the way we, as a society are moving; however, she also recognises this is not for everyone:

"whether people like it or not we are going to turn to technology because it's what we know and the way the world is moving ummm and the more integrated that you make it the better I think it would be but everyone is different you know" [Beatrice]

In summary, the theme 2 "moving with the times" came from women when they began to mention that both their mothers and in some cases, daughters, had become involved. Abby said her mother did not have choices and discussions in her time. Times and technology have moved on and Abby made it clear that her mum felt it had improved for the better.

What was clear is that younger generations are more tech savvy with two of the women stating that their daughters, who are nine and three, are used to accessing an electronic device and apps, so if we don't "move with the times" then there is a possibility of being left behind. Beatrice was sensitive to the fact

that medicine is following suit, with technology and more information related to health care available online and in apps. Nevertheless, she suggests that we should not lose touch with the health professionals that provide care. Next to be explored is the next major theme “*how the app influences discussion with the midwife*”.

#### **7.4 How the app influences discussion with the midwife**

This theme directly relates to secondary aim 3 and looks at the women’s perception of how the midwife discussed the app, if at all. The first time the midwife was mentioned by the women was in relation to questions about their first appointment. What came to light is that at that first appointment women were again split with their perception as to what the midwife said. The first group of women felt that the midwife was very much of the mind “*We’ll discuss it later*”, which is the first sub-theme.

##### **7.4.1 We’ll discuss it later**

Jessica and Freda both described how the midwife gave them MyBirthplace at their first appointment, as per local procedures. However some of the other women suggested that the midwife had the attitude of, “We will discuss it later”:

“Not with the midwife, I did ask her quickly and she said no we will discuss it later on in the pregnancy so it was dismissed and said we would discuss it later but I think earlier is better. I think giving people early information so that they can go away and read up about it would be useful”. [Edith]

Three of the other women had a similar experience at the first appointment:

“erm the first appointment was really just booking in and a million questions about everything \* laugh\* erm but I don’t think.... I think she may have asked where I would think I would want to give birth erm but it wasn’t really discussed”[Sophia].

“so I think the midwife probably didn’t talk about it till much later but that is obviously normal because it was irrelevant for a long time ..... I think it would be best to do it a little later yeah because at that point I wasn’t thinking about birth yet at all and I didn’t want to think about it that much

yet because I wasn't in that thought after two miscarriages I didn't want to think too far forward”[Mia].

“I don't think we talked too much about it I don't think .....” [Paula].

All three of the women above identified that the midwife did not discuss birth place options at the first appointment. Mia felt that this was possibly ok because of her previous miscarriages and this was on a very personal level for her. The other two felt that it was not discussed. Freda, on the other hand, did say there was some discussion about the options at the initial appointment:

“she didn't go into a lot of detail on the different options she just asked me if I had thought about it erm and obviously we'd already spoken erm \*pause\* [Freda].

In this quote Freda mentions “we'd already spoken”; here she was commenting on the interaction with the researcher whilst gaining consent and providing the pre appointment questionnaire. It could be seen that because Freda was part of the study and was partially aware of the app that she was expecting a discussion with the midwife. A similar angle was described by Sophia, who felt that she led the discussion with the midwife explaining that because she was a participant she had considered that it would come up in discussion, so when the midwife did not mention the app, Sophie took the lead:

“Yeah, I think ... I think with this erm with your research, it brought it to light a bit more because then I was able to have a little look and see what options there were”. [Sophie]

Both of these women brought to light that the researcher may have had an indirect influence, which will be discussed later in Chapter 8.

One reason that the midwife might have suggested postponing the discussion about birthplace was because this was not Edith's first pregnancy, which introduces the next sub theme.

### **7.4.2 You've done this before**

A few of the women felt that midwives mistook them having had a baby before with not needing to be told their options. This is supported by comments that were made by Dotty and Olivia.

"If I was a first time mum I think they probably would have given me more information and time. I would have been asking different questions too. Yeah its very much you have done this before so you are ok, which I am it's just not thinking about the fact that well actually this may be my last pregnancy and it went so wrong last time that this may be my last chance, how do I do things to get it back and so that's what I felt that I am not going to get that information from you [Midwife]" [Dotty].

In this extract, Dotty does identify that if she were a first time mum she felt the level of information would be different. She does, however, say that she probably would have been asking questions as a first time mum and thus this may have changed the dynamics of the discussion. However she clearly felt, especially because of the previous birth outcome, that she would have liked more information.

Conversely, Olivia felt that although the midwife did indeed speak less about the options, she felt this was ok because she had gone through it and had some knowledge:

"I would actually say the midwife doesn't .... Because you're a second pregnancy and it's the same area so she knows you have gone through it before you don't really chat to the midwife about it, she sort of kind of understands that you have more information about it. So I would say probably less information from the midwife this time than last time but I felt more comfortable with what the choice were this time because I knew from last time" [Olivia].

Beatrice expanded on this view with the concept of continuity of midwife; she felt that if the midwife was the same as in her previous pregnancy, they have a level of understanding about your views and concepts and this carries over to the level of discussions:

"I suppose I have received some new information but I suppose because I have the same midwife "Clemmie" and she knows what I already know and being part of the NHS I already know it if you like, I know what is available, I know what they expect and I know what their capabilities are she didn't need to say more" [Beatrice].

The second group of women were those that said the MyBirthplace app did appear in discussions and represents the next subtheme.

#### 7.4.3 Take a look at that

"Yes she did yes. Erm I think she just put a sticker in the book. She didn't really talk about it but she sort of went here you go, there's an app but that's it" [Freda].

Freda describes above that the midwife did mention the app, but there was limited discussion. She did, however, put a sticker known as the QR code, which provides quick access to all those that have a scanner on their smart device. It appeared that on a basic level the app was mentioned, but it left a lot to be desired when it came to the discussion. This was contradicted by Jessica; she felt that the midwife discussed it well;

"She was like, quite confident like how to use it and giving it to me really. She showed me it on her phone and gave me the leaflet, put the thing \*pause\* I don't know what they are called the codes \*Pause those things you can scan on the front of my notes so I could get to it quicker like" [Jessica].

Jessica's midwife went to the next level, showing the app on her phone so that Jessica could look at it. Jessica states the midwife also gave a leaflet and QR code so that she could access it following the appointment; this was also the view held by Cara and Annie. Cara was happy that the midwife had shown her well and Annie felt that she described it well:

"then the midwife then I think when I went in she showed me the app and that was very good and she went through it" [Cara].

"think it, I am sure, it must have been the first appointment I had with her, I am almost positive it was it must have been because then there's quite

a gap between seeing your midwife again so it must have been the very first appointment and erm yeah she said there is this app, it gives you lots of information very easy to digest way check it out see what you think and its very, very user friendly yeah definitely" [Annie].

Paula had a similar experience to Freda, identifying that the midwife had given her a way to access the app but not much more:

"I think she did mention the app, she put a little sticker on the front of my folder or something. Erm which I .... Or maybe a leaflet or something so that I could go on to look at that but otherwise I don't think we talked too much about it I don't think ....." [Paula].

Again Mia corroborated this with her interaction with the midwife producing a leaflet about MyBirthplace, but a lack of further discussion. She does, however, mention that this may be due to caution, stating that before they give out information they wait for the scans and that everything is alright:

"She did, I do remember having a \*small pause\* a little card or leaflet about MyBirthplace at some point, but again it was further in so unless they were just being cautious awaiting for people to have their scans and making sure everything is alright before they start to give this information out" [Mia].

The disparity between the levels of discussion about the app is comparable with the amount of disparity in other areas. There was a lack of continuity among what the midwives should say when delivering the app, and in some cases there was a lack of buy in from midwives who had chosen not to provide the MyBirthplace app. Another area to emerge within women's comments during interview was around the 36 week appointment. A follow up discussion at 36 weeks was required to see if women had accessed the app and to discuss their choice of birthplace. What emerged from women's comments is that MyBirthplace was sometimes not mentioned at all.

#### **7.4.4 What apps that?**

Mia explained that she did not get given the app by the midwife:

"Ermm yeah I don't think the app was mentioned at all in any of those decisions sorry discussions" [Mia.]

The same issue was raised by Abby; she noted on her questionnaire that the midwife had not given her the app:

"Erm .... There was but I don't think it was until erm I'm not quite sure I think it was more like 30 weeks or something it was quite far along and not about the app specifically but more so about my choice in general" [Abby].

Again, a similar issue occurred with Sophia, whose midwife also did not discuss with her about the app, but had a general discussion about her options instead:

"No she didn't, she didn't mention it, again I erm only knew because of your research...No, no I wasn't given it at all" [Sophia].

Edith highlights that other than the initial appointment when she was given a leaflet, the app wasn't mentioned again:

"Apart from the first appointment where I got a leaflet, Never" [Edith].

Mia was not given the app at that first appointment and quite clearly from that statement the app wasn't mentioned by the midwife. When asked about how she knew about MyBirthplace, Mia explained that it was because of the study that she knew about MyBirthplace. The study clearly influenced her knowledge of the availability of the app, which meant that it was relevant to this theme. However it does matter how she got to know about it; the key probably is the idea of compliance of the midwife in giving the app, which is discussed in Chapter 8. This raises the question that if Mia had not been part of the study, would she have known about the app? Thus consideration must be given to whether this had unduly impacted on her choice.

Annie, on the other hand, said there was a discussion:

"I know there was an appointment at some point where erm where yeah it was brought up and she said you know have you looked at it have you gone through your choices and I know it was something that we discussed but I don't think it's something I've ever sat with the midwife

and looked at my phone at the same time but I have gone back through it a number of time sort of at home and with I've shown my mum and shown my husband and that sort of thing" [Annie].

A few of the women said that information they found in the MyBirthplace app generated a discussion with the midwife to clarify what they had read:

"I did talk through that (with midwife) and if you are getting transferred from here why, why are you likely to be transferred what are the things that will mean I will go up there.... she mentioned its if you want additional pain relief erm or you are going to need extra intervention if the baby is in distress or you are or those sorts of things that mean you are going to need extra help" [Paula].

#### **7.4.5 Check, check, have I mentioned that?**

One statement made by Freda brought to light a new sub-theme:

"yeah I just thought well, it was said more in passing kind of like "Sophie said kind of like things have now changed there's a couple more things you can look at, have a look at this (the app) that's it, and then moved on to the next thing. I think it was like here is your twenty minutes, here's my check list of things I've got to get through and this is another thing to say" [Freda].

In this statement, Freda suggested that the comment was made in passing, to satisfy a checklist. She also made reference to the time constraint put on midwives. This, however, does not justify the passing comment of 'have a look at this', with no further explanation of what it is and why it might be relevant to Freda. This is an example of how Freda designates the discussion as a checklist activity. Similar comments were made by Edith:

"Yeah midwives have so much to do anyway a lot of the stuff becomes just tick box that is the problem". [Edith]

"I had an appointment at 34 weeks where she had a student midwife in with her and ... she said well if you want a more active birth etc. etc. we can write together a bit of a birth plan then when I saw her after the last one oh right we are going to look at the birth plan this time she didn't do it

at all so I felt it had been said because there was a student in the room because that was the right thing she had to say to teach" [Dotty.]

"Very much so yeah erm it could have been due to time constraints .... All very nice all very jolly and smiles but I knew she was going to do that because I thought this is bollocks you're just saying that because you've got your student with you and best practice whatever but you're not going to follow up with that because you haven't got the time" [Dotty].

The above excerpts again bring to the forefront how different midwives practise and the experience that they give to the women within the appointment. Again, there is the link to the time constraint in that midwives have a lot to do. Edith went further to say that she felt that it would be difficult or "take a lot" to get midwives to comply with giving women MyBirthplace. She also said that lack of compliance may be because the midwives do not get anything from MyBirthplace:

"I think it's because they don't get much from it .... \*SIGH say if the app gave something to them out on it like I said about a birth plan or something like that or they could go on it and say oh ok this is closed or live updates for them or something then they might for instance in [UK city outside study site] I remember I thought I was going into labour with my first and I um phoned up and they said that the labour ward was closed because they do that so people were having to go 40 minutes down the road but if you could have a live feed to the app that said ok this is closed or low on staff or something that would intrigue [Midwife] or news and information for them they might recommend it a bit more as well they might just see it as a leaflet as well" [Edith].

This was contradicted by the experience Annie had; she felt that the midwives were really positive of the app and how they would see it as extra information to support the discussion:

"I think they seem very open to it and very supportive of it. Erm that was the impression that I got I think sometimes when \* Pause\* when new things come in erm I think sometimes, not necessarily midwives coz I've not had huge amounts of experience with them but you know sometimes

people say oh well you know that's they are kind of slightly stuck in their traditional ways you know erm and you then you think with anything to do with medical things you are always sort of aware or certainly I am always aware that you are encouraged not to go and Google your symptoms obviously things like that so you feel a bit daft if you, erm you do not want to question someone basically it's their job you know I guess you do get midwives who um are a bit more stuck in their way about things but everybody that I've met has been very \*pause\* I mean even things not related to the app they have been very like we have some training recently and this is the new thinking about this situations so you know that what we are going to do and everyone I have spoken to has been um has mentioned the app and yeah and" [Annie].

"Oh yeah definitely yeah because I think from their point of view like it's the more informed a women is umm the less you know potentially the less stupid questions they are going to have to answer as well I suppose you know \*Laugh\* I think you know it's so easy" [Annie.]

Overall it is clear that further disparity is seen between how MyBirthplace is delivered; this could be related to the views and opinions midwives have about bringing MyBirthplace into a discussion. How MyBirthplace affects midwives' autonomy will be discussed further in Chapter 8.

## 7.5 Who's in charge?

Another major theme that emerged from the interview data is the theme of "who's in charge". A large majority of the women felt it was important to them to discuss how the midwife was involved with their decision making, which could come under the umbrella of secondary aim 4; to explore how the DST was given to women by their midwife specifically looking for key principles of a shared discussion. As this thesis looked largely at SDM and how introducing a DST affects this, the researcher felt it important to include these feelings. This inductive theme looked at the interviews and the opinions of women were very different. They come into one of two camps: either with the midwife leading "she told me", or the woman "led by me". The researcher also felt that it was important to look at the influence of others under this heading; many of the women talked about the influence of their partner, mother or mother in law.

### **7.5.1 Midwife – she told me**

The lead person in discussions can vary; in the interview with Dotty she felt that the midwife tried to make a decision about birthplace for her:

“I just felt like you can’t make a decision on my behalf or indicate to me that early on what’s going to happen without knowing me, what I want and how I would like my birth to be, I know it doesn’t always match up \*laughs to your birth plan \*smiling I’m not naive but that’s my main thing it being my decision [Dotty].

Here Dotty highlights that it was discussed early on and that she thought that was appropriate; however, at a later point the midwife attempted to take the lead and this was a concern for her. Jessica also said that the midwife was the one who said she had to deliver in the AMU instead of her choice;

“I still wanted to go to [FMU] because it was a quieter environment and its nearer here and everyone has been saying it’s going to be a lot quicker and I just yeah where I didn’t get to go last time I was yeah \*pause and then at the last midwife appointment I had had a chat with “Sophie” and she said I will have to have a chat with my manager and then they asked me to go to [AMU] basically” [Jessica].

Jessica was asking to go to the FMU, but was led by the midwife to the AMU even though this was not what Jessica wanted. This brings into question the idea of real informed choice and who is in charge.

### **7.5.2 Woman; led by me**

Beatrice was one woman who very much brought together the concept of who leads discussions. In the excerpt below, it comes through that she felt that she was leading the discussion; that her midwife who had been there for her for the last pregnancy was happy to follow what Beatrice wanted.

“Yeah well she’s “Clemmie” \*sigh\* she’s fantastic she’s very easy to talk to, she’s very led by me umm … I was very up front with that I said I want to do what I did last time I want to go to AMU I am happy with the midwives”. [Beatrice]

Beatrice felt this was acceptable and the one reason that this was the case is because of the continuity she had with the midwife. Cara felt that she used the midwife as someone to listen to her, but ultimately she took the lead;

“She umm I used her a lot to sound out” [Cara].

Continuity plays a role when a woman sees a different midwife each time. Dotty explained that one midwife said that she’s “not allowed” her choice and she was not happy with this. Asking different midwives provided a mixed response, which she classed as contradictory:

“So “Sophie” had already made a decision about the fact that I was not going to be allowed to go to FMU in the City because I had an assisted delivery previously and I would end up on AMU that was around week 8 or 9 it was really early she made the decision. I wasn’t comfortable … I didn’t agree with that, it could be a completely different pregnancy so I took the opportunity to ask the other midwives and they were like no we will see how it goes so that made me smile its completely contradictory” [Dotty].

Olivia provided a unique idea suggesting that the midwife is not there to lead:

“it does make sense that she’s not going to hold your hand walking you through it, there’s no need to do that” [Olivia].

Concepts around the relationship between a woman and her midwife was discussed in Chapter 2, and showed how over time the onus has been placed on women to be involved in decisions. It is clear from the above that some midwives still seem to play the decision maker; this will be discussed further in Chapter 8.

### **7.5.3 Influence of others**

Another inductive sub-theme came from women’s responses to the question about sources of information. The majority of the women mentioned hearing from friends and family. Many spoke positively about the sources that they had accessed, especially when it came from friends, family and other women. There was, however, some negatives highlighted about information that did not come

from a midwife. One such comment came from Jessica who talked about a story that she had read online:

"On facebook, people put their stories and they are scary ain't they. And they were like this woman gave birth at [FMU] and then coz she was really ill she had to get transferred to [OU] .... \* Pause I can't remember but one of them the baby or the mum died I can't remember and that really put me off". [Jessica]

What is important to point out is that different people react differently to what they hear from others. This story clearly affected Jessica and she later went on to say that it put her off giving birth in the same location. However, not everyone is influenced by what they hear.

Abby "Yeah so like friends, because everyone has a horror story, I have had about three or four, you just have to kind of go with it because it was their pregnancy it isn't yours, yours maybe nothing like that. It's just they have had a bad experience.

Researcher: Ok so you were quite sort of strong in the fact you were not going to be led by others

Abby: Yeah its fine I have had all sorts of things told to me and I brush it off. I don't think anyone has shared a beautiful birth it's only ever horror stories" [Abby]

In this extract from the interview with Abby, she was talking about how she thinks that talking to people outside the medical profession is not always for the best. Above she shows that the majority of stories that people share about birth are negative and that the positive birth stories are not often mentioned. Compared to Jessica however, this has not impacted on her choice of birth location. Again, the same could be said about Sophia who also mentioned horror stories:

"laughs oh yeah I have experienced their horror stories but it doesn't really bother me or affect me I know that ... oh actually I did get some opinions from my mum, recently my grandparents have been in [Study hospital] and my mum was like maybe you shouldn't go to [Study

hospital] because they experienced problems there and I was like oh no actually I have heard some good things about the maternity ward and \*mark's sister has had two babies there" [Sophia].

Sophia brought this concept through to another source, which was a television programme. When asked about birth place choice prior to pregnancy initially Sophia said that she wasn't expecting to get pregnant and therefore had not considered the options. She then went on to say:

"Erm the only thing really would be from watching *One born every minute* \*Laughs\*...." [Sophia].

She identified that this was a good television programme and, because of her limited knowledge, this made her think that hospital was the only option. On the other hand, Abby brought up *Call the midwife*, a television programme about midwifery care in the 1950s. She felt that she needed to stop watching the programme during pregnancy:

"Yeah erm I also stopped watching *Call the midwife* since being pregnant .... I haven't even started it yet I have it on Netflix ready to go but I thought I'm not watching that for nine months blimming worrying about different thing that are happening" [Abby].

When asked whether she felt this would impact her decision she went on to say:

"Erm ..... possibly dependant on what happened it might have made me a bit worried erm I don't think I'd want to watch people losing babies or having complications or I would rather be relaxed on my little cloud and will worry about how mine will go rather than anyone else".

Partners are another possible source to take charge as they play a part in the discussion, but most women said that they were most definitely not in charge;

"He will do whatever I say \* Laughs no he has no say. I think he wanted it to be in hospital.... Like because when I did mention to him home birth, he was like but all the mess \*laughs and you can just leave hospital and it's all there and you can go" [Jessica].

The above excerpt shows that Jessica is in charge, as the partner “will do whatever I say”; the same could be said for Sophia:

“Erm \*laughs he doesn’t really have any say ....he’s happy to go on what I want to do” [Sophia].

The general consensus from the women during the interviews is that they include their partner in the discussion about their birth location, but ultimately the woman herself makes the decision. In all of the cases the women said that their partner was happy with the choice of location. It seems that the main difference is between the midwife being in charge and the women themselves leading. This then led to the next major theme.

## **7.6 Midwives’ impact on women’s choices**

Again this is a theme that came from the women, rather than the secondary aims of the research, when they were asked about their choice of birthplace. Some of the women mentioned that the midwives were less than supportive about their chosen options, normally when discussing birth in an FMU, which will be discussed under the first subtheme of “*don’t get your hopes up*”.

### **7.6.1 Don’t get your hopes up**

One woman identified early on in the pregnancy that she wished to give birth in the local FMU and going into the first appointment she was fairly set about her chosen option. However, her individual scores on the SDMS were less decisive afterwards. When discussing why this was the case, she talked about the issues that arose in that first appointment;

“one thing that I found is erm mixed level of response on [Local FMU] and how possible it is to get in there .... just depending on who you talk to erm so she was, my initial midwife was quite pessimistic well not pessimistic but sort of yes its possible but don’t get your hopes up my normal midwife is very positive she was like yeah [the FMU] should be fine, you shouldn’t have a problem erm but yeah it just depends on who you speak to” [Freda].

When Freda was asked to expand on what she thought the midwife meant by “*don’t get your hopes up*”, she went on to say:

“Just in terms of having midwives available erm so she said that depending on when you call depends on where the midwives are at that time, if they are all concentrated at [OU] and there is no one available at \* pause\* to come to [FMU] to be there then I might just have to go to [OU] [Freda].

Freda expressed disappointment with this comment and how it then caused further worries:

“one thing I have never got an answer on is how likely it is to be turned away because like I said it depends on who you speak to depends how positive they are and I think it’s as much a personality thing as anything else erm what are my odds of getting in or not and how many women sort of get in there. \* Cough\* and it depends on other things like what I want for the birth itself as well so more informed now I think than I was erm but I think but that’s the whole point of you know like I said it , you know the theory but not how practical that may be” [Freda].

This thought process of mixed views and being put off of an FMU was not limited to Freda. Dotty also mentioned that the midwife had not been positive. Dotty was in a different geographical area and talking about another of the FMUs, but she felt that the midwife was trying not to get her hopes up:

“then I obviously found out that it didn’t always open … I think we were told by the midwife the appointment as we got nearer and they said look it might not be actually open” [Dotty.]

Again, Dotty said that this had factored into the decision making:

“Erm yes to some extent yes because then there’s no options depending on what time it’s going to happen erm so it was like well I said to my partner well if it’s not open then there’s not really a choice you have to go somewhere else” [Dotty].

### 7.6.2 Conflicting advice

Another aspect of midwives’ views on women’s choice came from Edith, having had her previous two children out of the study site she came with a fresh perspective of the midwives at the study hospital. She felt that her decision to

have a home birth was met with mixed responses by the midwives, the same as Dotty and Freda:

"I had about 5 different midwives \* laughs\* err it depends on the midwife you got ... So because I am very home birth and I want to have a home birth erm and one midwife I got was very dismissive erm you don't want to have a home birth because we don't always have a team or we don't have \* paused\* there was always excuses made before, before I even made a decision rather than giving me the information about the home birth I actually got more information about home birth from other mums that I actually got from the midwives erm so like for instance what do you do afterwards for cleaning up and things like that whereas some of the midwives are like very supportive and are like go for it go for it and they were like oh well just phone us earlier and we will get a team on standby and things like that ... But then you get another midwife that is like don't bother it's just kind of like conflicting" [Edith].

However, what she went on to explain is that this was directly the opposite response to the midwives in the previous area, who were very positive to the option of homebirth;

"their midwives were very pro birth at home and I remember with him especially at 32 34 weeks they were like are you sure you don't want to be at home like really pushing it" [Edith].

The mixed responses and the "don't get your hope up" attitude clearly affected some of the women; those that had been through it before, such as Edith, were less likely to let this affect them and knew what they wanted. This balance between the level of honesty about the possibility of low staffing and availability of midwives compared to putting women off of birth outside of the hospital will be reviewed in Chapter 8, because there is a fine line between making sure women are informed and scaring the women from their chosen place of birth.

## 7.7 How the app fits

The next major theme to emerge was "*How the app fits*", which came from what women were saying about how it supported them. This specific theme relates to

secondary aim 5 “explore their feelings about how well the DST supported them to make a decision” and 6, “explore women’s views around usefulness”.

### 7.7.1 Not a good fit

Dotty felt that the app was not going to give the information that she wanted:

“I don’t think the app is going to give me that information so I started to think what do I want how do I go about doing it” [Dotty].

A similar thought was raised by Cara, however this was because of a risk factor being her age; she felt that the app wasn’t designed for her.

“But what was never discussed was in depth my options given to where it would be, so looking at your app erm that’s why erm it’s not necessarily designed for people like me because I probably without a doubt will end up going into hospital erm I think the age that I am and with my mortality I think they look at these things and think home birth sounds great and midwifery led unit in [Study location] great but I will birth in [Study OU]. There is no discussion in the app any difference between AMU and OU.....” [Cara].

Both Freda and Annie, on the other hand felt that the app has helped them make a decision:

“Erm no I think it helped me make a decision, erm having looked at the app from 10 weeks to now there is lots of information that I have gotten so I don’t just need the app because of the other ways I have found things out” [Freda].

“yeah I don’t fancy giving birth there so but yeah I went back to it and re read it erm and it, it’s sort of put my mind at rest slightly even though you know it’s not originally what I thought I wanted I had all the information there nothing really freaked me out erm and you know it sort of and I think again because I wasn’t having to do loads of research I could read it as you know as is erm its sort of reassured me definitely so it kept me informed of although not my first choice, something that may have been a potential.” [Annie].

### **7.7.2 Information aid or decision aid?**

Two of the women brought the concept of MyBirthplace being an “information aid” rather than a decision aid.

“So erm I think the app does help with the choices knowing where is available it’s good for that but I don’t think that there is that extra level that is that kind of one to one meeting sit down with people that clicks with people. Or knowing that actually you can say no I’m not happy with this situation I don’t what it” [Dotty].

In the above excerpt Dotty makes reference to it not being a replacement for a sit down with a health professional, and the same was said by Beatrice; she felt that it is good as an information aid, however it should be used in conjunction with a discussion with the midwife:

“I’m not convinced it answers all the in-depth detailed questions but things like that are never going to that is what the midwife is there for but it would certainly lead people that had no idea to a direction or give them an understanding of their options so that \*pause\* they can then question them with the midwife..., I think it’s very informative I think it has a lot of information but I think that people shouldn’t rely solely on the information in the app. I think it should be used as an information tool to take to their midwives and further discuss on a medical or individual case basis”  
[Beatrice]

### **7.7.3 Making thoughts happen**

The next sub-theme within “How the app fits” is the concept of “*making thoughts happen*”. Women suggested that seeing and accessing the app started the thought process for them, normally in the case of what is important for them when making a decision.

“Erm and it did make me think about what, what’s more important so is location important because the other thing with here is that I was born here um as was my other half as well so there is that sort of link there but we had the conversation of well is the location more important because we live down the road and can be here in like 2 minutes all of

those things um or is pain relief more important so if I phone up and they say the pool is busy do I then say ok well then we are going to look at OU then and then if OU is busy do I then think well what about FMU in the North. Would I travel that distance because the pool is more important to me. So it did encourage that conversation if that makes sense" [Paula].

"It gives you like an insight as to what they are like \*pause and it gives you a bit more information than you may have had before. I think before I got like a leaflet or something and that was it" [Jessica].

Again Cara said that using MyBirthplace provided consistency and allowed her to think about going into hospital and the two different wards:

"It's consistent is probably the right word, it's not not been valuable to me erm it has enabled me to have a thought process go through my head and it has enabled me to think about the business of oh right so given that I have to go into hospital there are two ways to go into hospital. I might not have been so aware of that" [Cara].

Olivia did feel that it provided a different thought process dependant on parity. She felt that as a first time mum it would be useful, whereas as a second time mum she used it as a refresher:

"I think there's two things it's useful for first time mums about where can I actually give birth I think it's a good refresher for second time mums just to remind and you might have moved. I would think it's useful because you know more of what you would like for the app to tell you what equipment is there that would be more useful because you know it's not always available on the day but knowing what's there or if it's available in a different place maybe because you won't always ask your midwife." [Olivia].

## 7.8 It's the first version right?

Thinking about the how the app fits, another inductive theme that emerged was "it's the first version right?" A few of the women felt that this was a good starting point as a first version:

"Well yeah very useful, erm I'm assuming that this is like the first version and it can grow from there. So I think it's a good sort of first version , I think but like I said there should... if it's given out to everyone that there should be high risk stuff that could go into it to make it more informative as an aid" [Olivia.]

"it's basically just not \*pause\* because it's too basic not how you use apps, you're still in the alpha phase" [Edith].

These women feel that there is room for improvement and the app has a very basic level of information. All apps start somewhere, and again, some women felt that it provided the information they needed. This was mentioned before hand, with some even feeling that it was an information aid rather than a decision aid. However not everyone is going to be satisfied with an app and will offer feedback on the areas they feel need improving. Determining an appropriate level and density of information content can be difficult and this gave rise to the next major theme.

## **7.9 Goldilocks and the three bears approach to information**

This theme looks to address the first of the secondary aims, "explore women's information gathering and decision making behaviours during pregnancy". Again the level of information in an app is a difficult concept to gauge. In their creation, apps go through pilot testing and information considered by a focus group; however the level pitched might not always meet with universal approbation

### **7.9.1 Too much or not enough?**

From the excerpt above, Edith and Olivia made it clear that they felt the information was basic. This was supported by comments made by Cara:

"Again this is something the app doesn't cover but there is so much that you can Google on the internet about induction" [Cara].Conversely, others felt that was just enough information; Abby made comments about it being informative and Beatrice compared the level of information to other sources, finding that it stood up to their level:

"Yes I think it does provide just as much information as the likes of Bounty and Emma's diary" [Beatrice].

"I think it was useful yeah, it gave you all the options and was tailored toward Study site, so it was relevant to here and yeah I thought it was useful and it wasn't too complicated" [Mia].

Three women gave the idea of information overload; that the amount of information received in pregnancy is potentially "too much":

"At that point I was, yeah, because I found the whole thing just information overload \*laughs, there's just so much it was just kind of settling into where I was and then how many appointments you had and timings of those and when you get a scan and wanting to check that she's ok and everything and all of that I think that was more in my head at that point than where I was going to birth" [Paula].

"I have found just information overload in the pregnancy, you don't realise how much information you are getting and how much you are forgetting that they have told you. I still ask questions now that I know they have probably already given me the answer to" [Abby.]

"I was saying you get bombarded with information it's so easy to go into it blind and scared" [Annie].

Here Paula was specifically discussing the first appointment and how she felt that the amount of information the midwife discussed with her was "overload"; this was without the midwife going through birth place options. Both Abby and Annie also felt that so much information is received during pregnancy and specifically for Abby, it was too much.

Similar feelings were bought up by Mia, who we have already gauged came into the first appointment worrying about a miscarriage. She felt that choice of birth place was too much information at this initial appointment and that it would be better off discussed at a later point:

"For other women it might be different and they might want to start thinking early on but I think once you have had your 12 week scan or your 20 week I don't know" [Mia]

Gauging the right level of information is going to be difficult because for one individual it will be too much information and off putting and for another it will be

too basic. What is clear however is that MyBirthplace sways opinion on the level of information as does the information about options provided in pregnancy. Those that made it clear aspects of the app could do with further development became an inductive theme.

## **7.10 Content of the app**

This theme addresses secondary aim 3 “understand women's views and opinions about using the DST” and touches on women's views of how useful the app is which related to secondary aim 6.

Similarities can be drawn between the level of information and the content in the app; some women are going to appreciate the content, however others are going to want more.

### **7.10.1 Left me wanting more**

Some of the women felt that, as previously mentioned, that the app should provide some level of information about high risk birth location and the OU.

“If it's given out to everyone that there should be high risk stuff that could go into it to make it more informative as an aid” [Olivia].

“You are absolutely right like I said there isn't a lot um there isn't a lot given to explain the personal side of it um for me there was a comparison between AMU and you know different birth centres and you know home birth there was no comparison between [AMU] and [OU] other than AMU is for low risk and OU is for high risk nothing in the middle” [Cara].

“The only thing I felt was obviously being a VBAC now there was less information now for me erm because I felt like it was much more geared towards a first time mother erm which makes sense coz that's the type of person that is going to want to download the app. So erm as soon as erm there were statements about being high risk and kind of erm that made me feel a bit like oh it's not really for me because I am a VBAC and there's not much options for me. I felt that there could be another page or section about VBAC OR something like that” [Olivia.]

Another area that women felt could improve the use of the app is if it was more interactive with a personal side:

“So I I’ve got other apps and it is a lot more interactive so it will have little videos pop up that will relate to your week so you will keep going back to the app so although you don’t need all the information anymore as a second time mum you keep going back because there are interesting points that keep you active and your app is, I’ve read the information I want and then I can delete it now [Edith.]

Edith went further and said that she would like reviews of the different areas from other women who had been there:

“why not put mums comments so I felt it really helpful because I really like home birth so like have a bit that says this is the opinions of mums that had home birth in the area who have done it and ten have that information like I found it more relaxing than the labour ward especially if mums have had more than one baby in the same area that are willing to give their opinion and then have a button like a review button on Amazon (...) Does that make sense, so why not have a thing in the app where you go ok well now you have had your baby give us a review on the way you had baby if that makes sense” [Edith].

Others felt more visuals would benefit the development:

“pictures of where you are going to be definitely but yeah maybe showing you maybe if you are going to be depending on what your situation is what your choices are that might be helpful because it can be confusing to go through and still think well I have all the information and I still don’t know where I want to be and talking to other people isn’t always handy” [Abby].

“Maybe pictures, like there’s a lot of words. So like the OU they said they got a like water birth room but I don’t think I saw it ..... Maybe it was there but I didn’t see it [Jessica].

Others mentioned more about pain relief [Paula]. The general consensus was that more could be added and the app could evolve if the hospital so wished.

### **7.10.2 What's in a word**

Another sub-theme that emerged was “*what's in a word*”. This emerged when three of the women mentioned that they were not happy with particular wording in the app; this included high risk in the introduction of the video show round of the OU and undesirable outcomes when looking at the statistics.

Cara felt that the introduction to the video tour of the birth locations was not worded appropriately:

“number one I would probably question, the video that you have got on the app starts off with if you are high risk you will be in OU now I suppose that's how you define yourself I don't agree with the wording I think you might want to put in there or if you are a mother over 40 because then a mother over 40 might think oh no I am high risk and yes that is a risk factor but that is in accumulation with other things may make you high risk” [Cara].

Dotty also wanted to highlight the word ‘safe’:

“But the thing, I remember getting really irritated with some of the language that the app gave about being safe because I had had it off “Sophie” at an early stage I was like is it safe or is it because it makes your job easier are you actually giving choice. Basically are you giving me the birth experience I want because its erm it means that if anything does go wrong it's a lot quicker to get to and then they give you the assumption that everything will go wrong? You have already made the decision that I'm not going to be able to give birth here and I am really early on in” [Dotty].

Dotty believes that the language of the app and referring to certain locations in terms of safety will put people off. She also raises the question of whether it is her safety or easier for the midwives; this is a concept that will be explored further in Chapter 8.

Undesirable outcomes are used within the MyBirthplace app to highlight those cases in each locality that were not desirable and ended in a poor outcome for babies. Some felt this terminology caused them to worry:

“Yeah and I don’t really like the term undesirable outcome erm I know that erm I know that the undesirable outcomes are important but it just shows you that there is that ability of something going wrong....”  
[Sophia].

However Olivia felt that the wording of the app was ok, stating that it suited people across a spectrum:

“the language in it is, it can suit a spectrum of people because I appreciate that you have got to deal with ... from what my midwife has told me you have to deal with people who perhaps don’t speak English as a first language erm right up to every spectrum across the rest of [Study Site]. So it’s just straightforward” [Olivia]

Mia also thought it was not too complicated;

“I thought it was useful and it wasn’t too complicated. I like having more information but I know that erm we had antenatal classes and information is toned down so that everyone can understand it” [Mia].

As with a lot of things discussed above, providing wording to suit everyone can be difficult and some may not like what others do. The key is that all of them understand the information, which it is clear that they did.

### 7.11 Summary of findings

**To be or not to be an app...that is the question.** Women’s views were split, with some feeling that to call it an app is inaccurate, whereas others felt that it does what it says on the tin, providing the information it says it would. In certain cases the women felt that it was not using the power of an app because of the difficulty with the format and the flow of information, feeling more like a book rather than an app. For some this caused real frustration, with one woman giving up on accessing it, and another becoming frustrated with it not being available on the regular platforms that she is used to.

**Who’s in charge?** Again, there was a split in opinion from the women, with some saying that the midwife led the discussion. Those women felt that the midwife made the choice for them, almost saying what is “allowed” to happen. In the majority of cases, midwives’ suggestions went against what the women

wanted. For those that felt that they led the midwife, they believed that they made the decision and the midwife was supportive. This was more likely to be the case when the woman was already known to the midwife, the idea of continuity and the midwife knowing women's wishes was indicated by the women. Influence from others was brought into this theme, because there is a relationship between outside influences on women's decision making. Generally family and friends act as supporters but do not lead; neither do partners. Women say that their partners do not have a say, but in the majority of cases they are happy with the women's choices. Stories and television programmes can unduly influence women, with other people's horror stories causing a direct change in one woman's choice.

**Midwives impact on women's choice.** Women reported that the midwives can be quite negative about their choice of birth place, with one woman saying that the midwife commented "Don't get your hopes up". This concerned the availability of midwives to attend either a home or FMU birth. They also felt that advice about options differed between the midwives that they came into contact with. This could potentially be seen as undermining the reality of choice and therefore the app, because even with the app, midwives' are still telling women different things.

**Moving with the times.** A positive that women expressed about the availability of MyBirthplace is that it is "information you can trust" because it has been endorsed by the Trust; some of the women felt this meant that the information is reliable. Women felt that the app was moving with the times and that it reflected generational change with some of the women mentioning that nothing like this was available in their mothers' era. Two of the women added that their daughters are the next generation and are 'tech savvy', so healthcare should be moving with the times.

**How the app fits.** Some women reported that the app was not a good fit, that it did not give them the information that they were expecting and that it should be considered as a first version. Others felt that it made them think about what was important to them when they were choosing a birth location. The emergent sub-theme was that some women view MyBirthplace only as an information aid and something that should be used in conjunction with the midwife or health

professional. Others contradicted this, stating that it had helped them make a decision.

**Content of the app.** The majority of women felt as though they were left wanting more. They all had some area of the app that they felt needed development, the most common being higher risk information and more visuals. Two women felt that the app needed to be more interactive and on a personal level with comments on the different locations from other mothers that had given birth there. Another emergent sub-theme was the issue around wording of different areas of the app, in particular ‘undesirable outcomes’. They felt that it was confusing and for one caused fear.

**Goldilocks and the three bears.** Women were again split on the level of information provided, with some feeling that there was not enough in depth information. Other women reported that the level of information was good and informative. Others felt that the whole process of discussions with midwives caused information overload.

The next chapter discusses the findings in greater depth.

# Chapter 8 Discussion of findings

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This chapter brings together the key concepts that have been previously highlighted in the quantitative and qualitative findings, laying them out in relation to the primary and secondary aims and considering them within the broader remit of the existing literature.

## **8.1 Is MyBirthplace effective in supporting decision making?**

This is the first study to assess the effectiveness of a DST to assist with decisions regarding place of birth. To address this primary aim the Stages of Decision Making Scale (SDMS) (O'Connor 2000) was utilised. Women who received the MyBirthplace app had reduced decisional conflict after using the tool.

A quarter of women had an increase in their SDMS score immediately after the booking visit, indicating greater certainty in their decisions; however, for most women that increase in certainty was only evident at 28 weeks.

When this is further broken down to those that accessed the app, it appeared that more women experienced improved decision making compared with those that did not access the app (35.5% compared with 22.0%), however a larger sample size would be required to test these differences.

Although the response to the survey at 28 weeks was lower than desirable (60.5%), the findings show a positive effect, with only 2.9% of women having greater decisional conflict. It is acknowledged that between the post appointment questionnaire and the 28 week survey there may have been numerous influences that could have randomly affected decision making. An RCT would eliminate confounding factors. It was discussed in the methods chapter that the limitation of the pre-test post-test design was the inability to control for confounding factors, but that internal validity was apparent due to the study being conducted within a clinical setting. The pre-test post-test design was the most appropriate method because the MyBirthplace app was already being used with women. Future research regarding MyBirthplace and its

effectiveness must consider confounding factors and the possibility of conducting an RCT.

Despite these limitations, this study provides evidence that the use of a DST positively affects women's decision making with regard to place of birth and as such, provides an original contribution to the field. The finding that a DST can effect a change in decisional state corroborates findings of other studies that utilise SDMS within the context of health when using DSTs (Grant et al 2001).

Only one prior study within midwifery had used the SDMS and found that women were receptive to change (Raynes-Greenow et al. 2010). Similar findings were seen in this study, with 23.8% of women being receptive to change. Being receptive to change is suggested by O'Connor (2000) as being the ideal time with regards to a participant's frame of mind to introduce a DST. However, where this study differs from that of Raynes-Greenow et al. (2010) is that greater proportions of women in this PhD study had already made a decision and were unlikely to change their minds.

This group (the decided) represented just 17% in the study by Raynes-Greenow et al. (2010) compared to 25.5% within the MyBirthplace study. The larger proportion could be due to the topic under investigation; women tend to be fairly decisive regarding the place of birth with most women having made a decision either before pregnancy or within the first trimester (Murray- Davis et al. 2014; Grigg et al 2014). In contrast, Raynes-Greenow et al.'s study (2010) focused on choice of labour, a topic about which women usually decide either in late pregnancy or active labour. As a result fewer women were initially receptive to change in this PhD study but greater change was seen at 28 weeks.

## **8.2 When do women make a decision?**

The MyBirthplace app was created from a local need to provide women with the information to enable them to make an informed choice about place of birth. Although this PhD study suggests that many women have already decided or are not receptive to change at the booking visit, a large proportion of the women were unaware that homebirth was an option (59.3%). Most were aware of the hospital (87.2%); only a small proportion of women were aware of the difference

between options within the hospital those being the OU and the AMU (19.2%). This highlights the need for a more detailed discussion, in this study facilitated by the app, to ensure that an informed decision is made.

In the recent English maternity survey 16% of respondents reported that they were not offered any choice regarding place of birth and a further 14% stated that the choice was insufficient (Care Quality Commission 2015). The availability of choice and provision of maternity services also varies throughout Europe (Sandall 2015). A key trend relating to reduced choice is that of maternity unit closures and thus the supply of information is outdated because fewer options are available (Pilkington et al. 2012). Internationally in Australia choice is offered between private and public care, similar findings are seen in the USA. Australian women are stated to be dissatisfied with maternity services (Horner et al. 2002) and this could be attributable to choice.

Sweden and Finland have a significantly lower percentage of women birthing at home, with Sweden's National Health Department advising against home birth. In contrast, in the Netherlands choices are offered and consequently they have a home birth rate of 30% (Hadjigeorgiou et al. 2011), which is significantly higher than the UK. The existing literature suggests disparity in women's views on the level of choice in relation to birth place in high income countries. However, what comes through is that many women who are free to choose to give birth in hospital; possible reasons for this were explored in Chapter 2. The findings in this study suggest that this could relate to women's knowledge about the options.

History has shown that choice of place of birth has been a topic promoted by numerous government papers and initiatives in response to women highlighting that they wanted to be more informed and given more information (Lagan et al. 2011). In the majority of cases, a hospital birth dominated; one could argue that this was down to the lack of choice (Davies 2013) or possibly women were unaware of the options of an alternative such as an AMU, FMU or at home. This PhD study has shown that 70.2% of women discussed birth place options with their midwife. Furthermore a greater proportion of women were more decided about their choice at 28 weeks (N=63) compared to booking (N=44). This supports the hospital's priority of women knowing where they want to give

birth before 36 weeks to ensure provisions and care can be appropriately distributed.

### **8.3 Information gathering and decision making behaviours**

Previous studies have identified that women use similar sources to gather information in pregnancy; those being friends and family, partners, the internet and midwives (Lagan et al 2011; Coxon et al 2012; Ingram 2013; Mannion et al 2013). Findings from this PhD study support studies that identify the midwife (Grimes et al. 2014) and the internet (Lagan et al. 2011; Sayakhot and Caeolan-Olah 2016) as the most accessed sources for information. There is, however, a need for further identification on where women find information *prior* to utilising a DST.

Research highlights the increasing use of information resources by lay people (Rideout et al 2005); this can be attributed to self-reliance and the desire to participate in decision making. Information seeking directly impacts on interactions with health care providers and care plans (Baker et al 2003) and the literature highlights generational differences in the ways individuals' access health information. Younger women are more likely to access online health information, but in general women do not express fear about using mobile technology (Chang et al. 2016). The majority of women in this PhD study who accessed MyBirthplace did so using a mobile device or tablet. Some of the women identified that they used other online apps, such as Aptamums and WHICH. Boulous et al. (2011) identifies that there is a significant opportunity to exploit mobile health and apps to support health care exchanges and this study provides evidence of the effectiveness of MyBirthplace in supporting women with decision making.

There is an association between women's self-assessment and evaluation of the situation with their intention to seek health information. People's choice of where and what information to obtain are individual and change over time (Plutzer and Keirse 2012) but in midwifery sources of information have largely remained the same.

It is well evidenced that the internet is used by pregnant women (Huberty et al 2013; Lagan et al 2011) with the need to gain control as a reason given for its use. A key issue highlighted by those researching women's use of the internet involves women's knowledge around accuracy of information and the source it is from (Huberty et al 2013). It is suggested that women are unaware of how to evaluate information that they access online (Romano 2007). Reliability of health information is a concern given that patients are accessing health information from sources other than the professional sites (Impicciatore et al 1997; Craigie et al 2002). MyBirthplace contains information endorsed and created by an NHS trust and therefore is information that is credible; this is something that one woman made reference to in the qualitative interviews. She valued MyBirthplace more because she knew it was created by a hospital; thus the app addresses one of the biggest challenges regarding online information, which concerns around quality control (Armstrong and Powell 2009). In terms of the use of MyBirthplace with others the women in Phase 1 of the study were generally positive about showing the app to both a partner and their family. Early involvement of fathers in pregnancy is associated with greater satisfaction; primiparous women are more likely to have a partner who accessed information about pregnancy and birth and shared in decision making (Redshaw and Henderson 2013).

However, data from the follow up survey in this study showed that only 26.8% of women used MyBirthplace with others. When asked if they would suggest it to friends, women were more positive. No information on why this was the case was gathered, which is recognised as a limitation, however negative reviews of the app and the level of information could explain this result.

During the qualitative interviews few women decided to show MyBirthplace to their partner, but felt that ultimately it was their decision about where to give birth. Research by Longworth et al. (2015) suggests that partners' involvement with birth ranges from a passive observer to a coaching role. However, as discussed in Chapter 2, partners can affect women's decision making with regards to choice of birth place. Research by Bedwell et al. (2011) found that men thought that the general assumption was birth would be in a hospital; those who had considered home birth were quick to dismiss the idea. Men were seen

as having as much power of persuasion as the midwife, a concept which was discussed in Chapter 2. Sweeney and O'Connell (2015) acknowledge that fathers can overcome initial reservations in terms of home birth and following a natural homebirth men benefit personally and emotionally. Both these studies highlight that information exchange, midwife involvement and making partners active participants in the decision is key. Therefore, understanding reasons for the women in this current study not showing MyBirthplace to their partners would be beneficial.

Two women mentioned using the app with their mother or family member. Findings suggest that women recognise that information is changing through the generations. Two women mentioned how their daughters were informed when it comes to technology and thought that MyBirthplace is moving with the times. Loosemore (2013) found that digital services and the use of DST are increasing, and qualitative findings offered insights to this change with the theme "moving with the times". What transpired from these viewpoints is that technology like this was not available in their era. The idea that health and the use of digital technology is progressing is also acknowledged by Sheppard (2017) who found that 34% of women were using apps to support pregnancy and a further 65% to track the pregnancy. With greater digital health comes the need for health professionals to familiarise themselves with technology. However, there seems to be a professional barrier to using MyBirthplace and the role of gatekeepers needs further exploration.

#### **8.4 Knowledge when it comes to making a decision**

While knowledge was not a specific aim for this study, knowledge is a key component in the decision making process and is regularly reported in other such studies (Yee et al. 2014; Kuppermann et al. 2009; Nagle et al. 2008). Overall there is evidence that DSTs result in a significant increase in knowledge scores and this could contribute to the decision making process. This study showed that while there was no statistical difference between overall knowledge scores of those with access to the app and those without, there was a statistically significant difference in women's knowledge post appointment about the FMU located in the West of the research setting. One could suggest that

this is significant since it means that women are not aware of the options that they do not know about.

Interestingly, the majority of women did not want any further information about place of birth from their midwife (84.9%), which directly contradicts research that suggests women are left seeking further information after booking (NCT, 2017) and accessing the internet to find information for themselves. This creates the question of whether there is too much choice and are we actually pushing the burden of choice onto women?

Research has highlighted the move of the NHS and health professionals from a time where decisions were made for a patient to the present era whereby the onus is placed on the patient to be involved in the decision (NHS England 2014). However, there has always been a theory that too much choice can actually impact negatively (Schwartz 2005). Furthermore it is recognised that the extent to which a patient themselves prefers to participate in choice is dependent on how they see their role and their capabilities. Preferring less involvement in choice and the doctor to be the decision maker is seen as very paternalistic but still happens; however, this is more likely to occur with vulnerable patients such as the elderly (Brom et al 2014).

Rothman (2013) argues that the expression “it’s your choice” and the action of midwives leaving the decision up to the woman is not always helpful. She suggests that it in fact, highlights that midwifery is caught between autonomy and caring, and that information can be a weapon as much as a tool.

The results from this PhD study indicate that women report the midwife is still a valuable source of information and support. The finding that women did not want further information could be due to the specific content of the discussion; this was shown in Table 14 Section 6.1 in Chapter 6. The majority of women (70.2%) had a discussion about birth place options. Of those women that wanted further information, only 16 had discussed birth place options with the midwife and 17 were told that they had options.

A relationship was found between what happened in the appointment and women's desire for further information. Women who wanted further information were less likely to have been given access to the app (N=22, 20.0%). During the appointment with the midwife, women were asked whether the midwife accessed MyBirthplace with them; this was to explore a secondary aim of this study which was "*how the DST was given to women by their midwife*" specifically looking for key principles of a shared discussion.

Consideration needs to be given to the fact that a large number of the women did not have access to the MyBirthplace app; only 31 women of the 167 (18.6%) were shown the app during the appointment. This lack of compliance by the midwives is a significant and unanticipated finding of the study. This occurred despite a policy at the local hospital stating that women should be given the app at booking and also despite a training programme given to midwives at the start of rolling out the intervention, which included the relevance of MyBirthplace as a tool for SDM and also how the app should be introduced.

Exploring the reasons for lack of compliance was beyond the scope of this thesis, but previous research suggests that women may not be offered the opportunity to try an intervention if the health professional, in this case the midwife, believes that the women in their area do not want it (Hundley et al. 2002). Future research with midwives around technology and use of MyBirthplace with women would be valuable.

### **8.5 Does the app facilitate making a shared decision?**

Although women who received the MyBirthplace app had reduced decisional conflict at 28 weeks, the question is whether this was a result of shared decision making or whether the app on its own was effective. Looking at the first appointment as a whole, it appears that the process of having this first appointment and the discussion with the midwife about the different options reduced decisional conflict, irrespective of whether the app was shown to women.

A total of 118 women said that the midwife discussed birth place options (70.2%). This improvement in decision making could be attributed to a number of discussions during that appointment including information about MyBirthplace (55.7% were told about MyBirthplace), provision of a leaflet (32.1%), being given a QR code to access MyBirthplace (23.6%) or simply being told by the midwife that they had options. In general, a DST does improve the decision made (Raynes Greenow 2010); however this can only be the case if the person using the DST, in this case the midwife, is engaged.

Data from qualitative interviews found that a clear explanation was needed from the midwife about what MyBirthplace is and how it can support women; a demonstration of how to access MyBirthplace was also needed. Well under a third of the women surveyed reported that the midwife explained how to use MyBirthplace, and just half of those women stated that this was done well. This could be linked to the amount of time available for this discussion at the booking appointment. Women were asked if they felt the midwife had enough time to discuss MyBirthplace and just under half (47.2%) felt that there was. Furthermore, qualitative interviews found that some midwives did not discuss MyBirthplace at all through the pregnancy; women were only aware of the app because they were participants in this study.

Apps cannot work on their own; engagement is needed to ensure appropriate rollout and for users, in this case women, to feel confident about using them. A global survey of 1130 patients and stakeholders (Anonymous Report 2014) found that individuals are increasingly using apps, but patients fear losing face to face interaction with health professionals (31%) and would rather use technologies in conjunction with health care professionals (46%). Furthermore, 90% had a lack of knowledge of what apps to use. In this PhD study, greater midwife engagement may have reduced negative views from women about accessing the app, and supported the provision of the leaflet and QR code.

So why do health professionals not engage? Research by Wilcox et al. (2015) found a lack of familiarity and fear limited health professionals' engagement with technology. These views may explain why only a small number of midwives provided the app to women. It is clear from this PhD research that gatekeepers, in this case the midwife, can undermine the advancement of innovations if they

are not positive towards the change in practice. This was also raised by one of the women during interview; Edith felt that it would be difficult to get midwives to comply with giving out MyBirthplace, suggesting this is because the midwives do not get anything from the intervention. If midwives feel that they have to comply and that their autonomy is being removed, this may explain why the Trust is failing to get buy-in from midwives. Fraser et al. (1998) found that newly-qualified midwives were not prepared to meet the high tech requirements of providing care in a modern birth environment. Over two decades later, this PhD study suggests that this is still the case, despite the advancement of information and increased access to apps. However, confirming that these were indeed the views of the midwives will require further research.

The midwife-woman discussion about the app was also very much dependent on whether the woman had had a baby before; “You’ve done this before” came to light in the interviews, with some women identifying that the midwife assumed that they already knew information because the woman had experienced a previous birth. Some of the women interviewed found this attitude acceptable, with one mentioning she would have questioned the midwife had it been her first baby. Another said that continuity of midwife also meant that she was aware of past experiences and felt that a deeper level of discussion was not needed. In contrast, others felt that this lack of discussion impacted negatively on their ability to make a decision about place of birth.

What was clear was that the level of discussion at the booking visit around the MyBirthplace app and choice of birth place varied and this could contribute to disparities seen at a local level with some women knowing that they had birth place options and others only being aware of the OU and AMU.

Provision of information and involvement of the individual is key to shared decision making. Previously doctors have failed to recognise that the patient has preferences (Cockburn and Pit 1997) and this has aligned with a paternalistic approach to care. Where this dominant attitude prevailed, doctors were seen to make decisions for their patients (Gallagher 1998). Now patients seek to be involved with decision making and actively involved in decisions around their care, moving away from paternalism to patient autonomy (Chan et al. 2017). This has also been the case in midwifery; one could ask how we

facilitate shared discussions and how we know that informing women about the choices they have is going to help with their decision making.

Many tools have been used to try to increase women's involvement, including conceptual approaches, such as making the woman the centre of the discussion, or by health care professionals actively involving women in the options of care and treatment (Thompson 2007). The different ways this was done were discussed in Chapter 2 (Section 2.8). Alternatively, active tools included providing access to multidimensional information; leaflets, electronic forums or group meetings have been trialled (Da Silva 2012).

DSTs have also been suggested; utilising DSTs to provide information around a decision or treatment has been well evidenced within health but, as already mentioned, less so in midwifery (Chapter 3). Generally, decisional conflict scales, knowledge and satisfaction scales are used to assess effectiveness of a decision as seen in the results from the literature review in Chapter 3. However, prior to this study there had been no evaluation of a DST to facilitate birth place choice. This study provides new evidence of the effectiveness of MyBirthplace, however, for greater certainty midwives need to be engaged and actively delivering the app.

Again, this links back to the autonomy of midwives, it could be argued that the objective provision of information is almost at odds with the caring professions; simply providing information is not considered to be women centred and does not take into account individual needs (Noseworthy et al. 2013). Instead the health professional brings knowledge and supports this through shared discussion; shared decision making requires all involved to be aware of roles and expectations.

Continuity of carer builds a trusting and open relationship (Noseworthy et al 2013) however, as already mentioned, in the climate today women are deemed lucky to see the same midwife throughout pregnancy (Sandall 2011) and the midwife that then supports that woman during birth may be different again. This lack of continuity affects the provision of information, something that was recognised in the *Better Births* report (National Maternity Review 2016). Autonomy and an informed choice is also further disadvantaged if women are

vulnerable or where societal and cultural beliefs do not support the concept of giving informed choice (McGregor 2006). In these cases there is evidence to suggest that health professionals can be biased in their provision of information, something found in this study; women who had a baby before felt more able to talk about choices than those who had not had a previous birth. MyBirthplace was created to provide continuity of information even when used by different midwives, but unfortunately lack of provision of MyBirthplace failed to combat this.

## **8.6 How was the DST used with women by the midwife?**

The literature discussed in Chapter 2 highlighted that a shared discussion facilitates choice and ultimately, the choice should be made by the woman. However, the findings indicate that there was disparity between the level of information given and the midwives providing MyBirthplace. It became apparent that midwives' attitudes or responses to women's preferences had a significant impact on women's feelings regarding their birth location. This is the second part of the shared discussion; the question of whose choice is it?

Findings from this study support Coxon et al.'s work (2017) that showed that the midwife has a significant influence on a woman's choices. During the qualitative interviews one woman said that the midwife had commented "don't get your hopes up" and the synergy with other women's experiences meant that this became a subtheme. Both "time" and "availability" of midwives were warnings reportedly given to women by the midwives in relation to preferences for birth in the FMU or at home. These negative comments significantly impacted on women's decisions; one of the women interviewed had greater decision uncertainty following the appointment than before, which she linked with the opinion given by the midwife. It could be suggested that the midwives were trying to be open and honest; part of a shared discussion is knowing all options, therefore it may be justified that the midwife tells the woman that there is a possibility of her choice not being available. However, this information needs to be carefully delivered since women can be greatly affected. A balance needs to be found therefore, between honesty and introducing fear.

'Who is in charge?' was another inductive theme that came from the interviews; this was around the concept of who led discussions. Some women felt confident that ultimately it was their decision and that the midwives were supportive of this. Others felt that the decision was made for them, that the midwife told them where they would give birth. Previous studies have also found that women report that SDM did not happen due to the environment where time constraints impact on meaningful discussion (Boyle 2013).

In this PhD study one woman said that the midwife had made the choice for her; she wanted to birth in the FMU local to her, however the midwife said that she should go to the AMU. This made the woman feel as though the choice was out of her hands. The woman reflected that this could have been down to her previous birth experience and also a small medical complication; however she also questioned whether the midwife's choice of the AMU was for her own reasons, that being confidence or the midwife's personal preference.

Conversely, another woman highlighted that the midwife she had spoken to was extremely positive when she enquired about home birth, providing helpful advice on necessities to buy, such as plastic sheeting and towels. These findings build on those found previously that indicate that midwives can lead discussion and provide a narrative to influence a woman's choice and this is very much dependent on the midwives' personal views on the birth location (Coxon et al.2017).

Views and opinions of health professionals have a significant impact on women (Houghton 2008; Cook and Loomis 2012; Lee et al. 2016) and therefore we need to review how discussions are framed in order to facilitate a shared discussion. The same could be said for the information provided by the midwives; women highlighted that advice could be conflicting.

This again leads back to the model of care either being paternalist, where the midwife makes the decision, or a more autonomous model, where a woman makes the decision following information given. A Canadian study by Vedam et al. (2014) found that obstetricians and family physicians had low to moderately low favourability scores for planned home birth, compared to midwives who scored high (80.0%). Concerns about perinatal loss and lawsuits affected attitudes to home birth, and the researcher found beliefs about safety and the

midwives' own ability to manage emergencies at a home birth affected their views (Vedam et al, 2014). Zinsser et al. (2016) found that the work settings for German midwives influenced their views on birth place; with community midwives having significantly more favourable attitudes towards supporting physiological birth. Similarly a qualitative study of Dutch midwives found that hospital culture inhibited practices that promoted physiological birth (Thompson et al. 2016).

Future research should explore the information that midwives in the UK give about place of birth. This would be valuable to highlight any disparities in information provision and also any concerns they may have about birth outside of hospital. Tools such as MyBirthplace could help to ensure a minimum standard of information is given to all women. However, in the local area a study exploring why midwives are not providing MyBirthplace is needed and this could include looking at who the midwives' feel is in charge of decisions.

## **8.7 How acceptable is the MyBirthplace app to women; women's feelings about how well MyBirthplace supported them to make a decision**

Some women felt that to call MyBirthplace an app was inaccurate, because it did not behave in a way that they associated with an app. Some felt that because it was not available on the app store to download that it could not be considered an app. Others felt that it provides the information that it should in a way that is easy to use and thus does 'what it says on the tin'. In certain cases, the women felt that it was not using the power of an app because of the difficulty with the format and the flow of information, making it feel more like a book than an app. For some this caused real frustration, with one woman giving up on accessing it, and another becoming frustrated with it not being available on the regular platforms that she was used to.

Loosemore suggested that we are in the middle of a significant change "in how people use digital services" (2013 p. 1) with users expecting more both from websites adapted to mobile web versions and apps. The RCM launched a booklet on apps available during pregnancy known as "going digital" (RCM 2016) because of the trend towards more online sources, increasing numbers of

digital apps and information developed in different ways to reach more women and families during pregnancy.

Research suggests that 86% of an individual's time using a mobile phone is spent on apps not limited to health; one third is using apps for playing games and 17% on social media (Jensen 2015). Another 14% of usage specifically for consumerism, i.e online shopping, accounts for mobile web browsing; the only difference between apps and websites is the duration of time spent, with individuals spending 19.8 minutes on a website a month compared to 40 minutes on an app (Jensen 2015). Technically MyBirthplace is a mobile website meaning that it is available on smart devices with the ability to download. Moss (2013) suggests that mobile websites are accessible by search engines, more cost effective, easier to maintain and work across all platforms whereas apps are device specific.

There were positive associations with using the MyBirthplace app, with women generally giving positive scores in terms of its visual appeal, ease of access, statistics that were easy to understand and supporting them to know their options (Tables 26 and 27). Thus, Mybirthplace makes a positive step towards addressing the call from women for information through digital routes (Higgins 2013).

Of the 95 women who responded to the 28 week follow-up only 29.5% did not access the app. Those that did not access the app were less likely to agree to a follow up (only 4 were happy to be contacted for discussion) and thus gaining reasons for why they did not access the app was not possible for all participants. The wording of the follow-up discussion question in the 28 week follow-up survey may have suggested that only those that had looked at MyBirthplace would be valuable to the researcher; however this was not the case.

Further research could be completed to look at the barriers to accessing MyBirthplace. It could be that these women would have accessed an app had it been given, therefore one must consider the compliance from midwives about providing the app. However, it could also be that the app was not considered to be user-friendly or providing the right level of information.

## **8.8 Limitations**

A key limitation of this PhD study is the lack of engagement of midwives with the app. Only half of the women (55.6%) were given information about MyBirthplace during the appointment, with just 18.5% of women saying the midwife went through MyBirthplace with them. Midwives were more likely to give women a leaflet (67.8%) or QR code to access MyBirthplace (76.3%). During the qualitative interviews women raised the fact that the midwives mentioned the sticker or leaflet but it was “there’s this thing have a look” with limited discussion. Freda likened it to a checklist “I think it was like here is your twenty minutes, here’s my check list of things I’ve got to get through and this is another thing to say.” [Freda]. This brings the discussion back to the time available to midwives to complete the first appointment. A qualitative study with midwives would be valuable to identify their thoughts on MyBirthplace and whether it is appropriate to provide it at the first appointment.

Mia mentioned that midwives may have been cautious, stating that before they give out information they await positive confirmation from scans. This brings into consideration whether the timing of providing the app at the booking appointment is appropriate. Some women felt that they wanted this level of information early on; while others felt that after their scans might be a more appropriate time. A few of the women mentioned that the first appointment can feel like “information overload”. It is difficult to ascertain the right gestation to provide this type of DST. Currently in the NICE (2017) antenatal guidelines, no specific comment is made about when is best to inform women of birth place options. It does however state that “information should be given in a form that is easy to understand and accessible to pregnant women” (NICE 2017 Section 1.1.1.2) also accounting for those with learning disabilities and women who do not speak or read English. The guidance also recognises that women should be given information in other forms citing audio-visual or touch screen technology and that health professionals should support and enable women to make an informed decision about their care. Research is also limited regarding the right time to deliver such health interventions. In terms of parenthood, information research makes it clear that interventions aimed at enhancing the transition should be introduced early on (Entsieh and Hallstrom 2016; Axelsen et al 2014; Pinquart and Teubert 2010). A systematic review by Chamberlain et al. (2014)

looking at smoking cessation interventions found that there was no clear evidence about how and when interventions should be implemented, but in light of the smoking risk on pregnancy the earlier the better is assumed.

What is clear is that women value information provided in the early antenatal period, so much so that research using discrete choice analysis shows women may accept fewer visits if antenatal care is provided by midwives and they receive enhanced provision of information tailored to individual needs (Deverill et al 2010).

Antenatal care is considered the ideal opportunity to inform and educate pregnant women on a variety of issues (Anya et al. 2008). There has been controversy about the impact of antenatal education on women and their pregnancy outcomes (Gagnon 2000) however it is the view of Clift (2001) that information, education and communication create awareness, increase knowledge and reinforce desirable attitudes and behaviours. Al-Ateeq and Al-Rusaiess (2015) found that universally there are significant diversities within the provision of antenatal education and that more information is needed to address different aspects of pregnancy and childbirth.

A study looking at provision of the app at different gestations may be valuable however the key is that it is difficult to please all individuals and to provide the app to all is the main priority.

The next key limitation is classification of MyBirthplace as an app. The study findings discussed above offer an insight into the differing perceptions of the level of information in MyBirthplace; Some of the quantitative findings suggest that the level of information is not meeting the needs of all of the women, with some women stated that the app does not go through all the risks and “lots of statistics were confusing”. Others felt that the information was too basic. When asked if MyBirthplace had given them new information 39.6% said no and a further 42.3% were unsure. Again consideration has to be given that some women post appointment had not seen the app. However similar findings were seen at the 28 week survey with 25.7 % wanting more information and 11.4% suggesting further development was needed.

During the interviews a theme came through of the idea that MyBirthplace is a first version. Women felt that a more personal view of the different options from other women would improve MyBirthplace. One such example of how this would work is presented by [www.healthtalkonline.org](http://www.healthtalkonline.org), which is ranked second in the top five health websites that “you can’t live without” (Unknown 2013). Healthtalk provides reliable data on personal and patient experiences collated and analysed by the Health Experience Research Group at Oxford University. It provides videos, audio and written material of personal experiences that others can search (Healthtalk.org 2017). There is also a young adult version known as [www.youthhealthtalk.org](http://www.youthhealthtalk.org) providing similar data.

One woman in this study referenced the review button on Amazon; suggesting that once a woman had given birth in a location it should have the option of leaving a review so that other mothers can read about their experiences. Others felt that more information about high risk alternatives should be given. This begs the question of whether the app can truly facilitate informed choice if the information about the obstetric unit is limited. Furthermore the hospital does not offer this as a choice unless the women are high risk, at which point the choice is almost taken away from them. Research shows that some women want to birth in the OU and feel strongly about this. Donaldson et al. (1998) found that strength of preference, as reflected by women’s willingness to pay, was greater for women whose preference for care was the OU. Furthermore, research by Pitchforth et al. (2008) found that women in remote and rural areas of Scotland preferred consultant led care over midwife led and were prepared to travel further to access their choice.

Another issue that presented was the wording in the app. The term “undesirable outcomes” is used to describe the risks associated with each location in terms of baby and mother. Those outcomes are then broken down to explain what these could be for example admission to a neonatal unit. However a number of women felt that the wording was wrong and that it suggested things would go wrong. Others felt that “safe” would put people off, especially when observed with undesirable outcomes.

Dotty raised the question of whether it was actually safety that was the concern or whether it was just what was easier for midwives. This links back to the

concept of who is in charge and midwives being seen to make the decision for women.

In general terms, it is appropriate to have information in a DST about the risks and benefits of the different location. Some would argue, that given the Montgomery ruling, this is a requirement. This will not please everyone because for some, they will see those statistics in a negative light. The interviews highlighted the disparity amongst women, in particular with satisfaction around the amount of information MyBirthplace contained. Some women felt that there was the right amount of information, while others felt there was not enough. This is most certainly the case for those adults with low literacy levels (Birru et al 2004), but in general information that satisfies one individual will leave another individual seeking further health information.

This links back to what women value about birth place attributes, the most commonly explored are pain relief, continuity of midwife, homely environment and distance in relation to the need for transfer (Hollowell et al 2016). Research supports findings in this study that women's views and preferences differ markedly, especially around these attributes (Nolan 2009), and also the amount of information available.

Another limitation that arose came from an inductive theme in the qualitative interviews. Women felt that because they had met the researcher and knew about MyBirthplace, this influenced the discussion that they had with the midwife. If they were not told about MyBirthplace they either knew to look because of the nature of the research or they broached the subject with the midwife.

This, therefore, posed the second limitation; a statistically significant difference in women's reduced decisional conflict could be seen for the overall sample, however because of the small number of women that were given the app at the first appointment, this could not be attributed specifically to the MyBirthplace app.

The sample represents a largely white population, which is not representative of the population in the study area as a whole. However it was never suggested

that this study would be representative as explained in Chapter 5 when discussing sampling.

### **8.9 Fitting methodology?**

This study utilised a pragmatic approach to a mixed method study, using a quasi-experimental quantitative phase to administer a questionnaire prior to and after the intervention, the appointment when the DST should be used with women. This allowed a direct comparison of findings from the same group of women before and after an intervention. This was deemed to be the most appropriate approach given the study site and the fact that MyBirthplace was already widely available in routine care, thus ruling out a RCT. Findings from phase one and two (a follow-up survey at 28 weeks gestation) led to the qualitative phase; again a pragmatic approach was used to create a qualitative approach using interviewing as the tool to collect the data. The interview schedule and questions built on findings from the quantitative phase and allowed an inductive approach in order to generate themes directly from the data.

The quasi-experimental design brings internal validity into question, because of its inability to control for confounding variables. This is one of the major weaknesses of the quasi-experimental design (Harris et al. 2006).

In addition to the lack of control group, the study site was spread across three clinical areas and among different midwives; therefore it is acknowledged that these represent a challenge. This is why the study acts as a feasibility study. A feasibility study “intends to guide the planning of a large scale investigation” (Eldridge et al. 2016) whereas a pilot is used to test whether components of the main study can work. As was the case in this study a pilot was used to test the questionnaires because they had been created for this study’s purpose and had not been used before; this was so any issues could be identified.

The challenges highlighted above would need to be overcome before a well conducted RCT could be configured; these include getting buy-in from midwives. It would be important to make sure that every individual woman is given access to MyBirthplace at the first appointment or consistently at another

predefined point in pregnancy. The figure below was adapted from parameters set by Eldridge et al. (2016) identifying questions to consider prior to conducting a main study or RCT for MyBirthplace.

**Figure 33 Questions of feasibility before conducting an RCT**

- Can this study be done?
  - Are the women able to be randomised?
  - Are the midwives willing to recruit/ act as gatekeepers for participants?
  - Are there enough eligible women to participate?
  - Is the outcome measure suitable for the DST?
  - Has acknowledgement been given to follow up / response rates
  - Appropriate time available to recruit women and analyse data?

It is therefore acknowledged that results attributed to the MyBirthplace app could be the result of confounding factors such as the midwife or other discussions had during pregnancy. Future research should explore MyBirthplace in an RCT to reduce issues relating to internal validity. However the study was pragmatic, implementing the pre-intervention post-intervention design into actual care rather than being an experiment set up in a lab or artificial environment and thus not true to current care.

There was a significant problem with delay in receiving ethical approval and this meant that there was a delay in beginning recruitment. Then a further issue presented in recruitment; referrals from the midwives were initially slow and this could be attributed to their understanding of the process. Numerous attempts were made to make this clear with emails and reminders to the midwives to send through new referrals or to write them in the referral book. However, recruitment to the study was not the midwives priority and this reflects the challenges of gatekeepers in research.

As previously stated in the methodology and results chapters the participant return rates were less than desirable (Figure 18 and 19). Nevertheless there was quick recognition by the researcher that this would delay the time frame for

recruitment and an amendment to the ethics approval was sought. This process took longer than anticipated and extended the recruitment period by three months; however, an estimated 50% or less of studies meet their recruitment target and many require extending the length of the trial (McDonald 2006).

A Cochrane review found that there was a delay in start time in 41% of studies and 63% had early recruitment problems (Treweek et al 2010). These data were from RCTs, however they mirror problems experienced in this mixed method study.

Delays in ethical approval happen, due to the process and sometimes it is the researcher not allowing adequate time. To avoid this in future studies careful planning should be done alongside a stringent timeline. This will avoid the researcher induced problem. As for the delay in the process there is not much that can be done other than regularly checking on the progress.

This is why feasibility and pilot studies are so important; this study in itself could be viewed as a feasibility study prior to conducting a future RCT. Feasibility studies give advanced warning of where failure could arise and where proposed methods or instruments may be inappropriate (Hundley and van Teijlingen 2008). In this study low response rates and engagement of midwives were identified; future studies should allow adequate response to the pitfalls including regular assessment of recruitment rates and altering the study protocol with consent from the ethical panel although one cannot always account for when problems arise and it will not guarantee success in the main study.

The key for this study was early recognition and response; resulting in the study sample size being met. This was significant; Foy et al (2003) identified three studies in their review that closed prematurely because of recruitment problems and this was avoided in the MyBirthplace study.

Despite meeting the recruitment target in this study, time was wasted and this meant that less time was available for data analysis and writing up. There was also a financial implication to these problems. The researcher introduced a financial incentive to engage midwives and elicit their support; this was only on

a small scale however resources would have been impacted had the delay continued.

### **8.10 Another problem encountered**

During the last three months of the recruitment the researcher relied heavily on the community midwives acting as gatekeepers and highlighting women who were happy to be contacted. During this time period the referral book was filled in less and more referrals came straight from the midwives. As a result it is difficult to determine demographic characteristics of those not approached by the midwives. The overall response to the study information (that is, the number of eligible women who indicated that they were interested in the study) was poor at 14%; however once the researcher was able to contact the women the conversion rate was considerably higher at 76%.

One reason for such a poor initial interest in the study could be that an 'opt in' form needed to be completed and sent back by the women. Research studies show that recruitment is higher in those studies that have to 'Opt out' compared with those that are given the option of 'opting in' (Hunt et al 2013; Vellinga et al 2011). Yet research by Weiss et al (2013) found that there was more time needed for opt out recruitment compared to those studies where patients opted in; their study found that 1271 telephone calls were needed for the opt out recruitment compared with 283 for those that had opted in meaning that researchers took up time and resources following up those individuals that had not opted in. This would have impacted on resources and taken a number of assistants; something the MyBirthplace study did not have.

The MyBirthplace study faced numerous challenges including the limited referral received early in recruitment, slow uptake and delay in ethical approval however a strength of the study is that these problems resulted in a delay of just three months and the required sample size was met prior to the end.

The response rate to the follow up survey at 28 weeks gestation was less than desirable even though a fairly robust reminder system was in place. Women were sent, via their chosen option, a reminder two weeks after the initial questionnaire was sent. If the questionnaire was not returned those that had

chosen online were subsequently sent a last reminder by post. A 60.5% response rate to follow up was achieved. Studies suggest that this is positive with similar studies utilising questionnaire having a response rate of 67% (O'Keefee et al. 2013).

Kaplowitz et al. (2004) found that in general there is no difference in response rates between web-based surveys and postal surveys however they did find that those that had a reminder were more likely increase response rates. Of those that responded by web there was a significant age difference found with 70% of respondents aged 24 or under, however this could be attributed to the population opting to receive the survey online being students. Attrition has the potential to be a problem specifically when there is a period of time in between data collection points (Edwards et al. 2016). It could be argued that for future studies an update is set; women could have been contacted in the period of time between the questionnaires to maintain a connection and relationship with the researcher, this was a tactic that was effective in a RCT looking at depression (Edwards et al. 2016).

Interestingly some of the ways Edwards et al (2009) suggest for increasing response rates were used in this study; including hand written envelopes, University sponsorship, and use of stamped return envelopes. Other ways that have proven to be effective, but were not used due to the scope of the study, were monetary incentives, recorded delivery and shorter questionnaires.

To determine whether the overall sample was representative of the population from which it was drawn, comparative data were taken from the hospital PROTOS system. A total of 4991 women were booked to receive antenatal care during the study recruitment between April and December. The sample appeared not to be representative with a greater proportion of multiparous women and a higher education level compared to the population. It is also recognised that it is a largely white sample, however the app was only available in English and due to the scope of the study those that could not speak or read English were excluded. This may have impacted those from smaller ethnic groups. Research shows that more educated individuals are more likely to put themselves forward for studies (Armstrong et al. 1992). Participant characteristics often associated with poor response rates are considered as;

- Greater age
- Male
- Ethnic minorities
- Unemployed or low income families (Armstrong et al, 1992).

This may explain why this study had a larger White participant pool and had a lower unemployment rate than the local population in general. The study also had a higher response from multiparous women (having a second or subsequent baby). This could be attributed to an interest in knowing what further information was available on the app compared to what they already knew. It was mentioned by one of the women interviewed that the reason she looked at the app was because she was new to the area. This could also have contributed especially because 14.7% had previously given birth outside the study site (Table 11).

Future research should examine whether the app could be used with those with a lower level of education and for whom English is a second language to see how MyBirthplace supports their decision making.

### **8.11 Questionnaire issues**

On reflection, future improvements could be made to the wording of some of the questions in the questionnaires used.

In the post-appointment questionnaire “did the midwife have enough time to discuss MyBirthplace” could be seen as leading. It puts both the availability of time and MyBirthplace in the same sentence. In hindsight it would have been valuable to know if women felt the midwife had enough time in general. Analysis could then have been done to assess the relationship between those given the app and those that felt the midwife did not have enough time in the appointment.

Another question that would have aided the study was for the follow up survey around desired place of birth. This could then have been compared to the hospital PROTOS system that showed actual place of birth. It was found during collection of actual place of birth data (Appendix 23) during this study that for

some women the hospital had not documented preferred location and in some instances reason for change; although actual place of birth difference was not the aim for this study it would have been interesting to see how many women gave birth in their chosen location. Future studies could assess MyBirthplace's effect on actual place of birth in an RCT allowing for confounding factors such as risk and need for intervention this would provide significant data on the true representation of women not facilitated in their birth preference.

### **8.11.1 Strengths**

One of the main strengths is that this is the first study to assess a unique DST with information around choice of place of birth. The study provided evidence of its impact when used with pregnant women to assist them in making a decision and as such provides an original contribution to knowledge in the field of midwifery. Moreover, including the SDMS in the 28 week survey provided unique results, something that was not done in the study by Raynes-Greenow (2010) the only other study to use the SDMS to assess a DST in the birth continuum.

The study also provides a unique insight into women's experience of information given with the first appointment and how a DST fits within the discussion between a woman and her midwife. Furthermore it builds on the evidence already known that highlights the influence midwives have on women's birth place preference and the way they deliver information is key as to women's confidence with their chosen birth option.

It is recognised that this study created new data extraction tools and if the above changes identified in the limitation section were made they would be a useful resource that others could use to replicate the study.

The researcher persevered through recruitment issues (chapter 5) and met the target sample size required; Learning to adjust to and implement changes to do so.

The quantitative and qualitative data from the study provides exclusive insights into this new DST. The use of the pre-test post –test design enabled the study to reflect existing clinical practice, as compared to a theoretical RCT which can be done in practice but is tightly controlled and therefore may not be representative of actual clinical practice.

### **8.12 Relevance of findings**

These findings support other studies within the context of midwifery but provide a unique view on both the effectiveness of the MyBirthplace DST and women's views of choice of place of birth. Women were more confident with their decision following the appointment and by 28 weeks were more likely to have made a decision and be unlikely to change their minds. Women valued MyBirthplace as a source of information to help make them aware of the choices. These findings also build on what is already known about the sources of information women access for birth place information, but bring fresh knowledge of how women rate these sources. It further shapes research looking at what factors women feel are important when deciding about birth location. Women still consider safety as an important factor even with the birth place research available. It brought to light that some midwives are still set in the paternalistic model of care taking charge of where women give birth and that women are susceptible to negative views from midwives, especially around out of hospital birth, raising concerns about availability of midwives and the FMU being open. The chapter that follows provides the conclusion from the thesis and provides both the future direction and research recommendations from the research findings.

## Chapter 9 Conclusion

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The MyBirthplace app was created in response to a local challenge faced by the Director of Midwifery at a large urban hospital in England. The problem, a higher than national average rate of caesarean sections (PHT 2014) and more women birthing in the OU, was addressed by using MyBirthplace with women. The results of this doctoral study show that a DST could assist with supporting choice; women had increased certainty about their decision following the use of MyBirthplace. Women generally felt that the information contained in the app was useful and helped them think about their options.

Creating MyBirthplace was an innovative solution to the problem of informed choice regarding birth place and goes towards answering the challenges made by the Maternity Transformation Programme, and laid out within the *Better Births* report (National Maternity Review 2016), to improve access to information. *Better Births* called for transformational change recommending that all NHS Trusts should be harnessing digital technology and personalising care, by ensuring care is centred on the needs, decisions and choices of the woman (National Maternity Review 2016).

Lack of choice and awareness of options has been a concern raised throughout the decades, with numerous government initiatives trying to change the tide. This is also despite an exponential change within the NHS where patients, and in this case women, want more involvement in their care. Patients / women are pushing to be at the forefront of decision-making, and could now be considered consumers (Thompson 2007). However, The Care Quality Commission (2015) believed that women's satisfaction with the type and quality of information offered is low, and that informed choice is not taking place. Traditionally, paper based information would be given to women; some would read this and have a discussion with their midwife; others, and this was brought to light in the interviews, would file it away somewhere never look at it. This era is now a digital one, where more information should be available in different formats.

MyBirthplace is a DST designed to address this lack of information and facilitate choice. It is the first DST of its kind to focus on birth place choice within an interactive app that women can access when and how they choose. Women are

no longer limited to looking at information in the maternity unit or GP practices. They do not need to just accept the information provided by midwives, which sometimes may not be based on current evidence and can vary depending on the different midwives that they see. The MyBirthplace app is intended to empower women with the information that they need to enable them to engage in SDM with their midwives.

This PhD study provided explicit evidence that using a DST with women is effective at supporting a decision as measured by reduced decisional conflict and improvement in knowledge which was discussed in the literature review (Chapter 3). Furthermore when used, the app facilitates a shared discussion amongst women and their health professionals.

Additionally this study provides valuable insight into how midwives behave in practice when it comes to implementing change, which in this case was a DST (MyBirthplace). Only a few midwives supported the change and provided women with MyBirthplace using the app to frame their discussion, whereas the majority acted as barriers and did not provide MyBirthplace. This was a significant surprise finding, which warrants further research into how midwives view and implement technology.

Furthermore, the study found that how midwives frame information about choice of place of birth significantly affects women's choice, especially when women are considering birth outside the OU. Just under a third of women were given information about MyBirthplace and less still were shown MyBirthplace. Lack of engagement by midwives meant that some women never looked at MyBirthplace through pregnancy and there was evidence that those women who wanted more information did not have access to the app. Therefore it is important to consider that midwives in this role act as gatekeepers. They are either the facilitator or barrier to women receiving information about MyBirthplace.

A DST can have a significant effect on women's decision-making giving women greater certainty in their decision. This means that women are empowered with the information and know where they want to give birth. This increased certainty was achieved by 28 weeks gestation, meeting the hospital's aim for a decision to be made by 36 weeks. Women who know where they will give birth are more

likely to have reduced levels of anxiety (Staehler 2016), it also provides the hospital with an opportunity to organise facilities and provisions of care.

Going back to *Better Births*, being able to organise provisions of care increases the likelihood of accommodating women's preferences, this meets a requirement of the report to provide individualised care. MyBirthplace may make allocating midwives and provision of care easier for the hospital.

Time constraints may be a reason that women were not given the app, however it could just be that midwives are set in their ways and reluctant to change or adapt to this digital technology. Further research would need to be done to identify the true reason behind such poor compliance. However this study demonstrates the importance of buy-in and compliance of midwives. In this era midwives coming into the profession need to be adaptable and have knowledge of technology in order to keep up with the changing pace of digital health within midwifery.

We know that women feel midwives differ in how they inform women of their options and that negative comments directly impact on their decision making, particularly with regards to out of hospital birth which adds to evidence already known (Coxon et al. 2017). The findings also demonstrated the importance of health professionals understanding how they frame information around women's choices can impact on their decision; midwives should balance information about the alternatives equally to provide true informed choice. Getting midwives to regularly use MyBirthplace with women would see the disparity of information provided by midwives reduce, this is because the app provides a balanced display of all current research about birth place choice, including the benefits and risks regarding each location. This would improve women's experiences of interaction with midwives and ultimately improve women's satisfaction with their care.

The internet and increasing use of mobile devices mean that information is much more accessible to women if they feel that it is lacking from the health professional. However the quality and credibility of sources on the internet varies (Grimes et al. 2014). This has created the push for evidence based information. The information in MyBirthplace was created from both local and national data providing women with a credible source about the options for birth

facilities within the area. The question was whether it was effective at supporting women to make a decision.

This is the first study to look at a DST to support decisions around place of birth and it provides new evidence to the field. It is also one of only a few studies that looks at SDMS in midwifery in conjunction with a DST. Furthermore when the findings are extended and compared to those seen in healthcare this change in decisional state corroborates findings of other studies that utilise SDMS (Grant et al 2001).

The study provided good feasibility data for a larger trial into MyBirthplace's effectiveness; potentially in the design of a RCT. The potential RCT should be multicentre (possibly a cluster RCT) because during the study recruitment the app was sold to other hospitals which are currently using it within care. This could provide evidence on a larger scale. However before this can happen further research is needed to understand how to get buy in and compliance from midwives, and to identify why midwives are not using MyBirthplace with women to facilitate a shared discussion. Identifying these barriers for midwives and strategies to overcome them should help to increase roll out of the intervention, making way for the RCT. There is potential for MyBirthplace to have a greater role in making more women aware of their birth place options. Subsequently this has the potential to increase out of OU births and reduce costs for the NHS.

This PhD study provides a basis to understand how introducing a DST into the midwife woman relationship works, recognising that there is a significant shift in power to women with regard to decision making. The study findings raise issues about how innovations can only work if midwives and other health professionals are engaged and 'buy-in' to the change. With the significant challenges raised by the Maternity Transformation Plan, this finding has importance for areas beyond birth place choice. It is clear that when MyBirthplace is used with women there is a significant reduction in decisional conflict around choice of place of birth providing women with the opportunity to make an informed decision. This ultimately supports SDM and is likely to improve care.

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# Appendices

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## Appendix 1 – Protocol for literature review

### LITERATURE REVIEW DECISION SUPPORT TOOLS; VERSION 1, MARCH 2016 - PROTOCOL -

#### Objective

This review attempts to assess the current research available for the effectiveness of Decision Support Tools (DST) to support women's information gathering and decision making behaviours. This review will look to address:

1. The current scope of DST in pregnancy including the topics that are currently covered
2. The effectiveness of a DST in supporting decision making
3. Women's views of a DST usability in the pregnancy continuum
4. Women's values in terms of the information provided in the DST

#### Participants

The review will look at computerised DST used in the pregnancy continuum. Studies with specific focus on the users of the DST being pregnant women will be included in the review. Those that do not look at pregnant women as users will be excluded. It will include all RCT, any other methodology will be excluded.

#### Interventions

The intervention in this review is a DST. DST are specially designed information resources that help individuals make decisions about difficult healthcare options. As the effectiveness of a DST in supporting decision making is being reviewed this will be compared in terms of routinely given information or paper based leaflets.

#### Outcomes

Outcomes of interests will include measures of actual decision made. Assessment will also include women's satisfaction with decision making as ultimately DST are designed for use by pregnant women and thus their views of the usability of the DST is important.

#### Study Design

Due to the nature of this evolving field of research and the desire to understand effectiveness as decision made evidence will be sought from RCT.

#### Limitations

Due to the time and resource limitations literature not available in English will be excluded. The author does understand that this may mean that relevant information in another language will be missed and therefore this is considered a limitation.

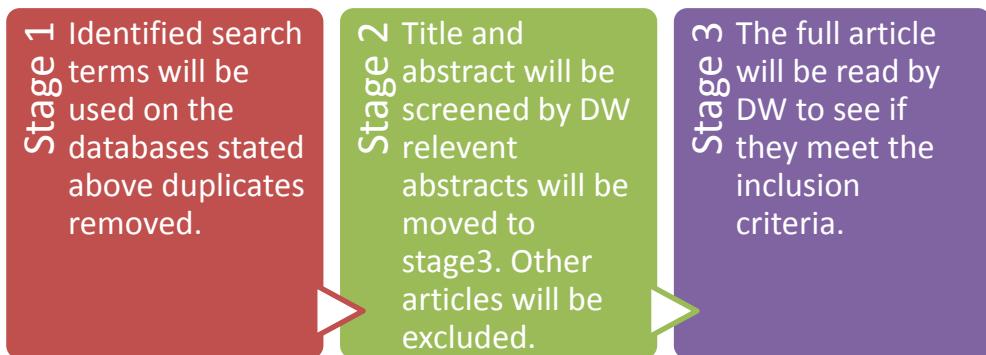
#### *Identifying the evidence*

The following electronic databases will be searched:

- CINAHL complete,
- PuBmed ,
- MEDLINE,
- PsycINFO,
- Ovid,
- MyiLibrary,

- NHS evidence,
- Cochrane database,
- National Institute of Care Excellence,
- Meta Register of controlled trials,
- Royal College of Obstetricians and Gynaecologists and
- Popline.

### *Search strategy*



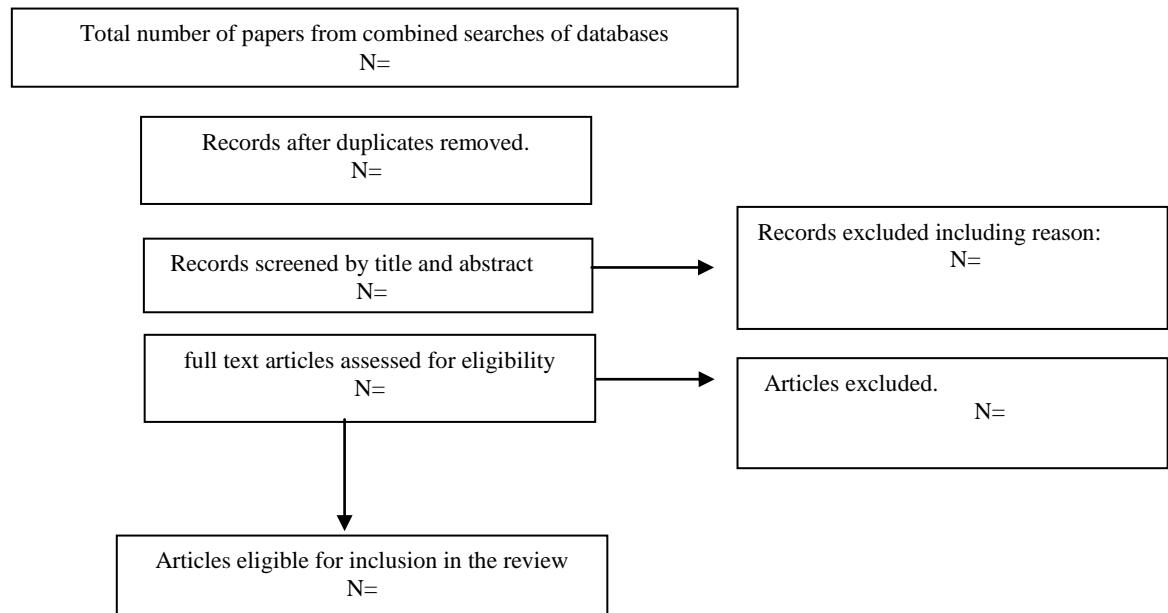
### *Data Extraction*

Data will be extracted by DW using a data extraction form designed with focus for this review; this was an adaption of a form previously used by VH in other reviews. This form will be independently reviewed by VH to ensure accuracy and detail. Please see attached.

### *Quality assessment*

Studies will be assessed for quality using CASP tools based on the relevant study design; these forms will then be reviewed by VH to second the assessment of quality.

### Flow diagram for identification of studies



## Appendix 2 Data extraction form

### Stage 1

<b>Author :</b>	<b>Date :</b>	<b>Source :</b>	
Title:			
Citation			
Publication type:		Further details	
	Peer reviewed paper Non peer reviewed Published Report Unpublished Report Other	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	paper
Methodology	Qualitative Quantitative Mixed Methods	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Population	Pregnant women Other	<input type="checkbox"/> <input type="checkbox"/>	
Intervention	DST Computerised DT Decision aid Decision Analysis Decision tree Other	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	tool
Comparison	Routine care Leaflet Discussion Other	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Outcome	Decision made Usability Effectiveness Women's views Other	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Include reason:	<input type="text"/>	<input type="text"/>	= Please give

### Stage 2

Aims/ Objectives

Design:

Inclusion criteria:

Exclusion criteria:

Sample size (if applicable):

Participant characteristics

Recruitment

Type of DST:

Other interventions if applicable:

Comparison:

Routine care

Counselling

Leaflet / paper based


Discussion of outcomes:

Decision made

Satisfaction

Usability

Acceptability

Maternal review

Other

Context:

Tools used to assess

Stages of decision making scale

Knowledge scale ( if applicable which one)

Satisfaction with decision

Acceptability

Useability

Notes

Data analysis type

Quality of paper

Limitations

### Findings

Source	Intervention	Control	Effect size RR (95% CI)	Significance
Decision made				
Satisfaction				
Accessibility				
Usability				
Maternal view of DST				
Negatives				

## Appendix 3 - 4 year gant chart

Daisy Wiggins – Proposed timetable version 4.0

### Key milestones - Year 1

	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014	August 2014
Registration and preparation												
Clinical enrolment and supernumerary period												
Undertake literature review (background to study)												
Define the proposed area and scope of research								Initial review				
Address risk assessment and ethical issues												
Final development of research proposal and methodology												
Monthly Supervision via meeting / email									Clinical practise review of progress			

Daisy Wiggins – Proposed timetable version 4.0

### Key milestones - Year 2

	Sept 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	March 2015	April 2015	May 2015	June 2015	July 2015	August 2015
Finalise Study Design												
Literature review												
Transfer document prep												
Transfer Viva intention to submit												
Transfer viva												
Ethical submission												
Monthly Supervision	SOM meeting clinical review								Annual supervisory			

Daisy Wiggins – Proposed timetable version 4.0

### Key milestones - Year 3

	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	March 2016	April 2016	May 2016	June 2016	July 2016	August 2016
Pilot Questionnaires												
Active recruitment of participants												
Analysis of pre and post questionnaires												
28 week survey												
Data analysis												
Monthly Supervision	SOM meeting								Annual Supervision meeting			

Key milestones - year 4

	Sep 2016	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017
Active recruitment <i>cont</i>												
28 week survey <i>cont</i>												
36 week interview												
Transcribe												
Actual place of birth data												
Analysis of interviews/ BPD												
Writing of thesis												
Submit intention to submit												

## Appendix 4 SDMS

Q16) Thinking about where you want to give birth, would you say .....? (Please tick one)

- |                                                                             |                          |
|-----------------------------------------------------------------------------|--------------------------|
| I have not begun to think about the choices                                 | <input type="checkbox"/> |
| I have not begun to think about the choices but I am interested in doing so | <input type="checkbox"/> |
| I am considering the options now                                            | <input type="checkbox"/> |
| I am close to selecting an option                                           | <input type="checkbox"/> |
| I have already made a decision but am still willing to reconsider           | <input type="checkbox"/> |
| I have already made a decision and am unlikely to change my mind            | <input type="checkbox"/> |

Stacey, Dawn <dstacey@ohri.ca>  
on behalf of  
OHRI, decisionaid <decisionaid@ohri.ca>  
Daisy Wiggins  
Wed 05/08/2015 04:21  
To:  
Thanks Daisy for your notification. Good luck with your study.

Dawn

Dawn Stacey RN, PhD  
Research Chair in Knowledge Translation to Patients  
Professor, School of Nursing, University of Ottawa  
Scientist, Ottawa Hospital Research Institute  
[dstacey@uottawa.ca](mailto:dstacey@uottawa.ca)

## Appendix 5 Cover letter for MyBirthplace study



Version 4.0 10/03/16

Bournemouth University Midwifery Education  
4<sup>th</sup> Floor St Marys Community Health Campus  
Milton Road  
Portsmouth  
PO3 6AD  
07928733620

Date : .....

Dear

**The Mybirthplace Study**

I am writing to invite you to participate in the Mybirthplace Study

The study, conducted by Bournemouth University and Portsmouth Hospitals NHS Trust, is looking at how pregnant women like you make a decision about where you want to give birth. In particular I am interested in your views regarding the decision support tool that will be provided to you at your first appointment with your midwife.

You are receiving this letter because you were recently referred to a midwife by your GP.

Please take time to read the information in the Participant Information Pack carefully and discuss it with others if you wish. If there is anything you do not understand, or if you have any questions, please feel free to contact me, you will find my contact details in the pack and also at the top of this letter.

Thank you for taking the time to read this.

I hope to hear from you to confirm your participation either by phone on 07928733620, by email [dwlqains@bournemouth.ac.uk](mailto:dwlqains@bournemouth.ac.uk) or alternatively by returning the opt in reply slip provided. If you do not wish to participate you need do nothing, but please note that a reminder letter will be sent to you within two weeks if I have heard no response. This will however be the final time I will write inviting you to participate. Whatever your decision I would like to take the opportunity to wish you well with your pregnancy and birth.

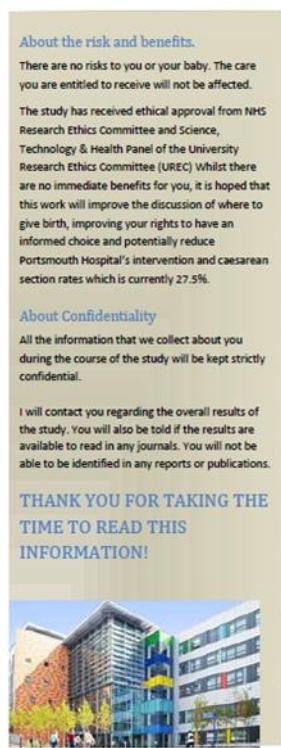
Kind Regards

*Daisy Wiggins*

Daisy Wiggins

Phd Student and Registered Midwife

## Appendix 6 – Trifold information leaflet



**About the risk and benefits.**  
There are no risks to you or your baby. The care you are entitled to receive will not be affected.  
The study has received ethical approval from NHS Research Ethics Committee and Science, Technology & Health Panel of the University Research Ethics Committee (UREC) Whilst there are no immediate benefits for you, it is hoped that this work will improve the discussion of where to give birth, improving your rights to have an informed choice and potentially reduce Portsmouth Hospital's intervention and caesarean section rates which is currently 27.5%.

**About Confidentiality.**  
All the information that we collect about you during the course of the study will be kept strictly confidential.  
I will contact you regarding the overall results of the study. You will also be told if the results are available to read in any journals. You will not be able to be identified in any reports or publications.

**THANK YOU FOR TAKING THE TIME TO READ THIS INFORMATION!**

### Mybirthplace study



What role does the decision support tool play in women's information gathering and decision making during pregnancy?

Researcher Daisy Wiggins - Bournemouth University in partnership with Portsmouth Hospitals NHS Trust, Version 7 14/7/16

### All you need to know

You are being invited to take part in a research project. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve.

Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

#### About the researcher

My name is Daisy Wiggins I am a second year Ph.D. student and registered midwife. I study at Bournemouth University working on the MyBirthplace research study. This study is a partnership between Bournemouth University and Portsmouth Hospital NHS Trust.

#### About the Study

This study is looking at where, when and how you access information about pregnancy related topics. It is also looking at how this informs the decisions you make as an individual, with your partner and family and how this affects the interaction you have with your midwife.

You will be supported throughout pregnancy by your midwife to make various decisions but this study is looking specifically at how you decide where to give birth.

Portsmouth Hospitals NHS Trust offers choice on where you can give birth to your baby. They have developed a tool which is available on smart devices

at whether the tool is useful for information gathering and decision making.

#### Why have I been chosen?

You have received this participant leaflet because you recently found out you are pregnant and have been referred by your GP to a midwife. The research is looking at pregnant women like you.

#### About what I will be required to do

If you are interested in participating please complete the consent form in this pack. Bring the form with you to your first appointment with your midwife. Please arrive 30 minutes before your appointment time in order to meet me and to answer any questions.

I will answer any questions you have and receive your consent from. You will then be asked to fill in a short questionnaire. This will take no longer than 10 – 15 minutes. You will then have your meeting with the midwife.

Following that meeting you will be asked to complete one final questionnaire similar to the one you completed beforehand.

The last question on the questionnaire is to see if you would be willing to receive a follow up questionnaire similar to the ones you have already completed. This will be sent to you in your choice of format for example email, online survey or by mail. This follow up will be at 28 weeks. A few participants will also be contacted at 36 weeks to organize a meeting. This meeting will be a face to face interview with me; this will be recorded for data collection. This interview will be no longer than 1 hour long. If you are chosen to be interviewed this will be done at a time and place of your choice to fit in with your life and commitments. If you are happy to be contact at a later

#### About my participation

It is up to you to decide whether or not to take part. If you wish to participate that is great! I will look forward to your valuable contribution. You will be asked to sign a consent form to bring to your appointment.

Deciding to take part or not will not impact upon your treatment or the care you receive. You can contact me if you have any further questions or to confirm participation. All we ask is that you understand, read and can write in English. Also that, you must deliver your baby within the areas covered by Portsmouth Hospitals NHS Trust.

You have the right to withdraw at any point during the research study without a reason and this will be supported. It will not affect you or your care.

I understand that coming earlier to an appointment and staying 10 minutes after may be an inconvenience for you, therefore to show my appreciation for your participation, your additional parking cost will be reimbursed as a thank you for giving your valuable time.



## Appendix 7: Opt in slip

10/12/10 Version 2

### Reply slip to Opt in for the MyBirthplace Study

Below is the opt in slip

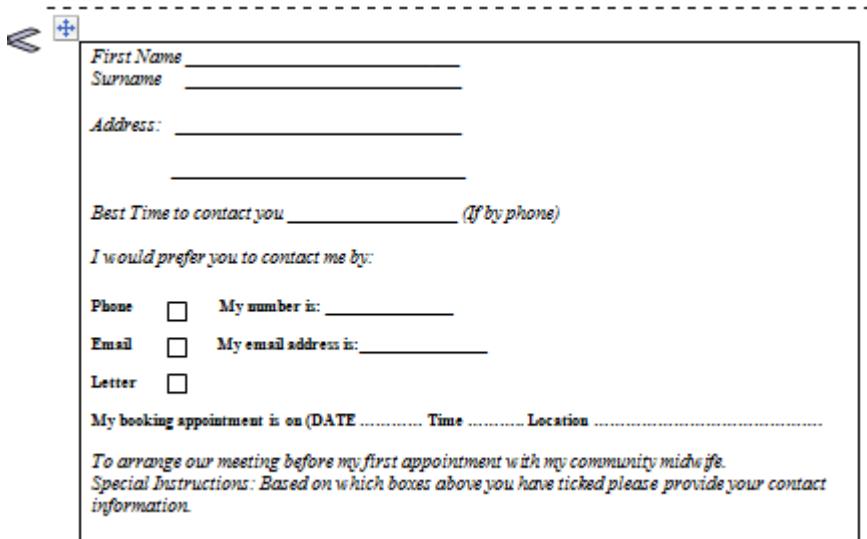
#### Instructions

Please make sure you have read and understood both the Study cover letter and information leaflet. Once you have read both if you wish to participate please complete the opt in slip, place it in the pre stamped envelope provided. The name of the researcher and address is already written on the envelope all you have to do is pop it in the post.

The researcher will then contact you to discuss your potential participation.

*Cut off bottom portion of the opt in slip and return to  
Daisy Wiggins Mybirthplace Researcher  
Bournemouth University, 4<sup>th</sup> floor St Mary's Community Health Campus, Milton Road, Portsmouth PO3  
6AD*

*Please return one week before your booking appointment so that I can contact you to arrange our meeting*



First Name _____
Surname _____
Address: _____ _____
Best Time to contact you _____ (If by phone)
I would prefer you to contact me by:
Phone <input type="checkbox"/> My number is: _____
Email <input type="checkbox"/> My email address is: _____
Letter <input type="checkbox"/>
My booking appointment is on (DATE ..... Time ..... Location .....
To arrange our meeting before my first appointment with my community midwife. Special Instructions: Based on which boxes above you have ticked please provide your contact information

## Appendix 8 Consent form



version 3

09/10/15

### Consent Form for MyBirthplace study

Please tick the appropriate boxes

**Taking Part**

- I have read and understood the study information sheet
- I have been given the opportunity to ask questions about the study. Which have been answered fully
- I agree to take part in the Study. I understand that taking part in the study will include completing two questionnaires, a survey questionnaire and potentially being interviewed and recorded (audio).
- I understand that my taking part is voluntary; I can withdraw from the study at any time and I do not have to give any reasons for why I no longer want to take part.

Yes

No

**Use of the information I provide for this study**

- I understand my personal details such as phone number and address will not be revealed to people outside this study.
- I understand that my words may be quoted in publications, reports, web pages, and other research outputs.
- I understand that my contributions/ data will be anonymised for publication so that others cannot identify me.
- I understand that if I withdraw my data will not be used and will be placed in confidential waste.

**So we can use the information**

I agree to participate in this study.

Yes

No

Name of participant [printed] Signature Date

Researcher [printed] Signature Date

Project contact details for further information:

Daisy Wiggins Email: [d.wiggins@bournemouth.ac.uk](mailto:d.wiggins@bournemouth.ac.uk)  
Clinical Academic Doctoral Midwife Email: [daisy.wiggins@portsmouth.nhs.uk](mailto:daisy.wiggins@portsmouth.nhs.uk)  
Bournemouth University  
Bodminouth Campus Telephone 07908738620  
4<sup>th</sup> Floor St Maysie Community Health Campus  
Milton Road  
Portsmouth, PO3 6AD

Version 2

01/12/14

created by [D.wiggins](#)

## Appendix 9: Pre appointment questionnaire page one –page eight



Mybirthplace Questionnaire 1

31/10/15

Identification Number:  
.....

Version  
6

This questionnaire is looking for your opinions on birth place choice which is deciding where you want to have your baby. It will also look at how you make a decision and what influences you.

### Instructions

Please fill in the answers as you go through. Please answer all the questions as honestly as possible. If you do not understand a question please ask me rather than leaving it blank. Each question has an individual set of instructions (e.g. please tick one)

E.g. Male

Female  Don't worry if you make a mistake just cross it out and tick your response.

### Section A: Previous pregnancies

Q1) Have you had a previous pregnancy? (Please tick one only)

Yes

No  If no go to Q6

Q2) How many babies have you given birth to before this pregnancy (Please tick one only)

One

Two

Three

Four or more

Q3) Did you give birth to any of your babies in Portsmouth? (Please tick one only)

Yes

No  If no go to Q5

Q4) Where did you previously give birth? (please specify)

Continue Overleaf

Page 1

Q5) How did you deliver your baby? (Please tick one option)

Normal Vaginal delivery

Assisted delivery e.g. forceps or ventouse

Elective cesarean section

Emergency cesarean section

**Section B: Information gathering**

Q6) Where do you get your information on birth place options? (Please tick all that apply.)

Books

Internet

Family

Friends

Health Professional

Media

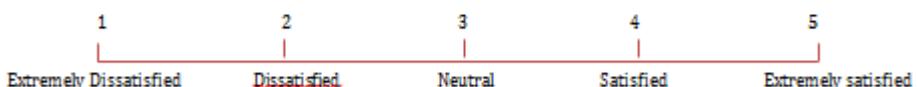
Magazines

Other

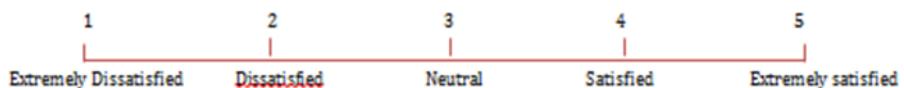
If other please specify

Q7) How satisfied are you with the information available from the sources you have indicated above?  
With 1 being extremely dissatisfied, 3 neutral and 5 extremely satisfied.

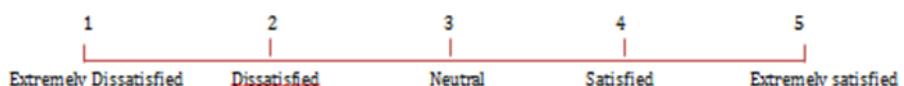
Books (Please circle one number only)



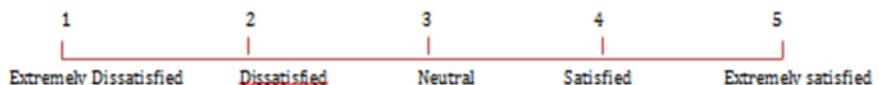
Internet (Please circle one number only)



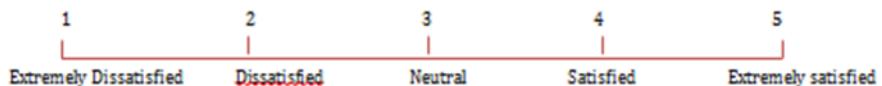
Family (Please circle one number only)



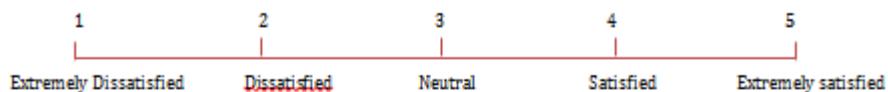
Friends (Please circle one number only)



Health professional (Please circle one number only)

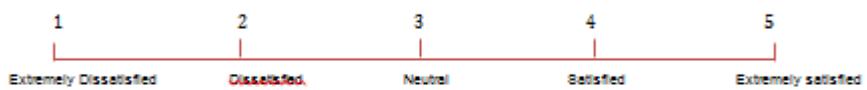


Media (Please circle one number only)

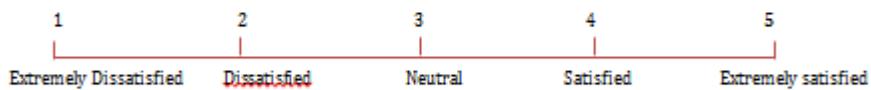


Continue overleaf

Magazines (Please circle one number only)



If you wrote down other for Q6 (Please circle one number only)



Q8) Since finding out that you are pregnant how many times have you looked at information relating to where you can give birth? (Please Tick one)

None

1 time

2-4 times

5 or more time

Continue overleaf

Section C: Birth place options and decisions

Q9) What options are you aware of in Portsmouth for places/ facilities you can give birth? (Please list all that apply)

Q10) What factors are important to you when making a decision about where you want to give birth? (Please specify)

Q11) Thinking about where you want to give birth, would you say ..... (Please tick one)

- |                                                                             |                          |
|-----------------------------------------------------------------------------|--------------------------|
| I have not begun to think about the choices                                 | <input type="checkbox"/> |
| I have not begun to think about the choices but I am interested in doing so | <input type="checkbox"/> |
| I am considering the options now                                            | <input type="checkbox"/> |
| I am close to selecting an option                                           | <input type="checkbox"/> |
| I have already made a decision but I am still willing to reconsider         | <input type="checkbox"/> |
| I have already made a decision and I am unlikely to change my mind          | <input type="checkbox"/> |

[Continue Overleaf](#)

**Section D:Background**

Q12) What is your age?

 Years

Q13) What is your postcode? (please provide the first 3-4 numbers and letters)

Q14) What is your current legal Marital Status? (Please Tick one)

- Single/ Living alone
- With partner/ Cohabiting
- Married/ Civil Partnership
- Separated but still legally married
- Divorced
- Widowed

Q15) what is your highest level of qualification? (Please tick your highest level only)

- No formal qualification
- NVQ
- GSCE/ equivalent
- A level or equivalent
- Degree or equivalent
- Higher Degree
- Foreign Qualification

**Continue Overleaf**

Q16) What is your current employment status? (Please tick the one you regard as your main job)

- |                     |                          |
|---------------------|--------------------------|
| Paid full time work | <input type="checkbox"/> |
| Paid part time work | <input type="checkbox"/> |
| Self employed       | <input type="checkbox"/> |
| Unemployed/looking  | <input type="checkbox"/> |
| Temporary sick      | <input type="checkbox"/> |
| Permanently sick    | <input type="checkbox"/> |
| Retired             | <input type="checkbox"/> |
| <b>Carer</b>        | <input type="checkbox"/> |
| Student             | <input type="checkbox"/> |
| Other               | <input type="checkbox"/> |

If other please specify

Q17) What is your ethnic group?

(Please circle the number that best describes your ethnic group or background)

**White**

1. English / Welsh / Scottish / Northern Irish / British
2. Irish
3. Gypsy or Irish Traveller
4. Any other White background, please describe

**Mixed / Multiple ethnic groups**

5. White and Black Caribbean
6. White and Black African
7. White and Asian
8. Any other Mixed / Multiple ethnic background, please describe

Continue over leaf

**Asian / Asian British**

- 9. Indian
- 10. Pakistani
- 11. Bangladeshi
- 12. Chinese
- 13. Any other Asian background, please describe

**Black / African / Caribbean / Black British**

- 14. African
- 15. Caribbean
- 16. Any other Black / African / Caribbean background, please describe

**Other ethnic group**

- 17. Arab
- 18. Any other ethnic group, please describe

**Thank you for completing the questionnaire.**

I really appreciate your time. You will now see your midwife. Remember to meet me after your appointment for the second questionnaire.

## Appendix 10 post appointment questionnaire page 1 – 8



Mybirthplace Questionnaire 2

31/10/15

Identification number .....

Version 6

This questionnaire is looking at how you decide where to have your baby and how you came to a decision following your first appointment with your midwife.

### Instructions

Please fill in the answers as you go through. Please answer all the questions as honestly as possible. If you do not understand a question please ask me rather than leaving it blank. Each question has an individual set of instructions (e.g. please tick one)

E.g. Male

Female

Don't worry if you make a mistake just cross it out and tick your response.

### Section A Your booking appointment

Q1) How many weeks pregnant are you? (Please tick one only)

6-8 weeks

9-11 weeks

12 or more

Q2) Did you and your midwife discuss birth place options? (Please Tick one only)

Yes

No

Q3) Did your midwife .....

A. Tell you that you have options about where to give birth? (please tick one only)

Yes

No

B. Give you information about the Mybirthplace app? (Please tick one only)

Yes

No

C. Hand you a leaflet about the Mybirthplace app? (please tick one only)

Yes

No

D. Give you the QR code to access the Mybirthplace app ? (Please tick one only)

Yes

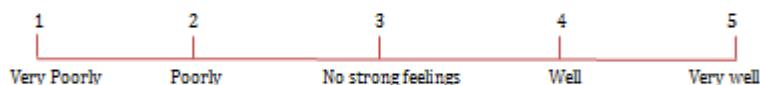
No

E. Go through the Mybirthplace app with you? (Please tick one only)

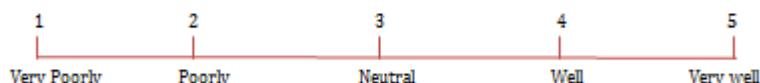
Yes

No  If no go to Q7

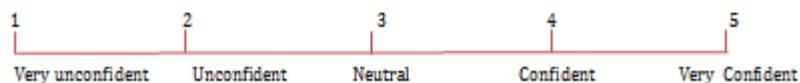
Q4) How well did the midwife explain how to use the mybirthplace app? (Circle one number only)



Q5) How well did the midwife demonstrate how to use the Mybirthplace app? (Circle one number only)



Q6) How confident are you about accessing the mybirthplace app on your own? (Circle one number only)



Q7) Do you feel the midwife had enough time to discuss the Mybirthplace app ( Please tick one only)

Yes No Unsure 

Q8) Did you want any further information about birthplace options from your midwife? (Please tick one only)

Yes No 

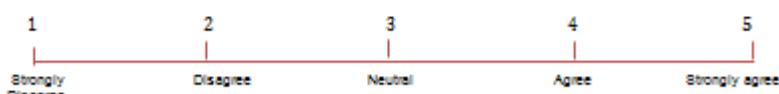
Q9) if yes what further information would you like to have?

**Section B is all about the Mybirthplace app**

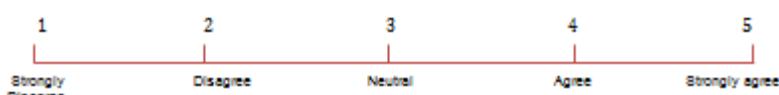
**(If you have not accessed or seen MyBirthplace please go to section C)**

Q10) The Mybirthplace app...

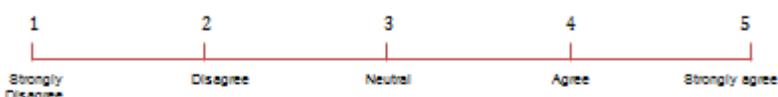
Is visually appealing (Please circle one number only)



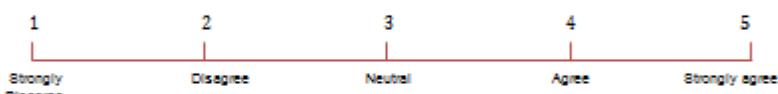
Is not easy to navigate (Please circle one number only)



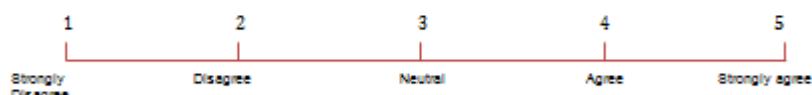
Told me everything I needed to know about my birth place options (Please circle one number only)



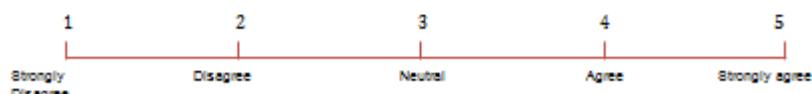
Had statistics that were difficult to understand (Please circle one number only)



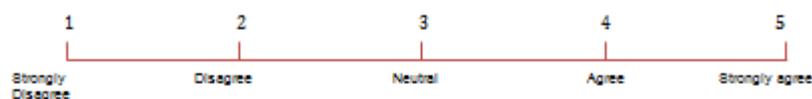
Has helped me think about my options about where to give birth. (Please circle one number only)



Did not help my understanding of my options (Please circle one number only)

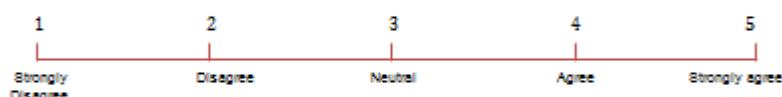


Made me feel less confident in making a decision (Please circle one number only)

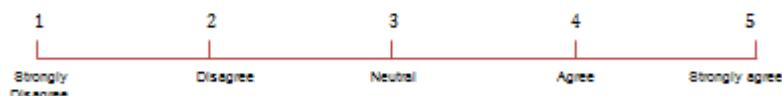


I will .....

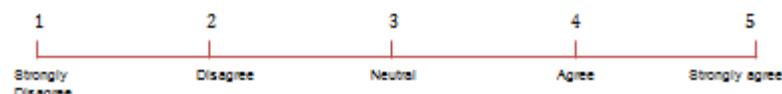
Use it again (Please circle one number only)



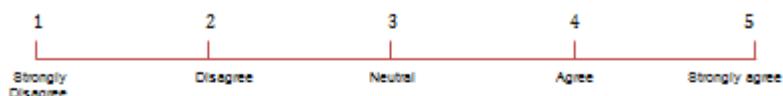
Show my partner (Please circle one number only)



Show my family (Please circle one number only)



Not suggest it to my friends (Please circle one number only).



Q11) What do you think was good about the Mybirthplace app?

Q12) What was not good about the Mybirthplace app?

**Section C. Information and options**

Q13) What options are you aware of Portsmouth for places/ facilities you can give birth? (Please list all that apply)

Q14) Has the MyBirthplace app given you any new information about where you might give birth? (please Tick one only)

- |        |                          |
|--------|--------------------------|
| Yes    | <input type="checkbox"/> |
| No     | <input type="checkbox"/> |
| Unsure | <input type="checkbox"/> |

Q15) If no or unsure , what was missing ?

Q16) Thinking about where you want to give birth, would you say .....? (Please tick one)

- |                                                                             |                          |
|-----------------------------------------------------------------------------|--------------------------|
| I have not begun to think about the choices                                 | <input type="checkbox"/> |
| I have not begun to think about the choices but I am interested in doing so | <input type="checkbox"/> |
| I am considering the options now                                            | <input type="checkbox"/> |
| I am close to selecting an option                                           | <input type="checkbox"/> |
| I have already made a decision but am still willing to reconsider           | <input type="checkbox"/> |
| I have already made a decision and am unlikely to change my mind            | <input type="checkbox"/> |

Q17) Is there anything further you want to say about the Mybirthplace app, the discussion with the midwife or your decision about where you want to give birth?

**Thank you so much for your valuable contributions**

I would be really interested to hear more about your views on the Mybirthplace app.

Would you be willing to be contacted when you are 28 weeks pregnant to see if your views have changed?

Yes

No

If the answer is yes please tick the most appropriate way to send you the 28 week survey

Online

As a hard copy by post

Please provide your email address or home address

## Appendix 11 28 week survey page 1 – page 6



Mybirthplace Questionnaire Follow up 31/10/15

Identification number

Version 6

This questionnaire is looking at your Mybirthplace use since your first appointment and now.  
Assessing how helpful it has been in your decisions about where to have your baby.

### Instructions

Please fill in the answers as you go through. Please answer all the questions as honestly as possible. If you do not understand a question please ask me rather than leaving it blank. Each question has an individual set of instructions (e.g. please tick one)

E.g. Male   
Female

Don't worry if you make a mistake just cross it out and tick your response.

### Section A: Accessing Mybirthplace

Q1) how many times have you looked at the Mybirthplace since your first appointment with your midwife and now? (Please tick one)

None	<input type="checkbox"/> Go to Q6
1 time	<input type="checkbox"/>
2 times	<input type="checkbox"/>
3-5 times	<input type="checkbox"/>
6 or more times	<input type="checkbox"/>

Q2) How have you accessed the Mybirthplace app? (Please tick all that apply)

Phone	<input type="checkbox"/>
Smart Device such as ipad	<input type="checkbox"/>
Internet	<input type="checkbox"/>
Other	<input type="checkbox"/>

If other please specify.

Q3) Was it easy to access? (Please tick one only)

- Yes   
No

If no please specify why it was not easy

Q4) Have you used the Mybirthplace app with anyone else? (Please Tick one only)

- Yes   
No

If yes who? (relationship)

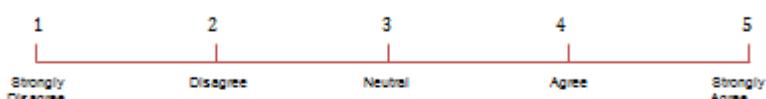
Q5) Where have you used the Mybirthplace app? (Please tick all that apply)

- With friends   
At Home   
In hospital   
On the go   
At work   
Other

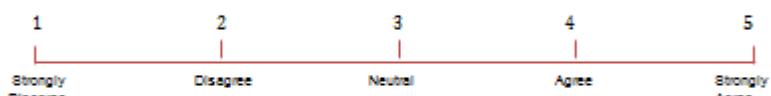
If other please specify

Section B : is about the Mybirthplace appQ6) ~~MyBirthplace app~~

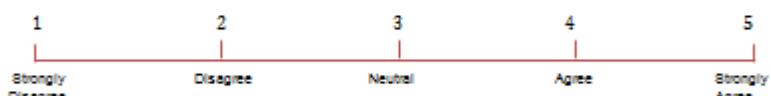
Is visually appealing (Please circle one number only)



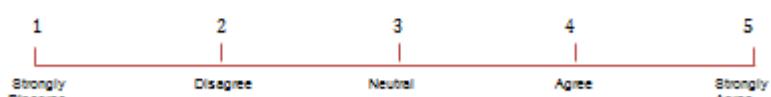
Is not easy to navigate (Please circle one number only)



Has told me everything I need to know about birth place options (Please circle one number only)



Had statistics that were difficult to understand (Please circle one number only)

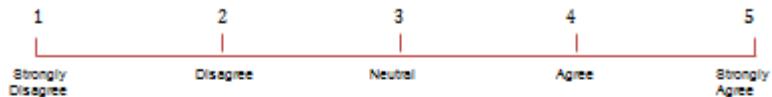


Has helped me think about the options for where to give birth (Please circle one number only)

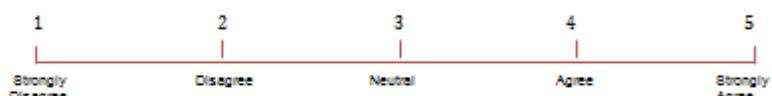


Identification number \_\_\_\_\_

Did not help me understand my options (Please circle one number only)

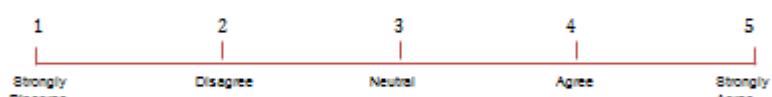


Made me less confident. (Please circle one number only)



I have .....

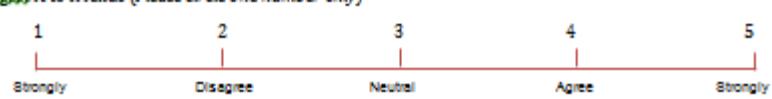
Used it with my partner (Please circle one number only)



Used it with my family (Please circle one number only)



suggest it to friends (Please circle one number only)



Q7) Please give your views on what is good about the Mybirthplace app?

Q8) Please give your view on what is not good about the Mybirthplace app?

Q9 Do you think the Mybirthplace app is useful? (please tick one only)

- |        |                          |
|--------|--------------------------|
| Yes    | <input type="checkbox"/> |
| No     | <input type="checkbox"/> |
| Unsure | <input type="checkbox"/> |

Q10 If Q9 was no or unsure why not?

Q11 what other resources have you found useful? (Please list all)

Q12 Thinking about where you want to give birth, would you say .....(Please tick one only)

- |                                                                             |                          |
|-----------------------------------------------------------------------------|--------------------------|
| I have not begun to think about the choices                                 | <input type="checkbox"/> |
| I have not begun to think about the choices but I am interested in doing so | <input type="checkbox"/> |
| I am considering the options now                                            | <input type="checkbox"/> |
| I am close to selecting an option                                           | <input type="checkbox"/> |
| I have already made a decision but I am still willing to reconsider         | <input type="checkbox"/> |
| I have already made a decision and am unlikely to change my mind            | <input type="checkbox"/> |

Thank you for completing the Survey!

I really value your opinions. Would you be willing to chat to me further so that I can discuss your thoughts and opinions with you?

If the answer is yes then I may contact you to organise a time suitable to you, for a face to face talk.

Yes

No

## Appendix 12 Poster amendment



14/7/16

Portsmouth Hospitals NHS  
NHS Trust

### The MyBirthplace Study

The MyBirthplace study is looking at where, when and how you access information about choice of place of birth.

Portsmouth Hospital NHS Trust offers choice on where you can give birth to your baby. They have developed an app which is available to use on smart devices.

This study aims to look at whether the app is useful for your information gathering and making a decision about where you give birth.

It involves meeting Daisy the researcher prior to your first appointment with the midwife, completing a consent form and a questionnaire before and after your appointment.

Daisy Wiggins  
Bournemouth University  
4th Floor St Mary's Health Campus  
Milton Road  
PO3 5AD  
Phone: 07928733620  
e-mail: dwiggins@bournemouth.ac.uk



My Birthplace



Have you recently been referred by your GP?

Are you 16 years or older?

Can you read and speak English?

Are you going to give birth under Portsmouth Hospital care?

You may be eligible to participate in the MyBirthplace Study

Do you want to participate or what to know more?

Contact Daisy Wiggins the Researcher for MyBirthplace who can provide you with further information and answer any questions you have.

13/6/16

Version 1.0

## Appendix 13 About the research and picture amendment

### All you need to know

You are being invited to take part in a research project. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve.

Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.



#### About the researcher

My name is Daisy Wiggins I am a third year Ph.D. student and registered midwife. I study at Bournemouth University working on the MyBirthplace research study. This study is a partnership between Bournemouth University and Portsmouth Hospital NHS Trust.

#### About the Study

This study is looking at where, when and how you access information about choice of place of birth. It is also looking at how this informs the decisions you make as an individual, with your partner and family and how this affects the interaction you have with your midwife.

You will be supported throughout pregnancy by your midwife to make various decisions but this study is looking specifically at how you decide where to give birth. Portsmouth Hospitals NHS Trust offers choice on where you can give birth to your baby. They have developed a tool which is available on smart devices such as your phone, ipad and computer, to

## Appendix 14 Analysis plan

### Analysis Plan

2016

Version 2

#### Principal Investigator

Daisy Wiggins PhD Clinical academic Doctoral midwife for Bournemouth University

#### Fieldwork Location and Dates

Clinical areas covered by a large urban hospital providing midwifery and obstetric care to three geographically different areas. Recruitment commenced April 2016 and to be complete at the end of December 2016.

#### Aim

The overarching aim of the study is to assess the effectiveness of the MyBirthplace Decision Support Tool (DST).

#### Objectives

1. To assess the effectiveness of the MyBirthplace DST as measured by the Stages of decision making tool (SDMS).
2. To identify if women's knowledge before and after access to the MyBirthplace DST changes if at all this will include descriptive data of the information sources women accessed prior to their first appointment with the midwife.
3. To assess women views of using the MyBirthplace DST and the contact with the midwife.
4. To investigate the role of socio demographics on women's decision making, knowledge, and views of the DST

#### Theoretical Hypothesis

It is hypothesised that the Mybirthplace DST will be effective in supporting women with their birthplace preference with increasing scores as measured by the SDMS. Following using the DST, it is thought that women's knowledge about their options for birth facility will improve and overall that women will suggest that the Mybirthplace app is useful when giving rating, eg for its appearance and easy to understand statistics.

#### Data Management

Data will be coded by the researcher DW and a proportion quality checked by VH, CB and CW. Codes will be given to each answer No (assigned 0) yes (assigned 1)

### Missing data

Data that are missing will be assigned to either two groups - actually missing due to a participant not completing the question (assigned as 999); missing because the question is not applicable or the participant is not required to answer (assigned as 99). As an example this is related to Q1 of Questionnaire one "have you previously had a baby?". If the answer is no they are asked to continue to question 6. Therefore questions two to five will be given the missing data code 99 for not applicable.

In terms of missing data from questionnaire not being returned it is important to consider the effect that will have on data analysis, failure to acknowledge missing data results in inferences that are worthless. The steps to avoid missing data can be both time consuming and costly in an attempt to reduce the amount of missing data from the pre and post questionnaire the researcher will be present to assist the participant if they do not understand the question.

If the proportion of missing data is considered an insignificant amount then clear and valid reasons will be given in the thesis and appreciation for the effect this has on the analysis will be given. However if the proportion is significant then alternative methods will be considered but this will then be assessed on the level of missing data. It is important to acknowledge that basic demographic details were obtained for those women that declined participation in order to ensure that there has been minimal selection bias.

### Analysis

#### Analysis to address Objective 1

Table 1 combines both the descriptive data and also the multivariate data for objective 1.

Data obtained from the scores on the SDMS will be collated. The women have been categorised into three groups

1. Those whose score on the scale improved;
2. Those whose score on the scale remained the same;
3. Those whose score on the scale got worse.

% data will then be presented for those groups of women measured by the SDMS at the three times during their pregnancy pre and post their first appointment and at 28 weeks of pregnancy. A sign test will then be utilised. This will measure the SDMS questions comparatively for each individual participant and identify any change (if at all) between the three time points. This will answer objective 1 to see any change between the before and after having access to the app. Therefore data will compare;

Pre compared to post

Pre compared to 28 weeks

Post compared to 28 weeks

Comparing pre data to 28 week data allows for women that are not initially given the app (even though it is part of routine care). It allows for women to access it at a later date and also post their 12 and 20 week scan when any concerns or conditions are highlighted.

A sign test was chosen because the sample size is relatively small and because the data are not continuous but are ordinal. The sign test is a statistical test that does not require the data to follow a particular distribution. Such a test is called a non-parametric or distribution free test.

The sign test is used to test the null hypothesis that the median of a distribution is equal to some value and in this case for ordered categorical data where a numerical scale is inappropriate but where it is possible to rank the observations of how women's decision making changes (if at all) as measured by the SDMS.

**Table 4.** Represents the SDMS scores for the 169 women at three time points within their pregnancy in the Mybirthplace study conducted within a large urban hospital between April and December 2016

Variable	Pre Questionnaire N (%)	Post Questionnaire N (%)	28 week follow up N (%)	P Value
Worsened				
Remained the same				
Improved				

Note: P value will be included. It is intended that data will be compared between Pre versus post for the 3 categories, Pre versus 28 weeks for the 3 categories and finally post versus 28 weeks.

#### Analysis to address objective 2

Descriptive data to meet objective 2 will show the various sources of information that the women have accessed prior to their first appointment with the midwife. This will be measured by the number of women identifying each option and will also measure spread when presented as an average.

Women are asked to identify what sources of information they have accessed prior to their appointment and then give these a score based on the scale from 1 to 5 with 1 being Extremely dissatisfied and 5 being extremely satisfied..

**Table 5.** Information sources identified by the 169 women of the Mybirthplace study before they accessed a midwife in a large urban hospital between April and December 2016

Prior information on birth place	N=	%
Books		
Internet		
Family		
Friends		
Health Professionals		
Media		
Magazines		
Other		
No. of times accessing information		

None		
1 time		
2-4 times		
5 or more times		

Table 3 Sources of information identified by the 169 women in the Mybirthplace study between April and December 2017 and their score based on a 5 point satisfaction scale before accessing the Decision support tool.

Information sources	N= (%)	Mean Satisfaction rating
Books		
Internet		
Family		
Friends		
Health professional		
Media		
Magazines		
Other		

## 2. Knowledge

Women are asked to identify what facilities that they know are available to give birth; they then have an open question box to document each facility. There are 6 possible facilities under the urban hospital for places to give birth. This open question is asked in both the pre and post questionnaire. It is important to see whether their knowledge changes (if at all) following exposure to the DST at their first appointment.

Table 4 Knowledge level of facilities to give birth in covered by the Large Urban hospital as identified by the 169 women pre and post access to the Decision support tool.

	Pre Questionnaire N = (%)	Post Questionnaire N= (%)
Sufficient (4-6 correct locations)		
Insufficient (0-3 correct locations )		

### Analysis to address objective 3

Descriptive data will also be gathered on the contact had between the woman and the midwife in order to meet objective 3. Q2 of the Post intervention questionnaire asks "Did your midwife discuss birth place options" Q3 asks did your midwife "a. tell you that you have options about where to give birth; b. Give you information about the Mybirthplace app ; c. hand you a leaflet about the Mybirthplace app; Give you the QR code about the app; d Go through Mybirthplace with you"

This information is important to gather to gauge what level of exposure women had to birth place options discussion and whether they have had access to the Mybirthplace app. This is going to directly relate to women's knowledge and also their scores on the SDMS which incorporates both objectives 1 and 2.

Table 4 Views of the 169 pregnant women after accessing the Decision support tool with the midwife in the large maternity unit between April and December 2016

Variable	N	(%)
Midwife discussed Birth place options		
No		
Yes		
Midwife told them their options		
No		
Yes		
Gave information about Mybirthplace		
No		
Yes		
Gave a leaflet about Mybirthplace		
No		
Yes		
Gave the QR code to access Mybirthplace		
No		
Yes		
Went through the Mybirthplace app with you		
No		
Yes		
Do you feel the midwife had enough time to discuss the Mybirthplace app?		
No		
Yes		
Unsure		
Did you want further information about birthplace options from your midwife?		
No		
Yes		

#### Analysis to address objective 4

Descriptive data for the sample will be presented. This will address objective 4 to include demographic characteristics; including age which has been grouped into less than 20 years (yrs), 20-29 yrs, 30-39 (yrs) and 40+. Locality; this will be based on the postcode that they provide in the first questionnaire. These will then be grouped into City, West and North which is the area that the Hospital provides care to. Education level; which will be grouped into no level of education, NVQ or A level and degree or higher. Current employment status as indicated on their pre intervention questionnaire, again this will be grouped dependant on the majority of respondent's answers and a decision will be made once data has been collected. Ethnic origin; which will be grouped dependant on the main ethnic groups recruited and thus will decided post recruitment.

Pregnancy characteristics will also be presented. This will include:

- Parity, which will be group into primiparous (Primips) women who have not previously had a baby and multiparous women (Multips) – women who have had one or more.
- Previous place of birth, the number of women who indicate that their birth was within the Urban hospital in the study and those that were not. Of those the number of previous births in each of the locations will be identified based on the open

question in the 1<sup>st</sup> questionnaire that asks the women "where did they previously give birth"

- Previous delivery type which will be as per the 1<sup>st</sup> questionnaire, Normal vaginal delivery, Assisted delivery (forceps/Ventouse), Elective section or Emergency section.

Frequencies and percentages will be calculated, given the variables are categorical.

**Table 6.** Demographic characteristics of 169 pregnant women participating before and after intervention in the Mybirthplace study looking at a Decision support tools effect on choice of birthplace with a large urban Hospital between April and December 2016

Demographic Characteristics	n	%
Age (years)		
<20		
20-29		
30-39		
40+		
Locality		
City		
West		
North		
Education		
No formal qualifications		
GCSE/ A level		
Degree or Higher		
Current Marital status at 1 <sup>st</sup> Questionnaire		
Single/living alone		
With partner/cohabiting		
Married/ civil partnership		
Separated		
Divorced		
Widowed		
Current Employment Status at 1 <sup>st</sup> Questionnaire		
Paid full time work		
Paid Part time work		
Self Employed		
Unemployed/Looking		
Temporary Sick		
Permanently sick		
Retired		
Carer		
Student		
Other		
Ethnicity		
1. White English/British/Welsh/Scottish		
Irish		
Gypsy/ Traveller		
Other white		
2. Mixed/ Multiple White and black Caribbean		
White and black African		

## **Appendix 15 Ethical approval letter**

South Central - Hampshire B Research Ethics Committee

Level 3 Block B  
 Whitefriars  
 Lewins Mead  
 Bristol  
 BS1 2NT

Telephone: 0117 342 1384

15 December 2015

Ms Julie Northam  
 Bournemouth University  
 4th Floor Melbury House Landsdowne 1-3 oxford road  
 Bournemouth  
 BH8 8ES

Dear Ms Northam

**Study title:** What role does the decision support tool "mybirthplace" play in women's information gathering and decision making about how and when women make a decision about place of birth?

**REC reference:** 15/SC/0506

**Protocol number:** NA

**IRAS project ID:** 156590

Thank you for your letter of 15/12/2015. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 01 December 2015

**Documents received**

The documents received were as follows:

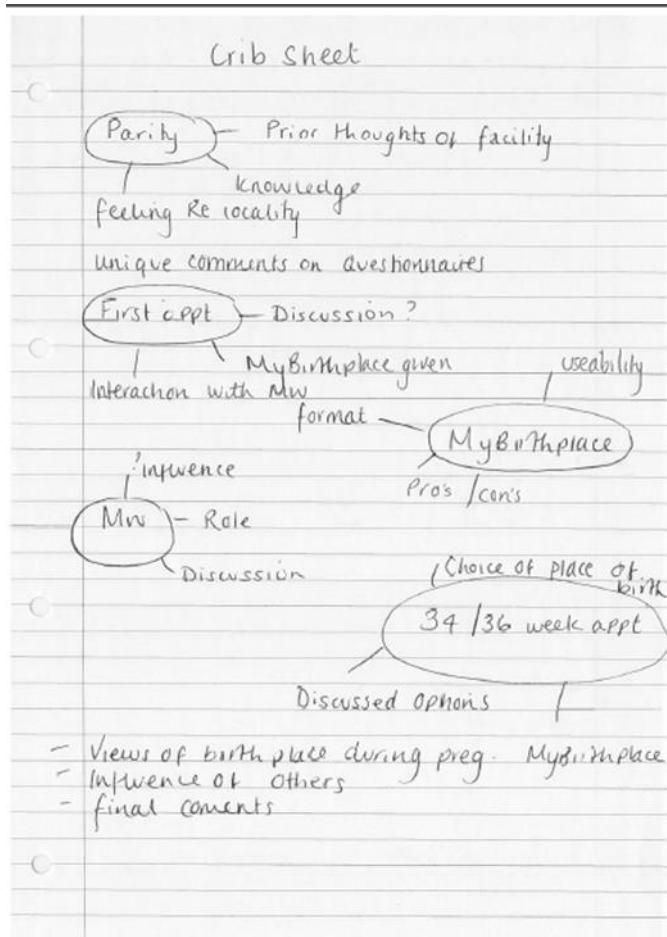
Document	Version	Date
Other [Reminder Letter]	2	10 December 2015
Other [Reply Slip to Opt In]	2	10 December 2015
Participant information sheet (PIS)	6	01 December 2015

**Approved documents**

8.50 x 11.00 in

!!!

## Appendix 16 Core interview crib sheet



## Appendix 17 Individual crib sheet

Crib Sheet for E.S 3/11/16	
First Baby → Thoughts about birthplace / facilit ↳ into Required	2-4 times accessed → where what things How did you rate them
Q1 mentioned 'feeling that you have options' factors that influence choice → do you feel this?	Q1 'full body Autonomy' Explain
First appt → Describe what happened Interaction w/ MW support	1st time mom Thoughts My Birthplace format
MW Role influence	Discussions had 34/40 appt My Birthplace Reviewed? Discuss options
plan or facility	
Choice → change → pregnancy	

## Appendix 18 Interview extract

### Interview with Participant CITY07

---

Synonym = Annie

Interviewer = PI

(Introduction and consent gained and verified)

PI: The main thing that came up for me was that this is your first pregnancy so and IVF wasn't it

Annie: mmm yeah

PI: So how before as you were going through the IVF process had you ever considered anything in terms of choice of place of birth at that point before you fell pregnant?

Annie: erm at that stage probably not ... based I would say on the fact that I think when you are going through and you know I think this is probably exclusive to an IVF process

PI: Yep

Annie: you almost don't dare to dream that it will actually work, so you don't you ~~you~~ don't think that far ahead to think that it you know that it might get to a situation, where actually you need to think about where to give birth.

PI: Ok

Annie: Uhh so yeah at that stage it's so all-encompassing that all you can really think about is the IVF process for me anyway yeah.

PI: Ok. so when was the first time that you started to look at choice of place of birth?

Annie: Urm ... probably my first meeting with my midwife which was maybe around, I wanna say ten weeks, it may not have been earlier than I can't quite remember. Urm but when she went through the initial kind of process Urm with me Urm and yeah I think it kind of happened to be at St Marys, my husband was born at St Marys so I kind of thought well you know I guess yeah, it's real it's happening you know, still obviously tentative but it was probably that stage that I started thinking about you know where.. \*pause\*... Potentially I would like to give birth.

PI: Fabulous and where about did you look for your information at that early stage?

Annie: Urm I guess I mean I guess it was based on geography really umm and obviously being where I am St Marys is very very close I mean if I really had to, I'd rather not but I could probably walk it in 20 minutes (giggles) so ....

PI: probably not ideal in labour to be honest \*laughs\*

Annie: ...I mean I would rather not but you know umm but yeah you know obviously there's St Marys Urm I mean I still call it St Marys not it's the Portsmouth maternity centre or something but erm the QA and I knew there

## Appendix 19 Extract of interview with initial coding

The screenshot shows a Microsoft Word document titled "Transcript of interview 1 with CITY07 2.11.16.docx". The document contains a transcript of an interview with various text segments highlighted in different colors: yellow, green, blue, and pink. The yellow highlights represent influence of others, green represents information gathering, blue represents what factors were important in deciding, and pink represents knowledge of choice.

**Annie:** um just from places you know that friends and family have given birth erm and yeah  
the information research online say that's the best so and then you said like um  
you know I've got a friend who... I thought I am not going to drive over to  
Gosport, you know I have got a friend who um... who I think had her first at st Richard in  
Chichester so she was kind of raving about there but I thought I am not driving to Chichester  
when I am in labour you know its... for me it was you know the choice of where we had the  
IVF treatment was based on geography and you know it makes life a little bit easier doesn't  
it, you don't want to be bombing down the motorway necessarily in the throes of labour so  
yeah it was a bit of friends and family and a bit of online once I started thinking about where to go  
um...

**Pi:** ... And specifically online, where online?

**Annie:** I guess well potentially I probably was googled before "where where you know  
where to give birth in Portsmouth" erm but I have had always been leaning towards  
midwives and I think I think you know like kept my options open but I have let you  
know I have a friend who um...

**Pi:** So you said geographically was important to you but was was really interesting on your  
first questionnaire is that you put something along the lines of feeling that you have options.

**Annie:** Yeah definitely definitely and I know that for some people, for example going home  
and giving birth at home, you know it's a very personal choice and I was like okay okay and  
then I realised my own mother would probably have kittens if I went for a home birth...  
Laughs... so you know but I - I knew there were lots of potential options and I think  
sometimes people feel perhaps that well you go to a labour ward and that's that. They want  
it very consultant led and for me I am one of I am typical like a lot of people I don't like  
midwives really so you know I was kind of more comfortable with the idea of a slightly milder  
midwife however had someone said to me you are going to need more medical  
interaction than I definitely would have gone with what they said. I am not stuck \*pauses\*

Yellow represented influence of others

Green represented information gathering

Blue represented what factors were important in deciding

Pink represented knowledge of choice

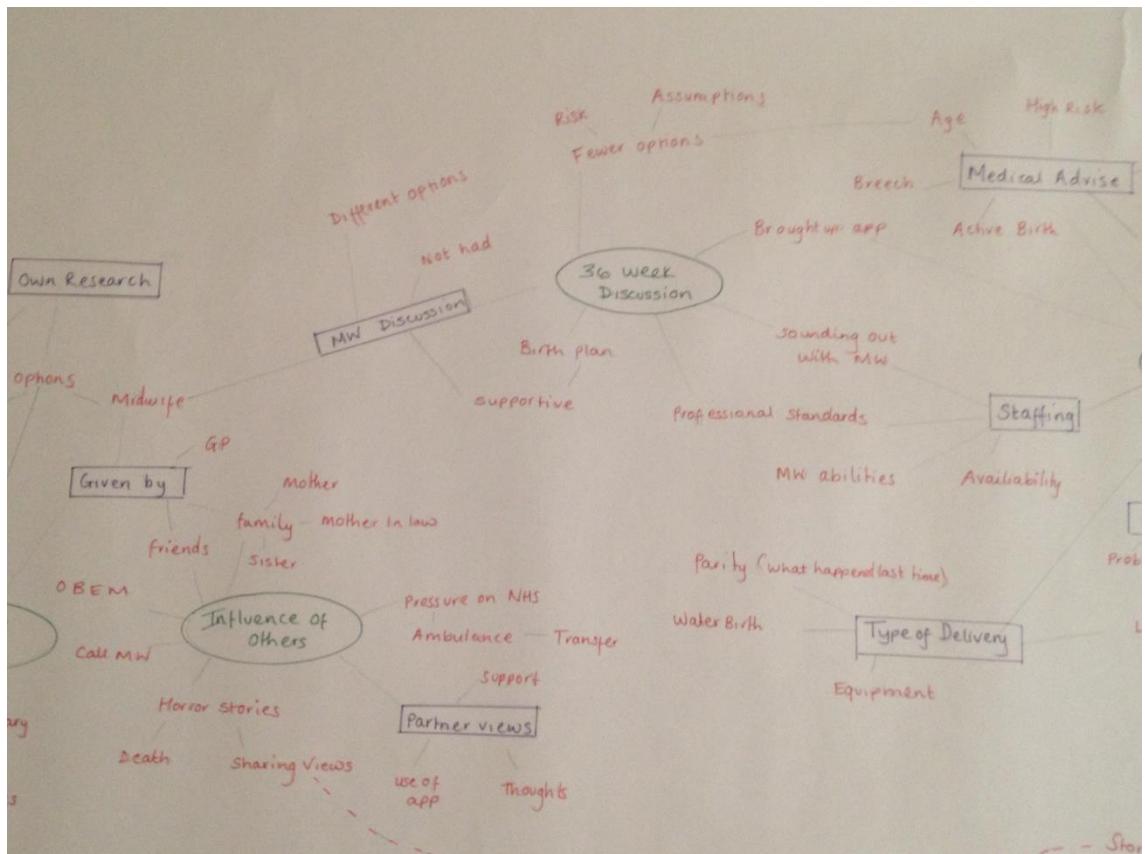
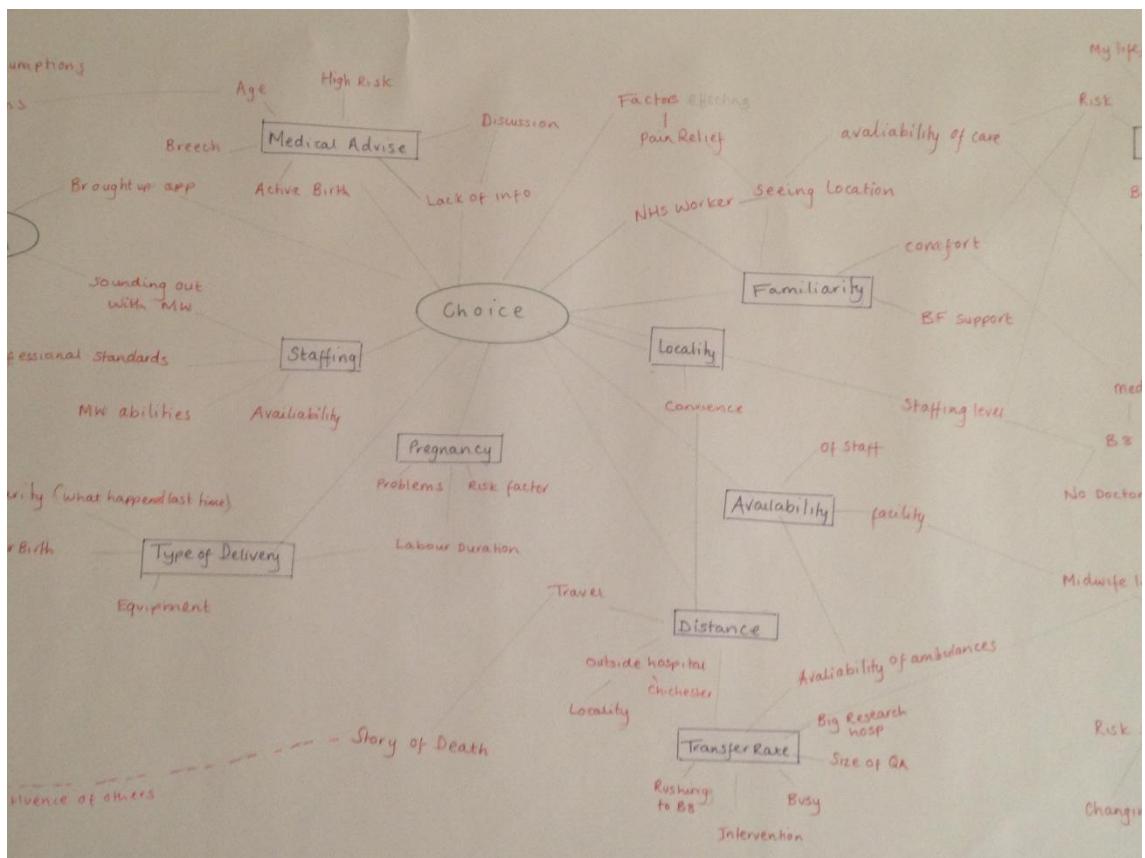
## Appendix 20 Example of initial code for one interviewee

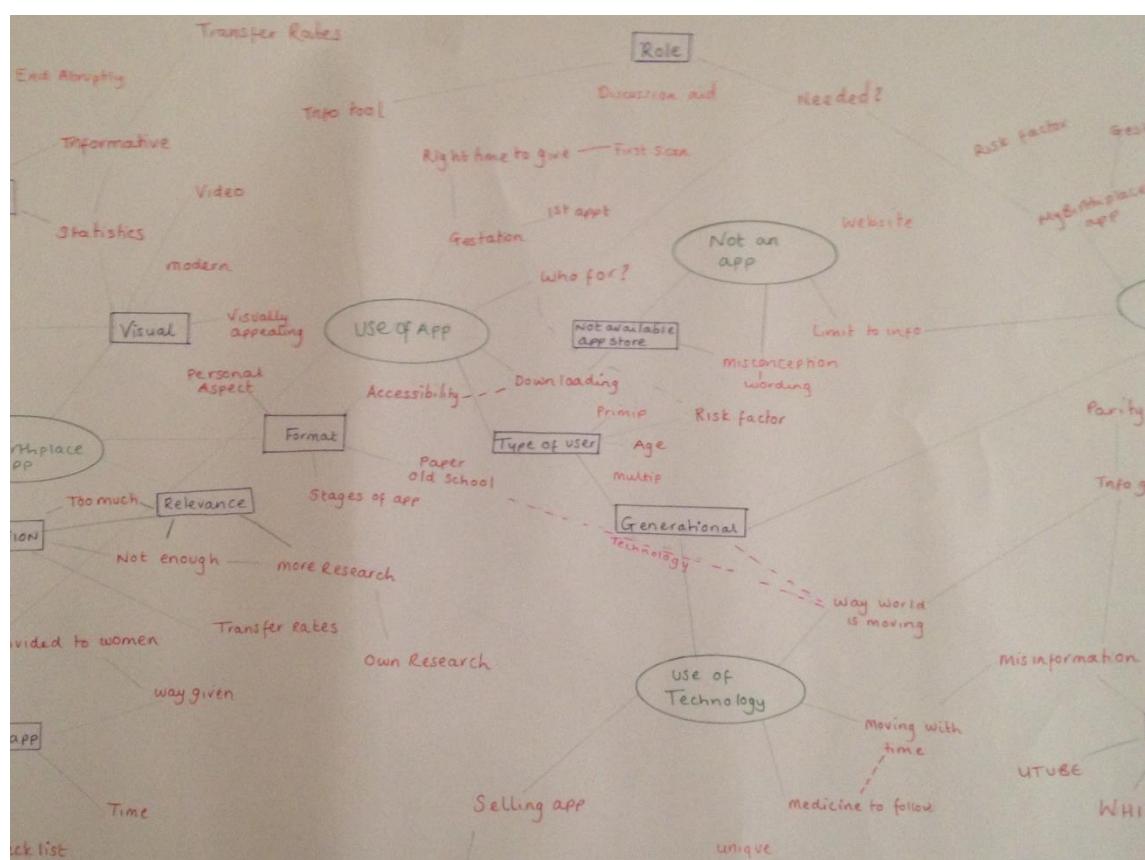
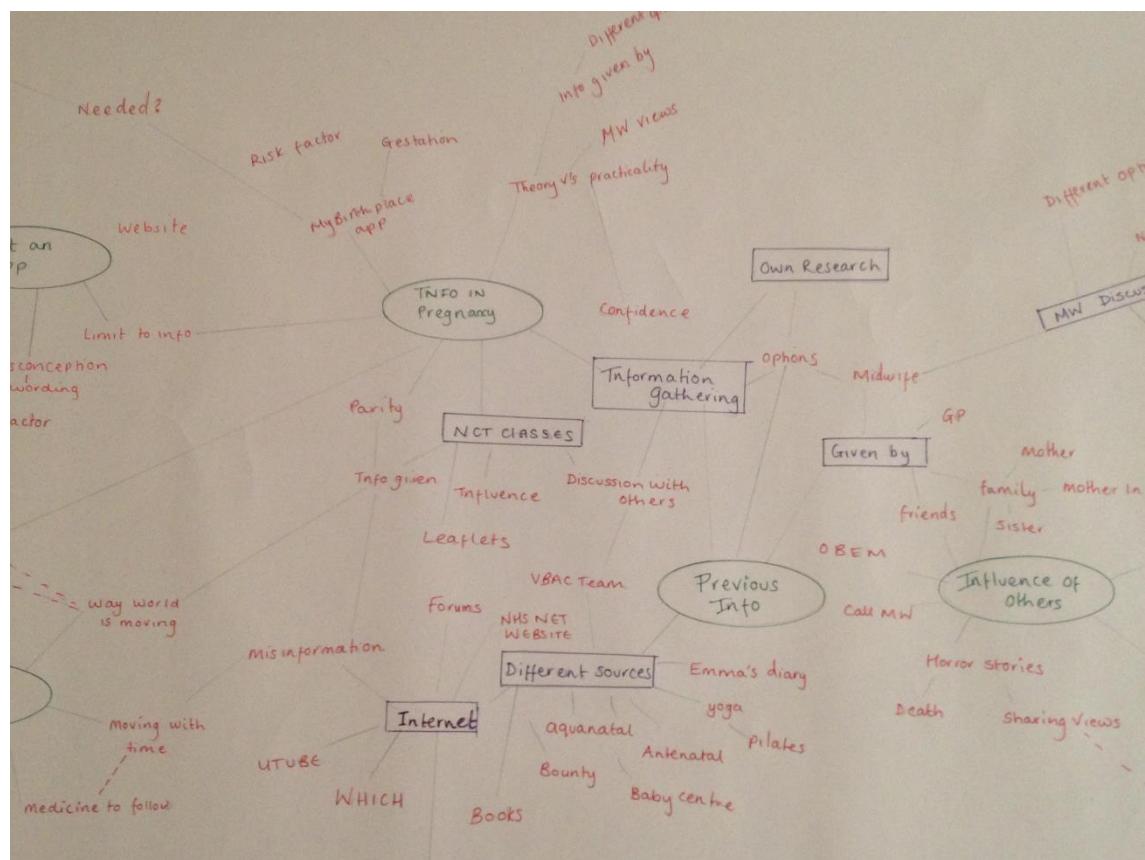
City 07	Prior knowledge IVF 1 <sup>st</sup> appointment Process discussed Distance Knowledge Influence of friends and family Own research Online and google Homebirth Thoughts Influence from mum Knowing options Instinct Trust Ideal birth Husband influence Pain relief Water birth Low intervention Midwife support Number of midwives Information giving Never feeling judged Open minded View of midwives App given at 1 <sup>st</sup> appointment Delivery of app by midwife Accessing the app Ease of use App compared to other sources Use of app Stats Information in app Transfer Informed choice Views on app Number of uses Use of app with midwife Midwife discussion Use of app with others Technology Information overload Big decision Problems with app Friends influence Midwife tradition Question professionals Midwife engagement with app Interactive
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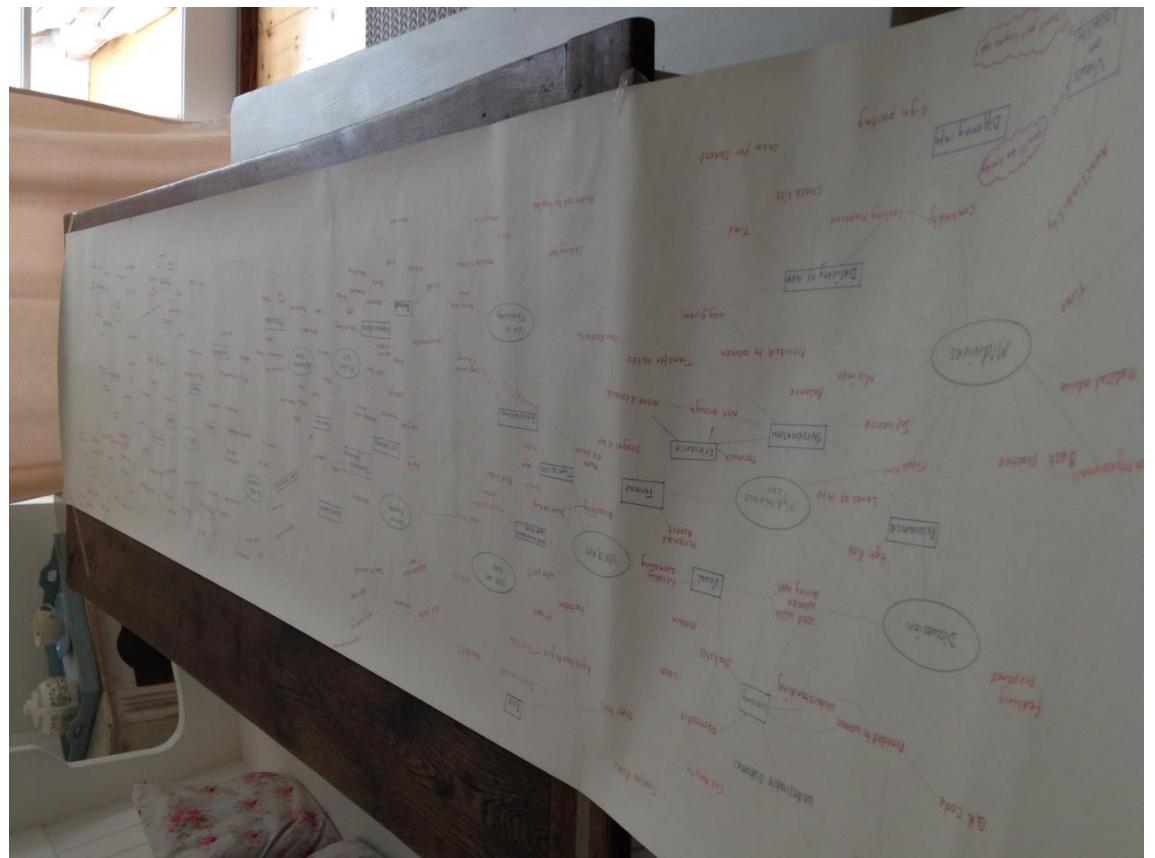
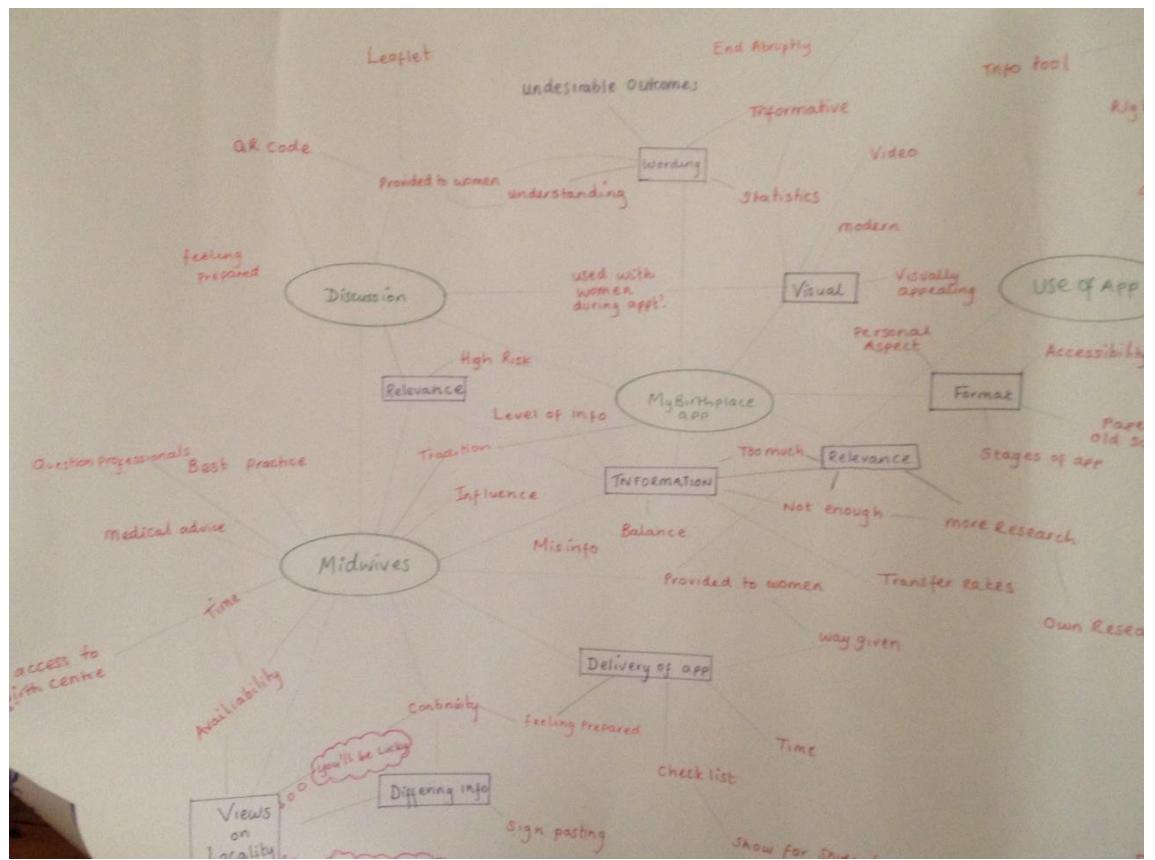
## Appendix 21 Example of one theme produced during phase four of analysis

Conception of Main theme	Sub theme and content	Data (Quotes)	Emerging quotes to themes Final process
Mybirthplace app	<p>Information            -Balance            -Miss info            -Too much/ too little            - More research            -Level of info            -Transfer Rates</p> <p>View of use            -Ease            -Duration</p> <p>Visual aspects            - Videos            - Statististics</p> <p>Format            -Stages of app            -Personal Aspect            - Paper Old school            - Downloading</p> <p>Access</p> <p>Development</p>	<p><b>Information</b></p> <p>"It gives you like an insight as to what they are like *pause and it gives you a bit more information than you may have had before. I think before I got like a leaflet or something and that was it"</p> <p>"It did it said that in the midwife led unit that there's gas and air and pethidine but you would have to go to B8 if you wanted more like go onto a epidural because of the consultants obviously. It's important you know ... to me to be there and safe like for bleeding in case."</p> <p>"It sort of did that process didn't it where you tick box of are you a first time mum are you looking for this are you looking for this all those complications and it went through the process and then showed what the other options were because obviously there are Gosport and Petersfield as well isn't there?</p> <p>I       Yes. Good.</p> <p>P       Erm and it did make me think about what, what's more important so is location important because the other thing with here is that I was born here um as was my other half as well so there is that sort of link there but we had the conversation of well is the location more important because we live down the road and can be here in like 2 minutes all of those things um or is pain relief more important so if I phone up and they say the pool is busy do I then say ok well then we</p>	<p><b>Main theme one: To be or not to be an app that is the question</b></p> <p>1.1 App happy</p> <p>"So it is certainly user friendly and informative and I certainly found it easy to use" [Beatrice]</p> <p>"oh yeah oh it makes complete sense it's like a flow chart sort of just interactive! [Annie]</p> <p>"erm pause I don't think so to be honest there is nothing that came across as a teething problem that you can get with apps you know and erm I mean it was super user friendly it's so easy to use and then if you wanna kind of delve you know a bit further into certain options then you can [Annie]</p> <p>"Yeah I think it was useful there was nothing about it that was frustrating let's put it that way you know what I mean it wasn't like I got to a point and was like oh I wanted to know that or if I went to that bit it all felt logical and the information that I wanted was there. There's nothing in my head that's sticking out as missing or that I would</p>

## Appendix 22 Thematic map pictures 1- 6







## Appendix 23 Outcome data

<b>Identifier</b>	<b>Intended location</b>	<b>Actual location</b>	<b>Birth type</b>	<b>Reason for difference in Location</b>
City01	OU	OU	ELSCS Twins	NA
City02	Undecided	AMU	SVD	Preference Confirmed
City03	OU	AMU	SVD	No specified
North04	-	Miscarriage	-	-
City05	Undecided	Hospital	SVD	Not Specified
City06	CITY FMU	BBA	SVD	Quick Labour
City07	AMU	OU	Forceps	Induction
City08	OU	OU	SVD	NA
City09	AMU	OU	EL LSCS	Clinical indication "Breech"
City10	-	Miscarriage	-	-
West11	AMU	AMU	SVD	NA
City12	-	Miscarriage	-	-
City13	OU	OU	EL LSCS	NA
West14	AMU	AMU	SVD	NA
West15	AMU	AMU	SVD	NA
City16	AMU	OU	Forceps	Clinical indication "Meconium"
North17	OU	WEST FMU	SVD	Unexpected Delivery
North18	OU	OU	EL LSCS	NA
North19	AMU	AMU	SVD	NA
North20	OU	OU	Ventouse	NA
North21	AMU	AMU	SVD	NA
City22	CITY FMU	AMU	SVD	Unable to accommodate
City23	OU	OU	EM LSCS	NA
City24	CITY FMU	CITY FMU	SVD	NA
City25	Undecided	CITY FMU	SVD	Preference confirmed
City26	AMU	AMU	SVD	NA
City27	-	Miscarriage	-	-
West28	AMU	OU	SVD	No reason given
North29	AMU	OU	SVD	Clinical indication "Meconium"
City30	OU	OU	EL LSCS	NA
City31	OU	OU	EM LSCS	NA
City32	-	Moved out of Area	-	-
City33	AMU	AMU	SVD	NA
North34	OU	OU	SVD	NA
West35		No info		
City36	OU	OU	EM LSCS	NA
North37	OU	OU	SVD	NA
North38	Undecided	OU	SVD	Induction
City39	OU	OU	SVD	NA
North40	OU	OU	Ventouse	NA
North41	AMU	AMU	SVD	NA
North42	OU	OU	SVD	NA
North43	AMU	OU	Forceps	Clinical indication "Meconium"
West44	AMU	AMU	SVD	NA
City45	*	No info	Available	*
North46	OU	OU	EL LSCS	NA
City47	Undecided	OU	EM LSCS	Clinical indication "fetal distress"
City48	CITY FMU	CITY FMU	SVD	NA
West49	AMU	AMU	H20	NA
West50	OU	OU	Failed Fx	NA
City51	OU	OU	EMLSCS	NA

West52	AMU	AMU	EL LSCS	NA
City53	*	No info	SVD	*
North54	OU	OU	Not Available	NA
City55	AMU	OU	SVD	Clinical Indication "Fetal distress"
City56	OU	OU	EMLSCS	NA
West57	AMU	OU	SVD	Induction
City58	CITY FMU	OU	SVD	Pregnancy problem not defined
West59	AMU	OU	SVD	Clinical Indication "Fetal distress"
City60	OU	BBA	EM LSCS	Quick Labour
West61	OU	OU	SVD	NA
North62	OU	OU	EM LSCS	NA
West63	OU	OU	Forceps	NA
West64	-	Miscarriage	EL LSCS	-
City65	OU	OU	-	NA
West66	AMU	AMU	EM LSCS	NA
West67	OU	OU	SVD	NA
West68	AMU	OU	SVD	Clinical Indication "fetal distress"
West69	AMU	OU	GA EM LSCS	Induction
North70	AMU	OU	SVD	Induction
City71	OU	OU	SVD	NA
West72	OU	OU	EL LSCS	NA
City73	OU	OU	SVD	Clinical Indication "fetal distress"
North74	OU	OU	EM LSCS	NA
City 75	AMU	OU	SVD	Clinical indication "slow 2 <sup>nd</sup> stage"
West76	AMU	AMU	Ventouse	NA
West 77	-	Miscarriage	SVD	-
City79	-	Miscarriage	-	-
City80	-	Miscarriage	-	-
City81	AMU	AMU	-	NA
West82	OU	OU	SVD	NA
City83	*	Moved out of	Area	*
City84	AMU	AMU	SVD	NA
North85	OU	OU	Forceps	Clinical indication Meconium
North86	AMU	OU	Forceps	NA
City87	AMU	AMU	SVD	NA
West88	OU	OU	SVD	Preference confirmed
City89	Undecided	FMU	SVD	NA
City90	OU	OU	SVD	Clinical indication Meconium
City91	AMU	OU	SVD	NA
City92	OU	OU	EM LSCS	Reason not given
City93	CITY FMU	OU	SVD	Clinical indication
City94	CITY FMU	OU	Forceps	NA
West95	OU	OU	SVD	NA
City96	AMU	AMU	SVD	NA
City97	OU	OU	Ventouse	Clinical indication "fetal distress"
City98	AMU	OU	SVD	Transfer for Slow progress
North99	CITY FMU	OU	Forceps	NA
City100	OU	OU	EL LSCS	NA
West101	OU	OU	EM LSCS	*
City102	*	Moved out of	Area	NA
City103	OU	OU	SVD	NA
West104	AMU	AMU	SVD	NA
City105	OU	OU	SVD	NA
North106	OU	OU	EL LSCS	Quick Labour
City107	AMU	Home	BBA	NA
West108	OU	OU	SVD	NA

City109	OU	OU	SVD	NA
North110	OU	OU	SVD	Induction
West111	AMU	OU	SVD	NA
West112	Home	Home	SVD	Quick Labour
West113	AMU	Home	BBA	SVD
West114	AMU	AMU	SVD	NA
City115	Undecided	OU	EM LSCS	NA
City116	AMU	AMU	SVD	Failed induction
City117	AMU	OU	EM ISCS	Quick labour
City118	Undecided	Home	BBA	
City119		Moved area		NA
City120	AMU	AMU	SVD	NA
City121	OU	OU	EL LSCS	Not available
City122	Undecided	OU	SVD	NA
City123	Undecided	AMU	SVD	Elective
West124	OU	OU	LSCS	MEC
City125	FMU	OU	SVD	NA
West126	OU	OU	EL LSCS	Induction
West127	OU	OU	SVD	NA
WEST128	Undecided	OU	SVD	Not documented
City129	FMU	AMU	SVD	
City130		Miscarriage		Clinical indication MEC
City131	Home	OU	SVD	NA
West132	Undecided	OU	Forceps	Not identified
City133	AMU	OU	SVD	NA
City134	Undecided	OU	SVD	Clinical indication
City135	Undecided	OU	Forceps	Mec
City136	AMU	OU	SVD	NA
City137	AMU	AMU	SVD	NA
City138	Undecided	OU	EL LSCS	Pre eclampsia
CITY139	AMU	OU	EM LSCS	NA
City140	OU	OU	EL LSCS	NA
City141	OU	OU	SVD	NA
City142	AMU	AMU	SVD	
City143	OU	OU	EL LSCS	NA
City144	AMU	AMU	SVD	NA
City145	Undecided	OU	EM LSCS	NA
City146	AMU	OU	Ventouse	Clinical
City147	FMU	OU	EM LSCS	Clinical
City148	Undecided	OU	SVD	NA
City149	AMU	OU	SVD	Not stated
City150	OU	OU	SVD	NA
City151	OU	OU	EMLSCS	NA
City152	Undecided	OU	EMLSCS	NA
City153	AMU	AMU	SVD	NA
West154	Undecided	OU	EMLSCS	NA
City155	Undecided	OU	SVD	NA
City156	AMU	AMU	SVD	NA
City157	-	Miscarriage	-	-
City158	AMU	AMU	SVD	-
City159	-	Moved	-	Not stated
City160	-	Miscarriage	-	-
City161	Home	AMU	SVD	Not stated
City162	-	Miscarriage	-	-
City163	AMU	OU	Forceps	Clinical
City164	OU	OU	EMLSCS	NA

City165	OU	OU	SVD	NA
City166	Undecided	OU	EMLSCS	NA
City167	AMU	OU	EM LSCS	Clinical
Coty168	Undecided	OU	EM LSCS	NA
City169	AMU	AMU	SVD	NA
City170	Undecided	OU	SVD	NA
City171	AMU	OU	Forceps	Clinical indication
City172	FMU	FMU	SVD	NA

**Total**

*Source:* Protos, study sites hospital system

Ou = Obstetric unit, FMU = free standing midwifery led unit, AMU = alongside midwifery led unit, SVD= spontaneous vaginal delivery, EM LSCS = emergency lower segment caesarean section, EL LSCS = Elective lower segment caesarean section, GA = General anaesthetic, BBA = Born before arrival , H2O = waterbirth

**The effect of a birth place decision support tool on women's decision making and information gathering behaviours during pregnancy:  
Mybirthplace study protocol**

Daisy Wiggins, Vanora A Hundley, Carol Wilkins, Carol S Bond and Gill Walton.

**Daisy Wiggins** - Clinical Academic Doctoral Midwife

Centre for Midwifery Maternal & Perinatal Health, Faculty of Health & Social Sciences, Bournemouth University, Portsmouth Campus, 4th Floor St Marys Hospital, Milton Road, Portsmouth, PO3 6AD

**Vanora A Hundley** - Professor of Midwifery

Centre for Midwifery Maternal & Perinatal Health, Faculty of Health & Social Sciences, Bournemouth University, Royal London House, Christchurch Road, Bournemouth, BU1 3LT, UK.

**Carol Wilkins** – Principal Academic

Centre for Midwifery Maternal & Perinatal Health, Faculty of Health & Social Sciences, Bournemouth University, Portsmouth Campus, 4th Floor St Marys Hospital, Milton Road, Portsmouth, PO3 6AD

**Carol Bond** – Principal Academic

Faculty of Health & Social Sciences, Bournemouth University, Royal London House, Christchurch Road, Bournemouth, BU1 3LT, UK.

Gill Walton – Head of Midwifery

Portsmouth Hospital Trust, Southwick Hill Road, Portsmouth PO6 3LY

*Correspondence to:* [dwiggins@bournemouth.ac.uk](mailto:dwiggins@bournemouth.ac.uk)

## **The effect of a birth place decision support tool on women's decision making and information gathering behaviours during pregnancy: MyBirthplace study protocol**

### **Abstract**

**Background:** The recent Maternity Review for England highlighted the need for more choice for women with more accessible information to support decisions. This study assesses the effect of a unique Decision Support Tool (DST) called MyBirthplace on women's decision making regarding birth place choice.

**Methods:** A mixed method sequential exploratory design will be utilised involving three phases with a proposed sample of 169 women from a large maternity hospital in the United Kingdom. Phase one will be a questionnaire survey with women pre and post access to the DST. The questionnaires will look at baseline data, knowledge level and decision making using the Stages of Decision making scale (SDMS). A follow up questionnaire at 28 weeks (phase 2) will review the SDMS to enable the usefulness of Mybirthplace to be evaluated and to seek women's opinion on various aspects of MyBirthplace. Phase three involves qualitative interviews with a minimum of 10 purposely chosen women at approximately 36 weeks gestation, and is followed by collating data on where the women actually give birth.

**Discussion:** This study is the first study to assess the effect of a DST in supporting women's choice of place of birth. It will add to current DST literature whilst broaching key concepts highlighted in the National Maternity Review.

**Keywords** Decision Support Tool, Mybirthplace, Choice, Decision making, birthplace, mixed methods

## **Background**

The Government's ambition for the National Health Service (NHS) to achieve health outcomes that are amongst the best seen in the world [1] relies on a strategy of shared decision making and patient-led decisions [2]. The Government white paper "Equity and excellence" discussed how liberating the NHS should involve promoting the philosophy of "no choice about me without me" [3]. The paper stresses the need for professionals to be putting patients first, especially now service users are expecting greater involvement in choice and shared decision making [3].

Shared decision making (SDM) has been defined as a "Two way process of information giving between the clinician and patient, where the final decision is made jointly" [1].

A prerequisite to engage in this shared discussion is information sharing which is positively associated with adherence to treatment and care [4]. It is likely that similar findings could be seen with respect to decision making in midwifery care. Tupara [5] encourages the use of SDM and it has become a core issue for midwifery practice; supported by NICE guidelines [2].

The National Maternity Review highlighted the need for both informed choice and greater access to unbiased information; the strategy being that this would support inclusive decision-making about care [1]. This review highlights the importance of women centred care and specifically identifies the need to provide women with easily accessible information in a digital format. Women now see themselves as "savvy consumers" [1] and with this a greater focus is being placed on making digital tools available to pregnant women to assist in their decision making.

With the majority of women still giving birth in the hospital [6] and the National Childbirth Trust (NCT) study [7] finding 49% of women dissatisfied with the amount of information they received about where to give birth, there is a need to look for new ways to provide women with the information to support choice.

## **Existing interventions**

One way of facilitating this is providing the information through Decision Support Tools (DSTs) [8]. These tools have a long history of use within health in areas such as cancer treatment [9] however their use in midwifery care has been considerably less. DSTs in midwifery are limited to a number of clinical scenarios that include choice of mode of birth following a caesarean section [10;11,12,13,14] antenatal screening for fetal anomaly [15] and delivery options for a known breech baby [16]. The research shows that these DSTs are effective in reducing the decisional conflict that women have when it comes to making a choice [14, 17]. Although there are tools available for women to support choice with regard to place of birth, including the WHICH website [18], there are no studies that have reported the effectiveness of these tools. Birth place choice is currently a hot topic within midwifery this led to the creation of MyBirthplace.

## **The intervention – The MyBirthplace app**

The MyBirthplace app [19] is a DST that was created to support women's choice regarding place of birth.

The app, which is publicly owned and copyrighted to the Hospital that created it, offers information on the different local facilities available to pregnant women. These include home, three Freestanding Midwifery-led Units (FMU), an Alongside Midwifery-led Unit (AMU) and traditional consultant led Obstetric Unit (OU). The API is open but licenced and is available via the internet where it gives an option to download to a smart device. No personal information is taken or used in the app and therefore poses no security risks. For each possible birth location the app describes the services and pain relief options available and provides a statistical breakdown of various outcomes including safety, depicted as the risk to baby (x per 1000 births). The app then goes into detail about the different locations for birth and also provides data on transfer rates, reason for transfer and the average time for an ambulance to arrive. All the data pertaining to the app are based on both local statistics and data derived from the Birthplace in England national prospective cohort study

This app should be provided to women at the initial appointment with her midwife and can be accessed at any point during pregnancy but a clear preference for place of birth is required by the hospital at 36 weeks gestation. This paper describes a protocol for a study to evaluate the effectiveness of the MyBirthplace App in supporting women to make a decision regarding place of birth.

### **Aims**

The primary aim of the study is to identify when women make a decision about place of birth and how useful the DST is in helping to make this decision. This will be assessed using the stages of decision making scale (SDMS) [21].

The secondary aims are to

1. Explore women's information gathering and decision making behaviours
2. Understand women's views and opinions about using MyBirthplace;
3. Explore how MyBirthplace was used with women by their midwife;
4. Explore women's feelings about how well MyBirthplace supported them to make a decision;
5. Explore women's views around its usefulness.

### **Methods/Design**

This is a three phase mixed method sequential exploratory study.

- Phase one involves a quantitative questionnaire survey of newly pregnant women. Women will be asked to complete the survey before and after accessing the DST. Phase two is a follow up questionnaire survey at 28 weeks. This questionnaire will be administered either online via Bristol Online Survey (BoS) or as traditional paper version sent by post, depending on the participant's preference.
- Phase three involves qualitative interviews with purposely chosen women from the first two phases. The interviews will be conducted at 36 weeks, and followed by collating data on where the women actually give birth.

### **Setting**

All three phases of the study will be conducted within one of the largest acute hospitals in the United Kingdom (UK) serving women in an urban area; with a

local population of 650,000 and on average provides care to around 6000 pregnant women each year [22].

### **Sample and Sample size**

Identification and recruitment of women will begin when a referral is received from the general practitioner (GP) surgeries. Participants will be newly pregnant women between the ages of 16 and 45, whom live and access care covered by the study Hospital.

The sample size of 169 women was determined by a power calculation based on the anticipated changes in the SDMS that can be attributed to the DST. This is based on women's scoring using the SDMS through the three phases and how receptivity to decision making is affected (if at all) by the DST.

Statistical significance will be assessed using the Sign test. This tests for differences in the size of paired groups (median differences); in this case it is comparing the pre, post and 28 week responses to the SDMS with the ability to understand:

1. Those whose score on the scale improved;
2. Those whose score on the scale remained the same;
3. Those whose score on the scale got worse.

The Sign test is one of the two most popular non parametric tests that compare outcomes between matched pairs or groups [25]. This non-parametric test was chosen over a t-test, because the outcome (decision making on the SDMS) cannot be assumed to follow a normal distribution. Such an assumption was not possible because this is the first study looking at the effects of the MyBirthplace DST.

It is known that generally women tend to be fairly decisive regarding the place of birth; that most women have made the decision before pregnancy or within the first trimester [26], many deciding by booking visit [27]. It seems unlikely that women will be more indecisive following use of a DST. Previous studies have found that patients' anxiety and decisional conflict scores improve after accessing a DST [10, 11, 16, 28] but many fail to acknowledge the actual decision made. However the number remaining unsure tended to be small, between 1% and 4%. None of the previous studies stated that there were any patients that became undecided or indecisive following access to the DST.

As this is the first time that the SDMS has been used to test a new DST in this area it was difficult to predict the percentage needed in each group in order to allow for the margin of error. The sample size calculation was informed by a review of the current literature available on the use of the SDMS in DST studies and the knowledge described above. Based on this information and with advice from a statistician, a realistic ratio was set at 70:30. This means that for every 70 women whose scores improve using the DST we will allow for 30 participants to be more indecisive than previously indicated.

### **Inclusion criteria**

- Age 16-45
- Newly pregnant and not yet accessed a midwife

### **Exclusion criteria**

- Women unable to speak read or write English. This is due to the DST being written in English and access to a translator being beyond the scope of the study.
- Women that are deemed incapable of giving consent will also be excluded.

### **Recruitment protocol**

Those women willing to participate will send back an opt-in slip from the PIP and the researcher will contact them.

Women will meet the researcher prior to their first appointments to commence the consent process and complete the first questionnaire. Following the first appointment with the midwife she will complete a second questionnaire.

Consent for the 28 week survey will be gained; women will be given the option that best suits them either a traditional paper survey sent by post as a hard copy or electronic delivered as an online survey using Bristol Online Survey (BoS).

Questionnaires were both paper and online format; created by the research team as this is a unique study and this required targeted questions. They are free to use and the author may be contacted for use in the future

Phase three is qualitative interviews with women at 36 weeks of pregnancy; purposively chosen from participants in the first two phases who accessed the DST. Purposive sampling selects participants who have experienced the phenomenon of the study [30], in this case exposure to the DST. The interviews will be conducted with a minimum of 10 women and will also account for specific demographic groups so that there is a rounded selection of opinions on the phenomenon being studied.

### **Study Procedures**

The questionnaires to be used for the study went through a four stage validation procedure. Involving verification by;

- the supervisory team,
- an independent public engagement officer who specialises in ensuring questions are accessible to the public and easily understood in terms of language and layout,
- peers for face validity and to iron out any issues,
- a small group of antenatal women.

### **Measures**

#### **SDMS**

The primary outcome data will come from the SDMS [31]. Stages of decision making refers to the individual's willingness and ability to engage in decision making, how they then progress into making a decision or choice, and how receptive they are in considering / reconsidering their options [21] This is especially significant when considering how decision making changes when the individual has access to a DST. The tool involves one set question that asks "at this time would you say you ..." Participants are given 5 options that range from

*haven't begun to think about the choices to have made a decision and am unlikely to change my mind.*

The SDMS is the only decision making tool that has the ability to assess women's decision making at various points and allows for changes. This is specifically key for pregnancy, which can be a period of time that encounters many changes in both health and wellbeing of both mother and baby. Having the answer to the SDMS allows a clear understanding of how the participants feel about the decision at each stage of the study which addresses the primary aim.

#### *Information accessed before MyBirthplace*

Women will be asked to identify where they currently access health information about where to give birth and how they rate their satisfaction with this source by (using a 5 point scale). Response options in the questionnaire are based on previous research [32] that suggested that women access information from sources that include the internet, friends and family and the media.

#### *Level of knowledge*

Women's knowledge and understanding of the options available for place of birth within the local area covered by the maternity unit will be assessed both prior to and after their first appointment. Improvement in this knowledge is expected to be seen in women reporting more options after their appointment compared to before.

#### *Consideration of important factors*

Choice is affected by a number of variables for example partners [33], therefore women will be asked to identify what is important to them when choosing where to give birth. This will be assessed through an open ended question in order to see what factors women deem important when choosing a birth facility.

#### *Evaluation of the MyBirthplace DST*

In the post-intervention questionnaire and 28 week follow up women will be asked to score their satisfaction with a number of concepts related to Mybirthplace; this includes whether the app is visually appealing, easy to understand, and easy to use. This will be assessed by a set of scaled questions that ask women to score their responses with 1 being strongly disagree and 5 strongly agree.

#### **Consent**

Written consent will be obtained and any questions answered by the researcher. Participants will be advised that they can withdraw from the study at any time without their care being affected and contact information will be provided for the researcher.

#### **Quality and safety**

Participant recruitment will be monitored on a daily basis by the research team to ensure adherence to the study timeframe, documents of recruitment and reporting of adverse events. Monitoring of miscarriages and retention rates conducted on a monthly basis to ensure the sample size requirements are met.

#### **Data collection**

Data collection for the study is depicted in the flow diagram (Figure 1)

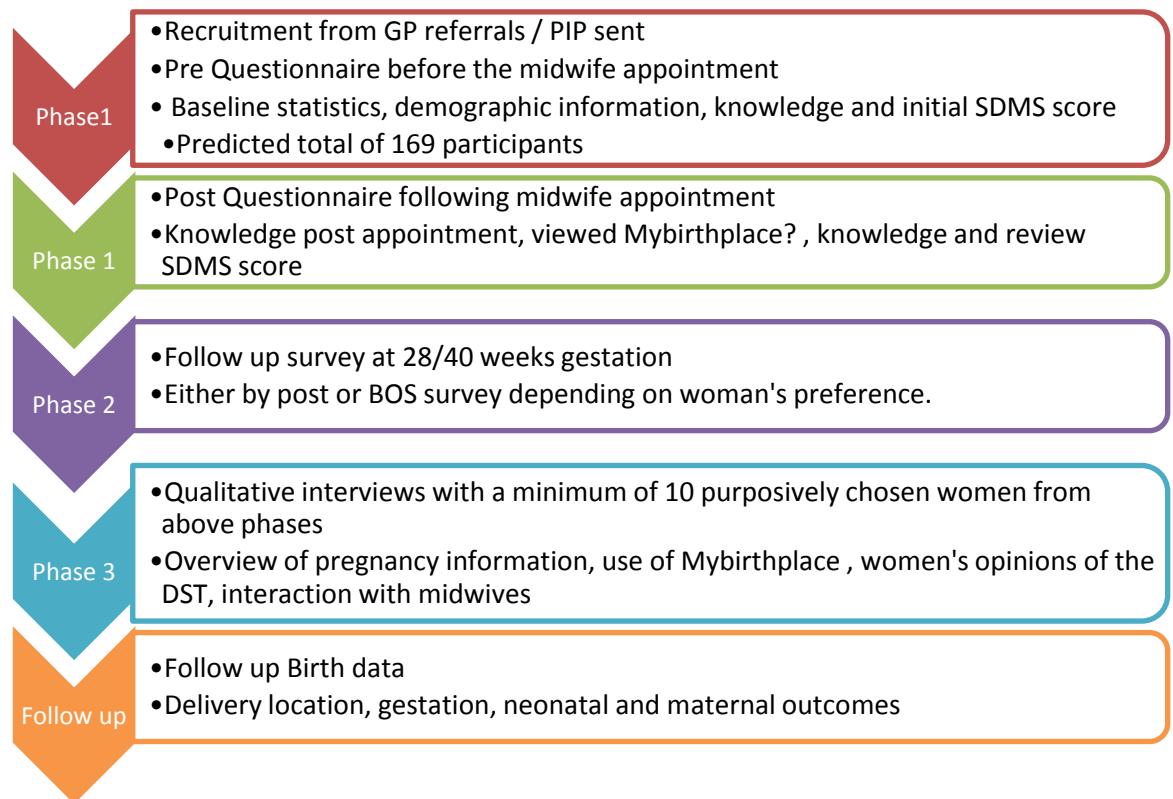


Figure 34 Mybirthplace study phases of data collection in a large urban hospital for the required 169 women

### **Data Management and Analysis**

Data management and analysis will follow a pre-set analysis plan. Data collated from phases one and two will be analysed via SPSS. The first stage of the analysis will involve frequency distributions. Descriptive analysis will be used to produce measures of central tendency for ordinal, interval and ratio data [34]. Non parametric tests will be used to show relationships between key variables using chi –square test [34].

Thematic analysis will be utilised to analyse the face to face interviews. This was chosen due to its ability to get close to the data while staying flexible [35].

### **Discussion**

There is a significant amount of literature that looks at choice of place of birth [20] including factors that researchers believe impact on a women's choice [36,37] and midwives' influence on choice [38].It is evident that women feel that they lack the information to make an informed choice about where they have their baby [39]. In the UK the majority of women still give birth in an obstetric unit; this is despite the fact that research shows that planned births in FMU and AMU have no significant difference in adverse perinatal outcomes compared with planned births in an OU [20].

What is missing from this body of literature is a mechanism to support women's decision-making regarding place of birth. DSTs have been used in a variety of

different health settings however only a few have been developed for pregnancy and birth [11,16,40].

This proposal for the MyBirthplace study aims to address the key matters highlighted in the maternity service review in 2016 that called for more information to be made available to women in different formats [1]. The intention is to bring women to the forefront of decision making about their care, reinforcing women centered care and providing the mechanism (the MyBirthplace DST) to support choice.

The app fits into a time where women are become more information savvy and the use of online resources is increasing; digital services are more widely available as is access to medical records as more is done to make online services accessible to patients [41]

The MyBirthplace DST was designed to improve women's decision making about place of birth, it is imperative now to investigate whether the DST does support women to make a decision. The findings of the study will contribute to the knowledge and understanding of the effectiveness of the MyBirthplace DST and will identify whether the use of the tool is justified within the shared discussion; recommending it for use to support other pregnant women in other localities. The study will begin to address whether it is possible for the NHS to make a move from the delivery of information in traditional format to delivery via a DST.

The research outlined in this protocol aims to provide explicit, quantitative expressions of women's valuations and qualitative experience of the MyBirthplace DST and its use within pregnancy. Our protocol provides a template for other researchers interested in assessing DST specifically related to choice of birthplace. This study is timely and is the first study of its kind no other study has looked at a birth place DST and therefore it will be an original contribution to the field.

#### **List of abbreviations**

DOH – Department of health

DST – Decision support tool

NHS- National health services

NICE- National institute of health and care excellence

SDMS –Stages of Decision making tool

#### **Ethics approval and consent to participate**

Internal approval was granted by Bournemouth University Research Ethics committee in August 2015 followed by National Ethical Approval December 2015 by South Central Hampshire B search Ethics Committee; REC reference 15/SC/05/06.

#### **Consent for publication**

Not applicable

**Availability of data and material**

Not applicable

**Competing interests**

No competing interests

**Funding**

The Ph.D is a joint collaboration between Portsmouth Hospital NHS Trust and Bournemouth University, the researcher is paid a stipend over her four years of study.

**Authors' contributions**

VH and GW conceived the study and secured funding for the work. DW, VH, CB and CW were responsible for the drafting of the protocol for which all authors contributed to the final version.

**Acknowledgements**

Not applicable

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