An evaluation of midwife-led, DOMINO and home birth services at the National Maternity Hospital, Dublin

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A quote from a DOMINO service user...

'I feel this experience should be available to more women. I imagine it saves money by avoiding intervention and the need for follow up, not to mention the benefits to the woman and family, emotionally and physically. From beginning to end this service was exemplary. I was very fearful and anxious that some of the problems which arose in my first pregnancy and labour might be repeated. As a doctor I understand the need for intervention where appropriate. I also understand the time and cost benefit analysis that is necessary in appraising a service. What I learned from the Community Midwives is how essential establishing the trust and support is to the best experience. There seemed to be a “return to the basics” approach and it works. The care gave me confidence and I was able to relax and know I was well-cared for. I did not wear my physician’s hat, and could feel free to be another woman in pain, who simply needed guidance and reassurance. Their method of relaxation and visualisation were astonishingly effective. Various appointments, such as being seen at 34 weeks for low-lying placenta were put in place, and the communication between the hospital and the midwives was also without fault. My husband was also involved and included by the midwives. The relief of having a midwife called to your home, not to mention the benefits of sleeping in your own bed, with your own bathroom to hand, and lack of time away from your other children is wonderful. I think it may help the older children accept the newcomer also. It would be a tragedy if the DOMINO service does not continue. For me, it should be looked to as the gold standard of care’.

A quote from a home birth service user...

'Vet allowed us to bond as a family immediately. Allowed us to recover and for the baby to start her life in the comfort of our own home. Lovely food. Able to sleep when we needed without disturbance of the hospital noise and routine’
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Foreword

The purpose of this evaluation research study was to obtain a better understanding of women’s experiences of using DOMINO or Home birth midwife-led models of care within an urban setting, in the Republic of Ireland. The findings presented are predominately positive and highlight the significance women and their families place on the importance of accessing these services. Recommendations focus on developing the services to improve everyday maternity care activities and practice, expanding the services to meet the overwhelming demand and extending the DOMINO and home birth services nationally. Finally, the most valuable process of evaluating these services was greatly assisted by the women who gave up their time to participate in this study.

This was an unfunded study led by Dr Maria Healy, Head of Midwifery, University College Dublin and the untiring efforts of Ms Teresa McCrreery, Community Midwife Manager.

Researchers include: Ms Niamh Bell, Ms Fiona Roarty and Ms Shauna Callaghan – (Awarded 2015 UCD, School of Nursing, Midwifery & Health Systems Summer Scholarship).

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A sincere thank you also goes to the rest of the Community Midwives at the National Maternity Hospital who continue to provide these high quality and invaluable DOMINO and Home birth services.

Unintended outcome

Publication of this research is timely to inform the development of the National Maternity Strategy in Ireland.
1. Background

Across Ireland the structure of maternity services is, and has been since the early 1970s, predominantly hospital-based and obstetric-led with obstetric consultants presiding as the leading maternity care provider for all pregnant women (Butler *et al.*, 2015). In recent years however, there has been a gradual shift, both in Ireland and internationally, towards the acceptance and development of midwife-led models of maternity care (Devane, Murphy-Lawless and Begley, 2007). There is mounting agreement amongst service providers and health professionals that midwife-led care plays a fundamental role in providing safe and high standard maternity and neonatal care services (Renfrew *et al.*, 2014). This has been demonstrated by the decrease in maternal and perinatal mortality rates throughout the developed world (Devane, Murphy-Lawless and Begley, 2007). The significant input of midwifery care within a functional maternity care system has also been recently highlighted to prevent approximately 23-31% of all cases of stillbirth worldwide (Homer *et al.*, 2014). In addition, the central focus of maternity services has grown to incorporate the important matters of maternal satisfaction and choice, as well as ensuring maternal and neonatal safety (Begley, Devane and Clarke, 2009).

Midwife-led care refers to models of maternity services where the midwife works in partnership with the woman and is the lead maternity care professional (Begley, Devane and Clarke, 2009). The midwife enacts an autonomous practitioner role and advocates a philosophy of normality in childbirth, where continuity and trusting relationships with the women form the foundations of care (Soltani and Sandall, 2012). Midwife-led models of care involve the continuous evaluation of the mother’s physical, psychological, social and spiritual wellbeing, as well as that of her family, to ensure the provision of holistic care and minimise unnecessary maternity interventions (Sandall *et al.*, 2013).

Within midwife-led services there are several models of care such as ‘caseload midwifery’ (Sandall *et al.*, 2010; Hartz, Foureur and Tracy, 2012; Sandall *et al.*, 2013) and ‘team midwifery’ services (Wardle, Wright and Court, 1997; Waldenstrom *et al.*, 2001; NICE, 2014). ‘DOMINO’ (*Domiciliary In and Out*), predominately utilises a team midwifery model and involves the provision of a midwife-led structure of antenatal care within the community, intrapartum care within a hospital and postnatal care initially in a hospital with early discharge to the community. Midwife-led care is only effective within a multidisciplinary maternity care model with a referral and transfer system to specialist care (Homer *et al.*, 2014). This includes a transfer back mechanism to midwife-led care, as assessment allows, which thereby promotes women receiving care from the most appropriate lead maternity care professional.

‘Place of birth’ has been the focus of large research studies in the UK (Brocklehurst *et al.*, 2011; Hollowell, 2015) and subsequent publication of practice guidelines (NICE, 2014). The findings highlight the positive and negative impact of different places of birth on maternal and newborn outcomes. Birth places examined include maternity hospitals/units, freestanding, and alongside midwife-led units and birthing at home.

Throughout the past Century there has been a significant change in global attitudes towards home births as a place of birth (Domiciliary Births Group, 2004). During the 1950’s one third of births took place in the home (Domiciliary Births Group, 2004). However, the current rate of home births in Ireland stands at approximately 0.2% (Meaney *et al.*, 2013). Home births in Ireland are largely facilitated by a limited number of Self Employed Community Midwives who are contracted by the Health Service Executive (HSE) under a memorandum of understanding (Meaney *et al.*, 2013). Home births are also enabled by a small number of community midwifery services, mainly by hospital based midwives (KPMG, 2008; Meaney *et al.*, 2013). Recent evidence has concluded that home birth is a safe option of maternity care for women with a straightforward pregnancy, in particular multigravid women (Hollowell *et al.*, 2011; Vedam *et al.*, 2012; Meany *et al.*, 2013). For nulliparous women who plan a home birth they also experience fewer interventions however, there is an increased risk for the baby (Hollowell *et al.*, 2011). Unfortunately home birth is largely unavailable as a choice of maternity care for women across Ireland, due to limited availability of these services at a national level.
2. Literature Review

2.1. Introduction

In recent years, a midwife has come to be identified and recognised as a responsible and accountable autonomous practitioner having completed an accepted standard of education and qualifications to be legally licensed to practice (International Confederation of Midwives (ICM), 2011). The professional practice of midwifery is defined as the:

‘skilled, knowledgeable, and compassionate care for childbearing women, newborn infants, and families across the continuum throughout the pre-pregnancy, pregnancy, birth, postpartum, and early weeks of life’ (Renfrew et al., 2014, p. 2).

The role of the midwife is to work in partnership with the individual woman to provide care, support and advice during the antenatal, intrapartum and postpartum periods (ICM, 2011). Key characteristics associated with the midwifery profession include promotion of normal birth, respect for the individual woman and her choices, and timely prevention, detection and management of possible complications with appropriate referral to associated services and professionals (ICM, 2011; Renfrew et al., 2014). Midwife-led care has recently been shown to correlate with increased positive outcomes and greater efficient and cost-effective use of resources (Renfrew et al., 2014).

There is substantial evidence internationally related to the importance of midwife-led care in promoting normality in childbirth and providing improved methods of care (Soltani and Sandall, 2012). Additionally, the positive impact on the quality and safety of maternity health services contributed by midwife-led care is significant (Sandall et al., 2010) as it has been shown to correlate with increased incidence of spontaneous vaginal births, as well as a decrease in the rates of operative instrumental births and caesarean section (Hartz, Foureur, and Tracy, 2012). It has been reported that universal implementation of midwife-led management for maternal and newborn infant wellbeing could prevent approximately 61% of all cases of stillbirth and maternal, fetal and neonatal deaths worldwide (Homer et al., 2014). It is estimated that approximately 30% of maternal deaths, 23.8-31% of all reported cases of stillbirth and greater than 50% of neonatal mortalities could be averted through the introduction of midwifery care (Homer et al., 2014). An evaluation carried out on 461 systematic reviews demonstrated that 56 key outcomes including survival rates, health and wellbeing of both mothers and infants, as well as effective and efficient use of resources can be improved upon through the implementation of midwifery services (Renfrew et al., 2014). These practices therefore aim to reduce the costly and excessive intervention use which costs an estimated $18 billion annually in the United States of America and carries associated risks of iatrogenic harm to women and neonates (Renfrew et al., 2014). Therefore, there is increasing acknowledgment worldwide that the provision of midwife-led care is an important component in advancing maternity care to specifically focus on normalising childbirth (Sandall et al., 2013).

2.2. Aims of Review

The aim of this review is to provide a systematic search and evaluation of the national and international literature focused on the DOMINO model of care and home birth services.
2.3. Search Strategy

A systematic review of several online databases was undertaken to identify published literature and studies relating to midwife-led models of care and DOMINO and home birth services. The databases reviewed included: Business Source Premier, Cochrane Library, CENTRAL, CINAHL plus, EMBASE, PsycInfo, Pubmed and MedLine.

Relevant keywords and phrases were compiled to systematically search the current literature to focus on DOMINO midwifery services. Search terms included: DOMINO, domiciliary care, team midwifery, midwife-led care, community midwifery, low risk midwifery care, straightforward pregnancy, maternity services, holistic care and early transfer home with 'and/or' used as a Boolean operator. English language was specified and filters used included scholarly and peer-reviewed work and academic journals/journal articles. Publication dates were limited to 2010-2015 to access the most up to date research available. However this was then expanded due to the lack of sufficient sources related to DOMINO services within that time frame (Appendix 1). The reference lists of all relevant papers were checked for further references not identified elsewhere.

An online search of resources that host professional guidance was also undertaken. These included:

- Department of Health Social Services and Public Safety (www.dhssps.org.uk)
- Lenus: The Irish Health Repository (www.lenus.ie)
- Guidelines and Audit Implementation Network (www.gain-ni.org)
- Health Service Executive (www.hse.ie)
- National Institute for Health and Care Excellence (www.nice.org.uk/)
- Nursing and Midwifery Board of Ireland (www.nursingboard.ie)
- Regulation and Quality Improvement Authority (www.rqia.org.uk)
- Royal College of Midwives (www.rcm.org.uk)
- Royal College of Obstetricians and Gynaecologists (www.rcog.org.uk)

2.4. International Models of Maternity Care

Different models of maternity care are employed throughout the world these include: Obstetric-led, Family doctor-provider care, Shared-care and Midwife-led care (Sandall et al., 2013). Obstetric-led care is seen predominately throughout Ireland and parts of the United Kingdom and refers to the role of obstetrician as the lead maternity care provider. In these systems, care and support for the woman during the antenatal, intrapartum and postnatal periods is largely provided by midwives within obstetric-led facilities where the obstetrician directs the care and assumes overall responsibility for the management (Collins and Kingdon, 2014). This system is similarly used in areas such as Iran and Lebanon (Sandall et al., 2013) as well as Germany (KPMG, 2008). In the United States of America, obstetric-led care is the dominant model of maternity services whereby an obstetrician provides the majority of antenatal care and is present for the birth, with postnatal care provided by an obstetric nurse or midwife (Sandall et al., 2013). Although women of all risk status can avail of this model, obstetric-led care is primarily associated with high-risk pregnancies and those experiencing obstetric complications (KPMG, 2008). This model has led to the medicalisation of childbirth where everyday maternity care of women with high and low risk status often receive a blanket higher risk approach to care.

Family-doctor services involve local physicians who are engaged at all stages of maternity and newborn care (KPMG, 2008) with appropriate referral to specialised obstetric services where applicable (Sandall et al., 2013). This model has largely been seen historically in areas such as Canada where in 2001, 64% of family doctors were involved in maternity care, while midwifery input into care was significantly lower at 3% (KPMG, 2008).

Shared-care is provided by a combination of health professionals sharing responsibility for the organisation and management of maternity care (Collins and Kingdon, 2014). This model of maternity care is utilised in France where women receive care from a combination of obstetricians, midwives, gynaecologists and other professionals, although the degree of choice available to some women is limited by geographical location.
Maternity care by midwives is a key element in the majority of maternity services worldwide, with the obstetrician as the lead professional. In the last decade however, there has been an increase in the implementation of midwife-led care services internationally, with the midwife acting as the lead maternity care provider in the development, organisation and provision of care and support for pregnant women (Sandall et al., 2013). Midwife-led models of care are based on the philosophy that pregnancy and childbirth are normal life events (Beckmann, Kildea and Gibbons, 2011) and that the majority of women have the natural ability to give birth without routine intervention (Sandall et al., 2013). There is general consensus throughout the literature that midwife-led care offers a safe and high-quality system of maternity services worldwide (Hartz, Foureur, and Tracy, 2012). Several reports have conducted studies to measure differences in the level of intervention and overall positive outcomes of midwife-led care when compared to other standard care models. A systematic review of 13 randomised trials involving 16,242 women across several countries including Ireland, Australia, UK, Canada and New Zealand examined the benefit of midwife-led services in comparison to obstetrician-led care (Sandall et al., 2013). Some of the key points that emerged from this study included that women randomised to midwife-led care were less likely to experience preterm birth, instrumental assisted deliveries, regional analgesia such as epidural anaesthesia, amniotomy and episiotomies (Sandall et al., 2013). They were also more likely to experience a spontaneous vaginal delivery, a longer average mean length of labour and being cared for during labour by a known midwife (Sandall et al., 2013). The review found there was no statistical difference between women being cared for by midwife-led or obstetrician-led services in terms of chance of caesarean section, intact perineum, overall fetal loss rates, induction or augmentation of labour or antenatal hospitalisation (Sandall et al., 2013).

2.4.1. International Models of Midwife-Led Care

Within midwife-led services, models of care include: Caseload midwifery, midwifery group practice (MGP), midwifery care in midwife-led units (MLUs), team midwifery and Domiciliary Midwifery In and Out of hospital (DOMINO). Caseload midwifery is individualised care antenatally through to the puerperium by a single midwife (Sandall et al., 2013) which promotes continuity of relationship (Mc Court, 2006). Assistance and support is provided by a small number of other caseload midwives (Hartz, Foureur and Tracy, 2012). Midwives within caseload models of care generally provide care for a group of 35-40 women annually. This model is mainly utilised in the UK and Australia (Hartz, Foureur and Tracy, 2012) and can be carried out within community settings to provide a more homely approach to care (NICE, 2014). Although the high level evidence of the value and efficiency of caseload midwifery is limited, the literature supports a positive trend towards a reduction in caesarean section and instrumental delivery rates over other models of care, as well as increased levels of maternal satisfaction and incidence of spontaneous vaginal deliveries (Hartz, Foureur and Tracy, 2012). Despite these benefits however, many areas have found difficulties in implementing the required comprehensive levels of continuity of care into practice (Bowers et al., 2015). Caseload midwifery is also referred to in the literature as ‘Midwifery Group Practice’ and ‘One-to-one’ care (Collins and Kingdon, 2014).

Midwifery Group Practice (MGP) provides continuity of care for women with low, medium and high risk status; an example of this service can be seen at a tertiary, urban hospital in Australia. Each midwife is responsible for the care, support and follow-up of approximately 40 women per year (Turnbull et al., 2009). A retrospective cohort study conducted in Australia analysed the outcomes of 1,545 births between 2006-2010 under the MGP model. The outcomes were compared to 13,880 women who received other models of care. Women who received care from MGP midwives were less likely to have epidural analgesia, increased incidence of vaginal births and greater maternal satisfaction (Beckmann, Kildea and Gibbons, 2011). A Cochrane systematic review also demonstrated that there was no adverse outcomes noted from this model of care, however there was also no statistically significant difference in mode of birth or caesarean section rates (Sandall et al., 2013).

Midwife-led Units (MLU) have been established internationally in recent years as an alternative choice of maternity care for women deemed to be of low obstetric risk. In this model of care, the woman receives
the majority of antenatal care in the unit or in the community and is cared for throughout the pregnancy, childbirth and postpartum period by a group of midwives allocated to the unit (Begley et al., 2011). In the United Kingdom and other countries, such as the Netherlands, MLUs can exist as ‘free standing’ (FMU) or ‘alongside’ units (AMU), which function in connection with an obstetric-led unit for high-risk women (KPMG, 2008). Within Northern Ireland, there are currently eight MLUs; five AMUs and three FMUs, all of which provide a conductive environment and care to promote physiological birth. However, various admission criteria are applied from one unit to another as each unit has developed their own criteria (Healy, 2013). A guideline for the admission to Midwife-led units in Northern Ireland is currently being finalised. This project is led by Healy and Gillen and supported by Guidelines Audit and Implementation Network (GAIN, www.gainni.org).

Within the Republic of Ireland there are just two AMUs one based at the Our Lady of Lourdes Hospital, Drogheda and one at the Cavan General Hospital. These were opened in 2004, (Begley et al., 2011), following the publication of the Kinder report in 2001 which recommended the opening of midwife-led units in the North Eastern Health Board area (Kinder, 2001). These MLU services were reviewed in a randomised controlled trial involving 1,653 low-risk women randomised to receive midwife-led care (n=1,101) or consultant-led care (CLU) (n=552) at a 2:1 ratio (Begley et al., 2011). The findings highlighted that MLU women were significantly less likely to have continuous electronic fetal monitoring or augmentation of labour. When comparing the outcomes of the midwife-led care as practiced within these units to the consultant-led care, there was no significant difference on seven key outcomes for example; rate of caesarean section, episiotomy, induction, postpartum haemorrhage; thereby midwife-led care is as safe as consultant-led care (Begley et al., 2011).

Although MLUs are purpose built or re-designed to provide a relaxing home-like environment, they are equipped for emergency scenarios (Domiciliary Births Group, 2004). Midwives undertake regular obstetric emergency education and in the event of the development of complications, women are immediately transferred to an alongside or nearby consultant-led unit for appropriate care (Begley et al., 2011). MLUs have internationally been developed as a mode of maternity care for low risk women in areas such as the Netherlands, Sweden and Germany, however they have not historically been a prominent feature of maternity care in France or the United States (KPMG, 2008). International reports have demonstrated similar incidence of positive outcomes in relation to maternal and neonatal morbidity and mortality rates in MLUs when compared to standard models of care (Begley, Devane and Clarke, 2009). In relation to the provision of choice for pregnant women, MLUs are deemed to be essential and valuable in the development of cost-effective (Saunders et al., 2000; Devane et al., 2010), safe and woman-centred holistic maternity services that aim to increase maternal satisfaction and promote normal childbirth (Begley et al., 2011; NICE, 2014).

Other models of midwife-led care include team midwifery and DOMINO midwifery services. Team midwifery models of care involve women receiving midwife-led care from a team of 4-10 midwives (NICE, 2014). Team midwifery is often provided to a defined group of women (Sandall et al., 2013), which may be located within a specific geographical area. Midwifery teams can be hospital-based or involve integrated systems between the hospital and community settings, such as DOMINO (NICE, 2014). The aim of this model is to also provide continuity of care with a known group of midwives through the antenatal, intrapartum and postnatal periods for women with low obstetric risk (Waldenstrom et al., 2001).

Sandall et al., (2013) systematic Cochrane review of midwife-led models of care included 13 trials, 10 of which utilised team midwifery models involving 11,124 women. The outcomes were compared against other maternity care models. The findings indicated no increased probability for any adverse outcomes for women with straightforward pregnancies or their infants having been cared for by a midwife-led continuity model of care. Waldenstrom et al., (2001) research based in Australia was included in the Cochrane review. Their research involved 495 women allocated to team midwifery care and 505 to standard maternity care, mostly obstetric-led or by midwives in collaboration with obstetric doctors. The findings indicated no statistical difference between the two methods of care in relation to maternal and fetal health, highlighting that team midwifery care is a safe model to be considered (Waldenstrom et al., 2001). A similar RCT involving 1,000 women, with 502 randomised to team midwifery care, found that they were less likely to experience augmentation of labour, epidural analgesia and continuous fetal monitoring compared to those receiving standard maternity care. These findings suggest that team midwifery as a continuity of care and promotion of normal birth model is a contributing factor to reduce unnecessary interventions in childbirth (Biro, Waldenstrom and Pannifex, 2000).
Within the international literature, the term ‘team midwifery’ is often used to describe models of care similar to that of DOMINO; such as that implemented by the Changing Childbirth pilot scheme in the UK (Hicks, Spurgeon and Barwell, 2003). International research relating to the implementation or evaluation of the DOMINO model is limited. In Ireland, there is no national provision of caseload midwifery, it is only available from a small number of community midwives. Midwifery Group Practice services do not exist, while DOMINO midwifery care was first introduced as a pilot project in Ireland in 1999. The pilot DOMINO and home birth service was successfully evaluated by Dr Harold Brenner in 2001, who highlighted a high standard of care provision for low risk women comparable to care within an obstetric-led hospital. The report highlighted a high degree of maternal satisfaction and recommended development of similar services throughout Ireland. Subsequently, DOMINO services in different forms have been offered in 5 of the 19 maternity hospitals including: the National Maternity Hospital, the Coombe Women and Infants University Hospital, the Rotunda Hospital in Dublin, Cork University Maternity Hospital and Wexford General Hospital.

A later review into the maternity and gynaecology services in the Greater Dublin Area found that DOMINO and Early Transfer Home services provide 10% of postnatal care for women in the community (KPMG, 2008). Despite the reported success of these services, they are under-resourced and overstretched and therefore are unable to facilitate the needs of women in the area (Begley et al., 2009). Although it is estimated that 70% of primigravidas and 85% of multigravidae who experience uncomplicated low-risk pregnancies would benefit from DOMINO and community midwife-led services, geographical restrictions impose an inequality of service provision to all maternity service users in Ireland (KPMG, 2008). Currently, Irish hospitals are not funded to provide national community maternity services beyond those offered through DOMINO and Early Transfer Home schemes available within limited hospitals (Begley et al., 2009); no national community midwifery service therefore exists in Ireland. Public health nurses (PHN) care for a new mother and baby on discharge, and are required to initiate care within 48 hours of receiving official notification (Circular 27/66, Department of Health). Inappropriately, there is no public health nursing provision at weekends or on bank holidays. In addition, PHN students no longer have to be a registered midwife to gain entry onto the PHN programme; they instead complete a maternal child health module. The current consultation and development of a National Maternity Strategy for Ireland is due for release in late 2015, it is hoped that a national community midwifery service will be included within the strategy and implemented into practice.

The DOMINO model of care is centred around the philosophy that childbirth is a normal and potentially life enhancing event (Brenner, 2001). The midwives are the lead maternity care providers and work as autonomous and accountable practitioners in accordance with the practice guidelines for midwives (An Bord Altranais, 2015). They also work closely with the hospital maternity care multidisciplinary team. DOMINO care, involves the provision of a midwife-led structure of antenatal, intrapartum and postnatal care for women (Butler et al., 2015) within a specific geographical area. This model is designed for women who are deemed at low risk of complications during pregnancy and birth (National Council for the Professional Development of Nursing and Midwifery, 2008). A DOMINO team generally comprises of 10-12 experienced midwives with a rota organised so that there is 24-hour care, with at least 2/3 midwives on duty during the day and 1 at night.

Women receive their antenatal care through midwife-led clinics at different venues in the community, including local primary health care centres. Antenatal appointments are scheduled to give sufficient time with each woman to discuss any issues or questions and provide relevant information. Antenatal care is also shared with the woman’s General Practitioner as this is a public service (Domiciliary Births Group, 2004). Subsequently, women who access the DOMINO or home birth services and have private health insurance which covers maternity care can not use their insurance. Maternity health insurance can only be used for consultant-led care, which requires further exploration.

At the onset of labour, first time mothers may receive a home visit from a member of the DOMINO team or receive a consultation over the phone before being admitted to the hospital to birth their baby, often by a known midwife (Begley et al., 2009). A randomised study conducted in Vancouver, Canada, of 630 healthy nulliparous women assessed the impact of home visits versus telephone communication as a support mechanism in early labour. Being admitted to hospital before commencing active labour leads to an increased risk of intervention during labour, such as augmentation by oxytocin infusion, electronic monitoring and epidural analgesia (Janssen and Desmarais, 2013). Of the 630 women, 328 were randomised to receive a home visit while 302 received support via telephone communication. The findings showed that women who
received personal visits for early labour assessment from a nurse/midwife described their overall experience and perception of labour more positively than those who had telephone support (Janssen and Desmarais, 2013). If the labour remains uncomplicated, a birth plan is followed to facilitate maternal choice where possible, with the inclusion of partners highly encouraged. One of the main aims of this model is to facilitate a normal labour and birth in partnership with the woman by a known and trusted midwife (KPMG, 2008).

Early discharge from hospital following childbirth can be facilitated within 6-24 hours and daily postnatal care in the mother’s home is provided for the first 5-10 days (Begley et al., 2009). The postnatal visits provide opportunities to assess the wellbeing of the mother and newborn infant as well as the mother’s mental health status, offer feeding and parentcraft advice, and also to assess the conditions and environment to determine the need for any additional social support (Bowers, 2015). Within the DOMINO model, the midwives provide their own antenatal and parentcraft classes for expectant families to promote normal pregnancy and childbirth, discussing preparation for labour including: yoga, massage, labour positions, aqua-aerobics and acupuncture (Brenner, 2001). The Newborn Blood Spot Screening test is performed by the midwives at home and in the near future (September 2016) midwives will be able to undertake the advanced neonatal assessment, thereby preventing the need for the woman and her newborn baby to return to the hospital following discharge or indeed requiring a woman who has had a home birth to visit a hospital for the neonatal assessment.

2.6. International and Irish Home birth Services

During the 1950’s, one third of births took place in the home (Brenner, 2004). In the UK rates have dropped dramatically to 2.5% of the national birth rate in 2010 (Ashley and Weaver, 2012). This is similar to the rates of 1-2% seen in Denmark and Iceland (Lindgren et al., 2014), while home births in areas of Canada where midwifery practice has been regulated account for 3% of all births (Vedam et al., 2012). Home birth rates are dramatically lower in countries such as Sweden and Norway, at approximately 0.1% (Lindgren et al., 2014), while Finland has a reported rate of 1% (Ashley and Weaver, 2012). In the USA, home births make up only 0.7% of the national birth rate (Meaney et al., 2013). The geographical location of women, the availability of services and the recognised role of the midwife appear to impact the rate of home births reported in various countries. In Turkey, there is extremely limited home birth service to deem it a genuine choice for women (Ashley and Weaver, 2012), and in Australia publically funded home birth services are confined (Lindgren et al., 2014). The Netherlands is one of the most successful countries with regard to home birth rates, where the annual percentage of home births ranged from 34% in 2002 (KPMG, 2008) to 24% in recent years (Lindgren et al., 2014). Within the health systems in the Netherlands, the concept of home birth is deemed to be culturally and medically accepted and encouraged.

In Ireland, the current rate of home births stands at approximately 0.3% (Meaney et al., 2013). This represents a dramatic decrease in the prevalence of home births during the 20th Century, where rates have fallen from approximately 18,000 in 1957 to 233 in 2012 and have consistently remained at low levels of less than 1% of the national birth rate in the 21st Century (Meaney et al., 2013). Home birth statistics in Ireland differ between national bodies, this may be due to home births that are facilitated by hospital based midwives are not registered as a home birth.

Home births in Ireland are largely facilitated by approximately 15-18 Self-Employed Community Midwives who are contracted by the Health Service Executive (HSE) under a memorandum of understanding (Meaney et al., 2013). This service was initiated following a pilot project in 2003, supported by the Health Service Executive, to provide choice for women who wanted to plan a home birth. A small number of community and DOMINO midwifery services also provide home birth services. The midwives who provide these services are hospital employees from the National Maternity Hospital in Dublin (KPMG, 2008; Meaney et al., 2013), Wexford General Hospital through a community midwives team, as well as through Waterford Regional Hospital (Meaney et al., 2013). Unfortunately, there is an unequal distribution and limited home birth service provision in Ireland (Meaney et al., 2013). Firstly, there is a small number of midwives providing home birth services within the community and via hospital outreach services however they are often restricted by location. Furthermore, they are limited to the number of births they can facilitate annually and therefore are unable to facilitate the demand (KPMG, 2008).

A review was conducted by the Health Service Executive in 2012 on the outcomes of home births conducted by Self-Employed Community Midwives from January 1st to December 31st 2012 (Meaney et al., 2013). During the time period, 224 women were registered to partake in home birth services, of whom 73.5% were multiparous and 23.7% were primiparous (Meaney et al., 2013). 15% (n=34) of these women were antenatally
transferred to hospital based care. Of the 189 women who began labouring at home, approximately 85% had a home delivery (n=161), while 14.8% (n=28) required intrapartum transfer. Episiotomy rate was relatively low, 6.1% (n=2) of primiparous women and 1.6% (n=2) of multiparous women, while approximately 64% had an intact perineum. Perinatal outcomes were also reported, with 6% of newborns requiring resuscitation and 1.8% (n=3) necessitated transfer to neonatal special care units. Breastfeeding rates were also recorded to be significantly higher in women registered for a home birth compared to women who gave birth in a hospital. In women experiencing a home birth, exclusive breastfeeding rates at discharge on day 16 were recorded as approximately 96.2% (n=153), compared with 46.6% of women discharged on day 3 postnatally from hospital-based maternity services (Meaney et al., 2013).

The Domiciliary Births Group Report (2004) in Ireland, stated that home births should be a prominent feature in all maternity service settings and should be incorporated through a risk management framework (Domiciliary Births Group, 2004). Unfortunately, this has not occurred. Not only are home births deemed to be as safe for low risk women, there is also evidence that they are more cost-effective as a hospital birth costs nearly twice the expense of a home birth (Domiciliary Births Group, 2004), and are in demand in many areas (Vedam et al., 2012). These services are reported to provide increased levels of maternal satisfaction through increased control and trust in the birthing process, individualised care and support (Ashley and Weaver, 2012), facilitation of increased family involvement in the process, and a reported greater sense of comfort and privacy (Vedam et al., 2012).

There are substantial differences in opinion and attitudes internationally regarding the acceptance of home birth (Ashley and Weaver, 2012), much of which is centred on the perception of safety, professional beliefs and the dominant model of maternity care as either obstetric or midwife-led (Lindgren et al., 2014). As mentioned in chapter one, the effect of planned home births on maternal and perinatal morbidity and mortality was examined by Hollowell et al., (2011) via a prospective cohort study in the UK. The study compared the outcomes of 79,774 low risk women, including 17,000 who had chosen a planned home birth (Hollowell et al., 2011). The findings highlighted that 93% of women in the planned home birth category had a spontaneous vaginal delivery; 88% achieved a ‘normal delivery’, compared to 58% of women receiving obstetric-unit care (Hollowell et al., 2011). The study concluded that home birth appeared to be a safe option for multiparous women that conveyed the benefit of a reduced level of interventions for the mother and an increased rate of breastfeeding initiation (Hollowell et al., 2011). NICE (2014) referred to the outcomes of Hollowell et al., (2011) research and based their recently published intrapartum guidelines, which encourages both multiparous and nulliparous women to choose any birth setting when planning their place of birth (home, freestanding or alongside midwifery unit or obstetric unit), on these findings. Clarifying this statement, NICE (2014) emphasises that low risk multiparous women are recommended to plan birthing at home or in a FMU or AMU as intervention rates are lower and the outcomes for their baby are no different to birthing in an obstetric unit. Low-risk nulliparous women are advised similarly regarding birthing in a FMU or AMU, although nulliparous women are advised that there is a small increased risk of an adverse outcome for the baby if planning a home birth.

2.7. Continuity of Care

The provision and acknowledgment of choice, continuity and control for pregnant women is a vital component in current high quality maternity services (Ashley and Weaver, 2012; Department of Health, Social Services and Public Safety, 2012). Continuity of care and carer is one of the most valued aspects of DOMINO and midwife-led models of care. However, difficulties arise in the literature due to wide variations in defining the concept of continuity of care (Biro et al., 2003). Continuity can relate both to continuity of the carer, such as the presence of a known midwife during labour, and consistency in the care and information provided by different professionals (NICE, 2014). Continuity is defined with 3 main categories: management continuity of care, relating to communication of facts and decisions within health care services, between professionals and to women (Sandall, 2014); informational continuity is timely and availability of relevant information and relationship/relational continuity focuses on the therapeutic relationship between a client and health care provider, aiming to minimise interactions with numerous staff members and dedicate adequate time to the development of a trusting relationship (Bowers et al., 2015).
Relational continuity has been found to have a more positive impact of patient experience and outcomes (Sandall, 2014). Within midwifery and maternity services, there are varying degrees of unpredictability associated with pregnancy and childbirth, it is therefore difficult for health care providers to establish complete continuity of care with women (Bowers et al., 2015). As DOMINO midwifery provides integrated care through a group of midwives, it is possible for management and informational continuity to be provided, however the provision of relational care may be problematic due to the possibility of interactions with all members of the group (Bowers et al., 2015). In practice, a woman throughout her pregnancy, labour and postnatal care may only meet 3-4 midwives out of the 10-12 members of a DOMINO team which can therefore enable the development of relational continuity of care. Nevertheless, the difficulty in maintaining continuity of care from the midwives perspective has only been briefly mentioned in the literature. NICE (2014) highlights the potential of burn-out from the additional workload associated with the model of team midwifery care (NICE, 2014). It is essential that midwife-led teams are adequately staffed at all times, that the team is not continuously called on to staff other areas and that individual midwives maintain their competence through continuous professional development to ensure continued high quality of care for mothers and babies.

A recent Cochrane review by Sandall et al., (2015) examined 15 studies of 17,674 women, further emphasises the benefits for mothers and babies from midwife-led continuity of care. The findings showed that they were less likely to experience: regional analgesia, instrumental vaginal birth, preterm birth, fatal/neonatal death and more likely to experience spontaneous vaginal birth from knowing the midwife prior to birth. The authors conclude by stating that most women without substantial medical or obstetric complications should be offered midwife-led models of continuity of care.

2.8. Outcomes of Review

This review initially outlines the different models of maternity care provision worldwide. Focusing on the different midwife-led models of care, the review critically discusses the evidence from an international and national perspective. The findings reveal the benefits of midwife-led care for mothers and babies, especially the increased occurrence of vaginal birth, reduced incidence of interventions during childbirth, increased breastfeeding initiation rates and valuable support from midwife-led continuity of care. The review examined the evidence relating to team midwifery and identified a lack of international research relating specifically to DOMINO models of care and women’s perceptions of receiving DOMINO care. International and national home birth rates were highlighted along with a discussion on home birth service provision in Ireland. Evidence supported in recently published NICE guidelines emphasises the safe aspect of a planned home birth, in particular for multiparous women.

It is crucial to continuously evaluate health care services to ensure quality of care and since Benner’s 2001 evaluation of the National Maternity Hospital (Dublin) DOMINO and hospital outreach home birth service there has been no further evaluation research carried out.
3. Aims and Objectives

The purpose of this study is to evaluate the DOMINO and home birth services provided by a team of midwives known as the ‘Community midwives’. They are employed and are based within a tertiary maternity hospital which cares for over 9,000 births per annum. The main objectives of this study are: to explore women’s perceptions of the DOMINO and home birth services, to identity the essential care needs women value within these services and explore the impact these midwife-led services have on the women and their families. It will also aim to identify aspects of the midwife-led services which require further development of practice or service provision.
4. Methodology

Quantitative methodological approach was used to systematically investigate the aims of this research. A cross-sectional, survey research design enabled the employment of a questionnaire as the structured data collection instrument. Ultimately, the instrument collects the type of data which is most useful in answering the research question. As Parahoo (2006) states, the main purpose of quantitative research is;

...to measure concepts or variables objectively and to examine, by numerical and statistical procedures, the relationship between them (p 49-50).

The questionnaire was designed and piloted by the research team and was predominantly quantitative in nature, however open questions prompted individual qualitative responses (See appendix 3). The survey questionnaire was designed to identify and validate the women’s opinions, views and experiences of their care having recently accessed the DOMINO or Home birth services. The questionnaire also aimed at ascertaining the essential care needs women valued from the midwife-led services, the impact of the services on the women and their families and to identify aspects of the services which require further development.

4.1. Data Collection

Data were collected via a postal, self-completed questionnaire. This approach was chosen to reach a relatively large sample of participants easily. The cross-sectional survey involved a population of 151 service users who had accessed the services between June and August 2013. Independent advice was sought from the Centre for Support and Training in Analysis and Research (CSTAR) based at UCD and the statistical analysis was focused on the precision of estimates of population proportions. Therefore, the planned sample of 150 participants would provide a precision (95% confidence interval width) of at most ±8% for a proportion of 50%, and as low as 3.5% for a proportion of 5%. The planned 151 sample size equated to 25% of the 600 annual service users. The service users were invited to participate in the research via an individual letter. Enclosed also was a participant information leaflet outlining details of the research and their involvement, a consent form, a return self-addressed pre-paid envelop and the questionnaire.

A pilot study was carried out on 10 service users to identify if there was any issues relating to clarity, readability, layout, the scope of the questions and the general time frame required to answer the full set of questions. Relevant adjustments were made by refining and rewording some of the questions to improve clarity. The findings from the pilot study were not included in the final analysis. The questionnaire contained 75 items related to the experience of DOMINO or home birth services, including 51 closed questions and 24 open questions. The questions were divided into 5 categories to target specific areas such as demographic (15 items), initial contact (4 items), antenatal care (12 items), intrapartum care (26 items) and postnatal care (18 items). The questionnaire was designed to be user-friendly and easy to understand with clear and unambiguous instructions. Efforts were made to avoid leading and hypothetical questions. Abbreviations and professional terminology were not included in the questions.

The questionnaires were forwarded to the 151 service users by the research team when they were between 2-8 weeks postnatal to encourage accurate recall of their experiences. Participants were initially asked to return the questionnaires by mid November 2013. A small number were prompted to return the questionnaire by up to two telephone calls from members of the research team. By December 2013, 116 participants returned the questionnaires.

Potential issues anticipated due to the method of data collection chosen included a possible low response rate to the postal questionnaires and a variance in the quantity and quality of responses to the open questions.
Similarly the use of verbal rating scales can be unfavourable as chosen words may hold different weight and meaning for individual participants. Contact information was provided in order to minimise non-responses due to issues with understanding of the questions, however this may prove to be a factor in some cases of failing to respond. Possible advantages of this data collection method include allowing sufficient time for participants to supply satisfactory responses and the anonymity offered may have encouraged participants to provide honest and detailed responses in a private format. The removal of individual known care-givers from the questionnaire distribution and data collection process may also have assisted in enabling participants in providing both positive and negative feedback regarding their experience.

Ethical approval was obtained from the National Maternity Hospital Ethics Committee and an exemption certificate was obtained from University College Dublin.

4.2. Data Analysis

The quantitative data analysis was undertaken predominantly using descriptive statistics. This included frequencies and averages with some of the data represented in charts. Detailed analysis of the data began by the principal investigator (MH) setting up a data sheet on SPSS V22 for Windows and preparing the SPSS datafile by naming and labelling variables and indicating codes for missing data. The data was inputted by a trained IT specialist and verified by members of the research team.

Iterative content analysis of qualitative data from the open questions was then undertaken initially, by typing out word for word the participant’s handwritten responses. This was also undertaken by the IT specialist and members of the research team checked and verified that the transcriptions were accurate. An iterative intensive process of reading and re-reading the qualitative responses allowed meanings relating to the text to be identified and clustered. Successively, themes of meaning were recognized and described.
5. Findings

Of the population sample containing 151 service users, 116 participants completed and returned the questionnaires, indicating a 77% response rate. 37% (n=43) of the participants were primigravid, while 63% (n=73) were multigravid which ranged from Para 2 (14%) to Para 6 (2%). Geographical location was noted, with 75% (n=87) of participants residing in Dublin and 25% (n=29) in Wicklow. 90.5% of the participants listed their place of birth as National Maternity Hospital DOMINO service (n=105), while Home birth services accounted for 9.5% (n=11) of births during this timeframe. These figures were confirmed by recorded hospital statistics.

<table>
<thead>
<tr>
<th>Participants</th>
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<tbody>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Dublin = 75% (n = 87)</td>
</tr>
<tr>
<td>Wicklow = 25% (n = 29)</td>
</tr>
<tr>
<td>Primigravid Women</td>
</tr>
<tr>
<td>37% (n = 43)</td>
</tr>
<tr>
<td>Multigravid Women</td>
</tr>
<tr>
<td>63% (n = 73)</td>
</tr>
<tr>
<td>Para 2</td>
</tr>
<tr>
<td>14% (n = 16)</td>
</tr>
<tr>
<td>Para 3</td>
</tr>
<tr>
<td>34% (n = 39)</td>
</tr>
<tr>
<td>Para 4</td>
</tr>
<tr>
<td>12% (n = 14)</td>
</tr>
<tr>
<td>Para 5</td>
</tr>
<tr>
<td>3% (n = 3)</td>
</tr>
<tr>
<td>Para 6</td>
</tr>
<tr>
<td>2% (n = 2)</td>
</tr>
<tr>
<td>Place of Birth</td>
</tr>
<tr>
<td>NMH DOMINO = 90.5% (n = 105)</td>
</tr>
<tr>
<td>Home birth = 9.5% (n = 11)</td>
</tr>
<tr>
<td>Sex of Infant</td>
</tr>
<tr>
<td>Female = 53% (n = 62)</td>
</tr>
<tr>
<td>Male = 47% (n = 54)</td>
</tr>
</tbody>
</table>

The age group of the participants ranged from 22-44 years, with a mean age of 32-37 years (n=72). 81% (n=93) of the participants reported their highest level of education as graduate education. In relation to employment status, 95% (n=110) were employed, 2.6% (n=3) a housewife, 1.7% (n=2) were unemployed with 1% of missing data noted. In terms of the participant’s nationality, 84% (n=97) were Irish, 6% (n=7) from the United Kingdom, 3.4% (n=4) of Germany nationality, 1.9% (n=2) were French, 0.9% (n=1) were Polish and 3.4% (n=4) listed their nationality as ‘Other’.

Married participants accounted for 72% (n=84), while 22% (n=26) reported cohabitating with their partner. 3.4% (n=4) were in a relationship but not living with a partner, and 1.9% of missing data was recorded. 92% (n=107) of women described their overall health as ‘Excellent’ or ‘Very Good’. In relation to the gender of the babies born to the participating women, 53% (n=62) were female and 47% (n=54) were male.
5.1. Antenatal Findings

Of the 116 participants, 61% (n=71) of women stated they had received initial information about the service from a friend or family member, while 19% (n=21) received the information through health care related services such as a General Practitioner (10%; n=11) or via the official hospital website (9%; n=10). 10% (n=12) of women reported using the DOMINO or home birth services in a previous pregnancy and therefore had prior knowledge.

<table>
<thead>
<tr>
<th>Gestation at First Contact</th>
<th>Gestation at Booking Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks = 48% (n = 56)</td>
<td>9 weeks = 5.2% (n = 6)</td>
</tr>
<tr>
<td>7 weeks = 16% (n = 19)</td>
<td>10 weeks = 6% (n = 7)</td>
</tr>
<tr>
<td>8 weeks = 14% (n = 16)</td>
<td>11 weeks = 3% (n = 3)</td>
</tr>
<tr>
<td>10 weeks = 5% (n = 6)</td>
<td>12 weeks = 39% (n = 45)</td>
</tr>
<tr>
<td>11 weeks = 0.9% (n = 1)</td>
<td>13 weeks = 14% (n = 16)</td>
</tr>
<tr>
<td>12 weeks = 5.2% (n = 6)</td>
<td>14 weeks = 8% (n = 9)</td>
</tr>
<tr>
<td>13 weeks = 1% (n = 1)</td>
<td>16 weeks = 3% (n = 3)</td>
</tr>
<tr>
<td>14 weeks = 2% (n = 2)</td>
<td>12 women accessed the service &gt;16 weeks</td>
</tr>
<tr>
<td>15 weeks = 5% (n = 6)</td>
<td>and &lt;24 weeks as availability arose</td>
</tr>
</tbody>
</table>
The gestation at which the women first made contact with the services was monitored and almost half of the participants (48%; n=56) first contacted the service by 6 weeks gestation, with a total of 64% (n=75) making contact by 7 weeks gestation. 26% (n=30) made contact between 8-12 weeks gestation. Regarding the antenatal booking visit, 11.2% (n=11) had their first appointment by 10 weeks gestation, 39% (n=45) at 12 weeks gestation, while approximately 10% (n=12) transferred their care and accessed the services between 16-24 weeks gestation through a waiting list as availability arose.

5.1.1. Initial Contact & Antenatal Care

The participants were asked to describe and rate their experience of their initial contact with the service. 90% (n=104) rated their experience as excellent or very good and described the service as ‘professional’, ‘informative’ and ‘efficient’ which offered reassurance to the women through contact with the midwives when required.

A woman stated her experience of contacting the service was ‘Excellent – friendly, helpful, professional’. An open and helpful approach was the common theme mentioned by women regarding their initial experience, as two women explained:

‘We were phoned back by a midwife after enquiring about the scheme who spoke to me and my husband for at least 20 minutes and explained everything so clearly we were impressed’

‘I found them to be warm, interested and full of great advice that was very informative and practical’.

Some participants reported difficulty in achieving initial contact with the service stating it was; ‘difficult to get through on the phone, busy line’. Several women also stated they were placed on a waiting list initially, at less than 9 weeks gestation, due to limited availability or places. One woman explains, ‘I was disappointed at first as it seemed there was no place for me on the scheme, but was delighted when a space became available’.

The women were asked ‘How did you feel immediately after your booking appointment with the midwife?’. 90% (n=104) of participants reported feeling extremely satisfied or very satisfied with 9% indicating that they were neither satisfied or dissatisfied. Similarly, when asked about their follow-up antenatal visits, 56% (n=65) said they were extremely satisfied and 34% (n=39) reported that they were very satisfied.

When invited to explain what the participants remembered about their appointments, the overarching themes which emerged from the data were that they felt ‘reassured and supported’ through their care, as well as ‘felt included’ and ‘not rushed’ during their visits. A woman described, ‘they took their time with me, explained everything very clearly and made me feel very welcome’, while others explained at the appointments that they had ‘felt valued and important’, ‘felt happy and reassured – Pregnancy never treated like an illness’. A number of women experienced the midwives caring for them too – ‘I like the fact they look after me and the baby as opposed to just being concerned about the baby’. Also that the midwives cared with a, ‘personal touch – I felt like a person, not just a patient’.

Many women described the services as efficient, thorough and competent and that their maternity care had been provided by the most appropriate lead carer. Supporting participants comments include:
'Always friendly, caring and thorough. I had utmost confidence in the care and wasn’t afraid to ask anything’.
'They were all very confident in themselves, in the DOMINO scheme and gave me confidence in my ability to give birth naturally’.
‘Very friendly & informative appointments I felt well looked after - in safe hands’.
‘Always felt reassured and that it was more personal than with the consultants’.

A few women reported a lack in continuity of carer, as they were seen by different midwives at each visit. This didn’t seem to be an issue for some women:

‘Even though I saw a few different midwives each were as friendly and helpful as each other and I always felt relaxed and happy’
‘I saw various different midwives, all very professional and friendly’

The location of clinics was also found to be a positive aspect as women reported the clinics were family friendly, convenient and conductive to the service. Regarding the women receiving follow-up antenatal appointment information, 88% (n=102) noted they knew the time and date of their next follow-up antenatal appointment with the midwife or via shared cared with their GP.

5.1.2. Antenatal Classes

The midwives providing the DOMINO and home birth services also ran antenatal classes, in two locations, separate to the classes provided by the antenatal education staff within the hospital. The findings showed that 67% (n=78) of the participants attended these classes, while 52% (n=60) of women’s partners also attended. The questionnaire did not ascertain if those who attended the classes were primigravid or multigravid women. Of the 78 women who attended, 82% (n=64) were satisfied with the information provided. Aspects of the classes which women found valuable include: the detailed explanation of the physiology of labour and positions for childbirth, the different suggestions of how to cope with pain in labour and the organised tour of the facilities within the hospital. The women commented:

‘The midwife’s demonstration with a [toy] baby, diagrams shown – the realism of midwife and humour took the scariness out of it all’
‘Options in relation to pain relief - I didn’t know all of them’.
‘Visit to the labour ward and explanation of the layout/equipment was fantastic’

The inclusion of partners in the antenatal education class discussions was highlighted as an important feature for various women. A small number of women indicated they would like the opportunity of attending women only antenatal classes. Many women noted the classes helped them to feel prepared for labour and what to expect:

‘The classes informed me of how and what would happen on admission and birth’,
‘I came out of the classes feeling very happy and knew I could do it!’

Participants also identified the experience and confidence of the midwife presenting the classes as a valuable asset, which promoted reassurance and confidence in the midwife-led services. Another positive aspect of the classes was the time allocated to share previous experiences amongst the group:

‘The midwife in the class was extremely informative about everything and on leaving the class I felt relieved and much more prepared for labour’.
‘The midwife’s confidence in a woman’s ability to give birth normally was evident’.
‘Their confidence and expertise in dealing with what might go wrong, hearing other couples stories and sharing concerns/questions was reassuring’.

Meeting other parents-to-be at the classes and discussing their experiences also influenced place of birth (i.e. home birth). One woman explains:

‘The chance to talk to other parents. They convinced us about going for a home birth originally’.

When asked to comment on ways to improve the classes, women suggested a more structured approach to classes with more time for discussion. Women also recommended a need for further information on postnatal care, parentcraft and breastfeeding; ‘Include some information on preparing to bring baby home’, ‘Not enough information on breastfeeding & support options’. It was also suggested that the presentation of written information should be improved including an online format where women could access the information easily.
5.2. Intrapartum Care

This research also incorporated analysis of intrapartum care experienced by women who had a DOMINO or planned home birth.

5.2.1. Participants who planned home birth

Of the women who participated in the study, 15 women in total planned a home birth. Five women unfortunately had their care transferred to the hospital-based maternity care system due to: post-dates; prolonged rupture of membranes; failure to progress in labour; rapid labour and birth during hospital visit and maternal choice. One woman who planned a DOMINO birth experienced an unplanned, home birth due to rapid labour. 11 women in total planned and experienced a home birth.

5.2.2. Admission to hospital

Of the 105 participants who used the DOMINO service, 77% (n=89) reported that a midwife from the ‘community midwives’ team was available to commence their care when they were admitted to hospital for the birth of their child. 51% (n=59) stated they received care from a known midwife during labour, while 87% (n=101) reported feeling very happy with the initial contact with the midwife in early labour, stating:

- ‘It was excellent to speak to a midwife at such an early stage’.
- ‘I have never seen the coaching I received and I can honestly say it was just fantastic and so helpful and motivating’.
- ‘Excellent advice felt in safe hands and listened to’.

80% (n=93) of women felt very satisfied with their first contact with the midwife in the hospital, however some women who were not attended to by a DOMINO midwife in the hospital due to limited availability reported feeling vulnerable and fearful in their absence, as one woman described she;

- ‘Really noticed the difference in approach from the DOMINO and non–DOMINO midwife – Definitely prefer the DOMINO approach’.

Some women stated there was no issue as the possibility had been explained and they were cared for by competent hospital midwives; ‘Was not an issue, she was with another patient and we had been warned about the possibility and were not concerned. The midwife assigned was lovely’.

5.2.3. Birthing environment

81% (n=95) of women reported experiencing a different staff member entering their labour room without permission, which was described as intrusive, distracting and caused anxiety for some women; as one woman stated it was ‘like nobody cared about my dignity!’.

97% (n=112) of participants stated that they felt they and their baby were safe in the care of the midwife during labour, and 93% (n=108) felt they and their partner were included in their care. In relation to the environment, many women felt this had a positive impact on their progress in labour, describing it as reassuring, relaxing and that it may have caused a reduction in the level of pain experienced. One woman who accessed the DOMINO service described how ‘The lovely designed [labour] room was very helpful – I felt safe and relaxed’. Some women commented on the busy and noisy hospital environment which was a distraction for them during labour.

In contrast, the experience that stood out from the women who had a planned home birth was the ‘serenity and peacefulness’ of the home environment which enabled them to labour and give birth:

- ‘Being at home, I was relaxed and in a good frame of mind…I felt 100% focused and concentrated on the labour’.

Positive influences on the ability of women to manage their labour included the experience of one-to-one midwifery, the belief of the midwives in women, as well as the reassurance and expertise offered by the midwives involved. Key points mentioned by the participants include:

- ‘Knowing I was labouring with people who would do their utmost to assist me in having the labour I wanted and a healthy child’
- ‘Motivational attitude of the midwife and her belief in me’.
5.2.4. Pain relief utilised during labour

Methods of pain relief used by the women in labour were explored. Analysis of the data showed that 53% \((n=61)\) used mobilisation and positional techniques, while 39\% \((n=42)\) of women used water via a shower and 31\% \((n=36)\) applied Transcutaneous Electrical Nerve Stimulation (TENS) machines. Massage from the birthing partner or midwife was incorporated by 19\% \((n=22)\) and 12\% \((n=15)\) utilised hypnobirthing techniques to cope with their contractions. 36\% \((n=42)\) of participants reported using Entonox during the course of their labour. Pharmacological methods of pain relief were also utilised in some cases, whereby 15\% \((n=18)\) of women received Pethidine intramuscularly and epidurals were used by 18\% \((n=21)\) of women who accessed the DOMINO services.

Ten out of the eleven women who had a planned home birth reported using water in a birthing pool, however due to current hospital policy women are unable to birth in the pool; they have to stand up or step out of the pool. Waterbirth or labouring in water is not available in the National Maternity Hospital and was cited as a recommended improvement and request by 35\% \((n=41)\) of women when asked to identify possible additional facilities to improve the services.

5.2.5. Interventions experienced during childbirth

Birth plans had been prepared by 37\% \((n=43)\) of women, of which 74\% \((n=32)\) stated their birth had went as planned. In relation to interventions experienced during labour, 49\% \((n=57)\) of women reported experiencing an intervention such as artificial rupture of members \((35; n=42)\), instrumental deliveries \((4.3; n=5)\) and syntocinon infusion \((2.6; n=3)\). 20\% \((n=23)\) of participants also experienced an episiotomy, while 54\% \((n=63)\) reported a perineal tear. Of the 57 women who experienced interventions during labour, 70\% \((n=40)\) felt these actions were necessary, while 12\% \((n=7)\) stated they did not think the interventions were required and a further 18\% \((n=10)\) left this question blank.

75\% \((n=87)\) of participants reported the implementation of the active management of the third stage of labour through the use of uterotonic medication. 50\% \((n=58)\) reported delayed cord clamping by the midwife until the cord stopped pulsating, with 45\% \((n=52)\) of missing data found. Following the delivery of their baby, 93\% \((n=108)\) of mothers described experiencing immediate skin-to-skin contact with their baby while a reported 63\% \((n=73)\) of partners had skin-to-skin contact in the second hour post birth.
5.3. Postnatal Care

The questionnaire also included items related to the care received during the postpartum period. Of the 116 participants, 87% (n=101) listed their method of infant feeding as breastfeeding, while 12% (n=14) stated artificial milk as their choice. 96% (n=97) of women who chose to breastfeed, initiated feeding within one hour of birth and 97% (n=98) felt they had adequate support with breastfeeding after birth to continue breastfeeding into the future. 72% (n=84) felt they were allowed sufficient time with their baby before being transferred from the labour room to the postnatal ward. 59% (n=68) of women deemed they were satisfied with the postnatal care received while an inpatient on the hospital postnatal ward, while 16% (n=18) stated this question was not applicable as they had home births or were discharged without being transferred to the ward.

In relation to the women’s experience on the postnatal ward, the busy and noisy environment appeared to impact the quality of care received by the women. Women stated:

‘Staff are clearly over run, breast feeding was my issue and I never felt I had the support and got lots of conflicting advice’.

‘Postnatal ward was extremely noisy. It was impossible to sleep’.

Positive comments regarding the busy environment however reflected the resilience of the staff:

‘The ward was very overcrowded but the care still amazing’

‘Staff seems much overstretched, but staff were extremely pleasant, professional and helpful’.

52% (n=60) of women stated they were given information regarding the appropriate care for perineal trauma sustained during the birth. This question was not applicable in approximately 37% of cases. In relation to pain relief following childbirth, 92% (n=107) of mothers felt they received adequate pain relief in the postnatal period.

5.3.1. Discharge home

49% (n=57) of the women who accessed the DOMINO service availed of early transfer home and were discharged from the hospital within 6–12 hours after delivery. A further 23% (n=27) were discharged home within 24 hours and 10% (n=12) by 48 hours postpartum. 12% (n=14) of missing data was recorded, possibly due to the number of home births and earlier times of discharge.
### Hours After Delivery at Discharge

<table>
<thead>
<tr>
<th>Hours After Delivery</th>
<th>Percentage (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 hours</td>
<td>27% (n = 31)</td>
</tr>
<tr>
<td>12 hours</td>
<td>22% (n = 26)</td>
</tr>
<tr>
<td>24 hours</td>
<td>23% (n = 27)</td>
</tr>
<tr>
<td>36 hours</td>
<td>1% (n = 1)</td>
</tr>
<tr>
<td>48 hours</td>
<td>10% (n = 12)</td>
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<tr>
<td>72 hours</td>
<td>2% (n = 2)</td>
</tr>
<tr>
<td>96 hours</td>
<td>1% (n = 1)</td>
</tr>
<tr>
<td>&gt;4 days</td>
<td>2% (n = 2)</td>
</tr>
<tr>
<td>Missing Data (10% home birth)</td>
<td>12% (n = 14)</td>
</tr>
</tbody>
</table>

The community midwives do not staff the postnatal wards, it is the hospital based midwives who predominately care for the women. However, 83% (n=96) of mothers stated they were seen by a community midwife prior to discharge. Many women deemed the early discharge to be a positive experience, stating they felt:

- ‘Confident and excited’
- ‘Relieved and excited to be going home’
- ‘Very happy – I felt ready to go home’.

One woman reported she was ‘Glad to be going home as it is a very busy and noisy hospital’. A few women expressed feelings of nervousness, exhaustion and vulnerability regarding their early discharge home:

- ‘A little displaced probably it was my first time ever leaving the hospital so soon after the birth’.
- ‘Exhausted, would have liked to stay in’.

The provision of additional postnatal care and support incorporated through home visits as part of the DOMINO and home birth services appear to provide reassurance for women regarding early discharge. In response to being asked about initial feelings associated with early discharge, one woman stated:

- ‘I’m very glad to know I would have a DOMINO midwife out the next day’.

### 5.3.2 Postnatal care at home

In comparison to women’s experience of care on the postnatal ward, 96% (n=112) of women described the level of postnatal support and care received in the home environment by the ‘community midwives’ as highly satisfactory. Postnatal care at home is daily for up to 10 days post birth which proved to be a valuable asset for many women:

- ‘It was great for my son that I was home the next day and it was lovely to get the home visit each day after – professional support in the comfort of my own home’
- ‘It was great support for me and my baby and my partner. They called out every day for 5 days after which is great as I had a few questions the first few days. I would definitely recommend the DOMINO service’.

### 5.4 Overall views and impact of the services

In total, 97% (n=112) of women rated their overall experience with the DOMINO or home birth services as highly positive and 96% (n=111) stated that the services met their expectations. When asked if they would access the DOMINO or home birth services again in future pregnancies, 106 of the 116 participants (91%) responded that they would, while one woman stated she understood she was no longer eligible as she had moved out of the catchment area.
A number of the women stated that their experience with the community midwives had a very positive impact on themselves and their family and would highly recommend the scheme to others. Comments made by some of these women include:

- ‘It made the whole pregnancy and postnatal experience very positive and stress free for the whole family’.
- ‘An amazing positive impact, empowering’.
- ‘It allowed us to bond as a family immediately’.
- ‘It was really positive for me, personally, but also for my family, who felt more included in everything’.
- ‘It turned what could have been a scary experience into an amazing happy time for me, my husband and our toddler – an amazing birth experience’.

The availability of advice from the midwives by phone during the postpartum period was also mentioned as a key positive aspect of the services:

- ‘It was great that we could contact a midwife after discharge if needed – felt secure’.
- ‘For the tough days following delivery, we always felt help was available when needed’.

In general, women mentioned the experience of the midwives and ability to promote normal birth as key influences on having a positive birth experience:

- ‘DOMINO midwives supported me greatly but let me take control of my birth... I felt understood, relaxed, and able to deliver my baby without intervention. Very positive experience’.

5.5. Recommendations from Women

When asked about possible recommendations to improve the DOMINO and home birth services, as highlighted above 52 of the 116 participants (45%) mentioned the provision of water facilities during labour, with 35% (n=41) mentioning the addition of birthing pools to the hospital service specifically. Currently, the National Maternity Hospital has limited resources to facilitate the use of water in labour and there are no birthing pool services available. Women also suggested the implementation of water proof fetal monitoring where, if continuous fetal monitoring is required, it may be facilitated in conjunction with using water for pain relieve.

The majority of women suggested the need to expand the DOMINO service to provide a nationwide service. Recommendations were also made to expand the catchment area of the current services and to employ additional midwives in order to increase accessibility for women. At present a team of 14 midwives (12 FTE) facilitate the coordination and implementation of the DOMINO and home birth services for 600 women per annum. The women in this study have highlighted however that in individual cases, there is a lack in continuity of carer and the availability of a DOMINO midwife for all women at the commencement of labour. An increase in the quantity of midwives will increase the number of midwives on duty in the hospital setting in particular, during night shifts, an area which was highlighted for improvement by service users.

In addition, to additional midwifery staff, the requirement of additional administration staff was emphasised as many women highlighted issues in contacting the service. The expansion of antenatal and postnatal support was also recommended by women who expressed a desire to reintroduce antenatal home visits for women having a planned home birth.

The lack of support from the community midwifery team beyond the first 10 days postnatal was also highlighted, with women suggesting follow-up phone calls between 2–4 weeks postpartum and an additional home visit or appointment at 6 weeks postpartum with the team to provide continued support for new mothers and families.

Service users also expressed the need for improvements in the promotion and advertisement of the services as the majority of women gained knowledge of them through friends and family. The availability of information, videos and education reading support for pregnancy and parenting should also be made available through electronic and internet sources.

See appendix 2 for further detail of the findings relating to specific questions on the questionnaire.
6. Discussion

This research demonstrates the potential benefits of the DOMINO and home birth midwife–led services for low risk women and highlights the areas valued by women.

6.1. Valued Aspects of Care

The findings of this study highlighted women valued aspects of their care as experienced from the DOMINO and home birth services such as, continuity of care and the provision of choice and control in their maternity care. As acknowledged in the literature, the provision and recognition of choice, continuity and control for pregnant women is a significant element in high standard maternity services (Ashley and Weaver, 2012; Department of Health, Social Services and Public Safety, 2012) and is a greatly valued aspect of DOMINO and midwife–led models of care.

This study confirmed the findings in the literature that a difficulty exists in providing complete continuity of carer for women within maternity services due to the unpredictable nature of pregnancy and childbirth (Bowers et al., 2015). The DOMINO model evaluated in this study proved largely successful in providing informational continuity through the integrated team care approach, however obstacles in the provision of relational care were identified as not all women were in the care of a known midwife during their labour. This issue of continuity of carer was highlighted in this study as 51% of participants were cared for in labour by a known midwife, with 77% of women receiving care from a DOMINO midwife. However, the review of the current literature demonstrates that the issues associated with this concept are not solely limited to DOMINO services in Ireland and provides evidence that this model of care may be more effective in delivering continuity of carer with a known midwife in labour than other utilised maternity care services. The value of relational continuity of care was demonstrated in this study as women reportedly felt more secure and comfortable in the presence of a previously encountered midwife and rated their care as ‘extremely’ or ‘very’ satisfactory. Increased maternal satisfaction was a key benefit identified in relation to continuity of carer in many studies (Sandall et al., 2013), and is again highlighted in this study. However, as this data was gathered from descriptive and narrative sources, in a retrospective manner, the quality of the findings may be influenced by the willingness of women to accurately recall, share and articulate their experiences.

Other essential care needs that were deemed to be of value to women in this study include the provision of thorough and competent care by a skilled and experienced midwives, as well as the structure of antenatal appointments that allowed for an unhurried and relaxed environment. The provision of a comfortable and home–like environment as well as facilitating a degree of control and choice in relation to maternity care are key aspects that are identified in different midwife–led services, such as midwife–led units, which enable women to feel empowered and allows for a positive birthing experience for women accessing these services (McNelis, 2013).

Women in this study also valued the provision of early discharge home and the experience of home visits during the early postpartum period. Women reflected that this had a positive impact on their family as it allowed for early bonding, as a family unit in the relaxed and comfortable environment of their own home. Studies have been carried out in Australia where government policies have aimed to develop a system to provide postnatal care in the home environment for all women. This has proved successful in providing this service for approximately 80% of women across two surveyed states in 2012, of which 65.5% of women deemed their care to be ‘very good’ (Biro et al., 2012). As in this study, women have consistently rated midwife–led community postnatal care higher than care received in the hospital setting (Biro et al., 2012). Efforts have been made internationally to implement a postnatal community service for women, however these services are not currently available on a nationwide basis in Ireland.
Although the philosophy of DOMINO midwife–led care proved largely successful in many areas of this study, cultural norms within this maternity unit must be addressed in order to ensure the ideals and values of DOMINO care are implemented and acknowledged in all areas of the hospital setting. These include the routine use of fetal monitoring on admission in labour, as well as ensuring efforts are made to decrease the rate of episiotomies where possible. The busy hospital environment also presents difficulties in providing a successful DOMINO service which has been highlighted in this study. Uninvited entrance into the birthing room by different maternity care staff is another cultural norm which needs to be addressed. This therefore suggests that the structure and layout of maternity units should be closely examined and appropriately adapted where possible to further facilitate the DOMINO model of maternity care.

6.2. Further Developments

This study highlights the need to expand the DOMINO services that are currently available and to develop further DOMINO midwifery teams nationally across Ireland, as the current services are unable to facilitate the level of demand and interest demonstrated by women involved in this study. At present a team of 14 midwives (12 FTE) facilitate the coordination and implementation of the DOMINO and home birth services from the National Maternity Hospital for 600 clients per annum. However, as stated in the findings, issues are still present in the lack of continuity of carer and the availability of a DOMINO midwife for all women in labour. This is not an issue for those who had a home birth.

The issue of limited availability of spaces to facilitate the demand by women is clearly demonstrated in that 48% of participants made initial contact with the service at 6 weeks gestation and the majority of women beyond 9 weeks gestation were placed on a waiting list. Nationally there is limited and unequal access to midwife–led services throughout Ireland. A review into the maternity and gynaecology services in the Greater Dublin Area found that DOMINO and Early Transfer Home services provide 10% of postnatal care for women in the community (KPMG, 2008). Despite the reported success of the system, services are under–resourced and overstretched and therefore are unable to facilitate the needs of women in the area (Begley et al., 2009). It is estimated that 70% of primigravidas and 85% of multigravidas who experience uncomplicated low–risk pregnancies would benefit from DOMINO and community midwife–led services, however geographical restrictions impose a limitation on the availability of these services to include only a small proportion of maternity service users in Ireland (KPMG, 2008). Increasing demand on the limited services results in women booking at very early gestations from approximately 5 weeks to secure a place with the DOMINO team (KPMG, 2008).

Currently, Irish hospitals are not funded to provide national community maternity services beyond those offered through DOMINO and Early Transfer Home schemes available within limited hospitals (Begley et al., 2009). However, it is recommended that prevailing plans to extend DOMINO services should be pursued to provide community postnatal care for 20% of women in the Greater Dublin Area (KPMG, 2008). The introduction of new DOMINO and home birth services and the expansion of those already in place may prove beneficial in addressing the increased demand for DOMINO and home births through a safe and reliable service (The Institute of Obstetricians and Gynaecologists, 2006).
7. Recommendations

This evaluation research report highlights key areas of DOMINO and home birth midwife–led care that are valued by women and provide a safe, satisfactory and cost effective alternative choice of maternity service in Ireland. Therefore, this study recommends an expansion of the current services available in the National Maternity Hospital in order to accommodate the present demand for the midwife–led services and to increase the probability of encountering a known member of the DOMINO team during labour. It is recommended this is done through the addition of a further team of midwives which is deemed necessary to meet women’s needs within the current geographical area.

It is necessary to review the support and organisation of the current services and to provide additional administrative staff to ensure the service runs in a professional and easily accessible manner. Furthermore, this study has clearly highlighted the need to expand current hospital facilities to include resources to accommodate the increasing request for water birth and birthing pool services from women.

This study further recommends a national provision of DOMINO and home birth services throughout Ireland, as there is unequal access to these services on a nationwide basis. There is also insufficient access of midwife–led services in Ireland, to meet the needs of women and provide them with freedom of choice and related benefits of the different places of birth, as per the NICE Intrapartum Guidelines (NICE, 2014). There is also an urgent need for the provision of community midwifery postnatal care services for all women in Ireland, in particular for those women who may not be suitable for midwife–led pregnancy and intrapartum care but require midwifery support and care on discharge home.

Additional research is required to transfer the benefits and essential care elements received by women who have accessed the DOMINO and home birth services to all women. This includes the promotion of physiological birth, decrease of unnecessary interventions in labour, improved facilities and care for women and partners from pre–pregnancy through to the postpartum period.
References


# Appendix 1

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<tr>
<th>Database</th>
<th>Search Terms</th>
<th>Filters</th>
<th>Results</th>
<th>Relevant Results</th>
<th>Used Results</th>
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<td>EMBASE</td>
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<td>Publication 1992-2015, Academic journal, English, Peer Reviewed, Boolean</td>
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<td></td>
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<td>-------</td>
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<tr>
<td><strong>A13. Did you have your baby under the care of the DOMINO midwifery service?</strong></td>
<td>95% (n=110)</td>
<td>5% (n=6)</td>
<td>0% (n=0)</td>
<td></td>
<td></td>
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<tr>
<td><strong>A14. Did you have a home birth?</strong></td>
<td>14% (n=16)</td>
<td>85% (n=95)</td>
<td>2% (n=2)</td>
<td></td>
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<td><strong>C2. Did you know the actual date of when you would be seen again by the midwife?</strong></td>
<td>88% (n=102)</td>
<td>10% (n=12)</td>
<td>2% (n=2)</td>
<td></td>
<td></td>
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<td><strong>C3. Did you know when you would be seen again by the GP?</strong></td>
<td>86% (n=100)</td>
<td>12% (n=14)</td>
<td>2% (n=2)</td>
<td></td>
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<tr>
<td><strong>C6. Did you attend the Community Midwives antenatal classes?</strong></td>
<td>67% (n=78)</td>
<td>32% (n=37)</td>
<td>1% (n=1)</td>
<td></td>
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<tr>
<td><strong>C7. Did your birthing partner attend the antenatal classes?</strong></td>
<td>52% (n=60)</td>
<td>46% (n=53)</td>
<td>3% (n=3)</td>
<td></td>
<td></td>
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<tr>
<td><strong>D4. Was there a DOMINO midwife on duty or available to commence your care?</strong></td>
<td>77% (n=89)</td>
<td>14% (n=16)</td>
<td>9% (n=11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D7. Did you meet the midwife prior to you going into labour?</strong></td>
<td>51% (n=59)</td>
<td>41% (n=48)</td>
<td>8% (n=9)</td>
<td></td>
<td></td>
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<td><strong>D8. Did anyone enter the room without permission?</strong></td>
<td>10% (n=12)</td>
<td>82% (n=95)</td>
<td>8% (n=9)</td>
<td></td>
<td></td>
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<tr>
<td><strong>D11. Did you feel you and your baby were safe in the care of the midwife?</strong></td>
<td>97% (n=112)</td>
<td>1% (n=1)</td>
<td>3% (n=3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D12. Did you feel the midwife included you and your partner in your care during labour and birth?</strong></td>
<td>93% (n=108)</td>
<td>3% (n=3)</td>
<td>4% (n=5)</td>
<td></td>
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<tr>
<td><strong>D16a. Did you have a birth plan?</strong></td>
<td>37% (n=43)</td>
<td>62% (n=71)</td>
<td>2% (n=2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D16b. If YES; Did your birth go to plan?</strong> (Total participants = 43)</td>
<td>28% (n=32)</td>
<td>10% (n=11)</td>
<td>0%</td>
<td></td>
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<tr>
<td><strong>D16c. If NO; Do you understand why?</strong></td>
<td>15%</td>
<td>2%</td>
<td>(n=24)</td>
<td></td>
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<tr>
<td>Question</td>
<td>Yes (%)</td>
<td>No (%)</td>
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<tr>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td><strong>D17. Did you have any interventions during labour?</strong></td>
<td>49%</td>
<td>42%</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D18. Did you feel the intervention(s) was necessary?</strong></td>
<td>35%</td>
<td>6%</td>
<td>(n=10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D21. Did you have immediate skin to skin contact with your baby?</strong></td>
<td>93%</td>
<td>6%</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D22. Did your partner have skin to skin contact with your baby within the first 2 hours of birth?</strong></td>
<td>63%</td>
<td>36%</td>
<td>1%</td>
<td></td>
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<tr>
<td><strong>D23a. Did you have a perineal tear?</strong></td>
<td>54%</td>
<td>44%</td>
<td>2%</td>
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<td><strong>D23b. Did you have an episiotomy?</strong></td>
<td>20%</td>
<td>76%</td>
<td>3%</td>
<td></td>
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<tr>
<td><strong>D24a. Was the cord clamped immediately after delivery?</strong></td>
<td>24%</td>
<td>45%</td>
<td>31%</td>
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<tr>
<td><strong>D24b. Did the midwife wait for the cord to stop pulsating before cutting?</strong></td>
<td>50%</td>
<td>5%</td>
<td>45%</td>
<td></td>
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<td><strong>D25. Did you have an injection to help the afterbirth deliver?</strong></td>
<td>75%</td>
<td>19%</td>
<td>6%</td>
<td></td>
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<tr>
<td><strong>E1. Were you given information about how to care for a tear or episiotomy?</strong> (37% (n=43) not applicable)</td>
<td>52%</td>
<td>10%</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>E2. Were you given adequate pain relief?</strong></td>
<td>92%</td>
<td>5%</td>
<td>3%</td>
<td></td>
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<tr>
<td><strong>E4. Did you breastfeed your baby within one hour of giving birth?</strong></td>
<td>84%</td>
<td>10%</td>
<td>6%</td>
<td></td>
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</tr>
<tr>
<td><strong>E5. Did you have support to breastfeed your baby following birth?</strong></td>
<td>80%</td>
<td>10%</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>E6. Did you have enough time with your baby before transferring to the postnatal ward?</td>
<td>72% (n=84)</td>
<td>9% (n=10)</td>
<td>19% (n=22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E7. Were you seen by a DOMINO midwife prior to discharge?</td>
<td>83% (n=96)</td>
<td>5% (n=6)</td>
<td>12% (n=14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E12. Did you have adequate support to continue breastfeeding? (10% N/A)</td>
<td>85% (n=98)</td>
<td>3% (n=3)</td>
<td>3% (n=3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E13a. Was the postnatal information you received from the midwife accurate?</td>
<td>94% (n=109)</td>
<td>2% (n=2)</td>
<td>4% (n=5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E13b. Was the information that was provided easily understood?</td>
<td>90% (n=104)</td>
<td>1% (n=1)</td>
<td>9% (n=11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E15. Did the service meet your expectations?</td>
<td>96% (n=111)</td>
<td>3% (n=3)</td>
<td>2% (n=2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E18. If you became pregnant, would you use the DOMINO or home birth service again?</td>
<td>91% (n=106)</td>
<td>3% (n=4)</td>
<td>5% (n=6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>B1. How would you rate your experience of first contact with the service?</td>
<td>71%</td>
<td>19%</td>
<td>8%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>(n=82)</td>
<td>(n=22)</td>
<td>(n=9)</td>
<td>(n=2)</td>
<td>(n=0)</td>
</tr>
<tr>
<td>C8. How did you find written information pack from Antenatal Classes?</td>
<td>32%</td>
<td>23%</td>
<td>9%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>(n=37)</td>
<td>(n=27)</td>
<td>(n=10)</td>
<td>(n=2)</td>
<td>(n=0)</td>
</tr>
<tr>
<td>C9. How did you find the method of information giving at antenatal classes?</td>
<td>33%</td>
<td>22%</td>
<td>10%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>(n=38)</td>
<td>(n=26)</td>
<td>(n=12)</td>
<td>(n=3)</td>
<td>(n=0)</td>
</tr>
<tr>
<td>D1. How did you feel about your first contact with the midwife at the start of labour?</td>
<td>66%</td>
<td>21%</td>
<td>6%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>(n=77)</td>
<td>(n=24)</td>
<td>(n=7)</td>
<td>(n=3)</td>
<td>(n=1)</td>
</tr>
<tr>
<td>E11. What was the level of postnatal care and support from the midwifery team when returned home/at home?</td>
<td>86%</td>
<td>10%</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>(n=100)</td>
<td>(n=12)</td>
<td>(n=2)</td>
<td>(n=0)</td>
<td>(n=0)</td>
</tr>
<tr>
<td>E14. How do you rate the overall quality of care provided?</td>
<td>82%</td>
<td>15%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>(n=95)</td>
<td>(n=17)</td>
<td>(n=3)</td>
<td>(n=0)</td>
<td>(n=0)</td>
</tr>
<tr>
<td>Question</td>
<td>Extremely Satisfied</td>
<td>Very Satisfied</td>
<td>Somewhat Satisfied</td>
<td>Neither</td>
<td>Somewhat Dissatisfied</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>---------</td>
<td>----------------------</td>
</tr>
<tr>
<td>C1. How did you feel immediately after booking appointment?</td>
<td>56% (n=65)</td>
<td>34% (n=39)</td>
<td>7% (n=8)</td>
<td>2% (n=2)</td>
<td>1% (n=1)</td>
</tr>
<tr>
<td>C4. How did you feel after follow-up appointments?</td>
<td>56% (n=65)</td>
<td>34% (n=39)</td>
<td>7% (n=8)</td>
<td>2% (n=2)</td>
<td>1% (n=1)</td>
</tr>
<tr>
<td>D3. How did you feel about first contact with the midwife in the hospital?</td>
<td>53% (n=62)</td>
<td>24% (n=28)</td>
<td>6% (n=7)</td>
<td>1% (n=1)</td>
<td>1% (n=1)</td>
</tr>
<tr>
<td>Home birth 12% (n=14)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>D6. How did you feel about first contact with the midwife in the hospital OR at home for home birth?</td>
<td>61% (n=71)</td>
<td>19% (n=22)</td>
<td>3% (n=4)</td>
<td>1% (n=1)</td>
<td>2% (n=2)</td>
</tr>
<tr>
<td>E8. How did you feel about your postnatal care on the ward?</td>
<td>37% (n=43)</td>
<td>22% (n=25)</td>
<td>15% (n=17)</td>
<td>4% (n=5)</td>
<td>3% (n=4)</td>
</tr>
</tbody>
</table>
Appendix 3

An Evaluation of Midwife-led DOMINO & Home Birth Services

Service User’s Questionnaire (Women)

Thank you for your time.
This questionnaire will take 15 minutes to complete
(Please note all questions are optional)

Please seal and return by post your completed questionnaire to the research team in the attached stamped addressed envelope by 25th November 2013

Study Number:
An Evaluation of Midwife-led DOMINO & Home Birth Services

Questionnaire

This questionnaire asks you to tell us about your experiences of attending the Community Midwives service at the National Maternity Hospital (NMH), Holles Street, whether you had a planned DOMINO or Home Birth. We know that you are very busy as a new mother however we would really like to receive your answers to evaluate and enhance these community midwife-led services. All information that you provide in the questionnaire is STRICTLY CONFIDENTIAL and all findings from the study will be presented in anonymous form. You will not be asked for any details that will identify you as an individual. The information provided will be stored in a secure location in the Nursing and Midwifery Research Unit at University College Dublin.

The research is being undertaken by a joint research team from the UCD School of Nursing, Midwifery and Health Systems and the National Maternity Hospital. If you have any questions about the study please call/e-mail:

Dr Maria Healy, UCD (01) 716 6675 / Maria.Healy@ucd.ie
or
Ms Teresa Mc Creery, NMH, Tel: (01) 6373177 / tmccreery@nmh.ie

Other Research Team Members:
Ms Fiona Roarty
Ms Niamh Cummins

STRUCTURE OF THE QUESTIONNAIRE
This questionnaire has six sections, numbered A through F
A About you and your baby
B About your experience of the administration process
C About your antenatal care
D About your labour and birth care
E About your postnatal care
F About your reflections on your care experiences and service provision
An Evaluation of Midwife-led DOMINO & Home Birth Services

Part A

A1 What is your age? _______ Years

A2 What is your highest level of education? (Please note this question is optional)
   a. No Formal Education
   b. Primary
   c. Secondary
   d. Non-Degree (Certificate/Diploma)
   e. Degree (e.g Bachelor’s Degree)
   f. Professional Qualification (of degree status at least)
   g. Postgraduate certificate, diploma or degree (e.g. Master’s Degree, PhD)

A3 What is your current or most recent employment?
   ____________________________________________________________________

A4 Are you an Irish Citizen?
   Yes   No
   If your answer is No, what is your nationality? ____________________________

A5 Are you currently: (Please tick one only)
   Living with your partner? .................................................................
   In a relationship, but not living with your partner?......
   Married ..............................................................................................
   Separated or divorced .................................................................
   Widowed ..............................................................................................
   Not in a relationship/single..............................................................

A6 How would you describe your overall health? (Please tick one only)
   Excellent..............................................................................................
   Very good.............................................................................................
   Good........................................................................................................
   Fair.........................................................................................................
   Poor.........................................................................................................
   Very Poor..............................................................................................

   If you tick poor or very poor would you like to explain in more detail? (Please note this question is optional) ________________________________
An Evaluation of Midwife-led DOMINO & Home Birth Services

A7 Is your baby a girl or a boy?  Girl  Boy (Please tick)

A8 Is this your first baby?  a) Yes, first baby b) No

If NO, how many babies have you had altogether, including this one?

Number of babies __________

A9 If this is not your first birth, which maternity care service did you use the last time?

Public  Semi-Private  Private  DOMINO

Other __________________________________________

A10 How did you find out about the service? (Please tick one only)

Family .........................................................
Friend............................................................
GP ..............................................................
Hospital website............................................
Previous DOMINO or home birth.............

Other __________________________________________

A11 Regarding your most recent pregnancy, what geographical area did you live in at the time of accessing the community midwives service?

Dublin  Wicklow

A12 Did you book for the DOMINO or home birth midwifery service?

DOMINO  Home Birth

A13 Did you birth your baby under the care of the DOMINO midwifery service?

Yes  No

A14 Did you have a home birth?

Yes  No

A15 If you were transferred into hospital and you had planned a home birth, what was the reason for being transferred into hospital to have your baby?
Part B
B1 How would you rate your experience of your first contact with the service?  
(please tick one only)
- Excellent
- Very good
- Good
- Fair
- Poor
- Very Poor

B2 How many weeks pregnant were you when you first made contact?  ________ weeks

B3 How many weeks pregnant were you when you had your booking appointment?  ________ weeks

B4 Would you like to explain in more detail your experience of initially contacting the community midwifery service? (please note this question is optional)
_________________________________________________________________
_________________________________________________________________

Part C
C1 How did you feel immediately after your booking appointment with the midwife?  
(please tick one only)
- Extremely satisfied
- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied
- Extremely dissatisfied
- Can’t remember

C2 Did you know the actual date of when you would be seen again by the midwife?  
YES / NO (delete as appropriate)

C3 Did you know when you would be seen again by the GP? YES/ NO (delete as appropriate)

C4 How did you feel immediately after your follow-up appointments with the midwife?  
(please tick one only)
- Extremely satisfied
- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied
- Extremely dissatisfied
- Can’t remember
C5 Would you like to explain in more detail what you remember about your appointment(s) with the midwife?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

C6 Did you attend the Community Midwives antenatal classes?
YES / NO (delete as appropriate)

C7 Did your birthing partner attend the antenatal classes?
YES / NO (delete as appropriate)

C8 How did you find the written information pack given at the Antenatal Classes?
Excellent................................................................................................. (Please tick one only)
Very good.................................................................
Good.................................................................................................
Fair.................................................................................................
Poor.................................................................................................
Very Poor.....................................................................................

C9 How did you find the method of ‘information giving’ at the Antenatal Classes?
Excellent................................................................................................. (Please tick one only)
Very good.................................................................
Good.................................................................................................
Fair.................................................................................................
Poor.................................................................................................
Very Poor.....................................................................................

C10 How could these classes and information pack be improved?
________________________________________________________________________
________________________________________________________________________

C11 Is there anything in particular that you found extremely helpful at the classes?
________________________________________________________________________
________________________________________________________________________

C12 Is there anything in particular that you found non-reassuring/anxiety provoking at the classes and that you would have liked at the time to have been explained further or could be improved?
________________________________________________________________________
________________________________________________________________________
An Evaluation of Midwife-led DOMINO & Home Birth Services

Part D

D1 How did you feel about your first contact with the midwife when your labour started?
Excellent................................................................. (Please tick one only)
Very good...............................................................
Good..................................................................
Fair..................................................................
Poor..................................................................
Very Poor..............................................................

D2 Did you find the advice useful? (Please explain)
________________________________________________________________
________________________________________________________________
________________________________________________________________

D3 How did you feel about the first contact with the midwife when you arrived at the hospital? (If you had a home birth please tick not applicable below & Go to D6)
Extremely satisfied.................................................. (Please tick one only)
Very satisfied..........................................................
Somewhat satisfied..............................................
Neither satisfied nor dissatisfied..........................
Somewhat dissatisfied..........................................
Very dissatisfied..................................................
Extremely dissatisfied...........................................
Not applicable, I had a Home Birth.....................

D4 Was there a DOMINO midwife on duty or available to commence your care YES/NO
(delete as appropriate)

If your answer is NO that the DOMINO midwife was not available, how did that make you feel?
____________________________________________________________________

D5 Please describe what the room was like in the hospital that you gave birth in? (E.g. music playing, soft lighting, quiet, noisy)
____________________________________________________________________
____________________________________________________________________
An Evaluation of Midwife-led DOMINO & Home Birth Services

D6 How did you feel about the first contact with the midwife when you arrived at the hospital OR when she arrived at your home if you planned a home birth?

Extremely satisfied................................. (Please tick one only)
Very satisfied...........................................
Somewhat satisfied.................................
Neither satisfied nor dissatisfied...................
Somewhat dissatisfied..............................
Very dissatisfied....................................
Extremely dissatisfied.............................

D7 Did you meet the midwife prior to you going into labour?
YES/NO (delete as appropriate)

D8 Did anyone enter the room without permission?
YES or NO (delete as appropriate)

If YES, How did this make you feel?

___________________________________________________________________
___________________________________________________________________

D9 How did you feel your environment affected the progress of your labour? Please identify your location of birth:  Hospital or Home (delete as appropriate)

___________________________________________________________________

D10 What made your labour or birth more manageable?

___________________________________________________________________
___________________________________________________________________

D11 Did you feel that you and your baby were safe in the care of the midwife?
YES or NO (delete as appropriate)

If No please explain_________________________________________________

D12 Did you feel the midwife included you and your partner in your care during labour and birth?
YES or NO (delete as appropriate)

If No please explain_________________________________________________
An Evaluation of Midwife-led DOMINO & Home Birth Services

D13 How did you cope with your contractions during labour?

- Hypnobirthing
- Mobilisation
- Visualisation
- Shower
- Water in the bath or pool
- Heat packs
- Dance with music
- Massage
- Distraction through music
- Tens
- Injections of water to lower back

(Tick as appropriate)

D14 What methods of pain relieve did you use during labour?

- Pethidine
- Entonox
- Epidural
- None

(Tick as appropriate)

D15 Are there any facilities or resources that you would have liked to have tried during your labour but were not available to you?

______________________________________________________________________

______________________________________________________________________

D16 Did you have a birth plan?  YES or NO (delete as appropriate)
If YES did your birth go to plan?  YES or NO (delete as appropriate)
If not, do you understand why?  YES or NO (delete as appropriate)

D17 Did you have any interventions during labour? (E.g. Waters broken, vacuum, forceps)

Please explain

______________________________________________________________________

D18 Did you feel the intervention(s) was necessary?  YES or NO (delete as appropriate)

D19 What positions did you use in labour?

- All fours
- Squatting
- Lending on the wall
- Walking
- Swaying side to side
- Head down bottom up

Other please explain
An Evaluation of Midwife-led DOMINO & Home Birth Services

D20 What position did you give birth in? (E.g. All fours, lying on the bed with back supported with pillows, left side)

Please describe ________________________________

D21 Did you have immediate skin to skin contact with your baby? YES or NO (delete as appropriate)

D22 Did your partner have skin to skin contact with your baby within the first two hours of birth? YES or NO (delete as appropriate)

D23 Did you have a perineal tear? YES or NO (delete as appropriate)
Did you have an episiotomy? YES or NO (delete as appropriate)

D24 Was the cord clamped immediately after delivery? YES or NO (delete as appropriate)
OR, did the midwife wait for the cord to stop pulsating? YES or NO or Don’t know (delete as appropriate)

D25 Did you have an injection to help the afterbirth deliver? YES or NO (delete as appropriate)

Part E

E1 Were you given information about how to care for a tear or episiotomy that you may have had? YES or NO or N/A (delete as appropriate)

E2 Were you given adequate pain relieve? YES or NO (delete as appropriate)

E3 How did you feed your baby? Breast milk Bottle milk (Tick as appropriate)

E4 Did you breastfeed your baby within one hour of giving birth? YES or NO (delete as appropriate)

E5 Did you have support to breastfeed your baby following birth? YES or NO (delete as appropriate)

E6 Did you have enough time with your baby before transferring to the postnatal ward? YES or NO or N/A as home birth (delete as appropriate) (If N/A please Go to E11)

E7 Where you seen by a DOMINO midwife prior to discharge? YES or NO (delete as appropriate)

E8 How did you feel about your postnatal care on the ward?
Extremely satisfied.......................................................... (Please tick one only)
Very satisfied.................................................................
Somewhat satisfied......................................................
Neither satisfied nor dissatisfied.................................
Somewhat dissatisfied...................................................
Very dissatisfied ............................................................
An Evaluation of Midwife-led DOMINO & Home Birth Services

Extremely dissatisfied………………………………………………
Please explain further if you were dissatisfied with your postnatal care:
____________________________________________________________________

E9 How soon after delivery did you go home? _____Days _____Hours

E10 How did you feel when you were discharged home?
____________________________________________________________________

E11 When you returned home or if you had a home birth, what was the level of postnatal support and care which you received from the midwifery team?
Excellent………………………………………………………… (Please tick one only)
Very good…………………………………………………………
Good………………………………………………………………
Fair………………………………………………………………
Poor………………………………………………………………
Very Poor…………………………………………………………

E12 Did you have adequate support to continue Breastfeeding? YES or NO or N/A

E13 Was the postnatal information that you received from the midwife accurate?
YES or NO (delete as appropriate)
Was the information that was provided easy understood? YES or NO (delete as appropriate)

E14 How do you rate the overall quality of care provided?
Excellent………………………………………………………… (Please tick one only)
Very good…………………………………………………………
Good………………………………………………………………
Fair………………………………………………………………
Poor………………………………………………………………
Very Poor…………………………………………………………

E15 Did the service meet your expectations? YES or NO (delete as appropriate)

E16 What impact did the DOMINO or home birth service, have on you or your family?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
An Evaluation of Midwife-led DOMINO & Home Birth Services

E17 In what ways can we improve the DOMINO or home birth services? (Please use an extra sheet if you would like to explain further)

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

E18 If you became pregnant, would you use the DOMINO or home birth service again?
YES or NO (delete as appropriate)

Thank you so much for taking the time to complete this questionnaire!

Please seal and return by post your completed questionnaire to the research team in the attached stamped addressed envelope by 25th November 2013.