DO CANADIAN NURSES DIFFER IN THEIR ATTITUDES TOWARDS BIRTH?

by

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ABSTRACT

Background: With a population estimated at 14,192, perinatal nurses are the largest group of Canadian maternity care providers. Knowledge about similarities and differences in nurses’ attitudes towards practice approaches can facilitate strategies to decrease intervention use, and to promote physiologic birth and care providers’ collaboration. Methods: The National Maternity Care Attitudes Study (NMCAS) study surveyed care providers about their attitudes towards birth using a web or paper-based survey. The nursing sample consisted of 545 nurses from across Canada. Using exploratory factor analysis, the NMCAS study revealed nine themes of care provider attitudes, including attitudes towards doulas, electronic fetal monitoring, epidural analgesia, episiotomy, factors that decrease the caesarean section rate, the safety of birth by place or mode (vaginal or caesarean), and the importance of vaginal birth. In this secondary analysis, Chi-Square, ANOVA, Kruskal-Wallis, and multiple regression were used to examine nurses’ demographic group differences in relationship with nurses’ scale scores. Results: Tertiary hospital level of employment predicted more positive attitudes towards epidural analgesia and less positive attitudes towards the importance of vaginal birth. Nurses were significantly more likely to select an obstetrician for their care (adjusted standardized residual, 3.8) if they worked at a tertiary hospital and select a family practitioner if they worked at a level one hospital (adjusted standardized residual, 2.5). Nurses’ selection of an obstetrician for their care predicted less positive attitudes towards the safety of birth, the importance of vaginal birth, and more positive attitudes towards electronic fetal monitoring, episiotomy, and epidural analgesia. Conclusions: Nurses’ attitudes may be influenced by exposures in their workplace and the predominant provider with whom they have contact. Further research is needed to understand relationships between nurses’ attitudes and practice behaviours.
PREFACE

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CHAPTER ONE: INTRODUCTION

Background

Multiple care providers are involved in maternity care, including nurses, midwives, general/family practitioners, nurse-practitioners, obstetricians, pediatricians, anesthetists, and perinatologists. Each discipline’s attitude towards childbirth is shaped by their socially ingrained values and beliefs (Albarracin, Johnson, Zanna & Kumkale, 2005; Thompson, 2003). Although commonalities in attitudes can be seen among care providers, it is largely acknowledged that diversity exists, acting as a source of friction in perinatal practice (Ballen & Fulcher, 2006; Blix-Lindstrom, Johansson & Christensson, 2008; Carlton, Callister, Christiaens & Walker, 2009; Gilliland, 2002; Kennedy & Lyndon, 2008; Simmonds & Peter, 2007; Simpson, James & Knox, 2006; Simpson & Lyndon, 2009; Sleutal, 2000; Sleutal, Schultz & Wyble, 2007; Thompson). In Canada, the introduction of midwifery care, use of technology and interventions, increasing presence of doulas, and home births are all fertile ground for disagreements or role confusion in perinatal care (Gilliand; Graham, Logan, Davies & Nimrod, 2004; Kornelson, Dahinten & Carty, 2003; Kornelson & Carty, 2004; Simpson & Atterbury, 2003; Simpson, 2006; Spoel & James, 2006).

Knowledge of care providers’ attitudes may allow for a greater understanding of how attitudes contribute to current issues and areas of disagreement in perinatal practice. In particular, concerns have been raised about the ongoing and rising use of interventions and technology in intrapartum care, such as electronic fetal monitoring, elective inductions, oxytocin augmentation, cesarean sections, and elective cesarean sections (Canadian Association of Midwives, 2004; Oppenheimer, Holmes, Yang, Walker & Wen, 2007; Romano & Lothian, 2008; Simpson, 2006; Society of Obstetricians and Gynecologists (SOGC), 2008a; SOGC, 2008b; SOGC, 2008c).
These concerns stem from consistent evidence which suggests that this trend of intervention use is unwarranted, because it does not necessarily result in improved neonatal and maternal outcomes and may even result in greater neonatal and maternal morbidity (Alfirevic, Devane & Gyte, 2006; Anim-Soumah, Smyth & Howell, 2005; Klein 2005; Klein 2006; Leeds & Hargreaves, 2008; Lui et al., 2005; Ryding, Wijma & Wijma, 1998; Simpson & Atterbury, 2003; Simpson & Thorman, 2005; Simpson, 2006; Soderquist, Wijma & Wijma, 2002). For example, as compared to planned vaginal birth, retrospective and prospective studies have associated elective cesarean sections with an increased risk of respiratory morbidities and prolonged neonatal intensive care unit stay in newborns (Hansen, Wisborg, Uldbjerg & Henriksen, 2007; Kamath, Todd, Glazner, Lezotte & Lynch, 2009; Richardson, Czikk, daSilva, & Natale, 2004, Villar et al., 2007). Elective cesarean section has also been associated with a significant increase in maternal postpartum complications, including cardiac arrest, septicemia, thromboembolism, hematoma, and wound infection (Dunne, Da Silva, Schmidt, & Natale, 2009; Lui et al., 2007). Elective induction at a gestational age of less than 41 weeks has been associated with nearly a three-fold (OR 2.72, 95% CI, 1.74-4.28) increase in the risk of cesarean section in nulliparous patients (Dunne et al.). Moreover, births with intervention may contribute to negative maternal psychological outcomes, such as post-traumatic stress disorder (Leeds & Hargreaves; Soderquist, Wijma, & Wijma).

Interventions and technology are also costly and may present undue burdens to Canada’s health care system if used unnecessarily (Canadian Institute for Health Information (CIHI, 2006a); SOGC, 2008a; Sword et al., 2009; Tracy & Tracy, 2003). CIHI estimated that each cesarean section costs the health care system $4,600, whereas a vaginal delivery costs $2,700. Because of the potential for negative outcomes and the increased cost of interventions, it is
important to understand factors that may affect their use in practice. Care providers’ attitudes are particularly vital to understand, as they can influence the behaviours practitioners employ (Ajzen & Fishbein, 2005; Bohner & Wanke, 2002). Exploring attitudes about interventions and technology use in practice can inform the development of strategies to reduce their inappropriate use.

Moreover, knowledge of care providers’ attitudes will allow care providers to have a greater appreciation of others’ perspectives and possibly facilitate greater interdisciplinary collaboration. Collaboration between care providers has become highly valued in Canadian perinatal care, for multiple reasons including its potential to improve patient safety, incorporate practice guidelines, and improve patient outcomes (Belle Brown et al., 2009; Collins, 2008; Peterson, Medves, Davies & Graham, 2007; Ploeg, Davies, Edwards, Gifford & Miller, 2007). Most recently, it has been argued that collaboration between disciplines will allow for the development of effective strategies to improve the delivery of maternal health care and recruitment and retention of care providers in Canada (Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN), 2009; Basso et al., 2009; Price et al., 2005). The importance of increased retention and recruitment is emphasized in the face of a shortage of maternity care providers in Canada (CIHI, 2004a; Zelmer & Leeb, 2004); labeled by some researchers as a “maternity care crisis” (Belle Brown et al., p. 19).

The well-acknowledged crisis in maternity care is characterized by a shortage of family physicians choosing to provide intrapartum care and experienced perinatal nurses and the predicted loss of a significant proportion of the maternity care workforce (obstetricians, nurses and family physicians) due to retirement (British Columbia Medical Association, 2004; CIHI 2004a; Zelmer & Leeb, 2004). Although licensed midwives are slowly being established in
Canada, they have a limited presence; nationally they care for less than 4% of the mothers giving birth (Chalmers, Dzakpasu, Heaman & Kaczorowski, 2008). The consequences of this shortage include maternity services closures and decreased access to care providers across Canada (Grzybowski, Kornelson & Cooper, 2007; Peterson et al., 2007).

Concerns about increased intervention rates and the need for collaborative care have spawned increasing research about care provider attitudes, both within Canada and internationally (Bergholt, Ostberg, Legarth & Weber, 2004; Fuglenes, Oian & Kristiansen, 2009; Karlstrom, Engstrom-Olofsson, Nystedt, Thomas & Hildingsson, 2009; Klein et al., 2009; Monari, Di Mario, Faccinetti & Basevi, 2008; Reime et al., 2004). It has been suggested attitude research may explain why high rates of intervention and technology use persist, despite the lack of evidence to support current rates of use (Monari et al.; Walker, Shunkwiler, Supanich, Williamsen & Yensch, 2001). Researchers have highlighted the importance of attitude research, because they argue knowledge of care provider attitudes may provide leverage to facilitate communication among care providers and decrease confusion, thereby increasing the likelihood of effective collaboration (Klein et al.; Reime et al.). Knowledge of attitudes could be translated into policy development and medical and nursing curriculum reform and interdisciplinary education (Klein et al.), and ultimately “improve the quality of care for mothers” in Canada (Reime et al., p. 1388).

Problem Statement

While gaining knowledge of care providers’ attitudes is essential, an understanding of the nature of their diversity is of equal importance. Maternity care in Canada is marked by diversity (CIHI, 2004a; CIHI, 2004b). Every province and geographic region in Canada has a unique distribution of care providers and maternal characteristics leading to significant
variability in the environments in which maternity care is delivered (CIHI, 2004a; CIHI, 2004b; CIHI, 2007; Public Health Agency of Canada (PHAC), 2008). The attitudes individuals possess are also highly individualized (Bohner & Wanke, 2002). Therefore, descriptions of care providers’ general attitudes may present an incomplete picture of attitudes towards birth. Moreover, such descriptions may lead to misguided assumptions about the attitudes care providers possess. Strategies to improve collaboration and influence intervention rates, which are based on misguided assumptions, will have limited efficacy, as they are unable to take into account care provider differences (Peterson et al., 2007). Researchers must examine whether attitudes within groups of care providers differ and how they differ, in order to have more comprehensive strategies to improve the delivery of maternity care in Canada. Estimated at nearly 15,000 in number, nurses are the largest maternity care provider group in Canada and are present at nearly all births (CIHI, 2004a; CIHI, 2006c; Peterson et al.). Because nurses care for the majority of women during their births, they represent an important group that requires understanding of differences in their attitudes toward birth. There is a paucity of information about how nurses’ attitudes vary by personal characteristics, province, and workplace environments.

**Purpose And Significance**

The purpose of this thesis is to examine similarities and differences in attitudes for one specific care provider group: nurses. It seeks to understand if nurses’ attitudes towards birth differ by demographic factors. On a broader scale, nurses’ attitudes towards other care providers, such as midwives or doulas, will either help or hinder collaborative practice between disciplines (Peterson et al., 2007). In the intrapartum setting, nurses’ attitudes towards interventions and technology may influence the frequency with which these are employed (Klein et al., 2009;
Sauls, 2007; Tillett, 2007). Similarly, nurses’ attitudes affect communication patterns between care providers and ultimately shape the outcomes of women’s births by influencing the care they provide (Payant, Davies, Graham, Peterson & Clinch, 2008; Sinivaara, Suominen, Routasalo & Hupli, 2004). Thus, understanding the diversity in nurses’ attitudes is essential to increase collaborative care and decrease intervention use in practice.

Understanding diversity in perinatal nurses’ attitudes is also highly relevant given the changing context of perinatal care delivery in Canada. In 1994, Canada was the “last developed country to legalize midwifery” (Midwives Association of British Columbia, 2007, p. 3). Likewise, doulas have only formally been practicing since 1992 in Canada (Doulas of North America International, 2009). As a result of the declining rate of family physicians providing intrapartum care, obstetricians are increasingly providing care to low risk women (CIHI, 2004a). Other trends include: increasing numbers of high-risk deliveries, increasing maternal age, and numbers of low birth weight infants, decreasing instrumental delivery and episiotomy rates, and increasing rates of induction, cesarean section, elective cesarean section, and epidural analgesia for labour and birth (CIHI, 2007).

Attitudes are inextricably linked to social and contextual environments in which care providers work (Smith & Hogg, 2008). Attitudes are susceptible to change and influenced in their formation by exposures to new objects, opinions, behaviours and people (Smith & Hogg; Bohner & Wanke, 2002). Research studies have not addressed the impact of trends in care provider practices and perinatal care on nurses’ attitudes. Understanding the effects of unique work environments and trends in maternity care on nurses’ attitudes would add valuable insight about intervention rates in practice and strategies to reduce inappropriate interventions and improve collaboration.
Determining The Attitudes Of Women And Care Providers Towards Birth Study

This thesis represents a secondary analysis of a larger study, entitled: Determining the Attitudes of Women and Maternity Care Providers toward Birth: Conflict, Confusion and Concordance (Klein et al., 2009). As a part of this national study, either web-based or paper-based surveys were completed by obstetricians, midwives, doulas, nurses and physicians (Klein et al., 2009). The surveys examined care providers’ attitudes towards birth, birthing practices, and other care providers. The similarities and differences in disciplinary attitudes were reported in an article titled: The Attitudes of Canadian Maternity Care Practitioners towards Labour and Birth: Many Differences but Important Similarities (NMCAS) (Klein et al.). This thesis aims to examine a subgroup of the larger sample, specifically nurses. It will describe their attitudes toward birth, birthing, and care providers. Nurses’ attitudes will be examined for within group differences based on nurses’ characteristics and the nature of their environments.

Canadian nurses from all provinces completed the survey (Klein et al., 2009). Due to the lack of a national perinatal nursing database, a convenience sample was used (Klein et al.). Some nurses received the questionnaire at an Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN) conference and were given copies to distribute at their workplace; therefore, the sample may also be considered a snowball sample. The sample included nurses who completed the Advances in Life and Risk Management (ALARM) or Advanced Life Support in Obstetrics (ALSO) course and/or nurses who were members of the AWHONN or attendees at a national conference for AWHONN in 2007 (Klein et al.).

Research Questions

Based on the literature review and theoretical framework to be described in Chapters Two and Three, the following eight research questions will be explored:
1) Is there a relationship between nurses’ years of intrapartum experience and attitudes towards technology and interventions, such as electronic fetal monitoring, epidural analgesia and episiotomies?

2) Is there a relationship between nurses’ years of intrapartum experience and attitudes towards decreasing the cesarean section rate and the importance of vaginal birth?

3a) Does provincial/territorial midwifery regulation status influence nurses’ attitudes towards midwives?

3b) Is there a relationship between year of provincial midwifery legislation and nurses’ attitudes towards midwifery services?

4) Is there a relationship between choice of provider and nurses’ attitudes towards electronic fetal monitoring, epidural analgesia, episiotomies, doulas, decreasing the cesarean section rate, the importance of vaginal birth or nurses’ attitudes toward safety by mode or place of birth?

5) Is there a relationship between hospital level of employment (level 1, level 2, level 3) and nurses attitudes towards the risk to the fetus during birth?

6) Is there a relationship between hospital level of employment and choice of care provider?

7) Is there a relationship between the hospital level at which nurses are employed (level 1, level 2, level 3), education exposure, choice of provider, and nurses’ attitudes towards safety by mode of birth?

8) Is there a relationship between hospital level at which nurses are employed (level 1, level 2, level 3), years of nursing experience, choice of provider, and nurses’ attitudes towards the electronic fetal monitoring scale, epidural analgesia or the importance of vaginal birth?
In summary, this chapter has provided the background, significance, problem statement research questions, and purpose of the study of perinatal nurses’ attitudes towards birth and other care providers. The next chapter will present the theoretical framework for the study.
CHAPTER TWO: THEORETICAL FRAMEWORK

Introduction

Attitude theory and research about attitudes abound in the psychological literature (Prislin & Crano, 2008). No single unifying theory has been constructed to explain multiple dimensions of attitudes (Albarracin, Johnson, Zanna & Kumkale, 2005). Literature about attitudes describes multiple elements (their formation, structure, strength, function, lability, change patterns, consequences, and measurement) through interrelated concepts and theories (Bohner & Wanke, 2002). In keeping with this tradition, the theoretical framework presented for the thesis will incorporate elements of attitude theory, but centre on one theory of attitude change; social identity theory. Although several of the aforementioned elements will be highlighted, of critical relevance for this thesis is how attitudes are formed and changed.

A Definition Of Attitudes: Of Implicitness And Construction

A simple, straightforward definition of attitudes is difficult to provide, due to the evolving understanding of how attitudes are defined (Albarracin et al., 2005). It is generally agreed attitudes are positive or negative “psychological predispositions about an object,” person, or issue (Sauls, 2007, p. 118). They are the way one views or evaluates an attitude object; which is defined as any person, group, object, or issue towards which one has an attitude (Ajzen, 2001; Oskamp & Schultz, 2005).

One’s attitudes may be known (conscious, explicit attitudes) or unknown (unconscious, implicit attitudes) (Bassili & Brown, 2005). Research exploring the unconscious nature of attitudes has steadily increased in recent years (Bassili & Brown; Devos, 2008). The notion that one can possess unconscious attitudes has caused considerable debate among social
psychologists because it calls into question a foundational idea in attitude theory that attitudes are stored, known evaluations that persist over time (Fabrigar, MacDonald & Wegener, 2005).

Recent proponents of attitude formation (Bohner & Wanke, 2002; Schwarz & Bohner, 2001) suggest attitudes are not stored per se, but are constructed when needed. One may be aware of certain negative attributes of a particular person or thing, but an individual may never have been called upon to express their attitude about that person (Fabrigar et al., 2005). Associated experiences and ideas about that particular person may exist but, until an individual needs to associate these experiences with a judgment, an attitude does not (Fabrigar et al.). It is argued, once an attitude is formed or constructed, it will not be an attitude one will continue to possess over time (Fabrigar et al.). In other words, it is assumed that attitudes are perpetually in a state of flux, due to the fact that individuals have daily experiences which may constantly affect their attitudes (Kruglanski & Stroebe, 2005). Therefore, it is argued, because attitudes are inherently labile, one can never possess a distinct set of stored attitudes (Fabrigar et al.).

Psychology research also supports attitudes as stable entities that persist over time (Alwin, Cohen & Newcomb, 1991; Erber, Hodges, and Wilson, 1995; Kruglanski & Stroebe, 2005). For example, political attitudes have been relatively stable across an individual’s lifetime (Alwin et al.). It is argued stable attitudes are the result of several factors; namely, the importance of the attitude to the individual, knowledge the individual has towards the attitude object, and an individual’s level of experience with the attitude object (Erber et al.; Wood, Rhodes, & Biek, 1995). Attitudes that an individual feels are important and attitudes towards issues about which the individual is well-informed are less likely to be constructed (Bohner & Wanke; Erber et al.; Wood et al.). Similarly, attitudes developed when an individual encounters the attitude object regularly are more easily accessible and likely to be stored attitudes (Bohner
& Wanke). A comprehensive theoretical model which encompasses divergent viewpoints about attitudes as constructions and attitudes as stored evaluations presently not exist (Bassili & Brown, 2005).

For the purposes of this thesis, attitudes will be described in consonance with Albarracin, Zanna, Johnson, and Kumkale’s (2005) views. They argue attitudes can be “both judgments that individuals form online, as well as evaluative representations in memory” (p. 4). They hold their standpoint as the most valid because to completely subscribe to attitudes as online judgments or evaluative representations would negate relevant empirical literature on either side of the spectrum which supports the view attitudes are both stored evaluations and constructed (Albarracin et al., 2005; Alwin, Cohen, & Newcomb, 1991; Bohner & Wanke, 2002; Isen, Shalker, Clark & Karp, 1978; Schwarz & Bohner, 2001; Shavitt, Swan, Lowrey, & Wanke, 1994). This is logical as one can not explore attitude change if attitudes never actually exist (Albarracin et al.; Bohner & Wanke). Moreover, one cannot explain how attitude measurement can be inconsistent, without acknowledging attitudes can be constructed and variable (Albarracin et al.; Bohner & Wanke).

To reconcile the inconsistency in views that attitudes are both stored and constructed, attitudes can be regarded as varying in their accessibility from memory (Bohner & Wanke, 2002). In order for individuals to decide whether or not they have positive or negative attitudes towards an attitude object, individuals must locate pertinent memories to inform their judgments (Bohner & Wanke). Some attitudes are well-defined and information is easily available from stored memory (Kruglanski & Stroebe, 2005). Other attitudes are weaker and more poorly defined which makes it difficult for an individual to retrieve the attitude from memory and to report her or his attitude on an attitude questionnaire (Kruglanski & Stroebe). If one can not
retrieve an attitude or has never been asked to express an attitude, it may be constructed (Bohner & Wanke). Therefore, attitudes can be both constructed and stored, depending on the degree to which an attitude can be accessed (Kruglanski & Stroebe). In conclusion, attitudes are defined as positive or negative “psychological predispositions” (Sauls, 2007, p. 118) towards an object, issue, or person that may be formed both consciously or unconsciously (Bassili & Brown, 2005; Devos, 2008). Attitudes may vary in their accessibility, and may be constructed or stored in memory (Bohner & Wanke; Kruglanski & Stroebe).

The definition provided is relevant to how attitudes are measured and the reliability of attitude measurement. An attitude which one constructs “on the spot” (Oskamp & Schultz, 2005, p. 13) in attempts to answer a questionnaire is vulnerable to contextual influences, such as a recent experience with the attitude object in question, previous questions in the questionnaire, or even one’s mood (Bohner & Wanke, 2002). Such an attitude is particularly likely to be unstable and reported differently at different times (Bohner & Wanke).

In the context of the present study, nurses are asked to report their attitudes towards birth. Because it is an assumption that nurses in this study had frequent encounters with birth and with a variety of other care providers, one would therefore expect they are more likely to report attitudes that are stored and well-formed. Furthermore, it is assumed nurses possess a working knowledge of issues surrounding birth. The attitudes explored in this study relate to nursing practice; thus, they are attitudes that are relevant or important to nurses. Therefore, the attitudes reported for the purposes of the present study, are more likely to be reliable and stable reflections of the attitudes nurses possess as opposed to labile attitudes, which have been constructed.
Attitude Formation And Perinatal Nursing

How a nurse comes to form his or her attitudes entails a complex process. At their most basic, attitudes are formed both unconsciously and consciously through experiences (Oskamp & Schultz, 2005). Generally, attitudes are thought to be formed through four mechanisms: mere exposure, reinforcement, modeling, and conditioning (Bohner & Wanke, 2002). The four mechanisms by which attitudes form are not independent of each other. As Prislin and Wood (2008) noted, it is more appropriate to view these four influences as working in concert, in what they described as “attitude soup” (p. 123). In other words, modeling, evaluative conditioning, social reinforcement, and mere exposure work synergistically to develop one’s attitude towards a particular attitude object (Prislin & Wood).

Mere Exposure Effect (MEE)

The mere exposure effect simply posits the more one is exposed to a particular object or person the more likely one is to favour it (Hansen & Wanke, 2009; Zajonc, 1968). It is based on the premise that individuals can form attitudes without being conscious they are doing so (Hansen & Wanke; Zajonc, 1980). It suggests, the fewer exposures an individual has towards an object or person, the fewer positive or negative associations the person has towards this object (Grush, 1976). After repeated exposures, a positive or negative attitude is formed based on the accumulation of these positive or negative associations (Grush). Although repeated exposures can lead to negative attitudes, individuals repeatedly exposed are more likely to develop positive attitudes towards an object or person, independent of a negative context (Saegert, Swap & Zajonc, 1973; Schimmack & Crites, 2005). That is, even if exposures are negative, repeated exposures will still increase the likelihood the individual will favour the object or person (Saegert et al.). In the case of perinatal health care, one would therefore reason the more a nurse
is exposed to a particular intervention or care provider, the more likely the nurse is to use the intervention or be more accepting of the care provider.

Social Reinforcement

Social reinforcement implies individuals are more likely to form an attitude towards an object, issue, or person, which is perceived favourably by others (Bohner & Wanke, 2002). If one expresses an attitude towards a particular object or person, the reaction received in response to the expression further shapes the attitude of the individual (Bohner & Wanke). Logically, repeated positive reactions decrease the likelihood an individual will possess negative attitudes towards an object or person (Bohner & Wanke). Take, for example, the issue of oxytocin use in perinatal care. Nurses often possess negative attitudes towards its use for a variety of reasons, but this is not always the case. Research has suggested physicians pressure nurses to actively manage birth and favour those who do so (Sleutal, Schultz & Wyble, 2007). Thus, if a nurse repeatedly receives positive reinforcement from physicians for actively managing labour, the nurse may be more likely to develop a positive attitude towards increasing oxytocin use in practice.

Modeling/Social Influence

Modeling or social influence implies individuals will develop attitudes simply by being in a particular social environment (Smith & Hogg, 2008). Essentially, they will either unconsciously or consciously model the attitudes others possess (Smith & Hogg). Social influence is, in part, similar to peer pressure, in that individuals may develop attitudes which serve to identify them with a particular group (Bohner & Wanke, 2002). For example, general nursing research has indicated newly graduated nurses’ are “driven by a desire to belong” (Duchscher, 2008, p. 444) and are particularly susceptible to the attitudes of others upon entering
practice (Price, 2008). Taken together with the concept of social reinforcement, nurses may act in socially desirable ways and even adopt attitudes of other nurses as their own (Price).

_Evaluative Conditioning_

Although historically deemed classical conditioning in response to the Pavlov (Pavlov, 1927 as cited in Bohner & Wanke, 2002) experiments, conditioning is now associated with the term, evaluative conditioning (Walther, Nagengast & Trasselli, 2005). This term describes an unconscious phenomenon and suggests individuals can develop attitudes without an acute awareness they are doing so (Walther & Langer, 2008). Although conditioning sounds very similar to the MEE, it is different from MEE, because MEE only describes the literal exposure of an individual to an object (Bohner & Wanke). Evaluative conditioning implies an object is accompanied by a positive or negative association (Walther et al.). Neutral objects repeatedly associated with positive objects can cause a person to develop a more positive attitude to the object (Walther et al.). This is most easily demonstrated in advertising. If a product is repeatedly paired with something an individual favours, an individual may unconsciously develop a more positive attitude towards the object (Walther & Langer). In the perinatal setting, evaluative conditioning could occur if a nurse always heard a particular care provider being discussed negatively and unconsciously develops negative attitudes towards her or him.

_Attitude Change_

The formation of attitudes is difficult to distinguish from attitude change, as in the process of change, new attitudes are formed (Bohner & Wanke, 2002). Attitude formation is not a rigid process in which the individual comes to hold a distinct set of attitudes (Kruglanski & Stroebe, 2005). Rather, attitudes are formed, but are also susceptible to change as one has different exposures and experiences.
Social Identity Theory and Social Norms

Perinatal literature describes social variables, such as social norms and unit culture, as barriers or facilitators to nurses changing their behaviours in the workplace (Chaillet et al., 2007; Graham et al., 2004; Davies et al., 2002; Hodnett et al., 2002). For example, Graham et al. found nurses felt institutional factors and social norms in their units influenced their ability to reduce the use of electronic fetal monitoring. In 2002, nurses from four Ontarian hospitals were involved in a study in which two hospitals received an intervention designed to decrease the use of electronic fetal monitoring (2 were control) (Davies et al.). Of the two intervention labour and delivery units, only one reduced their rate of electronic fetal monitoring (significant decrease of 49%); whereas the other increased their rate of monitoring by 2% over the study period (Davies et al.). Follow-up focus groups and interviews revealed nurses from the latter hospital identified lack of physician and obstetrician support, anesthesia policy for continuous fetal monitoring, and junior nurses uncomfortable with intermittent auscultation as contributing to the ineffectiveness of the intervention (Graham et al.). Conversely, nurses from the institution which lowered their rate of electronic fetal monitoring described strong nursing leadership and administrative support, and a general positive attitude among nurses towards intermittent auscultation (Graham et al). Thus, effectiveness of an intervention aimed at changing behaviours was related to the organizational culture and care providers’ attitudes.

This relationship between behaviour change and unit culture in perinatal nursing is relevant to attitude change. Attitude change has a strong relationship with behaviour change; attitude change may precede behaviour change or vice versa (Olsen & Stone, 2005). Social identity theory is therefore of great salience to nursing, as it recognizes attitude change is intrinsically linked to one’s social environment (Smith & Hogg, 2008).
Initially developed in 1972 by Tajfel (as cited in Smith & Hogg, 2008), social identity theory builds upon and integrates the research of social norms by Sherif (1936) and Sherif, Sherif, and Nebergall (1965), and social influence by Newcomb (1943 as cited in Prislin & Wood, 2005). Social identity theory has received consistent empirical support in social psychology; however, it has only recently been used as an explanatory framework for understanding attitude change (Smith & Hogg). Despite its grounding in decades of research, it is argued that the explanatory potential of social identity theory remains largely untapped (Smith & Hogg). This is so because attitude research has historically been weighted towards understanding the individual nature of attitude formation and change, rather than understanding the impact of groups on attitude change (Smith & Hogg). Nonetheless, Smith and Hogg argue currently “there is relatively robust empirical evidence for much of the social identity analysis of attitudinal phenomena” (p. 352).

Social identity theory holds attitudes “are socially learned, socially changed, and socially expressed” (Smith & Hogg, 2008, p. 339). The attitudes we form and change are, therefore, largely influenced by our social environments (Newcomb, 1943 as cited in Prislin & Wood, 2005; Sherif et al., 1965). In essence, it is conceptually similar to the idea of modeling in attitude formation. It too, is based on the assumption that attitudes serve a social function, in that attitudes allow an individual to identify with a particular group (Hogg & Williams, 2000; Smith & Hogg). In the context of perinatal care, nurses may wish to identify with both their own discipline (Hodnett, 1997) or with the larger group of care providers with whom they work (Chaillet et al., 2007). It is generally argued individuals will strive to hold socially “correct attitudes” (Bohner & Wanke, 2002, p. 137), as it affords an individual a sense of belonging (Hogg & Williams). Therefore, in a group setting, attitudes are more likely to change in favour
of what an individual perceives to be the appropriate attitudes he or she should possess (Smith & Hogg).

Perceived appropriate attitudes and behaviours are often defined as social norms. A social norm is a term used to describe the established attitudes and behaviours of a defined social group (Sherif, 1936; Prislin & Wood, 2005). Under social identity theory, individuals make subjective judgments of a group’s social norms (Smith & Hogg, 2008). Through repeated interaction with other group members, the individual undergoes a process of internalization of these perceived social norms (Smith & Hogg). Individuals eventually adopt the group attitudes “as their own attitudes” and then behave and express attitudes which match their perceptions of the group’s social norms (Smith & Hogg, p. 341).

Social norms; however, only exist in a given time frame and are prone to change (Sherif, 1936; Sherif et al., 1965). Likewise, one’s attitudes are only as “stable as the relative stability of the social world in which [an] individual moves” (Sherif et al., p.20). Therefore, changes in an individual’s environment can contribute to the development of new group social norms and, hence, different attitudes (Sherif et al; Smith & Hogg, 2008). Within perinatal care in Canada, one could speculate changing trends of intervention use and the introduction of midwives and doulas have influenced social norms in perinatal workplaces. Nurses working amidst changes in perinatal care may be exposed to different attitudes and experiences, which may have had an effect on the attitudes they possess towards birth.

**Implications: Exposure And Individuality**

A critical element underlying attitude change and formation is the unconscious and conscious mechanisms by which it occurs. Specifically, both conscious and unconscious exposure to different individuals, environments, objects, and ideas is at the core of all attitude
formation and change (Bohner & Wanke, 2002; Prislin & Crano, 2008). Attitude formation is predicated on the understanding attitudes are formed through different exposures and experiences (Bohner & Wanke). Similarly, social identity theory indicates the attitudes individuals form and how they change those attitudes are dependent on exposures in their social environments (Prislin & Wood, 2005). Thus, exposure can be considered the most fundamental component underlying one’s attitudes.

Applying understanding of exposure, social identity theory, and attitude formation to the perinatal care context would suggest nurses’ attitudes towards birth and care providers are influenced by their workplace environments. Nurses’ workplaces dictate their exposures to birth and social norms, which influence their attitudes. One may speculate that nurses’ attitudes are shaped by the attitudes of the care providers with whom they work, their patients, organizational influences, and workplace culture.

Workplace norms may vary from institution to institution in perinatal care (Davies et al., 2002; Graham et al., 2004; Hodnett, O’Brien-Pallas, 2003; Simpson, 2005; Stark & Miller, 2009). Rates of intervention can vary across geographic regions and between institutions, independent of hospital level (CIHI, 2007; Davies et al.). This suggests the possibility that different workplace norms influence an institution’s intervention rates. This notion is supported by Graham and colleagues’ qualitative study in which nurses from a unit with a low rate of electronic fetal monitoring described intermittent auscultation as being viewed favourably. The majority of participants at this hospital felt electronic fetal monitoring interpretation was subjective and that its’ use increased the potential for litigation. In contrast, nurses from an institution with high rates of electronic fetal monitoring described electronic fetal monitoring being viewed favourably because it protected care providers from poor outcomes. Their positive
and negative attitudes towards technology correlated to their units’ rates of electronic fetal monitoring.

Stark and Miller conducted a cross-sectional survey of 401 nurses from all hospital levels about their views towards barriers to hydrotherapy use in labour (2009). Nurses who worked at hospitals with higher rates of epidurals and cesarean sections perceived significantly more barriers towards hydrotherapy. The authors concluded perceptions of barriers may negatively influence nurses’ views towards hydrotherapy, implying nurses working at institutions who perceive barriers to hydrotherapy may have different attitudes towards its use. Therefore, the attitudes of nurses may differ among institutional settings. In addition, the length of time a nurse has worked in perinatal care could affect his or her exposure to varying attitudes and social norms, which would also influence the attitudes she or he possesses.

Finally, because attitudes are formed through different exposures and experiences, it is recognized attitudes can be highly individualized (Smith & Hogg, 2008). Social identity theory contests this notion to some degree, as it holds individuals’ attitudes will naturally gravitate towards perceived social norms, thereby reducing the heterogeneity of a group (Smith & Hogg). Nevertheless, social identity theory does not reject the notion individuals in a group can possess unique attitudes. Sherif deftly states: “individual differences are facts that no sane person can deny” (1936, p.3). Social norms are subjective and all individuals interpret perceived group attitudes differently (Smith & Hogg; Sherif et al., 1965). Therefore, differences in attitudes within groups exist.

Individuals internalize social norms differently, which leads to variation in the behaviours and attitudes of individuals within a group (Smith & Hogg, 2008). Moreover, the attitudes individuals develop in a group setting cannot be divorced from the experiences and exposures
one has outside the group setting. Contextually speaking, perinatal nurses’ attitudes are not only socially shaped by their workplaces; they are also shaped by social environments external to the hospital setting. Thus, there would be diversity in nurses’ attitudes towards birth, depending on their contexts, personal characteristics, and other exposures.

In conclusion, this chapter has outlined the theoretical framework for the study and emphasized the importance of social identity theory to perinatal nurses’ development of attitudes towards birth, interventions, and care providers. The next chapter presents a review of the literature.
CHAPTER THREE: LITERATURE REVIEW

Knowledge Of Nurses’ Attitudes And Their Diversity

The purpose of this chapter is to provide a critical analysis and synthesis of the literature about nurses’ attitudes towards birth and intrapartum care. Exploring possible differences in nurses’ attitudes is informed by insight into how they may be similar. At present, it is difficult to characterize perinatal nurses’ attitudes, as studies examining nurses’ general attitudes towards care providers and childbirth have been lacking. Research about care providers’ attitudes is prevalent in perinatal care; however, it provides no information about nurses’ attitudes, as published literature tends to focus on the attitudes of midwives, obstetricians and/or general practitioners, to the exclusion of nurses (Holroyd, Bailey, James, Pitman & Whynes, 2002; Karlstrom, Engstrom-Olofsson, Nystedt, Thomas & Hildingsson, 2009; Monari et al., 2008; Reime et al., 2004; Smith et al., 2009).

Nurses’ Attitudes towards Intrapartum Care

Within Canada, two broad studies have directly examined nurses’ attitudes towards care providers and intrapartum care (Blais et al., 1994; Klein et al., 2009). Blais et al. used a mail-out Likert type questionnaire to examine the attitudes of care providers (community nurses, hospital maternity nurses, midwives, physicians and obstetrician/gynecologists) in Quebec towards contentious issues in maternity care. These issues included attitudes towards midwifery, technology, and intervention in practice. In the study which forms the basis for this secondary analysis, Klein et al. surveyed 545 Canadian nurses, in addition to other disciplines (obstetricians, physicians, midwives, doulas), about their attitudes towards other care providers, interventions, management of birth, and birth itself.
Findings from the two studies indicate, in comparison to other disciplines, nurses’ attitudes towards birth situate them as holding views differing from those of other care provider groups. Generally, it was found, in comparison to obstetricians and general practitioners, nurses have more negative attitudes towards intervention and less negative attitudes towards midwives, doulas, home birth, out of hospital birthing centres, and vaginal birth (Blais et al., 1994; Klein et al., 2009). In comparison to midwives and doulas, nurses’ attitudes were more positive towards intervention and less positive towards vaginal birth and out of hospital birth (Blais et al.; Klein et al.).

Although nurses’ attitudes differentiate them from other care providers, nurses cannot be considered a homogenous group. Research has highlighted nurses’ diverse attitudes, as demonstrated in the Blais et al. study (1994). With the exception of physicians, the attitudes of other care provider groups were less variable than nurses. For example, in Quebec, during a period of intensive conflict between obstetricians and midwives, 95% of obstetricians agreed that they did not think that midwifery needed to be recognized (Blais et al.). One hundred percent of midwives agreed that “much progress is still to be made in humanizing maternity care” (p.65). These high levels of consensus were in sharp contrast to the views of hospital nurses. On only three of the sixteen questions did the maternity nurses largely agree (83% agreed that “maternity care can be humanized without introducing midwives;” 80% agreed that “much progress is still to be made in humanizing maternity care”) or largely disagree (82% disagreed that “midwives are more likely to detect certain risks such as low birth weight and premature babies,” (Blais et al., p.66). For all other questions, maternity nurses only agreed as a group, between 30-65% of the time (Blais et al.). Indeed, the authors concluded hospital nurses held the most “divergent” attitudes of all the care providers (Blais et al., p. 66).
Nurses’ diversity of viewpoints is corroborated by the Klein et al. (2009) study as evidenced by nurses’ favourable views towards birth plans, doulas and elective cesarean sections (64%, 75%, and 25%, respectively). Although these percentages reflect some degree of uniformity, as in the case of attitudes towards doulas, it is important to note that a full 25% of nurses surveyed were not in favour of doulas. Likewise, although most nurses did not have positive attitudes towards elective cesarean section, 25% of nurses did. Taken together, these studies suggest nurses’ attitudes vary.

The notion of diversity is also supported by other studies, which both directly and indirectly, have examined nurses’ attitudes towards birth and care providers. A few studies have directly examined nurses’ attitudes towards doulas (Deitrick & Draves, 2008; Papagni & Buckner 2006), intermittent fetal monitoring (Walker et al., 2001), collaborative maternity care (Belle-Brown et al., 2009) and labour support (Sauls, 2007). Of these five studies, three sets of results suggested potential differences in nurses’ attitudes (Belle-Brown et al.; Papagni & Buckner; Walker et al.).

Differences are demonstrated in Belle-Brown and colleague’s (2009) study, in which a stratified random sample of 449 nurses from Ontario completed a survey that explored nurses’ attitudes towards different models of maternity care. The authors suggested nurses preferred working with physicians, to the exclusion of midwives. A closer inspection of the results; however, revealed less than half (44.8%) of the nurses indicated they would prefer to work with physicians and not midwives (Belle-Brown et al.). Thus, nurses’ attitudes towards the different models of maternity care clearly varied.

Walker and colleagues (2001) administered a Likert questionnaire about nurses’ attitudes towards intermittent auscultation to 145 nurses from five hospitals across Michigan.
They claimed nurses generally had positive attitudes towards the use of intermittent monitoring, indicating 72% of nurses’ agreed “that intermittent monitoring should be the standard of care” (p.374). While this was the case overall, a review of nurses’ responses to the survey questions revealed wide variation in nurses’ attitudes. For example, on a question that asked whether or not the hospital’s “current approach to fetal monitoring is adequate,” 37.3% of nurses’ agreed, 23.9% were neutral and 33.8% disagreed (Walker et al., p. 378). Similar examples could be found for fourteen of the eighteen survey questions, indicating a lack of uniformity in nurses’ attitudes.

In Papagni and Buckner’s (2006) qualitative study; open-ended questionnaires about nurses’ attitudes towards doulas were completed by nine patients who had used doulas during their births. The authors described patients’ feelings that nurses either fell into the category of “acceptance and affirmation” (5/9 participants) or “resentment and animosity” (4/9 participants) in their attitudes towards doulas (p. 16). These findings suggest variation in nurses’ attitudes; however, they rely on the perceptions of patients. The authors do not corroborate their findings with views of the patients’ nurses; therefore one cannot assess whether the findings accurately reflect the attitudes their nurses possessed.

Two studies that did not support nursing attitude diversity were conducted by Sauls (2007) and Deitrick and Draves (2008); however, limitations for both studies should be noted. Deitrick and Draves analyzed patients’ and nurses’ attitudes towards doulas at two hospitals, which had well-established doula programs for mothers with little social support. The authors suggested that all the nurses had positive attitudes towards doulas, but they offered only three quotes to support their claim. Only ten nurses were interviewed between the two hospitals and the authors offered no explanation about their method of sample selection. Because the study aim
was to assess the efficacy of the doula program, the nurses they selected may have been biased in favour of doulas. Thus, their results may not reflect the attitudes of all nurses in their setting.

The Sauls (2007) study is misleading as it suggests from its title, “Nurses’ attitudes toward provision of care”, that nurses’ attitudes would be a focal point. While the study does assess nurses’ attitudes, its main purpose was to use the theory of planned behaviour to determine if attitudinal, normative, or control variables predicted whether nurses planned to perform labour support. The results indicated attitudes were the strongest predictors of labour support. An attitude questionnaire on labour support was used to assess nurses’ attitudes; however, the author did not describe the findings associated with the questionnaire, leaving questions about the nature of nurses’ attitudes and whether they differed.

Attitude diversity is also supported in perinatal literature that does not directly examine nurses’ attitudes. A review of research regarding nurses’ provision of labour support (Carlton et al., 2009; Davies & Hodnett, 2002; Payant et al., 2008; Sleutal, 2000; Sleutal et al., 2007; and nurses’ views of working with other care providers (Gilliand, 2002; Graham et al., 2004; James, Simpson & Knox, 2003; Kennedy & Lyndon, 2008; Kornelson, Dahinten, & Carty, 2003; Medves & Davies, 2005; Peterson et al., 2007; Simpson et al., 2006) reveals there are no universal attitudes nurses possess towards birth. Nurses held both positive and negative attitudes towards interventions (electronic fetal monitoring, oxytocin, cesarean sections, epidurals) (Carlton et al.; Davies & Hodnett; Graham et al.; Payant et al.; Sleutal; Sleutal et al.) care practices or beliefs, (labour support, home birth, birth plans, childbirth) (James et al.; Medves & Davies; Simpson et al.; Sleutal et al.), collaborative care (Kornelson et al.; Peterson et al.), and care providers (midwives, doulas, physicians) (Gilliand; James et al., Kennedy & Lyndon; Kornelson et al.; Medves & Davies; Sleutal et al.). To illustrate, Sleutal, Schulz and Wyble found
nurses expressed both positive and negative attitudes towards working with physicians. They examined 416 nurses’ narrative comments to a questionnaire which explored nurses’ views of labour support. Some nurses from this group reported physicians were highly interventative and impeded nurses’ attempts at labour support (Sleutal et al.). In contrast, other nurses described positive working relationships with physicians, which contributed to job satisfaction. Kennedy and Lyndon, in their ethnographic study at a teaching hospital in the United States, explored relationships between midwives and nurses, and found nurses held both positive and negative attitudes towards midwives. Some nurses described midwives as maintaining respectful and positive relationships with them; whereas others felt midwives could be disrespectful and difficult to work with (Kennedy & Lyndon). Differences in nurses’ attitudes create difficulties in obtaining a clear picture of nurses’ attitudes towards birth.

Several studies that have directly studied nurses’ attitudes support the notion of attitude diversity in perinatal nursing (Belle-Brown et al., 2009; Blais et al., 1994; Klein et al., 2009; Papagni & Buckner, 2006; Walker et al., 2001). The dichotomous attitudes towards care providers, collaborative care, care practices, or interventions found in perinatal literature, which indirectly examined nurses’ attitudes, also suggest nurses’ attitudes differ. Nonetheless, it is important to note there has yet to be research conducted to examine whether nurses’ attitudes differ towards birth and care providers. In other words, factors that predict how nurses’ attitudes differ have not been explicitly addressed in perinatal literature.

**Factors Contributing To Diversity In Perinatal Care**

There is a dearth of research which examines factors associated with nurses’ differing attitudes in perinatal nursing. A search was conducted using the PubMed, Cumulative Index of Nursing and Allied Health Professionals (CINHAL), Web of Science and Academic Search
Complete databases. Keywords used included “nurses”, “attitudes”, “perinatal”, “differ”, “differences”, “obstetrics”, “views” and “opinions”. Although articles were retrieved which highlighted possible differences in nurses’ attitudes, only one article was retrieved that looked specifically at factors affecting perinatal nurses’ attitudes towards intrapartum practice.

As previously described, Stark and Miller conducted a cross sectional survey ($n = 401$) about nurses’ views towards barriers to hydrotherapy (2009). Analyses of within group demographic differences revealed a weak correlation ($r = -.17$) between years of experience and perceptions of barriers towards hydrotherapy. This suggests more years of experience correlated with decreased perception of barriers; however, the authors concluded this result was not of clinical significance. Other demographic characteristics, including age, ethnicity, education, nursing roles, and hospital level of employment were not associated with differences in nurses’ views towards hydrotherapy. The authors note there was low power (.16) to detect differences based on nurses’ characteristics, and, because the demographic section was at the end of the questionnaire, there were missing demographic data. Based on the $df$ reported, it appears that of the 401 nurses, only 217-218 completed the demographics section. As no other power calculations were reported, this raises questions about the power to detect differences in the nurses who provided responses and whether the results were reflective of the whole sample. Further exploration of the influence of demographic variables on nurses’ attitudes is therefore warranted.

The general nursing literature has explored factors that influence nurses’ attitudes towards practice across a variety of care settings, predominantly mental health nursing, palliative care, and gerontological nursing. This research has been conducted internationally (see Appendix A). Because the literature is extensive details about the studies are provided in Appendix A.
Typically, nurses’ attitudes are examined with the use of cross-sectional surveys and significant differences in nurses’ attitudes due to demographic characteristics are reported. From these studies, demographic characteristics, such as age, years of nursing experience, ethnicity, religion, education, place of residence, clinical area of work, personal experiences, and gender have been associated with differences in nurses’ attitudes (See Appendix A). This is consistent with social identity theory and the concept of exposure. Nurses holding different demographic characteristics are exposed to differing attitudes and social environments, which would affect their attitude formation.

Importantly, it has also been found demographic variables are inconsistent predictors of nurses’ attitudes. For example, increasing age has been associated with more positive attitudes towards caring for obese patients (Brown, 2006), terminally ill patients (Lange, Thom & Kline, 2008), and patients who have attempted suicide (Sun, Long, & Boore, 2005). Conversely, it has been associated with less positive attitudes towards caring for patients with dementia (Kada Nygaard, Mukesh & Keitung, 2009) and not associated with a difference in nurses’ attitudes towards patient restraints (Hamers et al., 2008). Similar examples could be used for all other predictors. The analysis suggests the influence of demographic variables on nurses’ attitudes is related to the attitude of interest. From the general literature, the relationship between nurses’ attitudes and demographic characteristics is unclear because nurses’ attitudes are not universally influenced by any particular demographic variable.

Isolation of factors that affect perinatal nursing attitudes is limited, considering only a handful of studies specifically examine care providers’ attitudes in practice. Moreover, studies describing nurses’ attitudes are often qualitative and more apt to reveal themes of commonality rather than diversity (Carlton et al., 2009; Kornelson et al., 2003; Medves, 2005; Simpson, James
& Knox, 2003). From the evidence reported, three salient factors may affect nurses’ attitudes: experience, workplace setting, and education.

**Experience**

Limited qualitative work suggests nurses with extensive perinatal experience possess different attitudes towards intrapartum practices than nurses with less experience. Downe, Simpson and Traffords’ (2007) qualitative meta-synthesis on expert maternity care highlighted experienced nurses’ and midwives’ generally positive attitudes towards natural birth. Similarly, James et al. (2003), in their qualitative descriptive study of expert nurses from 4 large American hospitals, described expert nurses (> 5 years perinatal experience) as having negative attitudes towards technology and interventions and positive attitudes towards labour support, birth plans, mothers’ abilities to influence the natural birth process, and natural childbirth itself.

In contrast to depictions of experienced nurses, three studies claim experienced nurses and obstetricians perceive less experienced nurses as having more favourable attitudes towards technology and negative attitudes towards labour support and natural non-interventative birth (Carlton et al., 2009; Graham et al., 2004; Sleutal et al., 2007). Experienced nurses and obstetricians describe junior nurses as more likely to suggest epidurals for pain relief and use electronic fetal monitoring than experienced nurses (Carlton et al.; Graham et al.; Sleutal et al.). The findings suggest experienced nurses’ might hold different attitudes towards the use of technology.

On the other hand, this logic can be flawed, because it relies on perceptions of experienced nurses and obstetricians about junior nurses rather than those of the nurses themselves. Individuals may interpret the attitudes of others incorrectly (Smith & Hogg, 2008). It is possible newer nurses have more positive attitudes towards technology and epidural use.
because they are socialized into a highly technological environment and may not have had opportunities to develop skills that support non-interventative birth (Kardong-Edgren, 2001; Ruhl et al., 2006). Alternatively, newer nurses may not have more positive attitudes but model the behaviour of their more experienced peers (Sleutal, Schulz & Wyble, 2007). Studies have not been conducted which explicitly examine the attitudes of less experience nurses toward birth practices and care providers. Therefore, it is difficult to gauge if their attitudes are different.

Changes in Provider and Patient Attitudes

From a theoretical perspective, it may be reasonable to assume individuals with a greater number of years of experience might have different attitudes towards birth. Attitudes can be thought of as the summation of all the different experiences to which one is exposed (Ajzen & Cote, 2008). Nurses who have been working in perinatal care longer would have more opportunities to be exposed to differing ideas, attitudes, care practices, and care providers. Importantly, those exposures might influence or change existing nursing attitudes.

In perinatal care, many changes in attitudes and care practices have occurred throughout the last few decades. Tiedje, Price, and You (2008) argued, within the course of the last ten years, a major “paradigm shift” has occurred in perinatal care (p.144). This paradigm shift encompasses a change of both care providers and patients in their attitudes towards non-interventative birth (Tiedje et al.). In the case of patients, they note, although historically patients have advocated for natural childbirth without intervention, a gradual shift has occurred in which patients have steadily become more accepting and expectant of intervention use in perinatal practice (Tiedje et al.). This notion has received support from research which has examined patients’ attitudes towards cesarean section (Reichert, Baron, & Fawcett, 1993) and obstetric intervention (Green & Baston, 2007). These two studies suggest positive changes in patients’
attitudes towards intervention. In comparison to newer nurses, experienced nurses may have been exposed to differing patient expectations towards interventions during childbirth.

Canadian trends of intervention use also support the possibility of changes in care providers’ and patients’ attitudes towards care practices. Cesarean section and induction rates have steadily increased in practice, giving rise to speculation that care providers and patients are progressively changing their attitudes towards their use (CIHI, 2004b; CIHI, 2005; PHAC, 2009). Specifically, the cesarean section rate in Canada has increased from 5% in 1970 to 26.3% in 2009 (Nair, 1991; PHAC). In the last two decades, there has been a general upward trend for epidural use and variable rates of electronic fetal monitoring in practice (Chalmers et al., 2008; Davies et al., 1993 as cited in Davies et al., 2002; Grond, Meuser, Stute, & Uwe-Jochen, 2000; Oyston, 1995). Interestingly, episiotomy rates have significantly dropped from 66.7% of all births (1993) to 20.4% (2008) (Graham & Graham, 1997; PHAC). Authors speculate that a reduction in episiotomy rates may relate to evidence which highlights morbidity associated with routine episiotomies and, as a result, changed the attitudes of care providers towards its use (Graham & Graham).

Newer nurses entering practice may not have had diverse exposures to different attitudes when compared with experienced nurses (Kardong-Edgren, 2001; Ruhl et al., 2006). By being exposed to changes in epidural, electronic fetal monitoring use, episiotomy and cesarean rates, as well as changes in patient attitudes towards birth practices, experienced nurses’ attitudes may be markedly different than less experienced nurses. It is important to explore any differences in relationships between nurses’ attitudes and years of experience.
Exposure and Workplace Setting

Exposure and workplace setting can be considered interrelated in many respects, as one’s environment dictates one’s exposures (Sherif, Sherif & Nebergall, 1965). Research has not been conducted to explicitly examine if exposure in nurses’ workplaces influences nurses’ attitudes. One might speculate; however, that exposure to different care providers (Deitrick & Draves, 2006; Medves, 2005; Regan & Liaschenko, 2007), patient populations, (Kennedy & Lyndon, 2008) and intervention rates (Regan & Liaschenko) may be associated with differences in nurses’ attitudes.

Theoretically, repeated exposure to different care providers could influence the degree of favour a nurse may hold towards them in practice (Bohner & Wanke, 2002). Literature has suggested nurses who have less experience with doulas are less likely to favour them, as they have less understanding of their role and utility in practice (Ballen & Fulcher, 2006; Ferrari, 2001 as cited in Ballen & Fulcher; Medves and Davies, 2005). Research also suggests as experience working with doulas increases, nurses may develop more positive attitudes towards their practice (Ballen & Fulcher; Deitrick & Draves, 2006; Ferrari as cited in Ballen & Fulcher). This is evident in the study conducted by Deitrick and Draves, which was located in a setting with a highly integrated doula program. Although it must be taken into consideration that the doulas were only serving women with minimal social support (and thus may have been seen as favourable regardless), it was found nurses at this institution were strongly in support of doulas’ practice (Deitrick & Draves). Similarly, Ferrari surveyed nurses’ opinions of doulas at a tertiary hospital when doulas were first incorporated in the delivery of maternity care and six months following (as cited in Ballen & Fulcher). While initially only 65% of nurses’ felt that doulas were beneficial to patients, it was found at six months 90% of nurses’ felt they were helpful
(Ferrari as cited in Ballen & Fulcher). Thus, in the course of six months and through repeated exposure to doulas, nurses’ attitudes changed towards increasing favour for their practice.

Conversely, nurses who have had limited exposure to midwives and doulas have reported negative attitudes towards their practice. In Medves and Davies’ (2005) institutional ethnography using a sample of rural nurses, nurses indicated working with doulas could be “a nightmare” (p. 33). They were similarly opposed to working with midwives (Medves & Davies). These nurses worked primarily with physicians and had limited contact with other care providers (Medves & Davies). Likewise, Kornelson, Dahinten and Carty (2003) found when midwives were initially legislated as having legal practice in British Columbia nurses generally reported negative attitudes towards midwifery practice. The authors speculated this was so because prior to their legislation nurses had little exposure to midwives (Kornelson et al.). The limited exposure nurses had could have been primarily negative due to lay midwives and midwives often seeking hospital exposure if there were complications or poor outcomes during the period before legislation (Kornelson et al.). The authors note that their study was conducted to document a “baseline” of nurses’ attitudes towards midwives with the intent to complete a follow-up study (Kornelson et al., p. 132). Unfortunately, no follow-up study could be found, thus one can not assess if British Columbian nurses’ attitudes have become more favourable towards midwives over time. It is, therefore, important to explore differences in nurses’ attitudes to care providers by region of residence.

Role of Exposure in Attitudes towards Midwives and Doulas in Canada

As the aforementioned studies imply, different workplace settings and locations may influence nurses’ attitudes towards care providers. Within Canada, one might argue that nurses in different provinces could hold differing attitudes towards midwives and doulas. Although
midwives practice across Canada and have been legally practicing in Ontario since 1994, legalization has not been universal. Following their regulation in Ontario, midwives were legally allowed to practice in Quebec (1994), British Columbia (1998), Alberta (1998), and Manitoba (2000) (Canadian Midwifery Regulators Consortium, CRMC, 2009). Regulation of midwifery is relatively new in Saskatchewan (2008), Nova Scotia (2009), New Brunswick (2010), and the Northwest Territories (2005) (CRMC). Several provinces and territories (Prince Edward Island, Newfoundland, The Yukon, and Nunavut) have yet to fully regulate midwifery, although regulations are in process in Nunavut (CRMC). At the time of the survey distribution (2007), midwives were regulated in British Columbia, Alberta, Manitoba, Ontario, Quebec, and the Northwest Territories. Depending on the year of provincial midwifery legislation, nurses working in these four provinces and territory may have had differing exposure to midwifery care. Thus, the attitudes of nurses’ between provinces/territory with midwifery regulation may differ. Nurses from these provinces also may have greater exposure to midwifery than nurses in provinces with unregulated midwifery.

Although it is tempting to hypothesize that nurses in these provinces may hold more positive attitudes due to repeated exposure, one must recognize that attitude formation is cumulative (Azjen & Cote, 2008; Bohner & Wanke, 2002). That is, nurses’ attitudes may develop positively or negatively depending on other factors discussed in the theoretical framework, such as modeling, evaluative conditioning and social reinforcement (Bohner & Wanke). Information would, therefore, be required to consider different elements in nurses’ workplaces (such as workplace social norms, previous experiences of nurses with different care providers) to explain differences in nurses’ attitudes. It would be naïve to assume, solely on the basis of repeated exposures, that attitudes of nurses in these provinces would be more favourable.
than those of nurses in other provinces. Nonetheless, it is important to determine if there are differences in nurses’ attitudes, given the possibility that more exposure to midwives in daily practice may have shaped nurses’ attitudes towards these care providers.

Doulas are also new to perinatal practice. The two main certification bodies for doula practice, Doula of North America (DONA, 2005b) and Childbirth and Postpartum Professional Association of Canada (CAPPA, 2009), have only been in place since 1992 and 1998 respectively. Formal statistics about the number of doula attended births could not be found, although the DONA lists suggests doula presence is strongest in Ontario (122), British Columbia (115) and Alberta (75) (DONA, 2009). However; in Canada, Ontario, British Columbia, and Alberta have the 1st, 3rd, and 4th highest number of births per year, respectively\(^1\) (Statistics Canada, 2010). The higher number of doulas in these provinces may share relationships to the higher number of births and may not suggest nurses proportionately are exposed to them more frequently. Unlike midwife exposure it is more difficult to estimate and hypothesize about nurses’ exposures to doulas.

*Risk and Intervention Exposure*

Accepting the assertion that attitudes are byproducts of nurses’ workplaces, one might expect a difference in attitudes by the hospital level in which nurses are employed. Different hospital levels have the capacity to care for childbearing populations that vary by risk. Level one hospitals, which are often located in rural communities and some urban centres, are equipped to care for healthy term childbearing women (Ontario Perinatal Programs Partnership, 2006). These hospitals may or may not have cesarean or epidural capability (Ontario Perinatal Programs Partnership). Level two hospitals have the capacity to care for childbearing women with pregnancies greater than or equal to 32 weeks gestation, because they can support ill neonates

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\(^1\) Quebec has the second highest number of births, but only 6 registered doulas in this province could be found.
(Ontario Perinatal Programs Partnership). Level three hospitals, also known as tertiary care hospitals, are equipped to care for childbearing women of all gestations, in particular, high-risk women with pregnancy complications (Ontario Perinatal Programs Partnership).

Some evidence suggests tertiary hospitals tend to use interventions with greater frequency than lower level hospitals, independent of risk (Carrol, Reid, Ruderman & Murray, 1991; Janssen, Klein & Soolsma, 2001; Klein, Johnston, Christilaw & Carty, 2002; Le Ray, Gaudu, Teboul, Cabrol & Goffinet, 2004; Le Ray, Carayol, Zeitlin, Breart & Goffinet, 2006; Medves & Davies, 2005; Moen, Holmen, Tollefsrud & Rolland, 2005). Specifically, low-risk patients are more likely to receive interventions at tertiary centres than low risk patients cared for at level one or community facilities (Deutchman, 2001; Klein et al.). Tertiary and/or level two centres have been associated with higher rates of cesarean section, epidural analgesia, artificial rupture of membranes, augmentation, and episiotomies in low risk patients (Janssen et al.; Le Ray, Carayol, Zeitlin, Breart, & Goffinet).

When Janssen, Klein, and Soolsma (2001) compared the rates of intervention in low-risk nulliparous patients at a tertiary care hospital to that of a community hospital low-risk women were 3.4 times more likely (95% confidence interval, 2.1-5.4) to receive a cesarean section at the tertiary hospital than at the community hospital. Furthermore, patients received a significantly higher percentage of epidurals (67%) at the tertiary hospital, than at the community hospital (15.4%).

In a retrospective study of 3,654 low risk patients from 136 hospitals in France, it was found patients were 1.5 times more likely (95% confidence interval, 1.1-2.1) to receive a cesarean section at a level two hospital than at a level one hospital (Le Ray et al., 2006). In another retrospective study of 1,532 patients in France, patients were significantly more likely to
receive an epidural at a level three facility (95%) in comparison to a level one facility (76%) (Le Ray et al., 2004).

Thus, nurses at level three hospitals may have more exposure to interventative practices, epidural analgesia, and cesarean sections, which may affect their attitudes towards birth. It is difficult to hypothesize how these exposures affect nurses’ attitudes; it may be possible nurses are more positive towards epidural analgesia, interventative practices, and cesarean section if they work at a tertiary centre. On the other hand, some nurses working in environments with high rates of intervention have reported negative attitudes towards interventions (Callister et al., 2009; Sleutal, 2000; Sleutal et al., 2007). Therefore, high intervention exposure can have a negative effect on openness to interventions. It is therefore important to explore the direction of the association between nurses’ attitudes and the level of their institution of employment.

**Providers**

High rates of intervention in higher level facilities may be related to obstetricians being the “dominant culture” in tertiary care centres (Deutchman, 2001), as obstetricians’ attitudes have been more positive towards intervention than other care providers (Blais et al., 1994; Deutchman; Klein et al., 2009; Reime et al., 2004). Such favourable attitudes have been associated with obstetricians’ behaviour; they use more interventions in low-risk patients than other care providers (Abenheim, Welt, Sabbah & Audibert, 2007; Allen & Hanson, 2005; Davis, Riedman, Sapiro, Minogue, & Kazer, 1994; Deutchman, Sills & Connor, 1995; Hueston, Applegate, Mansfield, King, & McClain, 1995; Hundley et al., 1994; Klein, 1993; MacDonald, Voaklander, & Birtwhistle, 1993; Rosenblatt et al., 1997; Ruderman, Carroll, Reid & Murray, 1989; Russilo, Sewitch, Cardinal & Brassard, 2008).
In a retrospective cohort study of a single American community hospital, Allen and Hanson (2005) documented patients were 2.38 times more likely (95% confidence interval, 1.98-2.87) to receive an episiotomy when cared for by obstetricians in comparison to general practitioners. These findings are supported by Abenheim and colleague’s (2007) cohort study of all vaginal deliveries at a single Canadian hospital, during the years 2000-2006. They found the odds of receiving an episiotomy were lower in general practitioners’ patients (odds ratio .47; 95% confidence interval .41-.55), indicating a higher use of episiotomies in obstetricians.

Deutchman, Sills, and Connor (1995), in their retrospective study over a 20-month period, compared the rates of cesarean section in obstetricians and family physicians on all deliveries at an urban community hospital. Using a risk score, they determined rates of high-risk patients receiving care were not different between the two groups (Deutchman et al.). Nonetheless, obstetricians had a significantly higher cesarean section rate (26.5%) than family physicians (15.4%) (Deutchman et al., 2008). Furthermore, studies have found obstetricians to use significantly higher rates of epidurals, electronic fetal monitoring, induction, and operative delivery than family physicians and/or midwives, in comparable low-risk populations (Davis et al., 1994; Deutchman, Sill, & Connor; Hundley et al., 1994; Hueston et al., 1995; MacDonald et al., 1993; Reid et al., 1989; Ruderman et al., 1992).

From the NMCAS study on which this secondary analysis is based, Klein et al. (2009) found obstetricians held the least positive attitudes towards “maternal choice and mothers’ role in birth” (p. 16). In comparison to other disciplines (midwifery, nursing, physicians, doulas), obstetricians held the most positive attitudes towards epidurals, episiotomy, and electronic fetal monitoring and the least positive attitudes towards birth plans, vaginal birth, the safety of birth, and the degree to which mothers’ are influential in the birth process. Conversely, midwives held
the most positive attitudes towards non-interventative birth practices and the safety of birth
(Klein et al.). Family practitioner attitudes towards birth were between midwives and obstetricians
(Klein et al.).

Nurses’ attitudes may vary by hospital level because of their exposures to different
providers who may have different attitudes towards birth. Because obstetricians are more likely
to work in level two and level three facilities (BC Perinatal Health Program, 2005/2006; Medves
& Davies, 2005) nurses working in these institutions are more likely to be exposed to their
attitudes and practice than nurses working in level one facilities. Family physicians may be more
dominant at level one hospitals (Medves & Davies, 2005). It is difficult to speculate about
midwife distribution. It may be likelier midwives work at level three hospitals because a map of
midwifery practice in Canada reveals midwives are concentrated in urban areas, which may be
likeliest to have tertiary hospitals (National Aboriginal Health Organization, 2008). Midwives in
British Columbia report it can be difficult to work in rural areas and recruit clients, citing
tensions with other care providers and a lack of other midwives to support a practice (Rural
Maternal Care Research, 2008). Based on social identity and attitude formation theories (Bohner
& Wanke, 2002; Smith & Hogg, 2008), repeated exposure to a predominant provider type
(midwives, obstetricians, or family practitioners) with different practices and attitudes towards
birth may influence a nurses’ favorability towards the provider, his/her attitudes and possibly
practice. It would be valuable to examine whether nurses’ favourability for different providers’
shares relationships to nurses’ attitudes and hospital level of employment.

*The Safety of Birth*

Authors have speculated that repeated exposure to a high risk and intervention-based
workplace culture may unconsciously prime care providers to view birth as risky, thereby
influencing the use of high-risk intervention in low-risk patients (Deutchman, 2001; Kennedy & Lyndon, 2008). In other words, risk exposure may influence care providers’ attitudes towards the safety of birth (Kennedy & Lyndon). Mead and Kornbrot (2003) found perception of risk differs by institution and by exposure in highly technological settings. In a retrospective study across 11 maternity units in the United Kingdom, the authors surveyed 249 nurse-midwives about their perceptions of risk in labour and delivery. A series of hypothetical low-risk cases were presented. Midwives were asked to judge the level of risk for the patient. Nurse-midwives who worked at institutions with higher intervention rates were significantly more likely to perceive healthy nulliparous patients as having a longer duration of labour (76% in high intervention institution versus 68% in low intervention institution), needing an epidural (61% at high intervention institution versus 46% at low intervention institution), and/or requiring operative delivery (22% at high intervention institution versus 16% at low intervention institution) than those who worked at institutions with lower levels of intervention. The authors concluded working in an environment with high rates of intervention may influence nurse-midwives to perceive intrapartum patients as higher risk. The distribution of the level of hospitals in the sample is not provided; therefore it is difficult to associate higher levels of risk perception with higher level facilities. Because higher level centres tend to use more intervention it is possible higher intervention hospitals were likely to have been tertiary or higher level facilities.

Nurses’ varying views towards the safety of birth is demonstrated in Regan and Liaschenko (2007) study. In their study, 51 nurses from two birthing centres were presented with a picture of a labouring woman and asked to write a narrative about the care they would provide. The authors assigned the nurses a rating of risk based on their narratives. At the first birthing centre, 15% of all deliveries were conducted by midwives, whereas in the second, there is no
mention of midwifery practice. Interestingly, nurses who worked at the facility with greater exposure to midwives were more likely to view birth “as a natural process” (47% in first birthing centre, 19% in second birthing centre), rather than a “lurking risk” or a “risky process” (Regan & Liaschenko, p. 623). Unfortunately, the authors did not examine if the difference was statistically significant, nor do they provide information about the sample division between institutions. It is therefore difficult to discern whether the difference is due to different exposures to care providers or whether nurses’ exposure to workplace norms affects their attitudes.

Cognitive framing accounts for these responses, because it describes how one perceives and is driven to act in any situation (Regan & Liaschenko, 2008). Specifically, Regan and Liaschenko (2007) described nurses’ use of cognitive frames to organize their attitudes and beliefs, in order to make unconscious and conscious decisions about how they should proceed in clinical situations. The way nurses cognitively frame a situation is based on their cumulative exposure, education, knowledge, and experiences (Regan & Liaschenko, 2007). Theoretically, Regan and Liaschenko argue, if nurses were perpetually exposed to high-risk situations, they might be inclined to perceive even low-risk situations as high risk (2007). In other words, nurses who are regularly exposed to high risk situations, such as those working at higher level institutions, might develop attitudes that birth is less safe than those who are not. A view that birth is less safe could possibly affect nurses’ views towards issues in maternity care, such as home birth, birth centres, and vaginal births after cesarean section. Thus, it is important to explore if there are differences in nurses’ attitudes towards the safety of birth in relation to exposure of high-risk situations.
Providers’ Personal Choices

Nurses’ clinical exposures and experiences may shape personal choices surrounding their own or their partners’ birth. Klein and colleagues found obstetricians held the most positive attitudes towards the fear of vaginal birth for themselves or their partners, suggesting they were the most concerned discipline about negative vaginal delivery outcomes, such as urinary and fecal incontinence and sexual dysfunction (2009). The authors concluded obstetricians’ attitudes reflect their exposures to negative vaginal birth outcomes as a byproduct of their specialist function to manage high-risk and complicated deliveries. In relation, some research suggests obstetricians or their partners may be likelier to request an elective cesarean or have a cesarean birth, rather than a vaginal birth (Finsen, Storeheier, & Aasland, 2008; Turner et al., 2008). In an Australian study which surveyed primiparous women (n = 122), midwives (n = 84), obstetricians (n = 166), urogynaecologists (n = 12), and colorectal surgeons’ (n = 79) about their attitudes towards elective cesarean section as compared to vaginal delivery the authors found significant differences in the proportion of providers who would choose an elective cesarean section (Turner et al). Most midwives and patients would “aim for” a vaginal delivery, but only 78% of obstetricians and half of urogynaecologists and colorectal surgeons would (Turner et al.) Similar to Klein and colleagues, the authors speculated their more negative attitude towards vaginal birth may be shaped by skewed practice exposure to perineal morbidities in relation vaginal delivery (Turner et al., p. 1496). Thus, providers’ personal preferences for childbirth may be influenced by their attitudes towards birth. As provider types differ in their attitudes towards birth, it may be possible who a nurse would choose for their/partners’ care reflects their underlying attitudes. Relationships between personal choices and nurses’ attitudes towards birth have not been explored.
**Education**

Theoretically, education would influence the development and formation of nurses’ attitudes, as it exposes them to new ideas, thoughts, opinions, and knowledge towards a particular attitude object (Bohner & Wanke, 2002). In perinatal care, education on breastfeeding support (Bernaix, Schmidt, Arrizola, Iovinelli & Medina-Poelinez, 2008), perinatal bereavement care (Chan et al., 2008), and domestic violence in pregnancy (Moore, Zaccaro & Parsons, 1998; Schoening, Greenwood, McNichols, Heermann & Agrawal, 2004), has been associated with differences in nurses’ attitudes.

Nursing literature has linked previous education on patients who self harm (McCann, Clark, McConnachie & Harvey, 2006), older patients (Courtney Tong, and Walsh, 2000), artificial nutrition (Ke, Chui, Hu & Lowe, 2007), complementary medicine (Holroyd, Zhang, Suen, & Xue, 2008), domestic abuse (Corbally, 2001), and caring for terminally ill patients (Frommelt, 1991), with more positive nursing attitudes towards caring for these populations in comparison to nurses who did not have the education. Chan and colleagues (2008) administered a perinatal bereavement attitude questionnaire to 334 perinatal nurses’ from five hospitals in Hong Kong, in order to assess factors that predicted nurses’ attitudes towards perinatal bereavement care. Previous bereavement education was determined to be a significant predictor of nurses’ attitudes. Nurses who had received education on bereavement care had significantly higher scores on the questionnaires, indicating more positive attitudes ($p = .001$) towards the provision of perinatal bereavement care.

Moore et al. (1998) administered a questionnaire assessing nurses’ attitudes to domestic violence in pregnancy to 274 nurses working in: perinatal hospital care (71), private practice (117), and public health (87). Hospital nurses had the lowest percentage of previous education on
domestic violence in pregnancy, and the least positive attitudes towards the need to screen for domestic violence $(p = .001)$. Unfortunately, the researchers did not explore relationships between nurses’ previous education and attitudes; thus one can not infer that nurses with lower education had less positive attitudes towards domestic violence screening (Moore et al.). Nonetheless, studies imply previous education on a topic of interest shapes the development of nurses’ attitudes. It is therefore relevant to explore relationships between past education and nurses’ attitudes.

Education has been employed to changes existing attitudes. Using a time series pretest-posttest design, Bernaix et al. (2008) introduced nurses to a four hour lactation session and surveyed 64 nurses, from a tertiary Midwestern hospital in the United States, about their attitudes towards the provision of breastfeeding support. Nurses’ attitudes towards the provision of breastfeeding support were significantly more positive at the two-week posttest. The positive effects of the educational intervention on nurses’ attitudes were also shown to persist three months later $(p < .001)$. Similarly, Schoening et al. (2004) using a pretest posttest design, assessed the effect of an intimate partner violence (IPV) educational intervention on nurses’ attitudes. Fifty-two nurses from an urban American hospital completed a survey measuring their attitudes towards caring for abused women before intervention and two months post intervention. Nurses scored significantly higher on the questionnaire indicating the intervention positively influenced their attitudes.

Because effects of education on attitudes has persisted for months (Bernaix et al. 2008; Schoening et al., 2004) and even longer (Chan et al., 2008; Frommelt, 2001; Moore et al., 1998; McCann, Clark, McConnachie & Harvey, 2006), it may be possible the effect of education on nurses’ attitudes is enduring, independent of exposures following the initial education.
Furthermore, because perinatal nurses’ attitudes have been associated with previous education, it is also possible exposure to risk through educational courses shapes nurses’ attitudes towards the safety of birth. Some nurses in the study sample were exposed to the two-day Advances in Labour and Risk Management (ALARM) and the Advanced Life Support in Obstetrics (ALSO) course. The ALSO course is designed to provide continuing education for perinatal disciplines on obstetrical emergencies (College of Family Physicians of Canada, 2009). The ALARM course provides education on obstetrically derived best practice guidelines (Windrim, Ehman, Carson & Milne, 2006); the course material largely addresses high-risk situations in high-risk perinatal populations (i.e., fetal anomalies, cerebral palsy, gestational hypertension, antepartum hemorrhage) (ALARM, 2005). Nurses who completed these courses have been exposed to labour and birth as potentially high-risk situations, rather than a natural and normal phenomenon. It would be important to determine whether nurses’ exposure to such courses influences their attitudes about the safety of birth.

**Conclusion**

It is difficult to present a clear picture of nurses’ attitudes towards birth because there is a paucity of evidence about nurses’ attitudes towards birth and birth literature, which does discuss nurses’ attitudes, presents nurses as having positive and negative attitudes towards a variety of care practices and care providers. What appears least ambiguous is nurses’ diversity of attitudes in practice, particularly towards interventions, midwives, doulas, technology, and the safety of birth.

Exposure is the most fundamental element shaping nurses’ attitudes towards care practices, care providers, and birth. Mediators suggested to influence nurses’ exposure include experience, workplace setting, and education. It has been suggested nurses’ with differing years
of experience may have had exposure to trends that have shaped their attitudes towards birth differently than nurses with fewer years of experience. It has also been suggested that workplace setting influences nurses’ attitudes because it affects exposures to care providers, interventions, and high-risk populations. Because education has been associated with changes in nurses’ attitudes, nurses’ exposures to courses that expose them to high-risk obstetrical situations might influence them to view birth as less safe.

Attitude formation is extremely complex and difficult to understand (Olsen & Kendrick, 2008; Oskamp & Schultz, 2005). As attitudes are cumulatively formed throughout a lifetime, multiple variables such as socialization, and personal experiences with birth, can theoretically influence attitudes towards birth (Aiken, 2002; Bohner & Wanke, 2002; Oskamp & Shultz). Thus, exploration of factors, such as experience, education and workplace setting, will not account for all of the factors influencing nurses’ attitudes towards birth, and care providers. This study explores whether some factors are more influential than others in the development of attitudes in perinatal care, and hopefully begin to bridge the gap in knowledge about perinatal nurses’ attitudes.

Understanding perinatal nurses’ diversity is valuable given the diversity of maternity care delivery in Canada. The literature reviewed in this chapter provides insight into similarities of perinatal nurses’ attitudes and raises questions about their possible differences. Chapter four will present the research methods, research questions, plans for data analysis, and the strengths of this study.
CHAPTER FOUR: METHODS

Research Design

Secondary Analysis

The thesis design is a quantitative secondary analysis of nursing survey data that were collected as part of the NMCAS study (Klein et al., 2009). The purpose of this study was to conduct a secondary analysis of a pre-existing set of data to explore new questions or hypotheses not addressed in the original study but for which data was collected (Dale, Wathan & Higgins, 2008; Polit & Beck, 2010). This type of analysis is considered beneficial as a cost-efficient and time saving approach for conducting research (Polit & Beck). The NMCAS was a national study, five hundred and forty-nine obstetricians, 897 family physicians, 545 nurses, 400 midwives, and 192 doulas were surveyed on their attitudes towards birth. Although attitudes between these care provider groups have been explored from the original dataset, no analysis of nurses’ within-group attitudes towards birth has been undertaken.

Secondary analyses have constraints. Because the researcher is often not involved in the development of the study, the questions that he or she might want to address might not be accessible based on data collected (Polit & Beck, 2010). Generally, the broader the original study, the easier it is to develop new questions as the researcher is not as constrained by the specific theoretical model guiding the initial study (Dale et al., 2004). Such is the case with the NMCAS study. Its purpose was to broadly examine care provider attitudes towards birth (Klein et al., 2009). The writer was able to construct new questions for this secondary analysis that were not constrained by the theoretical framework from the original study.

In secondary analyses, variables the researcher may deem valuable for the new questions he or she may want to explore may not be included in the data set (Polit & Beck,
In consideration of the theoretical framework, some relevant variables were not included in the nursing questionnaire, which could limit understanding about how different exposures may relate to nurses’ attitudes. For example, additional data about education (such as previous midwifery training or doula courses) may have provided more understanding why nurses’ attitudes differed towards the safety by mode or place of birth or doula scale.

Secondary analyses can be compromised if the researcher views the data before constructing the research questions and develops questions to match the data from the original study (Huston & Naylor, 1996). Although general statements about nurses’ attitudes towards birth in comparison to other care providers were made in the Klein et al. (2009) study, I did not have access to the data before the research questions were constructed. The research questions and hypotheses for this thesis have been developed using relevant literature and a guiding theoretical framework. Thus, they are relevant questions independent of the NMCAS study.

Cross-Sectional Design

An appropriate approach for determining if nurses’ attitudes towards birth differ is the use of a cross-sectional survey (Gray, Williamson, Karp & Dalphin, 2007). A cross-sectional survey examines the phenomenon under study at a single point in time (Polit & Beck, 2010). It is a particularly suitable method to understand ways in which a given sample differs in attitudes (Gray et al.). In this case, it will allow the researcher to examine if the nurses’ attitudes in this sample differ by their demographic characteristics.

A cross-sectional design would be an inappropriate method to measure some types of attitudes, such as those that are unstable and likely to be constructed (Bohner & Wanke, 2002). It is assumed the attitudes measured in this study are more likely to be stored, stable attitudes as compared to attitudes nurses’ would construct. Perinatal research has not examined the rate of
change in nurses’ attitudes towards practice; however, research reviewed for the study suggests a
shift in nurses’ attitudes towards electronic fetal monitoring and has spanned thirty years,
implying nurses’ attitudes towards practice behaviors may take considerable time to change
(Cranston, 1980; Klein et al., 2009; Myers & Stolte, 1987; Walker et al., 2001). Because there is
limited research on nurses’ attitudes and differences based on nurses’ characteristics, the purpose
of this study is to describe nurses’ attitudes at this point in time. In summary, a cross-sectional
design is appropriate given the relative stability of the attitudes measured, and the purpose of this
study.

**Research Questions**

Although the research questions were mostly framed with the use of the scales,
questions three and five use the single item questions (23 and 54). They were included because
they are relevant to the concept of exposure. The research questions are as follows:

1) Is there a relationship between nurses years of intrapartum experience and attitudes towards
technology and interventions, such as: 1a) electronic fetal monitoring (scale 1), 1b) epidural
analgesia (scale 2), and 1c) episiotomies (scale 3)?

2) Is there a relationship between nurses’ years of intrapartum experience and attitudes towards
2a) decreasing the cesarean section rate (scale 5) and 2b) the importance of vaginal birth (scale
6)?

3a) Does provincial/territorial midwifery regulation status influence nurses’ attitudes towards
midwives (q.23)?

3b) Is there a relationship between year of provincial midwifery legislation and nurses’ attitudes
towards midwifery services (q. 23)?
4) Is there a relationship between choice of provider and nurses’ attitudes towards: 4a) electronic fetal monitoring (scale 1), 4b) epidural analgesia (scale 2), 4c) episiotomies (scale 3), 4d) doulas (scale 4), 4e) decreasing the cesarean section rate (scale 5), 4f) the importance of vaginal birth (scale 6) or 4g) nurses’ attitudes toward safety by mode or place of birth (scale 7)?

5) Is there a relationship between hospital level of employment (level 1, level 2, level 3) and nurses attitudes towards the risk to the fetus during birth (q.54)?

6) Is there a relationship between hospital level of employment and choice of care provider?

7) Is there a relationship between the hospital level at which nurses are employed (level 1, level 2, level 3), education exposure, choice of provider, and nurses’ attitudes towards safety by mode of birth (scale 7)?

8) Is there a relationship between hospital level at which nurses are employed (level 1, level 2, level 3), years of nursing experience, choice of provider, and nurses’ attitudes towards: 8a) the electronic fetal monitoring scale (scale 1) or 8b) epidural analgesia (scale 2) or 8c) the importance of vaginal birth (scale 6)?

*Definition of Variables*

Definition of attitude: A positive or negative psychological judgment of an object, issue or person (Ajzen, 2001) that may be formed both consciously and unconsciously, which varies in its accessibility and may either be constructed when needed or stored in memory (Albarracin, Zanna, Johnson & Kumkale, 2005; Bohner & Wanke, 2002).

Registered Nurse: An individual who is registered to practice nursing under his/her provincial/territorial regulatory body [ies] in Canada.
Independent Variables

1) Years of perinatal experience: The number of years a nurse has worked or did work in perinatal care.

2) Hospital level at which a nurse is employed:

   Level 1 Hospital: A hospital which has resources to care for the healthy term childbearing population (Ontario Perinatal Partnership Program, 2006).

   Level 2 Hospital: A hospital with the capacity to care for childbearing women at a gestation of 32 weeks or greater (Ontario Perinatal Partnership Program).

   Level 2 Teaching Hospital: A hospital with the capacity to care for childbearing women at a gestation of 32 weeks or greater, which also trains different disciplines (medicine, nursing, midwifery) in their specialties (Ontario Perinatal Partnership Program).

   Level 3 Hospital: A hospital which has the capacity to care for all gestational ages of childbearing women, including women with high-risk and rare complications (Ontario Perinatal Partnership Program). Level three hospitals are generally teaching hospitals.

3) Education: Completion of the Advances in Labour and Risk Management Course (ALARM) Course or the Advanced Life Support in Obstetrics (ALSO) Course.
   a) ALARM Course: A multidisciplinary (obstetricians, nurses, midwives, physicians) two-day course organized by the Society of Obstetricians and Gynecologists of Canada. The ALARM course content covers “all aspects of intrapartum and immediate postpartum practice” (SOGC, 2009, para.2), but is primarily focused on providing education on high-risk situations (ALARM, 2009).
   b) ALSO Course: A two-day multidisciplinary course offered to multiple disciplines, (obstetricians, nurses, midwives, physicians) organized by the College of Family Physicians of
Canada. Course content is designed to provide education on obstetrical emergencies (College of Family Physicians of Canada, 2009).

5) Provincial/territorial midwifery regulation status: The legal midwifery status of a province or territory; either non-regulated or regulated.

6) Year of provincial/territorial midwifery regulation: The year a province or territory regulated midwifery practice.

7) Choice of care provider: A nurses’ choice of care provider was determined by a nurses’ response to question 15: If you or your partner were pregnant today, with an apparently normal pregnancy, who would you prefer to deliver your baby? (Select only one). The response choices were: an obstetrician, a family practitioner, or a midwife.

Dependent Variables

The research questions for this thesis include six of the nine scales that were developed in the analysis of the NMCAS study and one developed from the nursing data. These scales were used as dependent variables to determine nurses’ attitudes towards birth. The following table defines these seven scales (see Table 4.1).

Table 4.1
Definition of scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Attitudes towards routine electronic fetal monitoring</td>
<td>Attitudes towards the benefit of electronic fetal monitoring for the fetus and the use of electronic fetal monitoring to reduce workload and litigation.</td>
</tr>
<tr>
<td>2) Attitudes towards epidural analgesia</td>
<td>Attitudes towards routine offering of epidural analgesia and the relationship of epidural analgesia to instrumental delivery, labour progress, and fetal malposition.</td>
</tr>
<tr>
<td>3) Attitudes towards routine episiotomy</td>
<td>Attitudes towards the necessity of episiotomy in instrumental vaginal births, the ease of repair of an episiotomy as compared to a perineal tear, the harm</td>
</tr>
</tbody>
</table>
4) Attitudes towards doulas
- Attitudes towards acceptance of doulas, the need for doulas in maternity care, and the influence of doulas on birth outcomes.

5) Attitudes towards approaches to reducing the cesarean rate
- Attitudes towards factors which may be contributing to the current cesarean section rate, such as lack of midwifery services and doula services, routine electronic fetal monitoring, unwarranted inductions, active management of labour, and elective caesarean sections.

6) Attitudes towards the importance of vaginal birth.
- Attitudes towards whether vaginal birth is an important life experience and more empowering than a cesarean section.

7) Attitudes towards safety by mode or place of birth
- Attitudes towards vaginal birth, midwifery, home birth, the safety of cesarean birth, and out-of-hospital birth centres.

Attitudes towards midwifery and the risk to the fetus during childbirth were determined by 2 single item questions.

1) Attitudes towards midwifery
Nurses’ attitudes towards midwifery was determined by nurses’ responses to question 23 of the questionnaire (I support licensed/regulated midwifery services).

2) Attitudes towards the risk to the fetus in childbirth
Nurses’ attitudes towards the risk of the fetus in childbirth was determined by nurses’ responses to question 54 (What is the overall risk of childbirth to the health of the infant?).

**Inclusion Criteria**

The total sample of registered nurses was 545; however, only nurses who were working or had worked in intrapartum care were used in the analysis. Whether a nurse worked or
had worked in intrapartum care was determined by a nurses’ response to the question 9:

Regarding intrapartum care, what is your status? The response choices were:

1) I see myself continuing to provide intrapartum care
2) I see myself stopping the provision of intrapartum care
3) I used to provide intrapartum care, but have stopped
4) I have never provided intrapartum care.

Nurses who answered 1 – 3 were included in the analyses; nurses who had never provided intrapartum care ($n = 63$) and nurses who did not answer this item ($n = 13$) were excluded from all analyses, and the total number of cases considered for inclusion was 469. A nurses’ response to this variable is referred to as intrapartum status (IP status).

Nurses who responded to IP status as “I used to provide intrapartum care” were excluded from research questions (5-8) using the variable hospital level of employment because this question asked the hospital level a nurse was currently providing intrapartum care (with the implication those who used to provide should not have answered). Nurses who used to work in intrapartum care did not answer this question consistently; some answered hospital level of employment, and some did not. Thus, it was decided all nurses who used to work in intrapartum care should be excluded.

Table 4.2 lists inclusion and exclusion criteria, the number of cases excluded for each criterion, and the total number of cases used for the research questions.
Table 4.2

Case inclusion and exclusion for research questions

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>Number of Cases Excluded/Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>1) Nurses who answered years of intrapartum (IP) experience</td>
<td>1) Missing IP experience</td>
<td>1) 80</td>
</tr>
<tr>
<td>(Is there a relationship between years of intrapartum experience and nurses’</td>
<td>2) Nurses who worked or had worked in IP care</td>
<td>2a) Nurses who never worked IP</td>
<td>2a) 5</td>
</tr>
<tr>
<td>attitudes towards:</td>
<td></td>
<td>2b) Missing IP status</td>
<td>2b) 4</td>
</tr>
<tr>
<td>1a) electronic fetal monitoring (EFM) (n = 454),</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b) epidurals (EPI) (n = 455),</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1c) episiotomies (EPIS) (n = 455),</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a) decreasing the cesarean section rate (CSR) (n = 456), and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b) importance of vaginal birth (IVB) (n = 456)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Nurses answering dependent variables</td>
<td>3) Nurses missing dependent variable of interest score</td>
<td>1a) EFM = 2</td>
<td></td>
</tr>
<tr>
<td>3a (n = 461)</td>
<td></td>
<td>1b) EPI = 1</td>
<td></td>
</tr>
<tr>
<td>(Does provincial/territorial midwifery regulation status influence nurses’</td>
<td></td>
<td>1c) EPIS = 1</td>
<td></td>
</tr>
<tr>
<td>attitudes towards midwives?)</td>
<td></td>
<td>2a) CSR = 0</td>
<td></td>
</tr>
<tr>
<td>1) Nurses who answered Province/Territory of Employment (PTE)</td>
<td>1) Missing PTE</td>
<td>2b) IVB = 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Nurses who worked or had worked in IP care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a) Nurses who never worked IP</td>
<td>2a) Missing IP status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b) Missing IP status</td>
<td>2b) 63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Nurses who answered one PTE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b (n = 295)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Cases from question 3a</td>
<td>1) Cases excluded from question 3a</td>
<td>1) 84</td>
<td></td>
</tr>
</tbody>
</table>

1 Although there are 63 cases that never provided IP care, the number of these nurses excluded by question varies because these nurses did not answer some variables of interest and had already been excluded.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>Number of Cases Excluded/ Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Is there a relationship between year of provincial midwifery regulation and nurses’ attitudes towards midwifery services?)</em></td>
<td><em>(n = 461)</em></td>
<td>2) Nurses working with midwifery regulation (nurses from British Columbia, Alberta, Manitoba, Ontario, and Quebec)</td>
<td>2) 161</td>
</tr>
<tr>
<td></td>
<td>3) Nurses who answered question 23 (attitudes towards midwifery services)</td>
<td>3) Nurses who did not answer attitudes towards midwifery services</td>
<td>3) 5</td>
</tr>
<tr>
<td>4</td>
<td>1) Nurses who answered choice of care provider.</td>
<td>1) Missing choice of care provider.</td>
<td>1) 4</td>
</tr>
<tr>
<td><em>(Is there a relationship between choice of provider and nurses’ attitudes towards:)</em></td>
<td>2) Nurses who worked or had worked IP.</td>
<td>2a) Nurses who never worked IP</td>
<td>2a) 63</td>
</tr>
<tr>
<td>4a) electronic fetal monitoring (EFM) <em>(n = 467)</em></td>
<td></td>
<td>2b) Missing IP status</td>
<td>2b) 9</td>
</tr>
<tr>
<td>4b) epidural analgesia (EA) <em>(n = 468)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4c) episiotomies (EPIS) <em>(n = 468)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4d) doulas (DO) <em>(n = 468)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4e) decreasing the cesarean section rate (CSR) <em>(n = 469)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Although Midwifery is regulated in the Northwest Territories, there were only 5 cases from this territory. I decided to exclude it from analysis because sample sizes were very unequal if it was included.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>Number of Cases Excluded/ Criterion</th>
</tr>
</thead>
</table>
| **4f)** the importance of vaginal birth (IVB) \( (n = 469) \)  
**4g)** nurses’ attitudes toward safety by mode or place of birth? (SMP) \( (n = 469) \) | 3) Nurses who answered dependent variable of interest | 3) Nurses missing dependent variable of interest score | 4a) EFM = 2  
4b) EA = 1  
4c) EPIS = 1  
4d) DO = 1  
4e) CSR = 0  
4f) IVB = 0  
4g) SMP = 0 |
| **5 \( (n = 316) \)**  
(Is there a relationship between intrapartum hospital level of employment (level 1, level 2, level 3) and nurses attitudes towards the risk of the fetus during birth?) | 1) Nurses who answered hospital level of employment  
2) Nurses who worked at level 1, 2, or 3 hospitals  
3) Nurses who were currently working in IP care | 1) Missing hospital level of employment  
2) Nurses who answered “I do not provide intrapartum care” or “other” to hospital level of employment.  
3a) Nurses who never worked IP  
3b) Missing IP status  
3c) Nurses who used to provide IP care.  
4) Nurses who answered question about risk to the fetus (q.54)  
4) Nurses missing a score on risk to the fetus (q.54) | 1) 99  
2) 57  
3a) 27  
3b) 3  
3c) 42  
4) 1 |
| **6 \( (n = 315) \)**  
(Is there a relationship between hospital level of employment and choice of care provider?) | Cases included for question 5 \( (n = 317) \)  
2) Nurses who answered choice of care provider | 1) Cases excluded from question 5  
2) Missing Choice of Care Provider | 1) 228  
2) 2 |
Research Question | Inclusion Criteria | Exclusion Criteria | Number of Cases Excluded/ Criterion
--- | --- | --- | ---
7 (n = 315) (Is there a relationship between: 1) hospital level of employment, 2) choice of care provider, 3) education exposure, and nurses’ attitudes towards safety by mode of birth?) | 1) Cases included for question 6 (n = 315) | 1) Cases excluded from question 6 | 1) 230
| 1) Nurses who answered ALARM/ALSO course completion. | 1) Missing ALARM/ALSO course completion. | 2) 0

8 (Is there a relationship between: 1) hospital level of employment, 2) choice of care provider, 3) years of intrapartum experience, and nurses’ attitudes towards: 8a) the electronic fetal monitoring scale (EFM) (n = 300), 8b) epidural analgesia (EA) (n = 301), 8c) the importance of vaginal birth? (IVB) (n = 302)) | 1) Cases included for question 6 (n = 315) | 1) Cases excluded from question 6 | 1) 230
| 2) Nurses who answered years of intrapartum experience. | 2) Missing years of intrapartum experience. | 2) 13
| 3) Nurses who answered dependent variable of interest | 3) Nurses missing a score for the dependent variable of interest | 8a) EFM = 2, 8b) EA = 1, 8c) IVB = 0

**Hypotheses**

Because limited evidence exists about differences in nurses’ attitudes in perinatal care; it is premature to assume there are directional relationships between nurses’ years of experience, education, province of employment, choice of care provider, hospital level of employment and nurses’ attitudes towards birth; however, there is adequate evidence to support hypotheses that relationships are present. Therefore, the hypotheses proposed for this secondary analysis are non-directional as there is insufficient evidence to support directional hypotheses All statistical tests will be two-tailed. It is hypothesized there are relationships between nurses’ attitudes and years
of experience, hospital level of employment, province of employment, choice of provider, and education, as indicated in the research questions.

**Ethical Implications**

The NMCAS study was approved by UBC Behavioural Research Ethics Board (BREB). A second ethics approval was obtained to conduct this study. Although the participants did not sign a consent form, there was minimal risk for participating and the participants received an invitation to participate which described the study. The return of the questionnaire to the researchers, either through email or paper mail, implied participants’ consent. Neither the paper-based surveys nor the online surveys were identified by number, therefore, confidentiality was maintained. The survey responses were entered into a website accessible only to the researchers involved.

For this study, the data and the analysis were held on a password protected data file on the researcher’s personal home computer. Anonymity was maintained as the researcher did not have access to the names and email or mailing addresses of the participants.

**Nursing Questionnaire**

The Nursing questionnaire consisted of 15 demographic questions, 71 (5-point) Likert scale questions, 6 multiple choice, 3 open-ended questions and 2 ten-point closed questions (See Appendix B). All Likert questions had a response range of 1-5; 1 was “strongly disagree”, 2 was “disagree”, 3 was “neutral”, 4 was “agree”, and 5 was “strongly agree”. Question 54, regarding the risk of the fetus during childbirth, had a 10-point response range of 1-10, 1 being completely safe and 10, completely dangerous. The questionnaire was derived from the Family Physicians’ (FP) questionnaire, which is a 76 item and demographic questionnaire that has been used
previously (Reime et al., 2004). The FP questionnaire has been piloted and revised over the course of seven years (Personal communication, M. Klein, December 12th, 2009).

A nursing version of this original FP questionnaire (the Nurses’ Attitudes and Beliefs Questionnaire (NABQ)) was piloted in 2004 \((n = 31)\) and administered in 2005 at one tertiary hospital to 176 nurses (Aparicio, 2006). This questionnaire contained 14 demographic questions, and 56 five-point Likert questions. A psychometric analysis of this instrument was conducted. The questionnaire was found to have a Cronbach’s alpha of 0.66 (Aparicio). Content validity was assessed with a focus group of labour and delivery nurses who completed the questionnaire. The construct validity was examined using exploratory factor analysis and the hypothesis testing approach (Polit & Beck, 2010); Aparicio hypothesized demographic groups would score differently on the questionnaire and tested for these differences. Only one of nine hypotheses tested was supported and of the seven factors identified, only two factors had a Cronbach’s alpha of greater than 0.7. Although Aparicio concluded the questionnaire had low internal consistency and no evidence of construct validity, she acknowledged several study limitations including a homogenous sample, a low response rate (45%), and an inadequate sample size for psychometric analysis.

Suggestions for improvement from the psychometric analysis of the NABQ and expert nurses was utilized in the development of the Nursing questionnaire for the NMCAS study (Personal communication, M. Klein December 12th, 2009). Moreover, the Nursing questionnaire is a similar adaptation of the FP questionnaire, which has been improved with many questions that were confusing or ineffective, edited or removed (Personal communication, M. Klein December 12th, 2009). The next section will examine the reliability and validity of the Nursing questionnaire.
Measurement And Attitudes

Reliability and Validity

Ideally, an effective instrument should measure what it intended to with accuracy; so that a researcher can ensure that any differences between scores reflect true differences between participants and not differences due to error (Gray et al., 2007). The rigor of an instrument is assessed by its validity and reliability.

Reliability

Reliability is concerned with the “consistency” of an instrument (Lo-Biondo-Wood & Haber, 2002, p. 319). Attitude scales are generally assessed for their internal consistency; that is “the degree to which the items of a scale correlate with each other and thus reflect the attitude construct of interest rather than random error” (Bohner & Wanke, p. 32). In other words, it reflects the degree to which questions are reliably measuring the same attitude (Polit & Beck, 2010).

Internal consistency reliability is appropriately measured by the use of Cronbach’s alpha, which is assessed on a scale of 0.0-1.0 (Polit & Beck, 2010). The closer the alpha coefficient is to one, the lower the random error and more reliable the instrument (LoBiondo-Wood & Haber, 2002). Generally, 0.7 or greater is considered to be an acceptable standard of reliability (Field, 2009).

The NMCAS study developed nine scales from the nursing questionnaire and used Cronbach’s alpha to assess internal consistency reliability. An alpha coefficient is particularly appropriate for the Likert type questionnaire used in the NMCAS study (LoBiondo & Wood, 2002). A total of 43 items from the original 79 content questions were included in the nine
scales. For all scales except one (“attitudes towards the importance of maternal choices”, Cronbach’s alpha, .646), the alpha coefficient was greater than 0.70 (Please see Table 4.1).

Internal consistency was examined using only the nursing data and was not as strong (See Table 4.3). In particular, the Cronbach alphas for the electronic fetal monitoring and the maternal choice in birth scales were lower than 0.7.

Table 4.3
Reliability of NMCAS scales and nursing data scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>NMCAS’s Cronbach alphas $n = 545$</th>
<th>Cronbach alphas from Nursing data $n = 545$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doula</td>
<td>.82</td>
<td>.77</td>
</tr>
<tr>
<td>Epidural</td>
<td>.82</td>
<td>.77</td>
</tr>
<tr>
<td>Episiotomy</td>
<td>.74</td>
<td>.71</td>
</tr>
<tr>
<td>Electronic Fetal Monitoring</td>
<td>.70</td>
<td>.61</td>
</tr>
<tr>
<td>Safety</td>
<td>.75</td>
<td>.72</td>
</tr>
<tr>
<td>Maternal Choice in Birth</td>
<td>.65</td>
<td>.58</td>
</tr>
<tr>
<td>Reducing Cesarean Section Rate</td>
<td>.80</td>
<td>.73</td>
</tr>
<tr>
<td>Importance of Vaginal Birth</td>
<td>-</td>
<td>.73</td>
</tr>
<tr>
<td>- Not measured</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The content of scale questions, corrected item-total correlations, and Cronbach’s alpha if item deleted statistics were examined for each scale. Corrected item-total correlations, which are preferable to examine over the uncorrected item-total correlation, identify how an item correlates with all other scale items (DeVellis, 2003). Unlike the uncorrected item-total correlation, which increases the correlation coefficient by correlating the item with other scale items “including itself”, a corrected item-total correlation excludes the item being assessed from the scale to compute the correlation coefficient (DeVellis, p. 93).

The corrected item-total correlation for the item “It is a women’s right to choose a cesarean section for herself, even in the absence of medical indication” from the factors to
decreasing the cesarean section scale was .01. Polit and Beck (2010) recommended an item with a correlation less than .3 should be considered for exclusion. Because this item also did not load on the decreasing the cesarean section factor structure as hypothesized, it was excluded from the scale.

*Maternal Choice in Birth Scale*

The maternal choice in birth scale as identified in Klein and colleagues’ study contained the following four items:

1) Having a vaginal birth is more empowering than delivering by cesarean section
2) Women who deliver by cesarean section miss an important life experience
3) Women should be encouraged to develop a birth plan
4) The most important determinant of a successful birth is the woman’s own confidence in her ability to give birth.

This scale may measure two underlying constructs, with questions 1 and 2 pertaining to attitudes towards the importance of vaginal birth, and 3 and 4, the mother’s role in birth. In consultation with my supervisor, the first two items: 1) having a vaginal birth is more empowering than delivering by cesarean section and 2) women who deliver by cesarean section miss an important life experience were used as a scale entitled “attitudes towards the importance of vaginal birth”, having a Cronbach’s alpha of .73. Attitudes towards “a mother’s role in birth” (containing the items, 3) Women should be encouraged to develop a birth plan and 4) The most important determinant of a successful birth is the woman’s own confidence in her ability to give birth) had poor reliability (Cronbach alpha = .35), and was not used as a scale in this study.

Use of the importance towards vaginal birth scale was deemed appropriate because it is congruent with the theoretical framework. Theoretically, nurses working at level three hospitals
and nurses with more experience may have been exposed to more negative attitudes or more positive attitudes towards vaginal birth, respectively. Because the cesarean section rate has steadily increased from 5% in 1970 to 26.9% in 2010 (Nair, 1991; PHAC, 2009), experienced nurses have worked during higher rates of vaginal delivery, which may have influenced their attitudes towards modes of birth. Similarly, nurses at level three hospitals may encounter cesarean section more frequently than nurses at level one and two hospitals (Ontario Perinatal Programs Partnership, 2006). These differences may affect how nurses view vaginal birth.

*Electronic Fetal Monitoring Scale*

There is slight discord in the electronic monitoring scale; the first two questions are about the use of monitoring for safety/liability reasons: 1) Electronic monitoring provides important benefits for the fetus, 2) Electronic monitoring reduces litigation, and the third item is about the use of monitoring to decrease workload. Exclusion of the last question afforded a minor increase in reliability from .61 to .63. The three items included in the electronic monitoring scale; however, are supported by the maternity literature, as it has suggested care providers use monitoring because it is believed to be safer, protect against litigation, and decrease workload (Graham et al., 2004; Priddy, 2004; Simpson, 2006) and were retained.

Although a Cronbach’s Alpha of 0.7 is the conventional standard, Kline demonstrates in a review of attitude survey instruments, an alpha below 0.7 is not unlikely (1999). DeVellis (2003) stated an alpha below 0.6 is unacceptable and between 0.6 - 0.65 undesirable; however, one must consider the instrument’s intended use to judge the alphas’ significance. He provided the example of a diagnostic instrument in which it would be highly important to have a high internal consistency reliability (DeVellis). Because this was an exploratory study measuring psychological constructs, and the instrument was designed to provide general knowledge of
attitudes, the electronic fetal monitoring scale was retained for analysis; the low reliability will be considered in the discussion.

Validity

Instrument validity is defined as the ability of the instrument to correctly measure what it is intended to measure (LoBiondo-Wood & Haber, 2002). Construct validity, which is an important assessment of validity in attitude research (Bohner & Wanke, 2002), refers to the degree to which an instrument accurately measures the construct (attitude) of interest, preliminary construct validity can be assessed with exploratory factor analytic methods (LoBiondo-Wood & Haber; Polit & Beck, 2010). Confirmatory factor analysis is favored over exploratory factor analysis to examine construct validity; however, this is an advanced statistical technique beyond the scope of this master’s thesis (Polit & Beck). Each group or factor derived from exploratory factor analysis measures one underlying construct (Polit & Beck). Narrowing measures into factors can allow the researcher insight into the number of constructs in a questionnaire (Lo-Biondo-Wood & Haber). Furthermore, by determining “the degree to which individual items on a scale truly cluster around one or more dimensions”, the researcher can support his or her own assumptions about the constructs being measured (Lo-Biondo-Wood & Haber, p. 319).

The NMCAS study assessed the multi-item measures’ validity using content experts and exploratory factor analysis. In a two-step process, content experts first analyzed the scores of the measures and were in agreement that nine scales were present (Klein et al., 2009). Each of these nine scales measured one underlying construct or theme. Item analysis ensued, which is a process by which content experts determine which questions are most appropriate for each theme (Burns & Grove, 2001). The nine themes established by the content experts were corroborated
empirically by the exploratory factor analysis (Klein et al.). Evidence for validity lies in the congruence between content experts’ themes and the factors generated from the exploratory factor analysis.

Rather than running one factor analysis with all survey items, three factor analyses were run in the NMCAS study using specific items hypothesized to form scales (Klein et al., 2009). The first factor analysis included 15 items hypothesized to form the electronic fetal monitoring, doula, epidural analgesia, and episiotomy scales. The second included 12 items for the pelvic floor benefits of caesarean section (not assessed within nursing data) and factors that decrease the cesarean section rate scales, and the third factor analysis, 10 items for the safety by mode or place of birth and maternal choice in birth scales. The number of factors extracted was limited to the number of hypothesized constructs, which Polit and Beck (2010) suggested can be an effective approach to isolate the variance of hypothesized factors.

A secondary analysis of the midwifery data from the NMCAS study identified different factor structures than those identified in the original study (Personal communication with J. Tomkinson, December, 2009). To ensure appropriateness of using the scales developed from the NMCAS study with the nursing data, exploratory factor analyses were run using the same procedures as Klein and colleagues (2009). I used the maximum likelihood estimation method and promax rotation because it was a large data set (Field, 2009).

The factors identified from the NMCAS study data were also identified in this study (Please see Appendix C). Generally, item loadings should be at least .4 (Field, 2009); all item loadings were greater than or equal to .4, with the exception of two items, one from the “Decreasing the Cesarean Section Rate” scale and one from the “Safety by Mode or Place of Birth” scale, which were below .4 (See Appendix C).
One item loaded on the Attitudes towards the Pelvic Floor Benefits of Cesarean section and not Attitudes towards Approaches to reducing the Cesarean Section rate scale as expected (See Appendix C), which similarly occurred when run with NMCAS data (Personal communication, S. Hearps December 10th, 2010). As indicated previously, this item “It is a women’s right to choose a cesarean section for herself, even in the absence of medical indication” was excluded from the scale because it also had an inadequate item-total correlation. When the factor analysis was run excluding this item, all items loaded as hypothesized. Rotated pattern matrices revealed items did not load on more than one factor.

One item on the attitudes towards the importance of vaginal birth scale had a loading on of 1.01. Typically, it is explained loadings cannot be greater than one because the factor loadings represent a correlation coefficient (Field, 2009). However; with oblique rotation the loadings are no longer direct correlation coefficients and in the rotated pattern matrix can be greater than one (Joreskog, 1999; Reymont & Joreskog, 1996; Rummel, 1970). The solutions accounted for 33.7% - 44.5% of variation in scores.

In sum, reliability for the nursing data was weaker than the NMCAS study data, but acceptable for six of the seven scales used in this analysis. The maternal choice in birth scale was modified and entitled “attitudes towards the value of vaginal birth”. Exploratory factor analysis results with nursing data were similar to the NMCAS study results.

Table 4.4 presents items included in each scale, scale reliability, and corrected item-total correlations.
Table 4.4

Internal consistency reliability and scale items

<table>
<thead>
<tr>
<th>Scale (α)</th>
<th>Items</th>
<th>Corrected Item-total correlation</th>
</tr>
</thead>
</table>
| 1) Attitudes towards routine electronic fetal monitoring (α = .61) | 1. Electronic fetal monitoring provides important benefits for the fetus.  
2. Electronic fetal monitoring reduces the chance of litigation.  
3. Electronic fetal monitoring is a good strategy for reducing maternity care provider groups' workload. | .45                              |
| 2) Attitudes towards epidural analgesia (α = .77)                | 1. Epidural analgesia should be routinely offered to all women in labour.  
2. *1 Epidural analgesia increase(s) the frequency of instrumental birth (forceps and vacuum):  
3. *Epidural analgesia interfere(s) with the normal progress of labour.  
4. *Epidural analgesia: when used early in labour (less than 4 cm of cervical dilatation) is associated with an increase in fetal malpositions (occiput posterior or transverse e.g. back labours). | .46                              |
| 3) Attitudes towards routine episiotomy (α = .71)                | 1. Episiotomy: if done routinely, can prevent pelvic floor relaxation.  
2. Episiotomy: should be used for all instrumental vaginal births.  
3. Episiotomy: if done routinely, can prevent 3rd/4th degree tears.  
4. Episiotomy: is easier to repair than lacerations.  
5. *Episiotomy: if done routinely, leads to more harm than good | .45                              |
| 4) Attitudes towards doulas (α = .77)                            | 1. In my practice, doulas are welcome.  
2. There is a need for doula services in maternity care.  
3. Doulas improve birth outcomes. | .50                              |
| 5) Attitudes towards                                         | 1. Changing medical and nursing education to | .46                              |

1 * Indicates these items were reverse coded
<table>
<thead>
<tr>
<th>Scale (α)</th>
<th>Items</th>
<th>Corrected Item-total correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>approaches to reducing the caesarean rate (α = .73)</td>
<td>1. Encourage more positive attitudes toward vaginal birth.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Organized pre-Cesarean section peer review of all elective cesarean sections.</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td>3. Organized “after the fact” formal peer review of all Cesarean sections.</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>4. Providing more midwifery services.</td>
<td>.58</td>
</tr>
<tr>
<td></td>
<td>5. Providing more doula services.</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>6. Eliminating routine electronic fetal monitoring (EFM).</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>7. Encouraging more family physicians to provide intrapartum maternity care.</td>
<td>.34</td>
</tr>
<tr>
<td></td>
<td>8. Reducing the number of inductions of labour for non-compelling reasons.</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>9. *Active management of labour improve(s) birth outcomes.</td>
<td>.25</td>
</tr>
<tr>
<td></td>
<td>10. *It is a woman's right to choose a cesarean section for herself, even in the absence of medical indication.</td>
<td>Excluded</td>
</tr>
</tbody>
</table>

6) Attitudes towards the importance of vaginal birth (α = .73)

<table>
<thead>
<tr>
<th>Items</th>
<th>Corrected Item-total correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. For a woman, having a vaginal birth is a more empowering experience than delivering by cesarean section.</td>
<td>.61</td>
</tr>
<tr>
<td>2. Women who deliver their baby by cesarean section miss an important life experience.</td>
<td>.61</td>
</tr>
</tbody>
</table>

7) Attitudes towards safety by mode or place of birth (α = .72)

<table>
<thead>
<tr>
<th>Items</th>
<th>Corrected Item-total correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If a woman has had a previous Cesarean section, a scheduled repeat Cesarean section can improve newborn outcome.</td>
<td>.41</td>
</tr>
<tr>
<td>2. Home birth is more dangerous than hospital birth, even in an uncomplicated pregnancy.</td>
<td>.60</td>
</tr>
<tr>
<td>3. *If available, for women at no apparent risk, I believe out-of-hospital birth centres can provide safe maternity care.</td>
<td>.42</td>
</tr>
<tr>
<td>4. Cesarean section is safer for the baby than vaginal birth.</td>
<td>.26</td>
</tr>
<tr>
<td>5. Cesarean section is as safe as vaginal birth for women.</td>
<td>.56</td>
</tr>
<tr>
<td>6. *I support licensed/regulated midwifery services.</td>
<td>.48</td>
</tr>
</tbody>
</table>

---

1 Indicates these items were reverse coded.
Sample

The sample for this study consisted of a convenience sample of 545 registered Canadian nurses from rural and urban areas, all provinces and territories, and English and French speaking nurses (Klein et al., 2009). As I indicated previously, eight hundred and eighty-six surveys were distributed across Canada to nurses who were members of AWHONN/attendees at the National AWHONN conference, who received a copy from an attendee at the AWHONN conference, (551) or were those who completed the ALARM/ALSO (335 nurses) course.

A convenience sample of nurses who were members of AWHONN or had completed the ALARM/ALSO was deemed necessary by the researchers as the lack of a perinatal national nursing database made it difficult to establish actual numbers of nurses providing maternal care across Canada and to access those nurses (Klein et al., 2009). The authors note that sampling was further complicated by the fact that nurses working in rural areas often are multi-specialists who work in several different clinical areas (Klein et al.). They may provide maternity care, but may not indicate maternal-child care to nursing registries as their primary area of work (Klein et al.) The limitation makes it difficult to ascertain how many rural nurses provide maternity care in Canada (Klein et al.).

Data Collection Methods

Quality data collection and entry is critical to ensure the validity of a study, because results cannot be valid if errors were made in the entry of the survey responses or if data were lost in the collection process (Polit & Beck, 2010). For this study, the data were collected by either a web-based or paper-based survey. A recruitment message was sent to all members of the Maternity Care Discussion Group, which is a listserv of over 700 maternity care providers (Personal communication, J. Tomkinson, December 9th, 2009). It is estimated that ~50-100
nurses are members of the maternity care discussion group, but exact numbers are unknown (Personal communication with J. Tomkinson, December 9th, 2009). Nurses were either directly able to access an online survey from the email or request that a paper copy be sent to them. The data from the online surveys were then automatically entered into a website devoted to the study. A total of 169 surveys were completed online. The survey data were then exported off the website and were entered into SPSS on a password-protected computer to be analyzed.

Nurses who had completed the ALARM or ALSO course (335) were emailed a link to the survey and were given the option to request a written copy. Five hundred and fifteen nurses that were AWHONN members or attendees at an AWHONN conference either received an email with a link to the survey or received a survey package at the AWHONN annual conference in 2007. Nurses that received a survey at the AWHONN conference also received additional paper copies to distribute at their perinatal units. Thirty-two surveys were mailed to nurses with whom the researchers had contact in northern British Columbia (Personal communication, J. Tomkinson, December 9th, 2009). The paper questionnaires (376) were entered by hand onto this website by a data entry company. All data was then transferred to SPSS for analysis.

Assumptions Underlying Survey And Attitude Research

In order to generalize the results to the population from which the sample was collected, the researcher must be confident the results of the survey data are valid (Hutchinson, 2004). That is, the researcher must believe the data reflect the true attitudes of the nurses surveyed (Hutchinson). In order to do this the researcher must make several assumptions. The following section describes the seven main assumptions underlying the nursing survey used for this thesis.
1) Nurses answered the questions honestly (Hutchinson, 2004; Krosnick, Judd & Wittenbrink, 2005).

2) Nurses who completed the questionnaire understood the questions (Gray et al, 2007; Swartz, 2008). If the questions are ambiguous or confusing, then the participant will not be able to accurately convey their attitudes (Krosnick et al., 2005; Moser & Kalton, 2004).

3) Nurses who completed the questionnaire understood questions similarly (Moser & Kalton, 2004). This is a critical assumption. In order to determine if nurses’ attitudes towards birth differ, one must believe that each question carried the same meaning to each of the nurses, otherwise comparisons can not be made. Of note, not only do the questions themselves need to be understood in the same way, but also the way in which the nurses are expected to answer questions must be understood similarly (Moser & Kalton).

4) Nurses had adequate knowledge regarding intrapartum care practices and care providers to be able to provide informed answers to the questionnaire (Gray et al., 2007).

5) Nurses were aware of their attitudes towards birth and care providers (Krosnick et al., 2005; Moser & Kalton, 2004; Schwarz, 2008).

6) Questions asked of nurses in the questionnaire are relevant to nurses (Krosnick et al., 2005; Moser and Kalton, 2004; Schwarz, 2008). This assumption relates to motivation (Gray et al., 2007). If questions are not of interest to nurses, they may have no incentive to answer the questions correctly or accurately.

7) Results of the survey did reflect the actual attitudes that nurses hold towards birth and care providers. “The overriding assumption is the survey responses reflect the reality of the respondent to the greatest extent possible” (Hutchinson, 2004, p. 287). Given that the six preceding assumptions are met, this assumption will be met also.
Strengths

This section will discuss the strengths of this study, including: data handling, questionnaire format, reliability and validity testing, and measures to reduce bias.

Self-Administered Surveys

In comparison to face-to-face or phone interviews, self-administered surveys allow participants to complete questionnaires in private and at their own pace (de Leuuw, 2008; Gray et al., 2007). This can be considered advantageous in attitude research, as there can be several steps in formulating an answer to an attitude question (Tourangeau and Rasinski, 1988). Although some statements in a questionnaire trigger an almost instantaneous response for the participant, others require more contemplation before the individual can determine a response (Krosnick, Judd & Wittenbrink, 2005). Participants perceive less time pressure when completing a questionnaire independently as opposed to during an interview, thus extra time may allow the participant to answer the question with greater accuracy (Gray et al.; Krosnick et al.).

Furthermore, paper or internet surveys decrease the likelihood of error in measurement due to interview bias and social desirability. In an interview, data collected are more susceptible to interview bias (Gray et al., 2007). The interviewer may inadvertently expose their personal biases and attitudes towards the topics being discussed in the rapport that they have with the participant or the way they ask the questions (Gray et al.; de Leuuw, 2008). Social desirability is a term used to describe the fact that individuals may not necessarily answer the question honestly (Krosnick, Judd & Wittenbrink, 2005). They may instead answer in the way that they believe the researcher would like them to answer, or answer in a way that they perceive is socially acceptable (Krosnick et al.). Social desirability is particularly problematic in attitude research when the participant is asked a personal question (Gray et al.).
Social desirability is relevant to the NMCAS study. The NMCAS nursing questionnaire includes questions that could be considered of a personal nature, as it asks several questions about the participants’ fear of vaginal childbirth due to the risk of fecal and urinary incontinence and risk that it may compromise sexual functioning (see Appendix B). A self-administered questionnaire was therefore more appropriate than an interview because it may have led to more accurate reporting of nurses’ attitudes to such personal questions. Overall, considering the national scope of NMCAS survey, a self-administered survey was the most pragmatic method of data collection, as it had the capacity to reach a large number of participants, in a wide range of areas with minimal cost (Polit & Beck, 2010).

**Data Handling**

A strength of the NMCAS study is the data handling methods. Direct exportation of survey responses from the website into SPSS eliminated manually entering the data from the website. The NMCAS study used a professional data entry team and the same team from the data entry company entered all the nurses’ responses from the paper surveys. Double entry was performed; in which a second individual checked the data entry (Personal communication, J. Tomkinson, December 9th, 2009). These methods would have likely decreased the error in data entry.

**Questionnaire Format**

The NMCAS study compensated for the potential weakness of using more than one survey mode by creating online and paper questionnaires identical in format and question wording (Personal communication, J. Tomkinson, April 26th, 2010). Dillman (2007) recommends using the same questions for each mode because it decreases the possibility of measurement differences between modes. Although the questionnaires were formatted
identically it is possible the online questionnaire may have appeared on screen differently depending on a nurses’ computer manufacturers (Gordon & McNew, 2008). Nonetheless, identical online and paper questionnaires would have decreased the likelihood nurses interpreted and answered the questions differently on the online or paper questionnaire (Dillman, 2007).

Reliability and Validity Testing

Lastly, a strength of the NMCAS study was the development and reliability testing of the scales to be used in this secondary analysis. Adequate reliability and evidence of construct validity for the scales increased confidence the nurses’ questionnaire accurately measured the attitudes being tested in this analysis, with the exception of the electronic fetal monitoring scale and single items questions.

Data Analysis

Data were analyzed using SPSS 17.0. Despite numerous hypotheses being tested, the \( p \) value for significance testing was set at .05 because this is an exploratory study. Cases were excluded listwise for regression analyses and pairwise for all other analyses as per default SPSS settings.

Univariate Descriptive Statistics

Univariate descriptive statistics (mean, median, mode, skewness, standard error of the skewness, standard deviation and range) were calculated for continuous variables (see Table 4.3). Histograms, boxplots, measures of central tendency, and P-P plots were completed for continuous variables to determine data normality. Simple frequency distributions and bar graphs were created and examined for categorical variables (see Table 4.5).
Table 4.5

Univariate descriptive statistics

<table>
<thead>
<tr>
<th>CONTINUOUS VARIABLES</th>
<th>CATEGORICAL VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics:</strong></td>
<td><strong>Demographics:</strong></td>
</tr>
<tr>
<td>1) Age</td>
<td>1) Gender</td>
</tr>
<tr>
<td>2) Years of Nursing Experience</td>
<td>2) Maternity services nurse is involved in.</td>
</tr>
<tr>
<td><strong>Independent Variables:</strong></td>
<td><strong>Independent Variables:</strong></td>
</tr>
<tr>
<td>3) Years of Intrapartum experience</td>
<td>3) Hospital level of employment</td>
</tr>
<tr>
<td></td>
<td>4) Education</td>
</tr>
<tr>
<td></td>
<td>5) Province of Employment</td>
</tr>
<tr>
<td><strong>Dependent Variables:</strong></td>
<td></td>
</tr>
<tr>
<td>4) Electronic fetal monitoring (scale 1)</td>
<td></td>
</tr>
<tr>
<td>5) Epidural Analgesia (scale 2)</td>
<td></td>
</tr>
<tr>
<td>6) Episiotomy (scale 3)</td>
<td></td>
</tr>
<tr>
<td>7) Doulas (scale 4)</td>
<td></td>
</tr>
<tr>
<td>8) Decreasing the Cesarean Section Rate (scale 6)</td>
<td></td>
</tr>
<tr>
<td>9) Importance of vaginal birth (scale 7)</td>
<td></td>
</tr>
<tr>
<td>10) Safety by mode or place of birth (scale 9)</td>
<td></td>
</tr>
<tr>
<td>11) Question 23 (attitudes towards midwives)</td>
<td></td>
</tr>
<tr>
<td>12) Question 54 (attitudes towards risk to the fetus)</td>
<td></td>
</tr>
</tbody>
</table>

Skewness scores were converted into $z$-scores dividing skewness by the standard error of the skewness to determine whether skew was significant; in larger samples a $z$-score greater than 3.29 determines the sample is significantly skewed (Field, 2009). Field advises it is “more important” to view the histogram and skewness statistic to make this decision (p.139). Non-parametric comparisons were used when the scales were skewed.

**Univariate Outliers**

Boxplots were used for continuous independent and dependent variables (years of intrapartum experience and scale scores) to identify outlier cases with potential to influence
analyses. Minor outliers were defined as cases with values 1.5-3 interquartile ranges (IQRs) away from the top or bottom edge of the IQR box (Duffy & Jacobsen). There were no major outliers (cases with values 3 times IQRs from the top or bottom of the IQR box (Duffy & Jacobsen)). Minor outliers were identified for the following variables: episiotomy scale ($n = 5$), doula scale ($n = 7$), the importance of vaginal birth scale ($n = 1$), decreasing the cesarean section scale ($n = 1$), safety scale ($n = 1$), and years of intrapartum experience ($n = 1$). Duffy and Jacobsen suggest running analyses with and without outlier cases; if findings are similar, outliers should be retained (2005). This strategy was employed for analyses. A variable for each scale was created excluding the outliers and analyses were run with and without outliers; results did not differ so outliers were included in analyses.

**Missing Data**

Missing data pose problems for interpretation because it is possible a participant’s decision not to answer a question is related to their attitude towards the topic (Tabachnick & Fidell, 1989). Moreover, missing data can raise questions about the validity of results as participants who do not answer questions may represent a population of nurses with different attitudes than the nurses who do (Tabachnick & Fidell). A significant amount of missing data can limit generalizability because it may be populations of perinatal nurses are not represented in the findings (Tabachnick & Fidell).

Frequencies of each item included in the scales and independent variables (years experience, years intrapartum experience, age, ALARM/ALSO course completion, intrapartum status, choice of care provider and hospital level of employment) were requested to assess the amount of missing data. To assess the significance of missing data, Duffy and Jacobsen (2005) advised running analyses comparing whether cases missing data differ significantly from cases
without missing data on variables of interest. Each variable of interest was re-coded into two groups: missing data (group 1) and non-missing data (group 2); Mann-Whitney U’s, Chi-square tests, and t-tests as appropriate compared these two groups for differences on their scale scores and demographics. For example, nurses who answered the item: Have you completed the ALARM/ALSO course? (group 1) were compared to missing cases for this variable (group two) on their scores to the scales and other demographics (years experience, hospital level of employment, choice of care provider, intrapartum status, age), to assess whether nurses missing data on ALARM/ALSO course completion differed significantly from nurses that answered. This was performed for each variable of interest.

For dependent variables, some cases were missing data on more than one of the questions included in the scales, suggesting a possible pattern of missing data. These nurses (missing more than one item score) (group 1) were compared to nurses answering all items or missing only one item score (group 2) on their scores to scales and demographics.

**Dependent Variables**

A nurse’s scale score was calculated by averaging scores of the scale items he/she answered. For example, if a nurse only answered two of the three items that were included in a scale, these two scores were averaged and the missing item score held no weight in the nurses’ score to that scale. To assess the appropriateness of this method it was important to examine for possible differences in scale distribution with and without missing cases. A variable was created for each scale that excluded cases with missing data (Duffy & Jacobson, 2005; Tabachnick & Fidell, 1989). Descriptive statistics for the scale with and without missing data revealed similar means and standard deviations (see Table 4.6). Analyses were run with and without cases
missing and all were found to be similar (Duffy & Jacobson; Tabachnick & Fidell); therefore, findings reported include cases with missing data on dependent variables.

Table 4.6

Descriptive statistics for scales with and without cases missing item scores

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic monitoring – missing data</td>
<td>465</td>
<td>2.15</td>
<td>.70</td>
</tr>
<tr>
<td>Electronic fetal monitoring</td>
<td>467</td>
<td>2.15</td>
<td>.70</td>
</tr>
<tr>
<td>Epidural – missing data</td>
<td>464</td>
<td>2.63</td>
<td>.85</td>
</tr>
<tr>
<td>Epidural</td>
<td>468</td>
<td>2.63</td>
<td>.85</td>
</tr>
<tr>
<td>Episiotomy – missing data</td>
<td>468</td>
<td>2.22</td>
<td>.64</td>
</tr>
<tr>
<td>Episiotomy</td>
<td>462</td>
<td>2.22</td>
<td>.64</td>
</tr>
<tr>
<td>Doula – missing data</td>
<td>460</td>
<td>3.55</td>
<td>.83</td>
</tr>
<tr>
<td>Doula</td>
<td>468</td>
<td>3.55</td>
<td>.84</td>
</tr>
<tr>
<td>Decrease cesarean – missing data</td>
<td>454</td>
<td>3.60</td>
<td>.55</td>
</tr>
<tr>
<td>Decrease cesarean</td>
<td>469</td>
<td>3.60</td>
<td>.56</td>
</tr>
<tr>
<td>Safety – missing data</td>
<td>460</td>
<td>2.36</td>
<td>.64</td>
</tr>
<tr>
<td>Safety</td>
<td>469</td>
<td>2.36</td>
<td>.64</td>
</tr>
<tr>
<td>Attitudes towards importance of vaginal birth – missing data</td>
<td>463</td>
<td>2.74</td>
<td>1.02</td>
</tr>
<tr>
<td>Attitudes towards importance of vaginal birth</td>
<td>469</td>
<td>2.73</td>
<td>1.02</td>
</tr>
</tbody>
</table>

**Data Normality And Use Of Parametric Tests**

The data collected from the Likert scales in the questionnaire are ordinal and thus theoretically should be analyzed with non-parametric tests (Duffy & Jacobsen, 2005). However; researchers compellingly refute this viewpoint because statistical research has consistently supported the validity of using parametric tests with scales derived from Likert data (Carifio & Perla, 2007; Carifio & Perla, 2008; Norman, 2010). Therefore, the individual nurses’ scores on the scales were considered continuous data for the purpose of parametric analysis, with the
exception of research questions 3 and 5. Non-parametric analyses were used to answer these questions because the dependent variable was a nurses’ response to a single item rather than a scale. Non-parametric analyses were also used when the dependent variable was the electronic fetal monitoring scale or the doula scale because these variables violated the assumption of data normality and were significantly skewed\(^1\). Means are reported for parametric test results and medians for non-parametric tests.

**Bivariate Analyses**

The following section describes the descriptive statistics viewed, analyses performed, and power calculations for research questions 1-6.

*Research Questions 1 and 2: H \(_1\) There is a Relationship between Years of Experience and Nurses’ Attitudes towards Electronic Fetal Monitoring (1a), Epidurals (1b), Episiotomies (1c), Decreasing the Cesarean Section Rate (2a), and the Importance of Vaginal Birth (2b).*

To explore research questions one and two, scatterplots and bivariate descriptive statistics were used to observe possible relationships between years of experience and scale scores and potential outliers (see table 4.7). Scatterplots of nurses’ years of experience and each scale from questions 1 and 2 were visually analyzed for the direction, strength, and shape of the relationship between the variables. Because there was overlap in scores and scatterplots were difficult to interpret, jittering was employed to improve visualization (Cohen, Cohen, West & Aiken, 2003). Jittering involved transforming independent variables by adding a random number to all values of the predictor (Cohen et al.).

---

\(^1\) However; regression does not assume normally distributed dependent variables (Field, 2009) and the electronic fetal monitoring scale and doula scale scores were considered continuous in these analyses.
Bivariate analyses were used to assess significant relationships between nurses’ years of experience and the scores on the scales, and the direction and strength of these relationships. Research questions 1 and 2 were analyzed using simple linear regression to assess the relationship between years of experience and nurses’ attitudes towards “electronic fetal monitoring” (scale 1), “epidural analgesia” (scale 2), “episiotomies” (scale 3), and “decreasing the cesarean section rate” (scale 5) and “the importance of vaginal birth” (scale 6). From the regression model summary table produced, the $R$ was assessed to observe the correlation between years of experience and the $R^2$ used to observe the amount of variance accounted for by years of experience (Munro, 2005d). The adjusted $R^2$ was used to assess how the model would generalize to the population (Field, 2009). The significance value of Analysis of Variance (ANOVA) table was viewed to determine whether years of nursing experience was a significantly better predictor than the mean of nurses’ attitudes towards the scales (Field).

**Research Question 3a:** $H_1$: There is a Relationship between Provincial/Territorial Midwifery Regulation Status and Nurses’ Attitudes towards Midwifery Services.

Nurses were divided into two groups based on provincial midwifery status the year data was collected, with the theoretical assumption nurses working in provinces with midwifery regulation may be likelier exposed to midwifery services than nurses who are not. Group one consisted of nurses from: Ontario, British Columbia, Alberta, Quebec, Manitoba, and Northwest Territories (legislated 1994, 1998, 1999, 2000, and 2005, respectively) and group two: Saskatchewan, Nova Scotia, Prince Edward Island, New Brunswick, Newfoundland and Labrador, and the Yukon Territory. Nurses with legislated midwifery services were coded as one group and nurses without, a second. Medians and bar graphs of each groups’ scores to the midwifery question were viewed. Mann-Whitney $U$, the non-parametric equivalent to a $t$-test
(Munro, 2005) compared the mean rank scores of these two groups on their scores to question 23 (I support licensed/regulated midwifery services) (see Table 4.7).

*Research Question 3b: H₁ There is a Relationship between the Years since Midwifery Regulation and Nurses’ Attitudes towards Midwifery Legislation and Services.*

Theoretically, differing exposure to midwives and midwifery services through increased years of regulation might influence nurses’ attitudes towards their services. To examine whether years of provincial midwifery regulation influenced nurses’ attitudes towards their practice, nurses working in provinces with midwifery legislation (Ontario, British Columbia, Alberta, Quebec and Manitoba1) were assessed for within group differences using a Kruskal-Wallis test (see Table 4.7). This non-parametric test compared the mean ranks of each province’s score to the midwifery question (Field, 2009).

*Research Questions 4a-4g: H₁ There is a Relationship between Choice of Care Provider and Nurses’ Attitudes towards 4a) Electronic Fetal Monitoring, 4b) Epidural Analgesia, 4c) Episiotomy, 4d) Doulas, 4e) Factors that Decrease the Cesarean Section Rate, 4f) the Importance of Vaginal Birth, and 4g) the Safety by Mode or Place of Birth.*

Mean and median scores to each scale were viewed with data split by choice of care provider. Analysis of variance (ANOVA) was performed comparing the mean scores of a nurses’ choice of care provider (midwife, obstetrician, family physician) on their scores to the scales (see Table 4.7). The Levene’s statistic was observed for a non-significant result, indicating the test assumption of equal variances was met (Field, 2009). For question 4b and 4d, a Kruskal-Wallis, which is the non-parametric equivalent to ANOVA, was performed because the dependent variable was non-normally distributed (Munro, 2005). For significant ANOVA results the post-

---

1 Although the Northwest Territories had midwifery legislation at the time of data collection, there was only five cases; due to the small sample size this territory was excluded.
hoc Gabriel’s test was used because group sample sizes were slightly unequal; for significant Kruskal-Wallis tests, the Mann-Whitney $U$ was performed (Field) to compare how the groups differed.

Research Question 5: $H_1$ There is a Relationship between Hospital Level of Employment and Nurses’ Attitudes towards the Risk of the Fetus during Birth.

Descriptive statistics of nurses’ scores to question 54 were examined by hospital level of employment. The Kruskal-Wallis test compared three groups’ (by hospital level) mean ranks on their answer to question 54 (What is the overall risk of childbirth to the health of the fetus?) (see Table 4.7). Post-hoc tests were performed using Mann-Whitney $U$ (Field, 2009).

Research Question 6: $H_1$ There is a Relationship between Choice of Care Provider and Hospital Level of Employment.

Chi-square analysis was used to determine significant relationships between a nurse’s choice of care provider and hospital level of employment. Significant chi-square statistics function to isolate relationships when a cross-tabulation is conducted in $2 \times 2$ format. Because there are not post-hoc procedures to determine where a significance difference is found in a chi-square, adjusted standardized residuals, which are a standardized measure of how many standard deviations away the observed count would fall on the expected count distribution, were used (SPSS, 2010). They are an improved measure over standardized residuals because they adjust for the standard error of the estimate, equivalent to a $z$-score, and can be compared to a normal distribution to determine significance (SPSS 2009; SPSS 2010). $Z$-scores greater than 1.96 indicate significance at the .05 level and greater than 2.58 at the .01 level (Field, 2009). Cross tabulations of hospital level of employment by choice of care provider were examined and
adjusted standardized residuals, which indicated whether the observed counts were significantly different than the expected count (see Table 4.7).

**Power Calculations**

Power analyses were largely conducted using G*Power 3.1. Polit and Beck (2008) recommended estimating a small or medium effect size in power analysis if there is not research to support an effect size for the variable of interest. Because there is not previous research examining differences in nurses’ attitudes in perinatal care, a small and medium effect size was estimated using standard conventions in the program.

For Mann-Whitney *U*, a small effect size is $d = .2$ and a medium effect size is $d = .5$ (G*Power). The $d$ statistic represents the standardized mean difference (Murphy & Myors, 2004). In the G*Power program, a small effect for regression analyses was $f^2 = .02$, and a medium effect $f^2 = .15$; for ANOVA analyses, a small effect was $f^2 = .1$, and a medium effect, $f^2 = .25$.

A small effect for a chi-square analysis was $w = .1$ and a medium effect, $w = .3$.

StudySize 2.0 was used to calculate power analyses for Kruskal-Wallis tests because G*Power 3.1 does not have this function. Means from the dataset were entered into a non-parametric two-sided Monte Carlo simulation (5000 distributions) for research questions 3b, 4a, 4d, and 5 to calculate the power based on the observed effect sizes. Table 4.7 summarizes bivariate analyses and power calculations examined for research questions 1-6.
Table 4.7
Bivariate analyses and power for research questions 1-6

<table>
<thead>
<tr>
<th>BIVARIATE ANALYSES</th>
<th>Power (alpha set at .05, beta 0.80)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simple Linear Regression (Research Questions 1 and 2)</strong></td>
<td></td>
</tr>
<tr>
<td>Research Questions 1 and 2</td>
<td></td>
</tr>
<tr>
<td><em>IV</em> - Years of experience (x) and:</td>
<td></td>
</tr>
<tr>
<td><em>DV</em></td>
<td></td>
</tr>
<tr>
<td>1) attitudes towards epidural analgesia (y)</td>
<td>86% power to detect a small effect ($f^2 = .02$)</td>
</tr>
<tr>
<td>2) attitudes towards episiotomy (y)</td>
<td></td>
</tr>
<tr>
<td>3) attitudes towards decreasing the cesarean rate (y)</td>
<td>99% power to detect a medium effect ($f^2 = .15$)</td>
</tr>
<tr>
<td>4) attitudes towards maternal choice in birth (y)</td>
<td></td>
</tr>
<tr>
<td>5) attitudes towards electronic fetal monitoring (y)</td>
<td></td>
</tr>
<tr>
<td><strong>Mann-Whitney U (Research Question 3a)</strong></td>
<td></td>
</tr>
<tr>
<td>Research Question 3a:</td>
<td>95% power to detect a medium effect ($d = .5$)</td>
</tr>
<tr>
<td><em>IV</em> - Province of employment</td>
<td></td>
</tr>
<tr>
<td>Group 1: British Columbia, Ontario, Manitoba, Quebec, Alberta and Northwest Territories</td>
<td></td>
</tr>
<tr>
<td>Group 2: Saskatchewan, Nova Scotia, New Brunswick, Yukon Territory, Newfoundland and Labrador and Prince Edward Island</td>
<td></td>
</tr>
<tr>
<td><em>DV</em> - Nurses’ attitudes towards midwives (q.23)</td>
<td></td>
</tr>
<tr>
<td><strong>Kruskal-Wallis (Research Questions 3b, 4a, 4d, and 5)</strong></td>
<td></td>
</tr>
<tr>
<td>Research question 3b:</td>
<td>82% power to reject the null hypothesis</td>
</tr>
<tr>
<td><em>IV</em> – Provinces with legislated midwifery services and:</td>
<td></td>
</tr>
<tr>
<td><em>DV</em> – Nurses’ attitudes towards midwives (q. 23)</td>
<td></td>
</tr>
<tr>
<td>Research question 4a and 4d:</td>
<td>4a) 99% power to reject the null hypothesis</td>
</tr>
<tr>
<td><em>IV</em> – Choice of care provider</td>
<td></td>
</tr>
<tr>
<td><em>DV</em> - Nurses’ attitudes towards electronic fetal monitoring (4a) and doulas (4d)</td>
<td>4d) 99% power to reject the null hypothesis</td>
</tr>
</tbody>
</table>
## Bivariate Analyses

<table>
<thead>
<tr>
<th>Research question 5:</th>
<th>Power (alpha set at .05, beta 0.80)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>IV</em> - Hospital Level of Employment and:</td>
<td>78% power to reject the null hypothesis</td>
</tr>
<tr>
<td><em>DV</em> - Nurses’ attitudes towards the safety of the infant (q.54)</td>
<td></td>
</tr>
</tbody>
</table>

**ANOVA (Research Question 4b, 4c, 4e, 4f, 4g)**

<table>
<thead>
<tr>
<th>Research question 4b, 4c, 4e, 4f and 4g:</th>
<th>99% power to detect a medium effect ($f^2 = .25$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>IV</em> – Choice of Care Provider</td>
<td></td>
</tr>
<tr>
<td><em>DV</em> – Nurses’ attitudes towards epidural analgesia (4b), episiotomies (4c), decreasing the cesarean section rate (4e), the importance of vaginal birth (4f), and the safety by mode or place of birth (4g)</td>
<td></td>
</tr>
</tbody>
</table>

**Chi-Square – Adjusted Standardized Residuals (Research question 6)**

<table>
<thead>
<tr>
<th><em>IV</em> – Choice of care provider</th>
<th>99% power to detect a medium effect ($w = .3$) with a df of 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>DV</em> – Hospital level of employment</td>
<td></td>
</tr>
</tbody>
</table>

## Multivariate Analyses

Research questions 7 and 8 were analyzed using multiple regression. Prior to running regression analyses, bivariate descriptive statistics and analyses and correlation matrices were examined and are summarized in Table 4.8 for each research question. For question 7, a sample size of 315 was determined to have a 100% power to detect a medium effect of $f^2 .15$, with an alpha of .05, for 5 predictors (G*Power, 2009). For question 8, the power with a sample size of 306 and an alpha at .05 was 100% to detect a medium effect of $f^2 .15$ with 5 predictors.
Table 4.8

Bivariate descriptives and analyses assessed for research questions 7 and 8

<table>
<thead>
<tr>
<th></th>
<th>Descriptives</th>
<th>Bivariate Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Question 7</strong></td>
<td><em>Cross tabulations</em> of hospital level of employment, by ALARM/ALSO course completion, and choice of care provider</td>
<td><strong>ANOVA</strong></td>
</tr>
<tr>
<td>Is there a relationship</td>
<td></td>
<td><em>IV</em> - Choice of provider, 3 groups (Midwife, Obstetrician, Family Practitioner)</td>
</tr>
<tr>
<td>between 1) hospital level</td>
<td></td>
<td><em>DV</em> - Nurses’ scores to the safety scale</td>
</tr>
<tr>
<td>of employment, 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>education exposure, 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>choice of care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>provider, and nurses’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>attitudes towards the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>safety by mode or place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>of birth?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Research Question 8</strong></td>
<td><em>Scatterplots</em> of years of experience and electronic fetal monitoring scale,</td>
<td><strong>ANOVA</strong></td>
</tr>
<tr>
<td>Is there a relationship</td>
<td></td>
<td><em>IV</em> - Choice of provider, 3 groups (Midwife, Obstetrician, Family Practitioner)</td>
</tr>
<tr>
<td>between 1) hospital level</td>
<td></td>
<td><em>DV</em> - Nurses’ scores to the safety scale</td>
</tr>
<tr>
<td>of employment, 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>years of experience, 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>choice of care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>provider, and nurses’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>attitudes towards the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>electronic fetal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>monitoring, epidural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>analgesia, or the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>importance of vaginal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>birth?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>IV</em> - Hospital Level of Employment, 3 groups (level 1, level 2, and level 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>DV</em> - Nurses’ scores to the safety scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>t</em> – test</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>IV</em> - ALARM/ALSO course completion, 2 groups (completed the course, did not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>complete the course)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>DV</em> - Nurses’ scores to the safety scale</td>
</tr>
</tbody>
</table>
**Research Question 7: There is a Relationship between Hospital Level of Employment, Education Exposure, Choice of Provider, and Nurses’ Attitudes towards the Safety of Birth.**

Multiple regression analysis was used to test the “relationship between two or more independent variables and one dependent variable,” (Polit & Beck, 2008, p. 638). Hierarchical regression is used when research or theory informs predictors influencing the dependent variable (Field, 2009). Cohen and colleagues (2003) explained predictors should be entered based on presumed relationships; if variables are assumed to influence the effect of another predictor, these variables should be entered first, to control for this effect. To control for the effect of education on nurses’ attitudes by hospital level, ALARM/ALSO course completion was entered into block one. In block 2, hospital level at which nurses are employed was entered (see Table 4.8). Hospital at which nurses are employed was dummy coded, with level one hospital level of employment as the control. In block three, choice of provider was entered, with obstetrician as the control.
Research Questions 8a-8c: H₁ There is a Relationship between Hospital Level of Employment, Years of Experience, Choice of Provider, and Nurses’ Attitudes towards Electronic Fetal Monitoring (8a), Epidural Analgesia (8b), and the Importance of Vaginal Birth (8c).

To control for the effect of experience on nurses’ attitudes by hospital level of employment, experience was entered first into the first model block. Blocks two and three were the same as for research question seven. Table 4.9 presents the regression models used for research question 7 and 8.

Table 4.9
Multivariate Analyses

<table>
<thead>
<tr>
<th>REGRESSION</th>
<th>BLOCK 1</th>
<th>BLOCK 2</th>
<th>BLOCK 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 7</td>
<td>ALARM/ALSO Course Completion</td>
<td>Hospital level of employment:</td>
<td>Choice of Provider:</td>
</tr>
<tr>
<td>Question 8</td>
<td>Years of intrapartum experience</td>
<td>IV1: Dummy variable 1 (Level three compared to level one)</td>
<td>IV1: Dummy variable 1 (Midwife compared to obstetrician)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IV2: Dummy variable 2 (Level two compared to level one)</td>
<td>IV2: Dummy Variable 2 (Family Practitioner compared to obstetrician)</td>
</tr>
</tbody>
</table>

The $R$ value was assessed to examine multiple correlations between variables, with the $R^2$ value used to examine the amount of variance accounted for in the model (Munro, 2005d). The adjusted $R^2$ provides an indication of the generalizability of the model and is a measure of how well the model can predict the dependent variable in a different sample (Field, 2009; Wu, 2010). $R^2$ is adjusted to take into account other predictors in the model and describe the variance that would be accounted for in the dependent variable if the model was created from the actual
population (Field, Polit & Beck, 2008). Change statistics were assessed for a significant result, to indicate if the change of $R^2$ from model 1 to model 2 is significant (Field).

*Regression Models*

Table 4.10 presents how variables were coded and the labels applied to the regression models.

Table 4.10

Variable coding and regression model labels

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coding</th>
<th>Regression Model Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Completed ALARM/ALSO course = 0</td>
<td>ALARM/ALSO Course Completion</td>
</tr>
<tr>
<td></td>
<td>Completed course = 1</td>
<td></td>
</tr>
<tr>
<td>Choice of care provider</td>
<td>Dummy Variable 1 = Compared family practitioner to obstetrician</td>
<td>Family Practitioner</td>
</tr>
<tr>
<td></td>
<td>Dummy Variable 2 = Compared midwife as compared to obstetrician</td>
<td>Midwife</td>
</tr>
<tr>
<td>Hospital level of employment</td>
<td>Dummy Variable 1 = Compared level three hospital to level one hospital</td>
<td>Level 3</td>
</tr>
<tr>
<td></td>
<td>Dummy Variable 2 = Compared level two hospital to a level one hospital</td>
<td>Level 2</td>
</tr>
</tbody>
</table>

*Regression Assumptions and Influence Statistics*

Field (2009) indicated meeting regression assumptions are important so the model can be used to generalize to the population. Table 4.11 summarizes assumptions tested and criteria used for meeting assumptions.
Table 4.11

Regression assumptions and assumption criteria

<table>
<thead>
<tr>
<th>Regression assumptions</th>
<th>Assessed by</th>
<th>Criteria for Meeting Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homoscedasticity</td>
<td>Scatterplot: Standardized errors against Standardized prediction</td>
<td>▪ Random scatterplot; no pattern delineating shape or curvature</td>
</tr>
<tr>
<td>Normal Distribution of Errors</td>
<td>Histogram of Errors Standardized Skewness Scores P-P Plot</td>
<td>▪ Appearance of normal distribution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ z-scores less than 3.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ No deviation from P-P plot line</td>
</tr>
<tr>
<td>Independence of Errors</td>
<td>Durbin-Watson statistic</td>
<td>▪ Between 1-3</td>
</tr>
<tr>
<td>Multicollinearity</td>
<td>Tolerance and Variance Inflation Factor Statistics Correlation matrix</td>
<td>▪ Tolerance &gt; .2 for all variables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ VIF average of variables &lt;1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Predictors do not correlate highly ($R &gt; .9$)</td>
</tr>
</tbody>
</table>

Influence Statistics and Model Outliers

Influence statistics and potential outliers were examined for regressions. Stevens argues cases can be outliers without unduly influencing model parameters; therefore, Cook’s distance, which measures the effect of an individual case on the model was used to determine cases for exclusion (2002) (see Table 4.10). An adjunct to Cook’s distances are leverage values which examine whether outliers specific to the independent variable(s) are influencing the model (Field; Stevens; Wu, 2010). Cases with a high leverage value may not necessarily influence the regression model; therefore, cases with leverage values greater than $3(k+1)/n$ ($k$ being number of predictors and $n$ the number of participants) (Stevens, 2002) were investigated in concert with Cook’s distances (see Table 4.12). Table 4.12 summarizes how model outliers and influential cases were assessed and criteria used for exclusion.
Table 4.12

Assessment of model outliers and influence statistics, and criteria for model fit and case exclusion

<table>
<thead>
<tr>
<th>Model Outliers</th>
<th>Assessed by</th>
<th>Further Exploration Undertaken</th>
<th>Criteria for model fit</th>
</tr>
</thead>
</table>
| Casewise diagnostics | Cases with Standardized Residual > ± 1.96 | Cook’s distance, Leverage Values, Standardized DfBeta | ▪ No greater than 5% of cases have Standardized Residual >± 1.96  
▪ No greater than 1% of cases have Standardized residual >±2.58 |

<table>
<thead>
<tr>
<th>Influential Cases</th>
<th>Assessed by</th>
<th>Criteria for further exploration</th>
<th>Criteria for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook’s Distance</td>
<td>n/a</td>
<td></td>
<td>&gt;1</td>
</tr>
<tr>
<td>Leverage Values</td>
<td>&gt;3(k+1)/n</td>
<td></td>
<td>Cook’s Distance used for exclusion</td>
</tr>
<tr>
<td>Standardized DFBeta</td>
<td>&gt;1</td>
<td></td>
<td>Cook’s Distance used for exclusion</td>
</tr>
</tbody>
</table>

**Conclusion**

In conclusion, this chapter has presented the method for the study, described the procedures, the nature of the sample, inclusion criteria for each research question, as well as indicating the independent and dependent variables. Hypotheses were presented. Information about the reliability and validity of the measures was also presented. Strengths and limitations of the study and data analyses performed were described. The power calculations for the relevant statistical tests were included.
CHAPTER FIVE: FINDINGS

The following chapter presents the findings from the secondary analysis of the nursing data from Maternity Care Provider Attitudes and Beliefs (NMCAS) survey.

Sample Characteristics

Because the number of cases analyzed differed by research question, the largest number of cases \( n = 461 \) used for analysis is presented to approximate sample characteristics (see Table 5.1). All nurses sampled were female. Nurses had significantly fewer years intrapartum experience than nursing experience and the highest number of nurses were aged 45 – < 55. Years of intrapartum experience was positively skewed. Table 5.1 presents age and nursing experience of study participants.

Table 5.1

Characteristics of nurses from the National Care Maternity Attitudes Study

<table>
<thead>
<tr>
<th>Variable (In Years)</th>
<th>Number of Valid Cases</th>
<th>Valid Percent</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>Range</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>452</td>
<td>-</td>
<td>45.21 (9.5)</td>
<td>47.00</td>
<td>24 – 68</td>
<td>-.34</td>
</tr>
<tr>
<td>&lt; 35</td>
<td>74</td>
<td>16.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>35 - &lt; 45</td>
<td>123</td>
<td>27.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>45 - &lt; 55</td>
<td>187</td>
<td>41.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>55 - 68</td>
<td>68</td>
<td>15.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nursing Experience</td>
<td>455</td>
<td>-</td>
<td>21.77 (3.0)</td>
<td>23.00</td>
<td>1 – 48</td>
<td>-.27</td>
</tr>
<tr>
<td>≤ 10</td>
<td>90</td>
<td>19.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11 – 20</td>
<td>99</td>
<td>21.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Variable (In Years)</td>
<td>Number of Valid Cases</td>
<td>Valid Percent</td>
<td>Mean (SD)</td>
<td>Median</td>
<td>Range</td>
<td>Skewness</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------</td>
<td>---------------</td>
<td>-----------</td>
<td>--------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>21 - 30</td>
<td>159</td>
<td>34.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>31 – 48</td>
<td>107</td>
<td>23.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Intrapartum Experience</td>
<td>447</td>
<td>-</td>
<td>14.24 (9.5)</td>
<td>13.00</td>
<td>1 - 42</td>
<td>.42</td>
</tr>
<tr>
<td>≤ 10</td>
<td>186</td>
<td>41.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11 – 20</td>
<td>150</td>
<td>33.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>21 - 30</td>
<td>88</td>
<td>19.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>31 - 42</td>
<td>23</td>
<td>5.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Nearly half of the nurses completed the ALARM/ALSO course while most nurses sampled were from Ontario, would select a family physician as their care provider, and were currently working in intrapartum care. Table 5.2 presents additional characteristics.

Table 5.2
Additional characteristics of nurses from the National Care Maternity Attitudes Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number (Valid Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALARM/ALSO Course Completion:</strong></td>
<td>457</td>
</tr>
<tr>
<td>Yes</td>
<td>221 (47.9)</td>
</tr>
<tr>
<td>No</td>
<td>236 (51.6)</td>
</tr>
<tr>
<td><strong>Province/Territory of Employment:</strong></td>
<td>461</td>
</tr>
<tr>
<td>British Columbia</td>
<td>73 (15.8)</td>
</tr>
</tbody>
</table>

1 Provinces/territories with cases numbers ≤ 5 are not shown.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Number (Valid Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>39 (8.5)</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>35 (7.6)</td>
</tr>
<tr>
<td>Manitoba</td>
<td>38 (8.2)</td>
</tr>
<tr>
<td>Ontario</td>
<td>111 (24.1)</td>
</tr>
<tr>
<td>Quebec</td>
<td>39 (8.5)</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>20 (4.3)</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>72 (15.6)</td>
</tr>
<tr>
<td>Newfoundland and Labrador</td>
<td>15 (3.3)</td>
</tr>
<tr>
<td>Yukon Territory</td>
<td>12 (2.6)</td>
</tr>
</tbody>
</table>

Choice of Care Provider: 459

- An Obstetrician 138 (30.1)
- A Family Physician 176 (38.3)
- A Midwife 145 (31.6)

Intrapartum Status: 461

- Working in intrapartum care 323 (70.1)
- Used to work in intrapartum care 138 (29.9)

Hospital Level of Employment\(^1\) 317

- Level 1 70 (22)
- Level 2 117 (37)
- Level 3 130 (41)

\(^1\) Only cases used in analyses with this variable are presented here.
Descriptives And Data Normality

Table 5.3 shows the variables of interest, the nurses’ scores on attitudes towards interventions, midwives, safety, and type of birth. The Likert response scale for all items ranged from 1-5, except the “Risk to Fetus” which ranged from 1-10. Mean scale scores of < 3 corresponded to negative attitudes, scores of 3 corresponded with neutral attitudes, and those of ≥ 4 corresponded with positive attitudes. Lower mean scores towards the safety of birth scale reflected more positive attitudes towards safety by mode or place of birth because this scale was reversed coded.

On average nurses’ scores were more negative towards electronic fetal monitoring, epidurals, episiotomies, more neutral towards the importance of vaginal birth, and more positive towards doulas, factors to decrease the cesarean section rate, and the safety of birth (see Table 5.3). The electronic fetal monitoring and doula scales were significantly positively skewed and scale scores for attitudes towards the risk to the fetus were the most variable (see Table 5.3).

Table 5.3
Descriptive statistics of nurses’ scores to dependent variables

<table>
<thead>
<tr>
<th></th>
<th>N Valid (missing)</th>
<th>M</th>
<th>Mdn</th>
<th>SD</th>
<th>Skewness</th>
<th>z-score</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk to Fetus</td>
<td>460 (1)</td>
<td>3.11</td>
<td>3.00</td>
<td>1.55</td>
<td>1.40</td>
<td>12.73</td>
<td>1.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Electronic Fetal Monitoring</td>
<td>459 (2)</td>
<td>2.15</td>
<td>2.00</td>
<td>.70</td>
<td>.41</td>
<td>3.72</td>
<td>1.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Epidural Analgesia</td>
<td>460 (1)</td>
<td>2.62</td>
<td>2.50</td>
<td>.85</td>
<td>.20</td>
<td>1.82</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Episiotomy</td>
<td>460 (1)</td>
<td>2.23</td>
<td>2.20</td>
<td>.64</td>
<td>.18</td>
<td>1.63</td>
<td>1.00</td>
<td>4.20</td>
</tr>
<tr>
<td>Doula</td>
<td>460 (1)</td>
<td>3.56</td>
<td>3.67</td>
<td>.83</td>
<td>-.36</td>
<td>-3.27</td>
<td>1.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Missing Data

Missing data analyses were performed on the 469 nurses who worked/had worked in intrapartum care, and excluded the nurses that never provided intrapartum care or who did not answer intrapartum status. Of the 33 items included in the scales, most (26) were missing between 1-4 cases. Five items were missing 5-7 cases. Two items were missing data for 11 cases; these items were: “In my practice, doulas are welcome”, and “Active management of labour [does not] improve(s) birth outcomes”.

Twenty cases were missing more than one item score. Mann-Whitney U’s, Chi-squares and t-tests as appropriate compared these 20 cases to cases without missing data and revealed non-significant differences by RN characteristics including: IP status $\chi^2 (2) = 1.45, p > .05$, choice of care provider $\chi^2 (2) = 4.78, p > .05$, hospital level of employment $\chi^2 (2) = .92, p > .05$, ALARM/ALSO course completion $\chi^2 (1) = 1.14, p > .05$, age, $U = 3,374, z = -1.67, p > .05$, years experience, $U = 3,318.5, z = -1.8, p > .05$, or years of intrapartum experience, $U = 3,769.5, z = -0.87, p > .05$. These nurses did not differ on any scale scores (all $p$ – values > .05). On the

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1 This number was analyzed instead of the 461 cases (as per demographics) as the reason only 461 cases were analyzed for research question 3a instead of 469 was because 8 nurses had missing data. Including these eight nurses in missing data analysis allowed a more comprehensive view of missing data patterns.
basis of these results, it is assumed the cases missing data on the dependent variables do not represent a different population of nurses.

There were few cases of missing data for province/territory of employment \( (n = 8) \), age \( (n = 9) \), ALARM/ALSO course completion \( (n = 4) \), choice of provider \( (n = 3) \), years experience \( (n = 6) \), intrapartum status \( (n = 10) \), although more were missing for years of intrapartum experience \( (n = 17) \). Scale scores and RN characteristics did not differ except with a few exceptions. Nurses who did not report their age had significantly more positive attitudes towards the safety by mode or place of birth scale \( t(467) = -2.75, p < .01 \) and nurses who did not answer choice of provider and who reported previously working in intrapartum had significantly more positive attitudes towards the attitudes towards vaginal birth scale than nurses who answered these variables, \( t(467) = 2.03, p < .05 \) and \( t(467) = 2.18, p < .05 \), respectively.

**Hospital Level of Intrapartum Employment**

Ninety-nine nurses did not answer hospital level of intrapartum employment; however, 85\% \( (n = 84) \) of nurses who did not answer this question were not working or had never worked intrapartum care. Five nurses providing intrapartum care did not answer this question; these nurses did not significantly differ by demographics (age, experience, IP experience), nor scale scores, (all \( p \) – values > .05 with both \( t \)-tests and Mann-Whitney \( U \)). It is assumed these nurses’ data is missing at random.

**Bivariate Findings**

The following sections present the findings in order of research questions one to six.
Experience and Nurses’ Attitudes: Correlations

Scatterplots revealed possible negative relationships between electronic fetal monitoring, episiotomy, and years of intrapartum experience, and one possible outlier when epidural or episiotomy was the dependent variable.

Hypotheses 1a-c, 2a-b: There is a Relationship between Years of Experience and Nurses’ Attitudes towards Electronic Fetal Monitoring (1a), Epidurals (1b), Episiotomies (1c), Decreasing the Cesarean Section Rate (2a), and the Importance of Vaginal Birth (2b).

Because the variable, years of experience, was significantly skewed, non-parametric Spearman correlations were used to examine relationships between years of experience and nurses’ scores on electronic fetal monitoring, episiotomy, epidural, decreasing cesarean sections, and importance of vaginal birth scales. Hypotheses about relationships between nurses’ years of experience and attitudes towards electronic fetal monitoring (1a) and episiotomies (1c) were supported with weak negative relationships. As years of intrapartum experience increased, nurses’ scores for electronic fetal monitoring and episiotomies decreased, indicating nurses with more years of experience have significantly more negative attitudes towards electronic monitoring, $r_s = -.17$, $p < .001$, and episiotomies, $r_s = -.14$, $p < .01$. The hypotheses of relationships between years of experience and nurses’ attitudes towards the importance of vaginal birth (1e), decreasing the cesarean section rate (1d), and epidurals (1b) were not supported. There were non-significant relationships between years of intrapartum experience and importance of vaginal birth, $r_s = -.03$, $p > .05$, decreasing the cesarean rate, $r_s = -.07$, $p > .05$, and epidurals, $r_s = -.07$, $p > .05$. These findings remained similar when outliers and missing data for the scale scores were excluded.
Hypothesis 3a: \( H_1 \) There is a Relationship between Provincial/Territorial Midwifery Regulation Status and Nurses’ Attitudes towards Midwifery Services.

Hypothesis 3a was supported; nurses working in a province or territory with regulated midwifery (British Columbia, Alberta, Manitoba, Ontario, Northwest Territories, and Quebec) had significantly more positive attitudes towards licensed/regulated midwifery services \((M \text{ rank} = 243.69)\) than nurses working in a province or territory without (Saskatchewan, Nova Scotia, Prince Edward Island, New Brunswick, Newfoundland and Labrador and the Yukon) \((M \text{ Rank} = 199.28)\), \(z = -3.69, p < .001\).

Hypothesis 3b: \( H_1 \) There is a Relationship between the Years since Midwifery Regulation and Nurses’ Attitudes towards Midwifery Legislation and Services.

This hypothesis was not supported; nurses working in provinces with midwifery regulation did not have significantly different attitudes towards midwifery services/legislation, \(\chi^2(4) = 8.30, p > .05\). Table 5.4 presents the median score of each province.

Table 5.4

<table>
<thead>
<tr>
<th>Province</th>
<th>(N)</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>I support licensed/regulated midwifery services.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>British Columbia</td>
<td>70</td>
<td>4.0</td>
</tr>
<tr>
<td>Alberta</td>
<td>39</td>
<td>5.0</td>
</tr>
<tr>
<td>Manitoba</td>
<td>37</td>
<td>4.0</td>
</tr>
<tr>
<td>Ontario</td>
<td>110</td>
<td>4.0</td>
</tr>
<tr>
<td>Quebec</td>
<td>39</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>295</td>
<td></td>
</tr>
</tbody>
</table>
Hypotheses 4a-4g: $H_1$ There is a Relationship between Choice of Care Provider and Nurses’ Attitudes towards 4a) Electronic Fetal Monitoring, 4b) Epidural Analgesia, 4c) Episiotomy, 4d) Doulas, 4e) Factors that Decrease the Cesarean Section Rate, 4f) the Importance of Vaginal Birth, and 4g) the Safety by Mode or Place of Birth.

To test differences in nurses’ attitudes by choice of provider, ANOVAs grouping nurses by choice of care provider were conducted. Because the data had an abnormal distribution for the electronic fetal monitoring and doula scales, non-parametric Kruskal-Wallis tests were used for these scales. Hypotheses 4a - 4g were supported; nurses’ attitudes to all scales significantly differed by choice of care provider (omnibus ANOVA and Kruskal-Wallis, all $p < .001$).

Nurses’ mean and median scores by choice of care provider demonstrate a distinct trend. Nurses selecting an obstetrician held the most positive attitudes towards epidural analgesia, episiotomies, and electronic fetal monitoring, and the least positive attitudes towards the safety of birth (see Table 5.5). Nurses selecting a midwife held the most positive attitudes towards doulas, the importance of vaginal birth, and factors to decrease the cesarean section rate (see Table 5.5). The attitudes of nurses selecting a family practitioner fell between those of nurses who indicated they would select obstetricians and midwives.

Post-hoc comparisons revealed the mean differences between nurses choosing a family practitioner as compared to an obstetrician on the safety by mode or place of birth scale, importance of vaginal birth, and decreasing the cesarean section rate were non-significant ($p > .05$). All other differences were significant at the < .001 level, with two exceptions on the episiotomy and doula comparisons (See table 5.5).
Table 5.5 presents nurses’ mean scale scores by choice of care provider, median scale scores for non-parametric comparisons, and significance values comparing nurses’ scores between a FP and OB and MW and OB.

Table 5.5

Scale scores by choice of care provider (Obstetrician-OB, Family Physician-FP, and Midwife-MW) and post-hoc comparisons

<table>
<thead>
<tr>
<th>Scale</th>
<th>Means (95% CI)</th>
<th>OB</th>
<th>FP</th>
<th>MW</th>
<th>FP vs. OB</th>
<th>MW vs. OB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Episiotomy+</strong></td>
<td></td>
<td>2.43</td>
<td>2.25</td>
<td>2.02</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.32 – 2.53)</td>
<td>(2.16 - 2.33)</td>
<td>(1.92 - 2.13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Epidural+</strong></td>
<td></td>
<td>3.05</td>
<td>2.71</td>
<td>2.16</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.92 – 3.19)</td>
<td>(2.59 – 2.82)</td>
<td>(2.04 - 2.23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Safety by Mode or Place of Birth+</strong></td>
<td></td>
<td>2.64</td>
<td>2.57</td>
<td>1.88</td>
<td>~</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.55 – 2.73)</td>
<td>(2.49 – 2.65)</td>
<td>(1.79 – 1.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Importance of Vaginal Birth+</strong></td>
<td></td>
<td>2.55</td>
<td>2.61</td>
<td>3.01</td>
<td>~</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.39 – 2.71)</td>
<td>(2.48 – 2.75)</td>
<td>(2.83 – 3.18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decreasing the Caesarean Section Rate+</strong></td>
<td></td>
<td>3.36</td>
<td>3.48</td>
<td>3.98</td>
<td>~</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.28 – 3.45)</td>
<td>(3.41 – 3.56)</td>
<td>(3.90 – 4.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Medians</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Doula+</strong></td>
<td></td>
<td>3.33</td>
<td>3.67</td>
<td>4.00</td>
<td>+</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electronic Fetal Monitoring+</strong></td>
<td></td>
<td>2.33</td>
<td>2.00</td>
<td>2.00</td>
<td>**</td>
<td>**</td>
</tr>
</tbody>
</table>

+Omnibus test (ANOVA or Kruskal-Wallis) = p < .001, * p < .01, ** p < .001, ~ p < .05,  NS
Hypothesis 5: $H_1$ There is a Relationship between Hospital Level of Employment and Nurses’ Attitudes towards the Risk of the Fetus during Birth.

A Kruskal-Wallis test was performed comparing the three groups on their scores to this question. The comparison was not significant, $H(2) = 0.84, p > .05$, and Hypothesis 5, was not supported. Notably, nurses’ scores were low, $M = 3.10, SD = 1.55$, interquartile range (IQR) between 2 and 4, for this question, indicating overall nurses did not feel there was significant risk to the fetus during childbirth. Some nurses ($n = 29$) answered greater than five on the scale suggesting these nurses did not feel birth was completely safe to the fetus.

Nurses in the group identifying birth as lacking in safety for the fetus were explored further in attempt to gain understanding of the reason for their higher scores. They neither differed significantly by any RN characteristic nor attitudes towards birth.

Hypothesis 6: $H_1$ There is a Relationship between Choice of Care Provider and Hospital Level of Employment.

This hypothesis was supported, there were significant relationships between hospital level of employment and a nurses’ choice of care provider, $\chi^2(4) = 18.46, p < .01$. Most nurses would choose an obstetrician at a level three hospital and a family practitioner at a level one and level two hospital. Figure 5.1 illustrates the percentage of nurses selecting each care provider by hospital level of employment.
Figure 5.1 Percent of provider choice by hospital level of employment.

Adjusted standardized residuals (ASR) indicated nurses working at a level three hospital were significantly more likely (ASR 3.8) to select an obstetrician than nurses working at a level 2 (ASR -2.1) or a level 1 hospital (ASR, -2.0) for their care. Nurses working at a level one hospital were significantly more likely (ASR, 2.5) to select a family practitioner for their care and less likely to select a family practitioner at level three hospitals (ASR -3.6). Table 5.6 presents adjusted standardized residuals of a nurses’ choice of provider by hospital level of employment.
Table 5.6

Adjusted standardized residuals of a nurses’ choice of care provider by hospital level of employment

<table>
<thead>
<tr>
<th>Choice of Provider</th>
<th>Hospital Level of Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 1</td>
</tr>
<tr>
<td>Obstetrician</td>
<td>-2.0</td>
</tr>
<tr>
<td>Family physician</td>
<td>2.5</td>
</tr>
<tr>
<td>Midwife</td>
<td>-.7</td>
</tr>
</tbody>
</table>

Regressions

Hypothesis 7: There is a Relationship between Hospital Level of Employment, Education Exposure, Choice of Provider, and Nurses’ Attitudes towards the Safety of Birth.

Preliminary bivariate analyses indicated statistically significant relationships between a nurses’ choice of care provider and nurses’ scores to the safety scale, but no significant relationships between nurses’ hospital level of employment, ALARM/ALSO course completion and nurses’ scores towards the safety by mode or place of birth scale. Table 5.7 present bivariate descriptives and ANOVA and t-test results.

Table 5.7

ANOVA and t-test comparing nurses’ scores to safety by mode or place of birth scale by provider choice, hospital level of employment, and ALARM/ALSO course completion.

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Groups</th>
<th>Mean Score</th>
<th>Omnibus ANOVA</th>
<th>Post-hoc comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice of Provider</td>
<td>1) Midwife</td>
<td>1.99</td>
<td>F (2, 312) = 43.44**</td>
<td>1) MW vs. OB **</td>
</tr>
<tr>
<td></td>
<td>2) Obstetrician</td>
<td>2.69</td>
<td></td>
<td>2) FP vs. OB ~</td>
</tr>
<tr>
<td></td>
<td>3) Family Practitioner</td>
<td>2.63</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Regression models corroborated bivariate analyses; only choice of care provider contributed significantly to the regression models. The hypothesis were partially supported; controlling for education and hospital level of employment, nurses’ scores to the safety by mode or place of birth scale were significantly lower if they selected a midwife as compared to an obstetrician for their care, indicating more positive attitudes towards the safety of birth by mode or place (See table 5.8). Regression assumptions were met and influence statistics were non-problematic for the final model (please see Appendix D), which accounted for 21% of variation in scores.

Table 5.8
Hierarchical regression analysis summary for variables predicting scores to the safety by mode or place of birth scale (n = 314).

<table>
<thead>
<tr>
<th>Block</th>
<th>Variable</th>
<th>Unstandardized B (95% CI of B)</th>
<th>SE B</th>
<th>Standardized B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ALARM/ALSO Course Completion</td>
<td>-.09 (-.16 to -.03)</td>
<td>.07</td>
<td>-.07~</td>
</tr>
<tr>
<td>2</td>
<td>ALARM/ALSO Course Completion</td>
<td>-.11 (-.18 to -.03)</td>
<td>.07</td>
<td>-.09~</td>
</tr>
<tr>
<td></td>
<td>Level 3</td>
<td>.02 (0.00 to .05)</td>
<td>.09</td>
<td>.01~</td>
</tr>
<tr>
<td></td>
<td>Level 2</td>
<td>-.10 (-.16 to -.03)</td>
<td>.09</td>
<td>-.08~</td>
</tr>
</tbody>
</table>
Hypotheses 8a-8c: H1 There is a Relationship between Hospital Level of Employment, Years of Experience, Choice of Provider and Nurses’ Attitudes towards Electronic Fetal Monitoring (8a), Epidural Analgesia (8b), and the Importance of Vaginal Birth (8c).

Bivariate correlations demonstrated no relationship (all \( p \) – values > .05) between nurses’ scores to the electronic fetal monitoring, epidural analgesia, importance of vaginal birth scales, and years intrapartum experience. This finding contrasted findings from research question 1, which suggested as years experience increased, nurses’ attitudes towards electronic fetal monitoring were more negative. As compared to research question one; in this question only nurses currently working in intrapartum care were analyzed, suggesting years experience may not influence nurses’ attitudes towards electronic fetal monitoring if they are working in intrapartum care.

ANOVA’s comparing nurses’ scores to the three scales by choice of care provider were all significant (See table 5.9) and findings similar to research question 4 (which analyzed both nurses working and who had worked in intrapartum care) (See table 5.5). Thus, nurses’ scale scores differed by choice of provider, independent of intrapartum status.

<table>
<thead>
<tr>
<th>Block</th>
<th>Variable</th>
<th>Unstandardized B (95% CI of B)</th>
<th>SE B</th>
<th>Standardized B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>ALARM/ALSO Course Completion Level 3&lt;sup&gt;§&lt;/sup&gt;</td>
<td>-.03</td>
<td>.07</td>
<td>-.03&lt;sup&gt;~&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Level 2&lt;sup&gt;§&lt;/sup&gt;</td>
<td>-.01</td>
<td>.09</td>
<td>-.01&lt;sup&gt;~&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Midwife&lt;sup&gt;ε&lt;/sup&gt;</td>
<td>-.08</td>
<td>.08</td>
<td>-.06&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Family Practitioner&lt;sup&gt;ε&lt;/sup&gt;</td>
<td>-.69</td>
<td>.08</td>
<td>-.48&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>§</sup>Reference category is a level one hospital
<sup>ε</sup>Reference category is an obstetrician

Note. Adjusted R<sup>2</sup> for Model 1, .002<sup>~</sup>, Model 2, .004<sup>~</sup>, for Model 3, .21<sup>**</sup>
<sup>~</sup>Not Significant, ** \( p < .001 \)
Comparing nurses’ scores by hospital level of employment, there were significant differences between nurses’ working at level three and level one hospitals on the epidural analgesia and importance of vaginal birth scales; nurses working at a level three hospital had significantly more positive attitudes towards epidural analgesia and more negative attitudes towards the importance of vaginal birth (See table 5.9).

Table 5.9

ANOVA and post-hoc results comparing nurses’ scores on electronic fetal monitoring (EFM), epidural analgesia, and importance of vaginal birth scales by provider choice, and hospital level of employment.

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Group</th>
<th>Mean Score</th>
<th>Post-hoc comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EFM</td>
<td>Epidural</td>
</tr>
<tr>
<td>Choice of Provider</td>
<td>MW</td>
<td>1.95</td>
<td>2.27</td>
</tr>
<tr>
<td></td>
<td>OB</td>
<td>2.47</td>
<td>3.18</td>
</tr>
<tr>
<td></td>
<td>FP</td>
<td>2.19</td>
<td>2.79</td>
</tr>
<tr>
<td>Hospital Level of Employment</td>
<td>Level 1</td>
<td>2.25</td>
<td>2.59</td>
</tr>
<tr>
<td></td>
<td>Level 2</td>
<td>2.15</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>Level 3</td>
<td>2.27</td>
<td>3.08</td>
</tr>
</tbody>
</table>

*NS, †p < .05, ‡p < .01, §p < .001

Hierarchical regression analysis partially supported hypothesis 8a; nurses selecting a midwife or a family practitioner held more negative attitudes towards electronic fetal monitoring, as compared to nurses selecting an obstetrician for their care (see Table 5.10). As per
correlations, years of intrapartum experience did not contribute significantly to any regression models.

Hypothesis 8b was partially supported; nurses working at a level three hospital held more positive attitudes towards epidural analgesia as compared to nurses working at a level one hospital (see Table 5.10). Nurses selecting a midwife or family practitioner had significantly more negative attitudes towards epidural analgesia as compared to nurses selecting an obstetrician.

Lastly, hypothesis 8c was partially supported; nurses working at a level three hospital held less positive attitudes towards the importance of vaginal birth as compared to nurses working at a level one hospital, and nurses selecting a midwife for their care held more positive attitudes towards the importance of vaginal birth (see Table 5.10).

Regression assumptions were met for the epidural model; however, there was non-constant variance for the electronic fetal monitoring regression, and the importance of vaginal birth regression (See appendix D). Influence statistics met criteria, with exception of the importance of vaginal birth regression, as there were 18 cases (6%) with a standardized residual > 1.96 (See Appendix D). Findings were similar when outliers were excluded.

Table 5.10
Hierarchical regression analysis summary for variables predicting scores to the electronic fetal monitoring (EFM) (n = 300), epidural analgesia (n = 302), and importance of vaginal birth (n = 302) scales.

<table>
<thead>
<tr>
<th>Block</th>
<th>Variable</th>
<th>$B^{\hat{}}$ (SE of B)</th>
<th>$\beta^{\hat{}}$</th>
<th>$B$ (SE of B)</th>
<th>$\beta$</th>
<th>$B$ (SE of B)</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>EFM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Years Experience</td>
<td>-.01 (0.0)</td>
<td>-.09~</td>
<td>0.0 (.01)</td>
<td>.01~</td>
<td>.00 (.01)</td>
<td>.04~</td>
</tr>
<tr>
<td></td>
<td><strong>Epidural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Vaginal Birth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block</td>
<td>Variable</td>
<td>$B^£$ (SE of B)</td>
<td>$β^£$</td>
<td>$B$ (SE of B)</td>
<td>$β$</td>
<td>$B$ (SE of B)</td>
<td>$β$</td>
</tr>
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<td>-------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>EFM</td>
<td>Epidural</td>
<td>Vaginal Birth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Years Experience Level 3§</td>
<td>-.01 (0.0)</td>
<td>-.09°</td>
<td>0.0 (0.01)</td>
<td>.00°</td>
<td>-.01 (0.01)</td>
<td>.05°</td>
</tr>
<tr>
<td></td>
<td>Level 2§</td>
<td>.00 (0.11)</td>
<td>.00°</td>
<td>.56 (.13)</td>
<td>.33**</td>
<td>-.42 (.15)</td>
<td>-.21°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.10 (0.11)</td>
<td>-.07°</td>
<td>.04 (.13)</td>
<td>.02°</td>
<td>-.22 (.16)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Years Experience Level 3§</td>
<td>-.01 (0.0)</td>
<td>-.08°</td>
<td>.00 (0.01)</td>
<td>.03°</td>
<td>0.0 (0.01)</td>
<td>.03°</td>
</tr>
<tr>
<td></td>
<td>Level 2§</td>
<td>-.05 (0.1)</td>
<td>-.04°</td>
<td>.52 (.12)</td>
<td>.30**</td>
<td>-.45 (.15)</td>
<td>-.22°</td>
</tr>
<tr>
<td></td>
<td>Midwife</td>
<td>.09 (0.1)</td>
<td>-.07°</td>
<td>.06 (.12)</td>
<td>.04°</td>
<td>-.25 (.15)</td>
<td>-.12°</td>
</tr>
<tr>
<td></td>
<td>Family Practitioner</td>
<td>-.55 (0.1)</td>
<td>-.34**</td>
<td>.84 (.12)</td>
<td>-.43**</td>
<td>.42 (.15)</td>
<td>.18°</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.29 (0.1)</td>
<td>-.21°</td>
<td>-.27 (.10)</td>
<td>-.15°</td>
<td>-.09 (.13)</td>
<td>-.04°</td>
</tr>
</tbody>
</table>

§Reference category is a level one hospital
£Reference category is an obstetrician
°Not Significant, † p < .05, * p < .01, ** p < .001
£B unstandardized beta, β Standardized Beta

Final models accounted for 5-23% of variation in scores (see Table 5.11).

Table 5.11

Adjusted R² of model blocks for each regression analysis.

<table>
<thead>
<tr>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Block</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

Chapter Summary

This chapter has presented the secondary analysis findings of the NMCAS nursing data. The sample was generally middle-aged and contained a significant proportion of nurses
who completed ALARM/ALSO courses, no longer worked in direct care, and had many years nursing experience.

Two of five hypotheses about relationships between years of intrapartum experience and nurses scale scores were supported when analyzing both nurses working and no longer working in intrapartum care. There were inverse relationships between years of experience and nurses’ attitudes towards electronic fetal monitoring and episiotomies. As nurses’ years of experience increased, nurses’ scores on these scales decreased, suggesting more negative attitudes towards these birth practices with increasing years experience. By contrast, there was no relationship between years experience and nurses’ attitudes towards electronic fetal monitoring when analyzing only nurses working in intrapartum care (Research question 8).

The hypothesis about nurses’ attitudes towards midwifery services was supported; nurses working in provinces/territories with midwifery legislation held more positive attitudes towards midwifery services than nurses who did not. However, there was no relationship between the number of years since midwifery legislation and nurses’ attitudes towards midwifery services.

Hospital level of employment predicted nurses’ attitudes towards the epidural analgesia and importance of vaginal birth scale. Nurses working at level three hospitals held more positive attitudes towards epidurals and more negative attitudes towards the importance of vaginal birth than nurses at level one hospitals. Attitudes towards the safety of birth, risk to the fetus, and electronic fetal monitoring did not differ by hospital level of employment.

A nurses’ choice of care provider was a strong predictor of nurses’ attitudes, irrespective of a nurses’ intrapartum status or level of hospital where they worked. Scale scores for nurses selecting a midwife reflected the most positive attitudes towards non-interventional
birth, the safety of birth, and doulas as compared to nurses selecting an obstetrician or family practitioner as care providers. Nurses selecting an obstetrician held the least positive attitudes toward non-interventive birth, the safety of birth, and doulas; whereas, for nurses selecting family physicians, attitude scores were between those of nurses selecting a midwife or obstetrician. Nurses selecting a family practitioner were most likely to work at level one hospitals and nurses selecting an obstetrician at level three hospitals.

Multivariate regression analyses supported bivariate findings and accounted for 5-22% of variation in scores. Controlling for ALARM/ALSO course completion and hospital level of employment, nurses choosing a midwife held more positive attitudes towards the safety of birth scale than nurses selecting an obstetrician. Similarly, controlling for experience and hospital level of employment, nurses choosing a midwife as compared to an obstetrician held more positive attitudes towards the importance of vaginal birth and more negative attitudes towards epidurals, and electronic fetal monitoring. Chapter 6 will discuss and explore the implications of the findings.
CHAPTER SIX: DISCUSSION

Introduction

This chapter includes discussion of selected findings from the secondary analysis of the NMCAS study nursing data. The findings are interpreted in relation to the theoretical framework, the sample, and current perinatal literature. Implications for research, education, and administration are also discussed.

Findings From The Secondary Analysis Of The NMCAS Nursing Data

The results indicated attitudes towards electronic fetal monitoring, episiotomies, epidurals, the importance of vaginal birth, and factors to decrease the cesarean section rate were not significantly related to years of experience when analyzing intrapartum nurses’ alone. Findings about nurses’ attitudes and years of experience contrasted with qualitative studies that suggested experienced nurses hold more positive attitudes towards vaginal birth and more negative attitudes towards technology and epidurals (Carlton et al., 2009; Graham et al., 2004; Sleutal et al., 2007). Analysis of data from nurses in my study; however, indicated, for nurses in clinical practice and nurses who previously worked in intrapartum care, increasing years of experience predicted more negative attitudes towards electronic fetal monitoring and episiotomies.

The findings from my study lend some support to the mere exposure effect and attitudes, as suggested theoretically by Zajonc (1968) and Grush (1973). Nurses working in provinces with midwifery care held more positive attitudes towards midwifery services than nurses working in provinces without regulated midwifery. Consistent with attitude formation theories (Bohner & Wanke, 2002), factors other than the mere exposure effect likely influence
nurses’ attitudes towards midwives because nurses working in provinces with midwifery regulation over long time frames did not have different attitudes.

Findings from this study indicated nurses working in a level three hospital held the most positive attitudes towards epidural analgesia and the least positive attitudes towards the importance of vaginal birth. Previous research conducted with physicians and obstetricians has also suggested hospital level of employment is related to providers’ practices and possibly attitudes (Carrol, Reid, Ruderman & Murray, 1991; Le Ray, Gaudu, Teboul, Cabrol & Goffinet, 2004; Le Ray, Carayol, Zeitlin, Breart & Goffinet, 2006; Moen, Holmen, Tolletsrud & Rolland, 2005). This study extends these findings to nurses. Nurses in level three hospitals may be more likely to be exposed to epidural analgesia and cesarean section than nurses at level one and two hospitals (Ontario Perinatal Partnership Program, 2006).

In my study, nurses’ selection of a midwife as opposed to an obstetrician as a care provider predicted more positive attitudes towards the safety of birth and the importance of vaginal birth, and more negative attitudes towards electronic fetal monitoring and epidural analgesia. Nurses who selected a family practitioner held attitudes between those who selected a midwife or obstetrician. Nurses working at a level three hospital were likeliest to select obstetricians for their care, whereas, those working in level one or two hospitals were likeliest to select a family practitioner. Because obstetricians may be likeliest to work at a level three hospital and family practitioners at a level one or two hospital (BC Perinatal Health Program, 2005/2006; Medves & Davies, 2005) these findings suggest nurses’ predominant provider exposures may relate to their provider choice and attitudes towards practice.
Experience Findings

The results from this study indicated experience was not a strong predictor of nurses’ attitudes, as hypotheses about years of experience and nurses’ attitudes towards the safety of birth, factors to decrease the cesarean section rate, epidurals, and the importance of vaginal birth were not supported. Only on the nurses’ episiotomy and electronic fetal monitoring scale scores did increasing years of experience correlate to more negative attitudes.

These findings are similar to those of McNiven and colleagues (2011) who performed a secondary analysis on the midwives’ data (n = 400) from the NMCAS survey. They found significant differences on only a handful of single items in the survey, between midwives with less than five years experience and midwives with greater than five years of experience (McNiven et al.). Midwives with more than five years experience were more positive towards the importance of vaginal birth as an empowering life experience, and less positive towards administration of epidurals upon patient request, episiotomies’ ability to prevent pelvic floor relaxation, and the ability of cesarean section to prevent urinary incontinence and sexual dysfunction. (McNiven et al.).

Klein and colleagues (2010) analyzing data from obstetricians completing the NMCAS survey (n = 800) suggested age may be a significant variable influencing attitudes. They found multiple significant differences in ‘older obstetricians’ (> 40 years) and ‘younger obstetricians’ (< 40 years) attitudes towards birth. Age was not examined in this study because evidence about relationships between age and attitudes was highly inconsistent (See appendix A). Moreover, experienced nurses may be of similar age to new nurses because many individuals choose nursing as a second or even third career (Hom, 2003). Because age variation would complicate
interpretation of the influence of age on attitudes intrapartum experience was viewed as a more accurate proxy variable for nurses’ exposures.

It is difficult to interpret these results in the context of attitude theory. It was assumed nurses with differing years of experience, particularly nurses with more perinatal experience, would have formed different attitudes towards birth because they would have been exposed to a range of attitudes and evidence about technologies. Novice nurses are exposed to current research during their education, which does not support routine electronic fetal monitoring use, episiotomies, increasingly supports home birth, and raises concerns about high rates of cesarean section (Alfirevic, Devane, & Gyte, 2010; Hodnett, Gates, Hofmeyr, Sakala & Weston, 2011; Hutton, Reitsma & Kaufman, 2009; Janssen et al., 2002; 2009; Klein et al., 1994; Rosen, 2004; Society of Obstetricians and Gynecologists Canada, 2008). Nurses’ attitudes may be influenced less by years of experience than by prevailing perinatal cultural attitudes towards birth, which exert a powerful influence (Smith & Hogg, 2008). In other words, new and experienced nurses may have similarly negative attitudes towards technologies and epidurals and more positive attitudes towards vaginal birth and birth safety because of similar current exposures to evidence and practice guidelines.

Although new nurses may have negative attitudes towards technology, they may have difficulty expressing these attitudes in practice because they are socialized into a technological perinatal culture. Nurses often work in environments with high rates of electronic fetal monitoring use, epidural analgesia, and cesarean sections (Carlton et al., 2009; Ruhl et al., 2006). Experienced nurses and care providers perceived newer nurses hold more positive attitudes towards electronic fetal monitoring and epidurals because these nurses use them frequently (Carlton et al.; Graham et al., 2004; Sleutal et al., 2007); however; in these technological
perinatal environments, new nurses may fear consequences if they promote non-interventative birth (Hodnett, 1997). Newer nurses may be seeking acceptance by modeling peers behaviours and may be more apt to provide care fitting with their interpretation of unit norms (Kardong-Edgren, 2001). Thus, the behaviour of less experienced nurses may not reflect their attitudes.

Newer nurses may face difficulty expressing their attitudes because of their position as ‘junior’ staff. In a grounded theory study about nurses’ agency for care, Lyndon (2008) indicated experienced nurses held more confidence in their beliefs and were more successful negotiating patient safety. Simpson and colleagues (2006), in their descriptive study of 54 nurses and 38 obstetricians from four different community hospitals, described experienced nurses as having better rapport with obstetricians than less experienced nurses, because obstetricians have increased trust in experienced nurses’ knowledge and skills (2006). It may be possible experienced nurses have greater success negotiating care that is synchronous with their attitudes, translating into different patterns of intervention and pain management strategies in their patients.

**Hospital Level Of Employment Findings**

Attitude formation (Bohner & Wanke, 2002; Walther & Langer, 2008; Zajonc, 1968) and social identity theories (Smith & Hogg, 2008) would suggest a nurses’ practice environment and his/her exposure to a dynamic mix of clients, providers, policies, and practice norms significantly influence nurses’ attitudes. Nurses’ practice environments were not examined; however, the findings from my study about hospital level of employment and choice of provider raise questions about practice environments’ influences on nurses’ attitude formation. Specifically, level three hospital employment was a significant predictor of nurses’ positive attitudes towards epidurals and less positive attitudes towards the importance of vaginal birth.
More positive attitudes towards epidurals at level three hospitals is consistent with research examining 249 nurse-midwives from 11 hospitals and their perception of care by hospital of employment (Mead & Kornbrot, 2004). When presented with the same clinical scenario, nurse-midwives working at high intervention institutions were significantly more likely to perceive a patient would need an epidural during labour than nurse-midwives working at low-intervention institutions (Mead & Kornbrot). It is possible nurse-midwives viewed epidurals more favourably because they worked at high-intervention institutions with higher rates of epidurals. The increased accessibility of epidurals and frequency of cesarean sections at level three hospitals (Ontario Perinatal Partnership Program, 2006) may contribute to more positive attitudes in those areas because nurses have greater exposure than those at level one and level two hospitals. Hospital level of employment may in part serve as a proxy variable to workplace norms because normative behaviours around the use of epidurals and cesarean sections may vary by hospital level.

In this study, findings of differences in attitudes by hospital level raise speculation about whether nurses at different hospital levels have different practice behaviours. Barrett and Stark (2010) surveyed 65 nurses from three hospitals about their labour support behaviours and concluded nurses working at institutions with higher epidural and cesarean section rates reported “fewer labour support behaviours” (p.16). Barrett and Stark did not describe demographics or labour support behaviours measured so it is difficult to interpret the significance of their findings. Further research about the relationships between practice behaviours, hospital environment, and nurses’ attitudes is warranted.

The results from this secondary analysis did not reveal significant relationships between nurses’ attitudes and electronic fetal monitoring by hospital level of employment.
Unlike the rates of epidural analgesia and cesarean sections that have been documented to differ by hospital level at a provincial level, provincial figures to support differing rates of electronic fetal monitoring by hospital level could not be found (Ontario Provincial Perinatal Report, 2006). The Public Health Agency of Canada’s (2009) What Mothers’ Say study suggests in 91% of all Canadian labours electronic fetal monitoring is used; this high percentage would imply most nurses at all hospital levels use or are exposed to routine electronic fetal monitoring. As a result of similarities in rates of electronic monitoring across hospital level, nurses may have developed similar attitudes towards its use.

My findings showed nurses’ scores on the safety by mode of birth scale did not differ significantly by hospital level of employment. Even though level two and three hospitals may care for more high-risk patients, it is possible increased provider resources and decreased nurse-patient ratios (Canadian Pediatric Society, 2006) at level two and three hospitals might mitigate the differences in nurses’ attitudes towards the safety of birth by hospital level. Research about nurses’ perceptions of practice in rural British Columbian hospitals suggested nurses have concerns about safety related to infrequent exposure to birth, high patient loads, and lack of nursing staff skilled in maternity care (Grzybowski, Kornelson, & Cooper; Mackinnon, 2008; Mackinnon, 2010). Level three hospital designation requires on-call access to a neonatologist, pediatric anesthesia, and surgical consultation, and on-site access to a pediatrician and respiratory therapist, and level two hospitals have access to an on-site respiratory therapist and pediatrician when infants are receiving mechanical ventilation (Canadian Pediatric Society). Thus, the nature of high-risk exposures may affect nurses’ perceptions towards the safety of birth; nurses at level one hospitals may have infrequent exposure to high-risk situations requiring
patient transfer (Mackinnon, 2008); whereas nurses from level two and level three hospitals are likelier to have regular exposure to high-risk situations with adequate resources.

**Education Findings**

Nurses who participated in this study and completed the ALARM(ALSO course did not have different attitudes towards the safety of birth than nurses who did not. Because I could not control for the date of ALARM(ALSO course completion, it may be possible there are differences in nurses’ attitudes towards birth safety following completion of ALARM(ALSO courses that did not persist. The longevity of attitude change from educational interventions is not well documented, as studies reviewed performed post-test attitude measures only up to three months post-education (Bernaix et al. 2008; Sejr & Osler, 2002).

It is possible education has an ephemeral effect on attitudes unless attitudes are in congruence with workplace norms and nurses are able to express them; perinatal research has suggested increased education alone may be insufficient to induce behaviour and attitude changes (Hodnett et al., 2002; Ploeg et al., 2007). In a randomized controlled trial of nurses’ effectiveness for labour support, Hodnett and colleagues provided 2-day labour support training to registered nurses at 13 hospitals. They found no differences in rates of cesarean sections and epidurals between patients receiving usual care and patients receiving care from trained labour support nurses. Because continuous labour support is associated with decreased cesarean sections and epidural use, they concluded working in a high intervention culture superseded the effect of continuous labour support (Hodnett et al.). The findings undermine the utility of brief educational interventions, such as doula training (Davies and Hodnett, 2002; Payant et al., 2008; Ruhl et al., 2006; Sauls, 2007) as means to influence nurses’ attitudes and practice behaviours.
Using ALARM/ALSO course completion to measure the influence of education on risk attitudes may not have been adequate because this variable does not take into account nurses’ undergraduate and continuing education or previous experiences which may exert a cumulative effect on attitudes. Vedam and colleagues (2009) highlight examples of this in their study which surveyed 1,893 nurse-midwives in the United States about their attitudes towards home birth. The authors found a positive relationship between exposure and attitudes towards home birth; the more experiences with home birth, the more positive nurse-midwives’ attitudes. Controlling for 29 other socio-demographic and educational factors, undergraduate clinical exposure to home birth was found to significantly predict more positive home birth attitudes, suggesting undergraduate experiences are formative in nurses’ attitudes (Vedam et al.). Maternity leaders have recognized the role of undergraduate education in attitude formation, in the context of the need for undergraduate education to be interdisciplinary (McNiven et al., 2011; Saxell, Harris & Elarar, 2009). Researchers speculate early exposure to other disciplines and their practice philosophies will improve collegial relationships, patient safety (Saxell et al.) and help to develop “shared attitudes” among providers (McNiven et al., p.19). Practicing providers are also exposed to interdisciplinary programs such as Managing Obstetrical Risk Efficiently (More\textsuperscript{OB}), a Canadian program about obstetrical risk management, which mandates staff members of different disciplines (midwifery, family practice, nursing, and obstetricians) to attend (More\textsuperscript{OB}, 2011).

The findings do not undermine relationships between education and risk attitudes; brief education sessions, such as ALARM/ALSO courses may have variable impact on attitudes and their influence may depend on a providers’ cumulative experiences and education. It is possible long-term peer interdisciplinary education, such as More\textsuperscript{OB} can significantly influence group
attitudes. Theoretically, peer education may contribute to new workplace social norms (Smith & Hogg, 2008). For example, if education and protocols recommend oxytocin augmentation for labour dystocia, providers may develop more positive attitudes towards oxytocin augmentation in patients with limited labour progress rather than non-interventative options, such as ambulation and position changes.

Smith and Hogg (2008) explain the primary process of group attitude change; group representatives who are highly respected or experienced (i.e. experienced nurses, discipline heads, or nurse educators) persuade other group members to change their attitudes. Considering attitude formation concepts, such as social reinforcement and modeling, repeated positive or negative exposure or ‘pressure’ from group representatives to practice as per educational interventions could influence nurses’ attitudes (Bohner & Wanke, 2002; Smith & Hogg). Because there is little evidence demonstrating benefit from peer education in maternity care (Reeves et al., 2008; Saxell et al., 2009) more research would be useful. It may be pragmatic for educators and committee members of programs such as MoreOB, to analyze core attitudes driving these educational programs. It is possible organizing peer education around emergencies and risk situations instead of normal birth may direct provider attitudes away from normal birth promotion.

**Choice Of Care Provider Findings**

Differences by choice of care provider in the nurse participants in this study were highly significant. Nurses’ choice of care provider seemed to correspond to a set of attitudes consistent with the generally reported attitudes of their care provider of choice (Klein et al., 2009). Klein and colleagues found obstetricians held the most positive attitudes towards interventative birth practices and midwives the least. In this study, nurses who selected an
obstetrician on average held the most positive attitudes towards interventative birth practices while those who selected a midwife held the least positive attitudes. The finding that nurses’ selecting a family practitioner held attitudes between nurses who selected an obstetrician or midwife also fits well with Klein and colleagues’ findings that attitudes of family practitioners towards birth generally fell between those of midwives and obstetricians.

Because nurses were relatively evenly divided on their choice of provider and provider choice predicted attitudes towards birth, this would seem to suggest nurses fall into three attitudinal groups. Similarly, Klein and colleagues (2011) surveyed 1,318 nulliparous women attending different types of providers and found women’s attitudes towards birth differed depending on their care provider of choice. In other words, women’s attitudes corresponded to the generally reported attitudes of their provider of choice. Women who selected a midwife for their care held the most negative attitudes towards technology and those who selected an obstetrician held the most positive (Klein et al, 2009; 2011). Cross-sectional studies like those reported here cannot determine the effect of the providers’ expressions of attitudes or patients’ attitudes held prior to provider contact. Akin to patients, nurses’ affinity for different providers may reflect underlying attitudes towards birth.

The findings from this study suggest practice environment may influence a nurses’ choice of provider; higher number of nurses selected an obstetrician at level three hospitals and family practitioners at level one and two hospitals.Proportionately, more obstetricians may work at level three hospitals and family practitioners at level one and two hospitals (BC Perinatal Health Program, 2005/2006; Medves & Davies, 2005). Nurses’ attitudes may be influenced by the predominant type of provider with whom they have contact. This is consistent with social
identity theory (Hogg & Turner, 1987; Turner, 1982) which suggests nurses’ attitudes will gravitate towards others in their environment.

The influence of other care providers on nurses’ attitudes is supported in Regan and Liaschenkos’ study (2007). When nurses were presented with a photo of a labouring woman their perceptions of the safety of birth were rated based on their narratives about how they would provide care for that woman. Nurses at hospitals with midwifery care were more likely to view birth as safe (47%) than nurses working in a hospital with no midwifery care (19%). Nurses’ repeated interactions with care providers holding particular attitudes may shape nurses’ attitudes differently. This explanation oversimplifies a nurses’ exposure to different care providers; however, because nurses can work regularly with obstetricians, midwives, and general practitioners at the same institution (Klein et al., 2009). Other variables that contribute to a nurses’ choice of care provider remain poorly understood.

Province Of Employment Findings

The findings from this study support the influence of exposure on nurses’ attitudes towards midwifery practice because nurses from provinces with midwifery care were more positive towards their practice than nurses from provinces without that care. The lack of relationship between increased years of midwifery regulation and nurses’ attitudes suggests factors other than mere exposure influence attitudes. Nonetheless, the finding is surprising, because attitude variation in midwifery-regulated provinces may result from different provincial practice models. For example, in Quebec, midwives primarily practice in birth centres and not with nurses (McNiven et al., 2011). Unlike some provinces where midwives work directly with nurses in hospital, in Ontario the second attendant during birth are midwives rather than nurses (Belle-Brown et al., 2009). Thus, nurses in Ontario may work only in parallel to midwives in
hospital. Even though midwifery has been regulated for 15 years ago in Ontario and 10 years in Quebec, nurses in those provinces may have varying exposures to midwifery practice.

In contrast, provincial attitude variation was supported in McNiven and colleagues’ (2011) secondary analysis of the midwifery data from the NMCAS study. Quebec midwives were less favourable towards epidural analgesia and active birth management than midwives from British Columbia and Ontario. Authors speculated because Quebec midwives work in birth centres with less exposure to epidurals their attitudes are less positive towards them.

Other unmeasured variables may influence nurses’ attitudes towards care providers, such as the broader socio-cultural context. For example, Douglas (2006) explained, for the Canadian Inuit, midwifery care is viewed positively because it facilitates birth within the community, which was the historical pattern (Wagner, Epoo, Nastapoka & Harney, 2007). Although not analyzed because of a small sample size, nurses’ attitudes towards midwifery in the Nunavut may be more favourable because they are shaped by factors other than practice environment.

Drawing conclusions using province of residence as a predictor may be problematic because the representativeness of the sample for this study was not adequately established. Using province of residence as surrogate for midwifery exposure assumes nurses in each province are equally exposed to midwives and similar practice models. Kreiner (2009) examined the implementation of midwifery care in Manitoba and indicated midwifery practices were unevenly dispersed (2009). Similarly, the Canadian Association of Midwifery (CAM) (2010a) reports variable distribution of midwifery practices in all provinces with midwifery legislation. Some midwives work in Newfoundland and Labrador and the Yukon, even though midwifery is not regulated in these provinces and territories (CAM, 2010b). Nurses within provinces and
territories may have varying exposures to midwifery care; influencing within-province attitude variation. Findings using this variable should be interpreted cautiously.

Lastly, lack of variation between provinces with midwifery care may relate to the dependent variable being a single question which does not adequately measure the construct of midwifery attitudes. Nurses may be generally positive towards the regulation/legislation of midwifery care, but may vary on other attitudes towards midwives, such as midwives’ clinical practice behaviours and working relationships.

**Research Implications**

Attitudes influence behaviour, but direct relationships between attitudes and behaviour are not generally supported (Azjen & Cote, 2009; Ajzen & Fishbein, 2005); therefore, it is important to understand whether nurses’ attitudes correlate to nurses’ behaviours. Further research should examine differences by demographics and relationships between attitudes and nurses’ practice behaviours in a multi-site study. A study could measure nurses’ attitudes with the Nursing Attitude and Belief Questionnaire and compare differences on demographic characteristics to corroborate or refute findings from this study. Using retrospective chart reviews, a researcher could match nurses’ scores with their patient charts to determine whether nurses’ positive or negative attitudes towards electronic fetal monitoring or epidurals correlate to increased/decreased frequency of their use and different birth outcomes. Research supports variation of intervention, technology rates, and care provider distribution by geographic region and at hospitals of the same level (Davies & Hodnett, 2002; Graham et al., 2004; PHAC, 2009). It would be important to control for patients’ provider type (midwife, physician, and obstetrician), factors influencing workplace culture (i.e. epidural availability, centralized electronic fetal monitoring), and patients’ risk factors to increase confidence that differences in
epidural and electronic fetal monitoring use would be related to nurse’s attitudes and behaviour (Radin, Harmon, & Hanson, 1993).

Clinical Significance

The practical application of these findings is limited because nurses’ practice behaviours were not measured. It is not straightforward to speculate how nurses’ varying attitudes towards some scales, such as electronic fetal monitoring, epidurals, and doulas, may translate to practice behaviours. Nurses who have more positive attitudes towards doulas may work effectively and report good working relationships with doulas, but no evidence documents behaviours. Speculation about how attitudes for other scales, such as decreasing the cesarean section rate, episiotomies, and the safety of birth, influence practice behaviours is difficult. For example, because nurses do not perform episiotomies, it is difficult to interpret how variation in attitudes would affect a nurses’ practice. It may be possible nurses with more negative attitudes would be likelier to advocate for the patient against the episiotomy.

The findings of differences by choice of provider suggest relationships between scales, e.g. safety of birth and doulas. An approach to examine relationships between nurses’ attitudes and practice would be an observational and survey study. The study design would involve nurses completing the NMCAS nursing questionnaire and having their practice behaviours observed to determine how their attitudes correspond to their practice behaviours. Qualitative research that explores relationships between nurses’ attitudes and practice behaviours would be useful because it could illustrate potential discord between nurses’ attitudes and behaviour and reasons for the lack of consistency.

Specifically, a critical ethnography could illuminate power relationships and structural features in labour and delivery units and their effects on nurses (Personal communication, W.
Hall, July 18\textsuperscript{th}, 2011); as research suggests power relationships influence nurses’ attitude expression (Varcoe et al., 2004). For example, if a provider requests electronic fetal monitoring and the nurse believes it to be unnecessary, he/she may consider previous experiences in determining how to act. If the nurse perceives the provider will respond negatively to opposition, this may limit the nurses’ ability to act in accordance to his/her attitudes.

Lastly, given differences in nurses’ attitudes by hospital level of employment, qualitative research that explores the influence of other care providers and workplace cultures on nurses’ attitudes would be useful.

\textit{Nursing Questionnaire}

The Nursing Attitudes and Belief Questionnaire would benefit from refinement and pre-testing of revisions with a group of nurses. The low scale reliability of the electronic monitoring scale may relate to an insufficient number of items to understand nurses’ attitudes towards this technology. Research suggests nurses may use electronic fetal monitoring not only for reasons of safety and to decrease workload, but also because they are not confident in intermittent auscultation skills, feel electronic fetal monitoring is more reliable, and is readily accessible whereas doptones may not be (Davies & Hodnett, 2002; Graham & Graham, 2004; Priddy, 2004). Inclusion of these items in future distributions of this survey might improve scale reliability.

In order to gain further understanding of differences in nurses’ attitudes towards birth, additional demographics could be included in revisions. Because education may influence the attitudes of perinatal nurses, educational variables, such as labour support courses, previous midwifery training, baccalaureate or diploma education, and highest degree held may be appropriate questions to measure differences.
Labour Support Questionnaire

Although labour support is an important aspect of perinatal nurses’ work (Miltner, 2000), the nursing attitudes questionnaire does not measure nurses’ attitudes towards labour support. In any survey study of nurses’ attitudes, Sauls’ Labour Support Questionnaire may be an additional instrument to include. This 27 item instrument has undergone psychometric evaluation and demonstrated: content validity by expert review and a content validity index of 0.94, construct validity through exploratory factor analysis, and a internal consistency reliability using Cronbach’s alpha coefficient of .90 (Sauls, 2004, 2006). The Labour Support Questionnaire examines nurses’ perceptions of the importance of labour support actions (Sauls, 2006). Use of this instrument would be important to understand relationships between attitudes towards birth and providers, practice behaviours, and views towards labour support.

Implications For Education

Although nurses’ attitudes may not necessarily predict nurses’ behaviours, the Nursing Attitudes and Belief Questionnaire could be administered to perinatal nurses by hospital-based educators. By using it to engage nurses to think about their attitudes towards technology and care providers, educators could initiate discussions about current evidence, workplace norms, and barriers affecting nurses’ practice. As part of the process, educators could also consider unique unit characteristics, such as distribution of care providers, rates of epidurals, electronic fetal monitoring, cesarean sections, and inductions, and differences in nurses’ demographics to make inferences about reasons for variations in nurses’ attitudes. It would be equally important for educators to complete this survey and reflect upon how their attitudes compare to those of staff nurses in order to increase mutual understanding and facilitate improved communication between staff members and educators. Moreover, distribution of this survey might reveal
discrepancies between nurses’ positive attitudes towards non-interventative birth and actual birth practices, thereby inviting dialogue with nurses about both personal and structural barriers to practice according to their attitudes.

**Implications For Administration**

Nursing administrators could assist understanding about how attitudes towards epidurals and electronic fetal monitoring influence practice behaviours by linking dialogue with staff, findings from a distribution of the Nursing Attitudes and Belief Questionnaire at their unit, and practice audits. Given patients of nurses who use more psychosocial charting may have differing outcomes (Radin, Harmon, & Hanson, 1993), an audit could examine the amount nurses’ document labour support activities or discussion with patients about options other than epidurals for pain relief. To understand a nurses’ role in epidural analgesia use, nurses could be asked to document who initiated the epidural: was it patient request, a mutual decision between nurse and patient, a providers’ suggestion, or the nurses’ decision (Personal communication with W. Hall, December 12th, 2010)?

Understanding variation in nurses’ attitudes and relationships to behaviours and patient outcomes is important because it may expose groups of nurses with positive attitudes towards birth with appropriate interventions and factors that contribute to their attitudes. Hypothetically, it could be found some groups of nurses, such as those with previous doula experience have more positive attitudes towards birth with minimal intervention and their practice reflects these attitudes. These nurses might provide more labour support and average fewer cesarean deliveries. It would be important for administration to understand these types of variations as this could provide impetus to provide new or current staff mentoring opportunities with these nurses, taking care to facilitate success by providing adequate staffing.
Interdisciplinary Collaboration

Notwithstanding the importance of documenting variation about nurses’ attitudes and behaviours in practice, strategies to influence positive changes in nurses’ practices may not be effective without consideration of other providers’ attitudes. For example, providing education about intermittent auscultation to newer nurses with favourable attitudes towards electronic fetal monitoring may be of little value if other care providers or nursing staff do not support a reduction in electronic monitoring. Distributing a NMCAS Questionnaire to all care provider groups at a particular institution could provide administrators with information about similarities and differences in providers’ attitudes. An appropriate venue to explore results could be at monthly interdisciplinary meeting (Schmidt, Claesson, Westerholm, Nilsson, Svarstad, 1996). Discussions about areas of agreement or disagreement might elicit more comprehensive strategies to maintain or change current attitudes and associated practices.

Limitations

A limitation of the study is the use of a convenience sample because it can increase the sampling error, as the sample may be different from the population of nurses who did not participate (Burns & Groves, 2001). Because no national perinatal nursing database could be located, comparisons between the proportion of nurses sampled in each province/territory and national proportions may not be valid. Nova Scotia may be overrepresented because the maternal/newborn workforce in Nova Scotia accounts for 3.4% of the total maternal nursing workforce \( n = 14,463 \) in Canada (CIHI, 2008), but Nova Scotia nurses accounted for 16% \( n = 87 \) of the total NMCAS sample. Moreover, only about 5% of the maternal/newborn nursing population had taken the ALARM course (Windrim, Ehman, Carson & Milne, 2006), but 42% of
the sample for this study completed these courses, which may have biased the findings towards the attitudes of ALARM/ALSO-certified nurses.

The simultaneous use of paper and web-based survey administration may be a weakness because it must be assumed nurses answered the questionnaire in the same way regardless of the mode of survey delivery (Dillman, 2007). Research comparing face-to-face, telephone, and paper-based interviews has demonstrated participants answer differently depending on the mode of administration (Dillman). Klein and colleagues (2009) reported a response rate of 61.5%. Because nurses took surveys to workplaces for colleagues to complete and it is unknown how many participants were reached via the Listserv or informed of the online survey, it is impossible to determine an accurate response rate for nurses.

A limitation to this study was the considerable length of the nursing questionnaire (97 questions). Self-administered questionnaires are also limited due to their non-experimental nature (Polit & Beck, 2010). Associations between variables can be established, but causal relationships cannot.

In addition, power estimates to detect differences towards midwifery in midwifery regulated provinces (82% power), and attitudes towards risk to the fetus by hospital level of employment (78% power) were borderline and the risk of type two error increased.

Lastly, violation of regression model assumptions, (homoscedasticity and normal distribution of residuals) occurred in two models. When this assumption is violated, the 95% confidence intervals of the Betas, SE of Betas, and the significance values of B may be invalid, although the regression coefficients will be the same (Tabachnick & Fidell, 1989).
Chapter Summary

This chapter has explored the findings from the secondary analysis in relation to the current research, theoretical framework, and sample. Nurses working at level three hospitals held more favourable attitudes towards epidurals and less favourable attitudes towards the importance of vaginal birth than nurses at level one hospitals. Nurses who selected a midwife as their care provider held more favourable attitudes towards non-interventative birth than nurses selecting a family practitioner or obstetrician. Nurses with more experience held more negative attitude towards electronic fetal monitoring and episiotomies; although, it may be nurses attitudes are not strongly influenced by years of experience as correlations were weak.

There were no relationships found between nurses who completed the ALARM/ALSO course and nurses who did not on attitudes towards birth safety and no relationship between nurses’ attitudes towards midwifery care in provinces with legislated midwifery. Using ALARM/ALSO course completion to measure risk exposure may not have been sufficient because other variables including previous experiences and educational background may also influence attitudes towards the safety of birth, but were not measured. Likewise, province of employment may have been not specific enough to measure attitudes towards midwifery care, as nurses may be variably exposed to midwifery care by province and there was a lack of control for other factors, including general socio-cultural attitudes. Inclusion of other demographic variables, such as previous education and experiences could explain more variation of scores in further research using the NMCAS questionnaire.

Findings of differences by hospital level of employment and choice of provider lend support towards the role of exposure and social identity theory in nurses’ attitudes and raise speculation about whether nurses’ attitudes share relationships with practices in their workplace.
and the predominate type of care provider with whom they work. A multi-site mixed methods study has been proposed that would offer insight about how nurses’ attitudes towards birth at different hospitals relate to practice behaviours.

Differences in nurses’ attitudes by workplace status, experience, and choice of provider raise questions about the clinical significance of attitudes. Further research could examine relationships between attitudes and practice by corroborating chart data or observing nurses’ behaviours in relation to attitudes scores. Using qualitative approaches to understand discrepancies between attitudes and practice would be valuable. The NMCAS survey may be a valuable tool for educators, other providers, and administrators to facilitate understanding similarities and differences in nurses’ attitudes and inter and intra-disciplinary dialogue about workplace norms, and barriers towards collaboration and appropriate technology use.

**Thesis Summary**

This study used a secondary analysis of data to explore whether Canadian nurses differ in their attitudes towards birth and contributed to a paucity of research examining differences in perinatal nurses’ attitudes towards birth. A theoretical framework was constructed based on relevant attitude literature to develop hypotheses about perinatal nurses’ attitude formation and change. Social identity theory was used to understand processes by which nurses’ attitudes develop and change. The assumptions, limitations, and strengths of the national Canadian cross-sectional survey design were discussed as well as reliability and validity testing of the questionnaire. The sample of 545 nurses may have been biased towards the attitudes of nurses from Nova Scotia who have completed the ALARM/ALSO course.

The findings demonstrated some differences in nurses’ attitudes towards birth by demographics. Nurses’ attitudes towards the safety of birth did not differ by ALARM/ALSO
course completion, nor did nurses’ attitudes in provinces with midwifery services. Nurses from
level three hospitals held the most positive attitudes towards epidurals and the least positive
attitudes towards the importance of vaginal birth. Nurses with more experience held more
negative attitudes towards electronic fetal monitoring and episiotomies, while nurses who
selected a midwife as their care provider held the most positive attitudes towards non-
interventative birth. Use of a nursing attitude survey within hospitals may assist in the
development of comprehensive strategies to positively influence interdisciplinary collaboration
and appropriate intervention use.
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Inclusion Criteria: Studies within last 10 years (> or equal to 2000)
Studies or reviews which analyze nurses' attitudes on the basis of demographics
Perinatal studies greater than 10 years old

Exclusion Criteria: Studies greater than 10 years old (before 2000)
Studies or reviews which describe attitudes, but do not do sub-analyses of factors which influence attitudes
Research not available in print, research not in English
Nursing Research not involving patients, clinical care, and care providers
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<td>26</td>
<td>3321</td>
<td>62.50% Belgium</td>
</tr>
<tr>
<td>27</td>
<td>291</td>
<td>79% Norway - 14 Nursing Homes</td>
</tr>
<tr>
<td>28</td>
<td>88</td>
<td>n/a Taiwan - 1 Hospital</td>
</tr>
<tr>
<td>29</td>
<td>335</td>
<td>not described New York-1 Hospital</td>
</tr>
<tr>
<td>30</td>
<td>46</td>
<td>100% Spain - 1 intensive care unit</td>
</tr>
<tr>
<td>31</td>
<td>84</td>
<td>53.50% England - 1 Hospital</td>
</tr>
<tr>
<td>32</td>
<td>352, 249 used d/t missing data</td>
<td>35% Australia - 37 Emergency Departments</td>
</tr>
<tr>
<td>33</td>
<td>68</td>
<td>85% Ireland-1 hospital</td>
</tr>
<tr>
<td>34</td>
<td>145</td>
<td>55.80% United Kingdom - not described</td>
</tr>
<tr>
<td>35</td>
<td>71 oncology and 52 maternity</td>
<td>not described Israel - One hospital</td>
</tr>
<tr>
<td>36</td>
<td>200</td>
<td>95% Israel - several hospitals</td>
</tr>
<tr>
<td>37</td>
<td>175</td>
<td>88% Spain - 18 Units</td>
</tr>
<tr>
<td>38</td>
<td>178</td>
<td>94% Netherlands - 39 nursing homes</td>
</tr>
<tr>
<td>39</td>
<td>392</td>
<td>not described United States - 10 Hospitals</td>
</tr>
<tr>
<td>40</td>
<td>41</td>
<td>100% Sweden - not described</td>
</tr>
<tr>
<td>41</td>
<td>401</td>
<td>not described Michigan - AWHONN Conference, perinatal listservs</td>
</tr>
<tr>
<td>42</td>
<td>155</td>
<td>77.50% Taiwan - 7 hospitals - Casualty Nurses</td>
</tr>
<tr>
<td>43</td>
<td>425</td>
<td>96% Singapore - One Unit</td>
</tr>
<tr>
<td>44</td>
<td>350</td>
<td>44% United States</td>
</tr>
<tr>
<td>45</td>
<td>347</td>
<td>79% Denmark -3 units at one hospital, primary care nurses</td>
</tr>
<tr>
<td>46</td>
<td>535</td>
<td>72% Norway - 5 nursing homes, 3 Home care districts, medical/surgical ward</td>
</tr>
<tr>
<td>47</td>
<td>236</td>
<td>14% Texas</td>
</tr>
<tr>
<td>48</td>
<td>33</td>
<td>n/a United States</td>
</tr>
<tr>
<td>49</td>
<td>211</td>
<td>38% London - 1 hospital</td>
</tr>
<tr>
<td>50</td>
<td>1824</td>
<td>not described Taiwan - 3 hospitals</td>
</tr>
<tr>
<td>51</td>
<td>119</td>
<td>14.9% - 28.6% United States - 3 facilities, Medical Centre, Acute Rehabilitation Centre, Skille</td>
</tr>
</tbody>
</table>
Nursing Questionnaire

We would be grateful if you would take the time to complete the following questionnaire. Please complete all questions. Space has been provided for any comments you may wish to make at the end of the questionnaire.

This section pertains to demographic information.

1) Gender:
   ☐ Male
   ☐ Female

2) Age:
   ______ years old

3) Are you married or in a common-law relationship?
   ☐ Yes
   ☐ No

4) Have you or your partner (present or previous) ever given birth?
   ☐ Yes
   ☐ No

5) Currently, I work in: (Check all that apply to you)
   ☐ BC ☐ MB ☐ PEI ☐ NL ☐ NU
   ☐ AB ☐ ON ☐ NB ☐ YT ☐ Not Applicable
   ☐ SK ☐ QC ☐ NS ☐ NT

6) How many years have you been working as a nurse?
   ______ years

7) Currently, in which of the following maternity care services are you involved? (Check all that apply to you)
   ☐ Antenatal care
   ☐ Intrapartum care
   ☐ Postnatal care
   ☐ Non-maternity patient care services in the hospital
   ☐ Other
   If you chose 'other'; please specify:
   ______________________________________
   ______________________________________
   ______________________________________
   ______________________________________

8) Regarding intrapartum nursing care, what is your status?
   ☐ I see myself continuing to provide intrapartum care during the next five years.
   ☐ I see myself stopping the provision of intrapartum care during the next five years.
   ☐ I used to provide intrapartum care but have stopped.
   ☐ I have never provided intrapartum care since my nursing school training.

9) For how many years have you been providing or did you provide intrapartum care?
   ______ years

10) If you are currently providing or have provided intrapartum nursing care in the past, what factors have motivated you to do so? (Check all that apply)
    ☐ I value(d) the particular relationships that develop(ed) with patient/family around birth.
I have/had managed the balance between providing intrapartum care and my personal life.
I feel/felt committed to provide this service to my community.
In my setting/situation, it is/was not possible to practice without providing labour and delivery nursing care.
If I give/gave up intrapartum nursing care, I would feel/have felt that I have abandoned my patients.
I believe(d) attending births is/was a rare privilege.
I enjoy(ed) the challenge of maternity care.
Attending births is/was a central part of who I am.
I enjoy(ed) supporting women in labour.
I believe(d) that participation in rescuing a fetus in a crisis is one of the most satisfying things that I do/did.
I like(d) dealing with the unexpected.
I feel/felt strongly motivated to work in Women’s Health.
I like(d) providing service to healthy young people.
Other
If you chose 'other'; please specify:

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

11) If you have never provided or plan to discontinue or have discontinued providing intrapartum care, what are/were your reasons? (Check all that apply to you)
Family commitments
Fear of litigation
Inadequate compensation levels
High cost of malpractice insurance
Retirement
Politics of healthcare
Not enjoying attending births anymore
Trend toward primary elective cesarean section
Personal physical limitations
Unsupportive interprofessional working relationships
Planning to limit my nursing care to nonobstetric patients
On-call requirements
Hospital administration policies
My hospital will stop/has stopped providing intrapartum maternity services
Fatigue/sleep deprivation

Ready for a career change

Advancing my education

Other

If you chose 'other'; please specify:

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

12) If you are currently providing intrapartum nursing care, approximately how many births did you participate in, in the last 12 months?

________ births

13) Currently, most of my intrapartum nursing care, is provided in the following setting:

☐ A community (Level I) hospital

☐ A Level II hospital

☐ A Level II teaching hospital

☐ A tertiary (Level III) teaching hospital

☐ I don’t provide intrapartum nursing care

☐ Other

If you chose 'other'; please specify:

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

14) Have you taken an Advanced Life Support in Obstetrics (ALSO) and/or Advances in Labour and Risk Management (ALARM) course?

☐ Yes

☐ No

15) If you or your partner were pregnant today, with an apparently normal pregnancy, who would you prefer to deliver your baby? (Check only one)

☐ An Obstetrician

☐ A Family physician

☐ A Midwife

4

This section contains questions pertaining to your opinions/beliefs regarding different clinical
conditions in maternity care. Some of the questions may involve activities in which you personally
are not engaged or where you do not make the decisions. Nevertheless, we are asking your
opinion about what you might think is the best approach. Even if you have not worked in this
area for many years, we would appreciate knowing your views. Make your choice by selecting the
box from the scale that most accurately represents your opinion. (The scale ranges from strongly
disagree to strongly agree).

16) If a woman has had a previous cesarean section, a
scheduled repeat cesarean section can improve
newborn outcome.
17) If a woman has had a previous cesarean section, a
scheduled repeat cesarean section reduces the
chance of litigation.
18) Childbirth can only be considered normal in
retrospect.
19) The most important determinant of a successful
birth is the woman’s own confidence in her ability
to give birth.
20) Home birth is more dangerous than hospital birth,
even in an uncomplicated pregnancy.
21) If available, for women at no apparent risk, out of-
hospital birth centres can provide safe
maternity care.
22) Obstetricians should restrict their care only to high
risk or complicated pregnancies.
23) I support licensed/regulated midwifery services.
24) A woman’s history of sexual abuse can have an
important impact on the course of her labour and
birth.
25) Childbirth usually requires medical intervention.
26) Women who want a cesarean section in the
absence of a medical indication should have to pay
for it.
27) For a woman, having a vaginal birth is a more
empowering experience than delivering by
cesarean section.
28) It is a woman’s right to choose a cesarean section
for herself, even in the absence of medical
indication.
29) Where feasible, the head of maternity care
services should be an obstetrician.

30) The long-term pelvic floor outcomes of physiologically managed birth (for example use of non-lithotomy positions, avoidance of prolonged closed-glottis pushing in the second stage, and limiting episiotomy) will likely be better than elective caesarean section.

31) For singleton term frank breech, women should be offered the choice of a vaginal birth.

Strongly disagree Disagree Neutral Agree Strongly agree

32) Attempted external cephalic version for a breech presentation near term should be the norm.

33) When a woman is in labour, the safest place for her to be is in the hospital.

34) “Active management of labour” improves birth outcomes.

35) Women who deliver their baby by cesarean section miss an important life experience.

36) Women should be encouraged to develop a birth plan.

37) Vaginal birth enhances child brain development.

38) There is a need for doula services in maternity care.

39) In my practice, doulas are welcome.

40) Doulas improve birth outcomes.

41) Epidural analgesia:

Strongly disagree Disagree Neutral Agree Strongly agree

a. Should be routinely offered to all women in labour.

b. Increases the incidence of instrumental birth.

c. Interferes with the normal progress of labour.

d. When used early in labour (less than 4 cm of cervical dilatation) is associated with an increase in fetal malpositions.

e. Should be administered whenever a patient requests it.

42) Routine use of continuous electronic fetal monitoring (EFM):
a. Provides important benefits for the fetus. ⊗ ⊗ ⊗ ⊗ ⊗
b. Reduces the chance of litigation. ⊗ ⊗ ⊗ ⊗ ⊗
c. Is a good strategy for reducing nursing workload. ⊗ ⊗ ⊗ ⊗ ⊗

43) Cesarean Section:

Strongly disagree Disagree Neutral Agree Strongly agree
a. Prevents urinary incontinence. ⊗ ⊗ ⊗ ⊗ ⊗
b. Prevents sexual dysfunction. ⊗ ⊗ ⊗ ⊗ ⊗
c. Is more convenient for women. ⊗ ⊗ ⊗ ⊗ ⊗
d. Is more convenient for physicians. ⊗ ⊗ ⊗ ⊗ ⊗
e. Is more convenient for nurses. ⊗ ⊗ ⊗ ⊗ ⊗
f. Helps women to regain their pre-pregnancy shape. ⊗ ⊗ ⊗ ⊗ ⊗
g. Costs more for the health care system than vaginal birth. ⊗ ⊗ ⊗ ⊗ ⊗

6

Strongly disagree Disagree Neutral Agree Strongly agree
h. Is safer for the baby than vaginal birth. ⊗ ⊗ ⊗ ⊗ ⊗
i. Is as safe as vaginal birth for women. ⊗ ⊗ ⊗ ⊗ ⊗
j. Is like any other birth. ⊗ ⊗ ⊗ ⊗ ⊗

44) Important reasons for the rising cesarean section rate in Canada include:

Strongly disagree Disagree Neutral Agree Strongly agree
a. The perception of women that elective caesarean section is safer for the baby than planned vaginal birth. ⊗ ⊗ ⊗ ⊗ ⊗
b. The perception of women that elective cesarean section is safer for themselves than planned vaginal birth. ⊗ ⊗ ⊗ ⊗ ⊗
c. The perception of physicians that elective cesarean section reduces liability. ⊗ ⊗ ⊗ ⊗ ⊗
d. The perception of women that elective cesarean section is less painful than vaginal birth. ⊗ ⊗ ⊗ ⊗ ⊗
e. Changing population characteristics (such as increases in mothers' age and increases in obesity) among pregnant women. ⊗ ⊗ ⊗ ⊗ ⊗
f. Early hospital admissions before the start of the active phase of labour. ⊗ ⊗ ⊗ ⊗ ⊗
g. Increasing interventions by professionals (e.g. induction, continuous electronic fetal monitoring, etc). ⊗ ⊗ ⊗ ⊗ ⊗

Any other reason(s) for the rising cesarean section rate in Canada:
45) Important approaches to reducing the cesarean section rate include:

Strongly disagree Disagree Neutral Agree Strongly agree
a. Changing medical and nursing education to encourage more positive attitudes toward vaginal birth.

b. Increasing the use of oxytocin to augment labour dystocia.

c. Organized pre-cesarean section peer review of all elective cesarean sections.

d. Organized “after the fact” formal peer review of all cesarean sections.

e. Providing more midwifery services.

f. Providing more doula services.

g. Eliminating routine electronic fetal monitoring (EFM).

h. Encouraging more family physicians to provide intrapartum maternity care.

i. Reducing the number of inductions of labour for non-compelling reasons.
j. Increasing the number of nursing staff in order to provide one to one care.

Any other approach(es):

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

46) Episiotomy:

Strongly disagree Disagree Neutral Agree Strongly agree

a. If done routinely, can prevent pelvic floor relaxation.

b. Should be used for all instrumental vaginal births.

c. If done routinely, can prevent 3rd/4th degree tears.

d. Is easier to repair than lacerations.

e. If done routinely, leads to more harm than good.

This section contains questions about the different clinical management approaches used in maternity care. Some of the questions may involve situations where you personally would not be working or deciding. Nevertheless, we are asking your opinion about what you might think is the best approach.

47) When a woman has had a previous cesarean section and has no recurring indication, most of the time, the preferred approach is to: (Check only one)

☑ Recommend a vaginal birth after cesarean section (VBAC).
Recommend a scheduled cesarean.
Follow the mother’s request.

48) In the management of an uncomplicated post term pregnancy (e.g. normal amniotic fluid) at or after 41 and 3/7 weeks, the most appropriate approach is: (Check only one)
Expectant management (wait for spontaneous onset of labour while providing antenatal fetal surveillance).
Elective induction.
Following the mother’s request.

49) The preferred approach (first choice) for the management of an uncomplicated third stage of labour is: (Check only one)
Active management (early cord clamping, administration of oxytocin with the delivery of the anterior shoulder or placenta, and controlled cord traction).
Physiological management (allow placental separation and expulsion to occur spontaneously without intervention).
Using oxytocin and/or other components of active management when necessary.
Following the mother’s request.

50) In the management of Group B Streptococcal infection in pregnant women, the most appropriate approach is: (Check only one)
Risk-Factor Approach (administration of intrapartum antibiotics based on risk factors).
Universal screening for GBS at 35 to 37 weeks of gestation and treatment in labour with antibiotics for positives.
Universal screening to establish GBS carriers and offer intravenous antibiotics in labour only if risk factors develop.
Following the mother’s request.

51) My preferred initial method of providing pain relief in uncomplicated labour is: (Check only one)
"Natural" (non-pharmacological) methods (e.g. walking and positional change, massage, and shower/bath).
Epidural analgesia.
Narcotics.

52) Overall, I think the current cesarean section rate in Canada is: (Check only one)
About right
Low
High

53) Considering maternity care in Canada, in general, what is the overall risk of childbirth to the health of the mother? (Given the scale below, check one box: one as completely safe and ten as completely dangerous)

54) Considering maternity care in Canada, in general, what is the overall risk of childbirth to the health of the fetus? (Given the scale below, check one box: one as completely safe and ten as completely dangerous)
There is extensive literature about the mode of birth and pelvic floor functioning. The following questions are meant to explore how Canadian Nurses feel about this issue.

Strongly disagree Disagree Neutral Agree Strongly agree

a. If my partner or I were pregnant, with an apparently normal pregnancy, I would prefer an elective cesarean section instead of a vaginal birth.

b. I fear vaginal birth for myself or my partner as it may compromise sexual functioning.

c. I fear vaginal birth for myself or my partner as it may lead to urinary incontinence.

d. I fear vaginal birth for myself or my partner as it may lead to fecal or flatal incontinence.

e. Because of the unpredictability of vaginal birth, I would prefer a scheduled cesarean section for myself or my partner.

f. I fear vaginal birth for myself or my partner as it could lead to perineal and/or pelvic floor damage.

You have completed the questionnaire. Please ensure that you have responded to all questions.

We welcome any further comments below.
Thank you for your time. Your input is very valuable to us.
Maternity Care Research Group
L408 - 4480 Oak Street, Vancouver, BC, V6H 3V4
Tel: 604-875-2196 Fax 604-875-3569
APPENDIX C: NURSING DATA FACTOR ANALYSIS
**FACTOR ANALYSIS ONE - Cumulative Variance = 44.52%**

<table>
<thead>
<tr>
<th>Factor One: Epidural Analgesia (eigenvalue, 4.031, 22.232 % of variance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidural analgesia should be routinely offered to all women in labour.</td>
</tr>
<tr>
<td>0.92</td>
</tr>
<tr>
<td>*Epidural analgesia [does not] increase(s) the frequency of instrumental birth (forceps and vacuum):</td>
</tr>
<tr>
<td>*Epidural analgesia [does not] Interfere(s) with the normal progress of labour.</td>
</tr>
<tr>
<td>*Epidural analgesia: when used early in labour (less than 4 cm of cervical dilatation) is [not] associated with an increase</td>
</tr>
</tbody>
</table>

**Factor Two: Episiotomy (eigenvalue, 2.051, 11.08 % of variance)**

| Episiotomy: if done routinely, can prevent pelvic floor relaxation. | 0.75 |
| Episiotomy: should be used for all instrumental vaginal births. | 0.62 |
| Episiotomy: if done routinely, can prevent 3rd/4th degree tears. | 0.58 |
| Episiotomy: is easier to repair than lacerations. | 0.51 |
| *Episiotomy: if done routinely, leads to more harm than good | 0.47 |

**Factor Three: Doulas (eigenvalue 1.416, 7.028% variance)**

| In my practice, doulas are welcome. | 0.89 |
| There is a need for doula services in maternity care. | 0.76 |
| Doulas improve birth outcomes. | 0.58 |

**Factor Four: Electronic Fetal Monitoring (eigenvalue 1.221, 4.183 % of variance)**

| Electronic fetal monitoring provides important benefits for the fetus. | 0.78 |
| Electronic fetal monitoring reduces the chance of litigation. | 0.55 |
| Electronic fetal monitoring is a good strategy for reducing maternity care provider groups’ workload. | 0.46 |

**FACTOR ANALYSIS TWO - Cumulative Variance = 33.74%**

<table>
<thead>
<tr>
<th>Factor One: Factors to Decrease the Cesarean Section Rate (eigenvalue 3.324, 17.796 % variance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing medical and nursing education to encourage more positive attitudes toward vaginal birth.</td>
</tr>
<tr>
<td>Organized pre-Cesarean section peer review of all elective cesarean sections.</td>
</tr>
<tr>
<td>Organized “after the fact” formal peer review of all Cesarean sections.</td>
</tr>
<tr>
<td>Providing more midwifery services.</td>
</tr>
<tr>
<td>Providing more doula services.</td>
</tr>
<tr>
<td>Eliminating routine electronic fetal monitoring (EFM).</td>
</tr>
<tr>
<td>Encouraging more family physicians to provide intrapartum maternity care.</td>
</tr>
<tr>
<td>Reducing the number of inductions of labour for non-compelling reasons.</td>
</tr>
<tr>
<td>Active management of labour [does not] improve(s) birth outcomes.</td>
</tr>
</tbody>
</table>

*It is a woman’s right to choose a cesarean section for herself, even in the absence of medical indication. does not load on this factor

<table>
<thead>
<tr>
<th>Factor Two: Attitudes towards pelvic floor benefits of cesarean section (eigenvalue 1.741, 15.946% variance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cesarean section prevents sexual dysfunction.</td>
</tr>
<tr>
<td>Cesarean section prevents urinary incontinence.</td>
</tr>
</tbody>
</table>

**FACTOR ANALYSIS THREE - Cumulative variance = 41.56%**

<table>
<thead>
<tr>
<th>Factor One: Attitudes towards the Importance of Vaginal Birth (eigenvalue 2.751, 18.825% variance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For a woman, having a vaginal birth is a more empowering experience than delivering by cesarean section.</td>
</tr>
<tr>
<td>Women who deliver their baby by cesarean section miss an important life experience.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor Two: Attitudes towards the Safety by Mode or Place of Birth (eigenvalue 1.405, 22.736% variance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a woman has had a previous Cesarean section, a scheduled repeat Cesarean section can improve newborn outcome.</td>
</tr>
<tr>
<td>Home birth is more dangerous than hospital birth, even in an uncomplicated pregnancy.</td>
</tr>
<tr>
<td>If available, for women at no apparent risk, I believe out-of-hospital birth centres can [not] provide safe maternity care.</td>
</tr>
<tr>
<td>Cesarean section is safer for the baby than vaginal birth.</td>
</tr>
<tr>
<td>Cesarean section is as safe as vaginal birth for women.</td>
</tr>
</tbody>
</table>

*I [do not] support licensed/regulated midwifery services. | 0.6 |
APPENDIX D: REGRESSION ASSUMPTIONS
Regression assumptions

Correlation matrix for question 7 – Relationships between Education, Hospital Level of Employment, Choice of Provider and Attitudes towards the Safety of Birth

Assumption of no multicollinearity

<table>
<thead>
<tr>
<th></th>
<th>ALARM/ALSO Course</th>
<th>Level 3</th>
<th>Level 2</th>
<th>Midwife</th>
<th>Family Practitioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>-.07~</td>
<td>.04~</td>
<td>-.07~</td>
<td>-.46**</td>
<td>.19**</td>
</tr>
<tr>
<td>ALARM/ALSO</td>
<td>.32**</td>
<td>-.17*</td>
<td>.13*</td>
<td>-.17*</td>
<td></td>
</tr>
<tr>
<td>Level 3</td>
<td>-.64**</td>
<td>-.00~</td>
<td>-.20**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2</td>
<td>-.04~</td>
<td>.08~</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwife</td>
<td>-.49**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

~NS, *p < .05, **p < .01, ***p < .001
### Regression Assumptions (Question 7)
**Cases 315**

<table>
<thead>
<tr>
<th><strong>Durbin-Watson</strong></th>
<th>1.9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tolerance</strong></td>
<td>Variable</td>
</tr>
<tr>
<td>ALARM/ALSO</td>
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</tr>
<tr>
<td>Course</td>
<td></td>
</tr>
<tr>
<td>Level 3</td>
<td>.53</td>
</tr>
<tr>
<td>Level 2</td>
<td>.59</td>
</tr>
<tr>
<td>Midwife</td>
<td>.74</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>.72</td>
</tr>
<tr>
<td><strong>VIF Average</strong></td>
<td>1.05</td>
</tr>
<tr>
<td><strong>Cook’s Distance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Leverage Values</strong></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>.04</td>
</tr>
<tr>
<td>Minimum</td>
<td>.01</td>
</tr>
<tr>
<td>Maximum</td>
<td>.03</td>
</tr>
<tr>
<td><strong>All Standardized</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>DF Beta &lt; 1</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Standardized</strong></td>
<td></td>
</tr>
<tr>
<td>Residual &gt; 1.96</td>
<td>12</td>
</tr>
<tr>
<td>Number</td>
<td>3</td>
</tr>
<tr>
<td>Percent</td>
<td>.96%</td>
</tr>
</tbody>
</table>
Normally distributed residuals
Homogeneity of Variances

**Scatterplot**

Dependent Variable: safety

**Correlation matrix for question 8a) Relationship between Years Experience, Hospital Level of Employment, Choice of Provider and attitudes towards Electronic Fetal Monitoring.**

**Assumption of no multicollinearity**

<table>
<thead>
<tr>
<th></th>
<th>Years Experience</th>
<th>Level 3</th>
<th>Level 2</th>
<th>Midwife</th>
<th>Family Practitioner</th>
</tr>
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<td>-0.01~</td>
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*NS, *p < .05, *p < .01, **p < .001
Regression assumptions question 8a) Cases 300

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<td>maximum</td>
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<td>.03</td>
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<td>.04</td>
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Normally distributed residuals (8a)
Correlation matrix for question 8b) Relationship between Years Experience, Hospital Level of Employment, Provider Choice and attitudes towards Epidurals

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<th>Level 2</th>
<th>Midwife</th>
<th>Family Practitioner</th>
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<td>-.05~</td>
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<td>-</td>
<td>-.65**</td>
<td>-.01~</td>
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<td>.05~</td>
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*NS, + p < .05, * p < .01, ** p < .001
### Regression assumptions question 8b) Cases 302

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<td>.55</td>
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<td>.75</td>
</tr>
<tr>
<td>Family Practitioner</td>
<td>.73</td>
</tr>
<tr>
<td><strong>VIF Average</strong></td>
<td>1.46</td>
</tr>
<tr>
<td><strong>Cook’s Distance</strong></td>
<td>Minimum: .00, Maximum: .03</td>
</tr>
<tr>
<td><strong>Leverage Values</strong></td>
<td>Minimum: .09, Maximum: .04</td>
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Normally distributed residuals for question 8b
Homogeneity of Variance for 8b)

Scatterplot

Dependent Variable: epidural

Correlation Matrix for Question 8c) Relationship between Years Experience, Hospital Level of Employment, Choice of Provider and attitudes towards the importance of vaginal birth.

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<td>Importance of Vaginal Birth</td>
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*NS, †p < .05, *p < .01, **p < .001
Regression assumptions question 8b) Cases 302

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Normally distributed residuals for 8c)
Homogeneity of Variance for 8c)

Scatterplot

Dependent Variable: attitudes_vaginalbirth

Regression Standardized Residual vs. Regression Standardized Predicted Value