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Factors Associated with Differences in Canadian Perinatal Nurses' Attitudes Toward Birth Practices

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ABSTRACT

Objective: To test whether demographic characteristics predict registered nurses' attitudes toward birth practices.

Design: A secondary analysis of a cross-sectional survey, the National Maternity Care Attitudes Survey.

Setting: A national survey conducted with health care providers providing maternity care in Canada.

Participants: A convenience sample of 545 registered nurses.

Methods: Hierarchical regression analysis was used to examine three hypotheses about nurses' demographic differences in relationship to their attitudes toward birth practices. Attitude scales included acceptability of doulas, effects of routine electronic fetal monitoring, factors decreasing cesarean birth rates, the importance of vaginal birth for women, safety of birth, episiotomy, and epidural analgesia.

Results: Tertiary hospital–level of employment was associated with more positive attitudes toward epidural analgesia and less positive attitudes toward the importance of vaginal birth. Nurses working at a tertiary hospital were more likely to select an obstetrician for their own maternity care. Those who worked at a community hospital were more likely to select a family physician. Nurses' selection of an obstetrician was associated with less positive attitudes toward the safety of birth and importance of vaginal birth and more positive attitudes toward electronic fetal monitoring, episiotomy, and epidural analgesia.

Conclusion: Nurses' attitudes may be influenced by exposure in their workplaces to predominant care providers' birth practices. Research examining the relationships between nurses' workplace exposures, attitudes, and practice behaviors is needed to develop understanding about how nurses contribute to rates of intervention in maternity care.

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Rates of interventions in Canadian hospitals have created concern for all maternity care disciplines (Society of Obstetricians & Gynecologists of Canada [SOGC], 2008). Evidence suggests regular use of some interventions is unwarranted because this use may not contribute to improved neonatal and maternal outcomes in low-risk situations and may increase neonatal and maternal morbidity. For example, in comparison to vaginal birth, cesarean birth has been linked to increased neonatal and maternal morbidity and mortality (Liu et al., 2007; Villar et al., 2007). Continuous electronic fetal monitoring is associated with a higher risk of operative vaginal birth and cesarean birth (Alfirevic, Devane, & Gyte, 2006), whereas epidural analgesia has been linked to an increased risk of oxytocin augmentation and operative vaginal delivery (Anim-Soumah, Smyth, & Jones, 2011). Birth processes with high levels of intervention have contributed to negative psychological outcomes, such as post-traumatic stress disorder (Soderquist, Wijma, & Wijma, 2002) and are costly to the health care system, with each cesarean birth estimated to cost $4,600 as compared to vaginal birth at $2,700 (Canadian Institute for Health Information [CIHI], 2006).

Understanding care providers' attitudes toward birth practices may help to explain why high rates of intervention persist in low-risk situations (Monari, Di Mario, Faccinetti, & Basevi, 2008; Walker, Shunkwiler, Supanich, Williamsen, & Yensch, 2001). Little information is available about registered nurses' (herein referred to as nurses) attitudes toward birth practices; most published literature tends to focus on the attitudes of midwives, obstetricians, and general practitioners (Monari et al.; Reime et al., 2004; Smith et al., 2009).

Nurses' positive attitudes toward routine interventions during labor can influence technology use.

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, 2004, 2006; Peterson, Medves, Davies, & Graham, 2007). Often working one-to-one with patients, nurses are positioned to have a significant influence on patients' decision making and ultimately birth outcomes (Payant, Davies, Graham, Peterson, & Clinch, 2008). Nurses' attitudes toward electronic fetal monitoring, epidural analgesia, and the safety and importance of vaginal birth may influence their modes of communication with other care providers, their decision making, and the frequency of their use of technology (Klein et al., 2009; Sinivaara, Suominen, Routasalo, & Hupli, 2004).

Nurses' attitudes toward birth in general have been studied; however, an understanding of factors influencing the diversity in nurses' attitudes is lacking (Blais et al., 1994; Klein et al., 2009). Although qualitative perinatal research about labor support and technology suggests there is variation in nurses' attitudes about birth practices (Carlton, Callister, Christiaens, & Walker, 2009; Davies & Hodnett, 2002; Kennedy & Lyndon, 2008; Payant et al.; Sleutal, Schultz, & Wyble, 2007), only one quantitative study has examined factors contributing to differences in nurses' views, specifically about hydrotherapy use (Stark & Miller, 2009).

The purpose of this study was to examine differences in perinatal nurses' attitudes toward birth practices by their demographic characteristics, specifically by hospital level of employment, nurses' choice of care provider, and nurses' years of experience. We conducted a secondary analysis of data from the National Maternity Care Attitudes Study (NMCAS), which was a cross-sectional survey of attitudes toward birth held by doulas, midwives, nurses, family physicians, and obstetricians (Klein et al., 2009).

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Theoretical Framework

Attitudes have been defined as a positive or negative judgment of an object, person, or issue (Ajzen, 2001). This study was guided by social identity theory and attitude formation theory, specifically the mere exposure effect. Initially developed by Tajfel in 1972, social identity theory has received consistent empirical support in social psychology (Smith & Hogg, 2008). It holds that attitudes are "socially learned, socially changed and socially expressed" and environments influence the attitudes individuals form (Smith & Hogg, p. 339). The theory is based on assumptions that attitudes serve a social function and allow an individual to identify with a particular group (Smith & Hogg). Individuals generally strive to hold the "correct attitudes" (Bohner & Wanke, 2002, p. 137). Attitudes group members perceive as appropriate are often defined as social norms that are the established attitudes and behaviors of a particular social group (Prislin & Wood, 2005; Sherif, 1936). The mere exposure effect, as suggested by Zajonc (1968) and Grush (1976), posits repeated exposure to an attitude object, whether positive or negative, leads to more positive attitudes toward the person or object.

Social identity theory and the mere exposure effect are predicated on the understanding that attitudes are formed through differing exposures and experiences. Applying this understanding to the perinatal care context would suggest workplace environments influence nurses' attitudes toward birth practices. Nurses' workplaces shape their exposure to social norms about birth and influence their attitudes. We hypothesized that nurses' attitudes are shaped by the attitudes of the care providers with whom they work and that increased exposure to technologies, such as epidural analgesia and provider groups, such as obstetricians, are associated with more favorable attitudes toward them.

Background

Researchers have suggested that nurses' attitudes are generally different than other care providers. In the NMCAS study, Klein and colleagues' (2009) found that midwives held the most positive attitudes toward birth without interventions, whereas obstetricians held the most positive attitudes toward epidurals, episiotomy, and electronic fetal monitoring and the least positive attitudes toward birth plans, vaginal birth, the safety of birth, and the degree to which mothers are influential in the birth process. Family physicians attending births had attitudinal scores that had distributions closer to that of midwives (Klein, Baradarana, et al., 2011). Nurses' attitude scores generally fell between those of family physicians attending births and obstetricians (Klein et al., 2009).

Very few researchers have examined factors associated with variations in nurses' attitudes. A review

of the perinatal literature using PubMed, Cumulative Index of Nursing and Allied Health Professionals, Web of Science, and Academic Search Premier elicited experience, workplace environment, and providers' personal preferences for their own births, as salient factors that may contribute to differences in nurses' attitudes.

Experience

The cesarean birth rate has increased in the last 15 years (Public Health Agency of Canada, 2008); theoretically, experienced nurses may have more exposure to low-intervention birth than less experienced nurses, which may enhance experienced nurses' attitudes toward the use of interventions. In their qualitative descriptive study of expert nurses from four large American hospitals, James, Simpson, and Knox (2003) described expert nurses as having negative attitudes toward technology and interventions and positive attitudes toward labor support and birth plans. In addition, in three studies researchers described experienced nurses' and obstetricians' perceptions of less experienced nurses as holding more favorable attitudes toward technology and negative attitudes toward labor support (Carlton et al., 2009; Graham, Logan, Davies, & Nimrod, 2004; Sleutal et al., 2007). Stark and Miller (2009) conducted a cross-sectional survey about American nurses' views toward barriers to hydrotherapy ($N = 401$) and found a weak correlation, $r = -.17$, between increasing years of experience and decreased perception of barriers. These findings suggest expert and novice nurses may hold different attitudes toward birth practices.

Providers' Personal Preferences

Research supports a relationship between providers' personal birth choices and attitudes toward birth practices. Klein and colleagues (2009), found obstetricians held the strongest attitudes toward fear of vaginal birth for themselves or their partners, suggesting they were the discipline most concerned about negative vaginal delivery outcomes. Other researchers have suggested obstetricians or their partners may be more likely to request a cesarean birth than a vaginal birth (Finsen, Storeheier, & Aasland, 2008; Turner et al., 2008). Authors speculated these findings reflect obstetricians' exposures to negative birth outcomes as a byproduct of their specialist function to manage complicated deliveries (Klein et al.; Turner et al.). Because there may be a link between obstetricians' personal birth preferences, birth attitudes, and behaviors, differences in nurses' personal choices of obstetric care provider (i.e. midwife, family practitioner, or obstetrician) may reflect underlying differences in nurses' attitudes. Obstetricians, family practitioners, and midwives have been demonstrated to hold different attitudes toward birth (Klein et al.); nurses may select a particular provider for their care because they perceive alignment between their attitudes and that of their provider choice.

Workplace Environment

Nurses at differing hospital levels are exposed to different birth practices and rates of intervention that may contribute to differences in attitudes toward birth practices. Tertiary-level hospitals have resources to care for infants of all gestational ages, whereas community hospitals have the capacity to care for infants who are ≥34 weeks gestation, and level-two hospitals can provide care for infants of ≥32 weeks gestation (Canadian Pediatric Society, 2006). Some evidence suggests tertiary hospitals use technological birth practices, such as cesarean births and epidural analgesia, with greater frequency than community and level-two hospitals (Janssen, Klein, & Soolsma, 2001; Le Ray, Carayol, Zeitlin, Breart, & Goffinet, 2006; Le Ray, Gaudu, Teboul, Cabrol, & Goffinet, 2004). When Janssen et al. compared the rates of intervention in low-risk nulliparous patients at a Canadian tertiary-care hospital to that of a community hospital, low-risk women were 3.4 times more likely, 95% confidence interval (CI) [2.1, 5.4], to have a cesarean birth 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%), which may have been related to increased availability.

Higher rates of interventions may occur because obstetricians represent the "dominant culture" in tertiary care centers where there are proportionately more high-risk patients (Deutchman, 2001, para. 1). Obstetricians have demonstrated more positive attitudes toward intervention than other providers and less positive attitudes toward vaginal birth; they also use more interventions in low-risk patients than general practitioners (Abenheim, Welt, Sabbah, & Audibert, 2007; Allen & Hanson, 2005; Klein et al., 2009). Applying social identity theory and the mere exposure effect to these associations, it is possible that nurses' approval of obstetricians and interventions is increased by repeated exposure in tertiary hospitals.

Experience, provider choice, and hospital level of employment may relate to nurses' attitudes toward birth practices. Qualitative research suggests nurses with more experience may view birth interventions less favorably than less experienced nurses. A nurse's preference for particular provider groups for childbirth may reflect underlying attitudes, as obstetricians, family practitioners, and midwives differ in their attitudes toward birth. Hospital level of employment may influence nurses' exposure to interventions and providers and subsequently how favorable nurses view them.

Hypotheses

Based on the literature review and theoretical framework three main hypotheses were explored. We hypothesized that nurses' attitudes toward birth practices would differ by years of experience, nurses' choice of care provider for their own maternity care (either obstetrician, midwife, or family physician), and hospital level of employment. Specifically, for hospital level of employment, we hypothesized nurses employed by tertiary hospitals would be more likely to select an obstetrician for their care, hold more positive attitudes toward epidural analgesia and electronic fetal monitoring, and hold less positive attitudes toward the importance of vaginal birth. In contrast, nurses working at community hospitals would be more likely to select a family physician (FP) for their care because of increased exposure to FPs at community hospitals (CIHI, 2004, 2005).

Methods

Ethical approval for this secondary analysis was obtained through the University of British Columbia Behavioural Research Ethics Board. Data were collected for the NMCAS in 2007 for 6 months using a paper-based or web-based questionnaire. Because there is no Canadian perinatal nursing database, a convenience sample was used. Five-hundred fifty-one surveys were distributed to nurses who were members of the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) or attendees at the national AWHONN conference. Some participants received surveys from AWHONN conference attendees who were given surveys to take back to their workplaces for distribution. Surveys were also distributed ($n = 335$) to graduates of the Advances in Life and Risk Management (ALARM) or Advanced Life Support in Obstetrics (ALSO) course, two perinatal interdisciplinary continuing education courses. Nurses were provided the option to access the questionnaire via the NMCAS study website or complete the paper-based questionnaires. The total sample consisted of 545 registered Canadian nurses from all provinces and territories. Paper-based questionnaires ($n = 376$) were completed and data were manually entered onto the NMCAS website by a data entry company; 169 questionnaires were completed online. Responses to paper-based and online questionnaires were collected using Snap 9.0 Professional survey management software. We exported the data from the NMCAS website for analysis on a password protected computer.

Nursing Attitude Questionnaire

The Nursing Questionnaire consisted of 15 demographic questions, 71 Likert-type scale questions, 6 multiple-choice questions, 3 open-ended questions, and 2 ten-point closed questions. All Likert-type questions had response choices ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The questionnaire was derived from the Family Physicians' (FP) questionnaire (Reime et al., 2004). Researchers from the NMCAS study developed nine scales from the maternity care providers' questionnaires, using 43 of the original 79 items. Six of the nine scales were used in this study. The scales measured attitudes toward doulas ($\alpha = .77$, 3 items), epidural analgesia ($\alpha = .77$, 4 items), episiotomy ($\alpha = .71$, 3 items), electronic fetal monitoring ($\alpha = .61$, 3 items), the safety of birth ($\alpha = .72$, 6 items), and reducing the cesarean birth rate ($\alpha = .73$, 9 items). The first four scales measured nurses' favorability toward doulas, epidural analgesia, electronic fetal monitoring, and episiotomies. The safety of birth scale measured attitudes toward home birth, out-of-hospital birth centers, midwifery services, and cesarean birth.

The reducing the cesarean birth rate scale measured attitudes toward increasing education, doula services, midwifery services, the number of family practitioners providing intrapartum care and reducing routine electronic fetal monitoring and unnecessary labor inductions as means to decrease the cesarean birth rate. Except for the electronic fetal monitoring scale ($\alpha = .61$), the internal consistency reliability of these scales was greater than 0.7. A Cronbach's alpha below 0.7 is common for psychosocial constructs, such as attitudes; thus, the scale was retained (Kline, 2000). Items pertaining to the importance of vaginal birth were used as a scale because they were consistent with the theoretical framework. Using those

items, a modified scale was created having a Cronbach's alpha of 0.73 (two items) that measured nurses' attitudes toward the value of vaginal birth for women as compared to cesarean birth. The NMCAS study assessed the validity of the multi-item subscales in a two-step process using content experts and factor analyses (Klein et al., 2009).

Data Analysis

We considered the individual nurses' scores on the scales as continuous data for the purpose of parametric analysis (Norman, 2010). To test for differences in nurses' attitudes on the electronic fetal monitoring, episiotomy, or doula scales we used nonparametric tests because these scales were significantly skewed. To test Hypothesis 1 for relationships between years of experience and nurses' attitudes on the scales, simple linear regression and nonparametric Spearman correlations were used. For Hypotheses 2 and 3, we used ANOVA and Kruskal-Wallis (nonparametric) to compare groups. Appropriate post-hoc comparison tests (e.g. Hochberg GT2, Mann-Whitney *U*) were performed. To test for relationships between hospital level of employment and nurses' choice of provider, we used chi-squared and interpreted adjusted standardized residuals (ASR). Adjusted standardized residuals are equivalent to a *z*-score and can be compared to a normal distribution to determine significance; *z*-scores greater than 1.96 indicate significance at the .05 level and greater than 2.58 at the .01 level (Field, 2009).

We conducted a hierarchical linear regression to examine the influence of demographic characteristics on nurses' scores for the electronic fetal monitoring, epidural analgesia, and importance of vaginal birth scales. Years of experience were entered into Block 1, hospital level of employment into Block 2 (with level-one as the reference), and choice of care provider in Block 3 (with obstetrician as the reference). Although age may relate to providers' attitudes (Klein, Liston, et al., 2011), age was highly correlated with years of experience (0.87), so we excluded that variable. We examined regression assumptions for each analysis to determine model generalizability beyond the sample (Field, 2009).

Although the total sample included 545 nurses, we only considered 461 for analysis because 63 had never provided intrapartum care, 13 were missing data for intrapartum experience, and 8 were missing dependent variable data. For analyses using hospital level of employment, we excluded nurses who were not working in intrapartum care. We only ran those analyses with nurses who were currently working in intrapartum care for a total of 317 cases.

We performed power analyses using G*Power 3.1, with an alpha of .05 and estimated a medium effect size using standard conventions in the program (Polit & Beck, 2010). A sample size of 317 was determined to have a 100% power to detect a medium effect of $f^2 = .15$ for up to 5 predictors in a regression analysis, a 99% power to detect a medium effect of $f^2 = .25$ for ANOVA, and a 99% power to detect a medium effect ($w = .3$), with a *df* of 5 for a chi-squared analysis. We used Study size 2.0 to calculate power analyses for Kruskal-Wallis tests by entering mean scale scores into a nonparametric two-sided Monte Carlo simulation (5,000 distributions); there was a 99% power to reject the null hypothesis with 461 cases.

Results

The average age of participants was 45 years (*SD* = 9.5), and the nurses had an average 14 years of intrapartum nursing experience (*SD* = 9.5). Nearly one half of the nurses (47.9%, *n* = 221) had completed the ALARM or ALSO courses. Most of the nurses sampled were from Ontario (24.1%, *n* = 111) and working in intrapartum care (70.1%, *n* = 323). Most nurses worked at a tertiary-care hospital (41%, *n* = 130), whereas 37% worked at a level-two hospital (*n* = 117), and 22% at a community hospital (*n* = 70). Nurses' choice of care provider was relatively evenly split; nurses were most likely to select a family practitioner for their care (38.3%, *n* = 176), followed by a midwife (31.6%, *n* = 145), and an obstetrician (30.1%, *n* = 138).

Table 1 shows the variables of interest; mean scale scores of <3 corresponded to negative attitudes, scores of 3 corresponded with neutral attitudes, and those >4 corresponded with positive attitudes. Lower mean scores for the safety by mode or place of birth scale reflected more positive attitudes because this scale was reverse-coded. On average, nurses' scores were more negative toward electronic fetal monitoring, epidurals, and episiotomies; they were more neutral toward the importance of vaginal birth, and more positive toward doulas, factors to decrease the cesarean birth rate, and the safety of birth.

Hypothesis 1 was partially supported. There were significant negative relationships between nurses'

Nurses working in tertiary-care hospitals were most positive about epidural anesthesia and least positive about the importance of vaginal birth for women.

years of experience and their attitudes toward electronic fetal monitoring, $r_s = -0.17$, $p < .001$ and episiotomies, $r_s = -0.14$, $p < .01$, with increasing years of experience corresponding with more negative attitudes. There were nonsignificant relationships between years of experience and nurses' attitudes toward the importance of vaginal birth for women, decreasing the cesarean birth rate, epidural analgesia, safety by mode or place of birth, and doulas.

Table 1: Descriptive Statistics of Nurses' Scores on Dependent Variables

Scale	*M* (*SD*)
Electronic fetal monitoring	2.15 (.70)
Epidural analgesia	2.62 (.85)
Episiotomy	2.23 (.64)
Doula	3.56 (.83)
Decrease cesarean birth rate	3.61 (.56)
Safety of birth	2.37 (.64)
Importance of vaginal birth	2.73 (1.01)

Hypothesis 2 that nurses' attitudes toward birth practices would differ by choice of care provider was supported. Nurses selecting an obstetrician for their own care held the most positive attitudes toward epidural analgesia, episiotomies, and electronic fetal monitoring, and the least positive attitudes toward the safety of birth (see Table 2). Nurses selecting a midwife held the most positive attitudes toward doulas, the importance of vaginal birth for women, and factors contributing to decreasing the cesarean birth rate. The scores on attitudes of nurses selecting a family physician as a care provider fell between those of nurses who indicated they would select obstetricians and those who would select midwives. Post-hoc comparisons revealed the mean differences between nurses choosing a family physician as compared to an obstetrician on the safety by mode or place of birth, importance of vaginal birth, and decreasing

Table 2: Scale Scores by Choice of Care Provider: Obstetrician (OB), Family Physician (FP), or Midwife (MW) and Post-Hoc Comparisons

Scale	Means [95% CIs]			Post-Hoc	
	OB	FP	MW	FP vs. OB	MW vs. OB
Episiotomy[a]	2.43	2.25	2.02	**	***
	[2.36, 2.53]	[2.16, 2.33]	[1.92, 2.13]		
Epidural[a]	3.05	2.71	2.16	**	***
	[2.92, 3.19]	[2.59, 2.82]	[2.04, 2.23]		
Safety by mode or place of birth[a]	2.64	2.57	1.88	+	***
	[2.55, 2.73]	[2.49, 2.65]	[1.79, 1.96]		
Importance of vaginal birth[a]	2.55	2.61	3.01	+	***
	[2.39, 2.71]	[2.48, 2.75]	[2.83, 3.18]		
Decreasing the cesarean birth rate[a]	3.36	3.48	3.98	+	***
	[3.28, 3.45]	[3.41, 3.56]	[3.90, 4.10]		
	Medians				
Doula[a]	3.33	3.67	4.00	*	***
Electronic fetal monitoring[a]	2.33	2.00	2.00	***	***

Note. CI = confidence interval.
[a] Omnibus test (ANOVA or Kruskal-Wallis) = $p < .001$.
^{+}ns, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

the cesarean birth rate scales were not significant ($p > .05$). All other differences were significant (see Table 2).

The hypothesis that nurses' choice of care provider would vary by hospital level was supported. There were significant relationships between hospital level of employment and nurses' choice of care provider, $\chi^2(4, N = 317) = 18.46$, $p < .01$. The largest percentage of nurses in a tertiary-care hospital would choose an obstetrician (45%) (31% would select a family physician, and 24% a midwife). By contrast, at a community hospital, the largest percentage would select a family physician (56%) (23% would select an obstetrician, and 21% a midwife). Adjusted standardized residuals indicated nurses working at a tertiary hospital were significantly more likely than expected (ASR = 3.8) to select an obstetrician and less likely than expected to select a family physician (ASR = −3.6) for their care. Nurses working at a community hospital were significantly more likely than expected (ASR = 2.5) to select a family physician for their care and less likely than expected to select an obstetrician (ASR = 2.0).

The hypotheses that nurses working at a level-three hospital would have more positive attitudes toward epidurals and less positive attitudes toward the importance of vaginal birth for women were supported. Comparing nurses' scores by hospital level of employment, there were significant differences between nurses working at tertiary and community hospitals on attitudes toward using epidural analgesia ($p < .001$) and importance of vaginal birth scales ($p < .05$); nurses working at tertiary hospitals had significantly more positive attitudes toward using epidural analgesia ($M = 3.08$, $SD = .94$) than nurses working at community hospitals ($M = 2.59$, $SD = .74$). Nurses working at tertiary hospitals also had less positive attitudes toward the importance of vaginal birth for women ($M = 2.49$, $SD = .96$) than nurses working at community hospitals ($M = 2.86$, $SD = .89$). Nurses' attitudes toward electronic fetal monitoring did not differ by hospital level of employment ($p > .05$).

Hierarchical regression analyses corroborated bivariate analyses, with the exception of relationships between years of experience and nurses' attitudes toward electronic fetal monitoring. When controlling for hospital level of employment and choice of care provider, increasing years of experience did not predict more negative attitudes toward electronic fetal monitoring (see Table 3). This finding contrasted with the correlations; however, correlation analyses included nurses working in intrapartum care and nurses who formerly worked in intrapartum care. In the regression analysis, only nurses currently working in intrapartum care were included. In other words, years of experience did not relate to nurses' attitudes toward electronic fetal monitoring if they were working in intrapartum care.

Nurses' attitudes were influenced by workplace exposure to other care providers' birth practices.

Selection of a midwife or family physician as a care provider predicted more negative attitudes toward electronic fetal monitoring and epidural analgesia compared with nurses who selected an obstetrician. Nurses who selected a midwife, compared to those selecting an obstetrician, held more positive attitudes toward the importance of vaginal birth for women. Nurses who worked at a tertiary hospital when compared to those working in a community hospital held more positive attitudes toward epidural analgesia and more negative attitudes toward the importance of vaginal birth for women.

Final models accounted for 5% to 23% of variance (see Table 3). Lower adjusted R^2s on the electronic fetal monitoring and vaginal birth regressions suggest other factors not measured also influence these attitudes; whereas a greater amount of variance in nurses' attitudes toward epidurals was explained by hospital level of employment and choice of provider.

Discussion

This is the first study to report differences in Canadian nurses' attitudes toward birth practices. The findings supported weak relationships between years of experience and attitudes toward electronic fetal monitoring and episiotomy and no relationship between years of experience and other scales, suggesting experience was not a strong predictor of nurses' attitudes. These findings contrast with those of qualitative studies that suggested less experienced nurses have more negative attitudes toward vaginal birth and more positive attitudes toward interventions and epidurals (Carlton et al., 2009; Graham et al., 2004; Sleutal et al., 2007).

Social identity theory helps explain this discordance because it suggests that individuals

naturally strive for group acceptance by behaving in ways they perceive to accord to group norms (Smith & Hogg, 2008). Recent graduates and experienced nurses may have similar attitudes toward interventions; however, both often work in environments with high rates of epidural analgesia, electronic fetal monitoring, and cesarean births (Carlton et al., 2009). Frequent intervention use may be perceived as the norm by recent graduates, who may fear social consequences if they promote births that have minimal or no exposure to interventions (Carlton et al.; Hodnett, 1997).

Moreover, nurses with less experience may suggest epidural analgesia to patients more frequently or use electronic fetal monitoring because they may not be sufficiently exposed to low-intervention birth practices and have limited opportunities to develop the skill sets necessary to support them (Kardong-Edgren, 2001; Ruhl et al., 2006). Nurses with less experience may feel vulnerable expressing negative attitudes toward interventions because of their position as junior staff members (Lyndon, 2008; Simpson, 2006). Experienced nurses may have greater success negotiating birth practices that are synchronous with their attitudes and more skill and authority to advocate for fewer interventions or resist epidural analgesia when they perceive it to be unnecessary.

Theoretically, experienced nurses could have developed more negative attitudes toward birth interventions because of previous exposure to lower rates of cesarean births; however, the findings that experience did not strongly predict attitudes does not support this. Our findings are similar to those of McNiven and colleagues (2011), who performed a secondary analysis on midwives' data ($N = 400$) from the NMCAS study. They found significant

Table 3: Hierarchical Regression Analysis Summary for Variables Predicting Scale Scores on Nurses' Attitudes

Predictor	Scale					
	Electronic fetal monitoring		Epidural analgesia		Importance of vaginal birth	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.01^{+}		−.00^{+}		.00^{+}	
Years of experience		−.09^{+}		.01^{+}		.04^{+}
Step 2	.01^{+}		.10***		.03*	
Years of experience		−.09^{+}		.00^{+}		.05^{+}
Level 3[a]		.00^{+}		.33***		−.21**
Level 2[a]		−.07^{+}		.02^{+}		.10^{+}
Step 3	.09**		.14***		.05**	
Years of experience		−.08^{+}		.03^{+}		.03^{+}
Level 3[a]		−.04^{+}		.30***		−.22**
Level 2[a]		.07^{+}		.04^{+}		−.12^{+}
Midwife[b]		−.34***		−.43***		.18**
Family Practice[b]		−.21**		−.15*		−.04^{+}
Total Adjusted R^2	.09***		.23***		.05**	
n	300		302		301	

Note.
[a] Reference category is a level-one hospital.
[b] Reference category is an obstetrician.
^{+}ns, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

differences between midwives with fewer than 5 years' experience and midwives with greater than 5 years' experience on only a handful of single items in the survey. Midwives with greater than 5 years' experience were more positive than midwives with less than 5 years' experience toward the importance of vaginal birth; they were also less positive toward epidurals upon patient request, episiotomies to prevent pelvic floor relaxation, and cesarean birth to prevent urinary incontinence and sexual dysfunction.

Nurses' attitudes may be less influenced by years of experience than by prevailing perinatal cultural attitudes toward birth practices that can exert a powerful influence. This is consistent with the premise in social identity theory that attitudes of group members (in this case providers of maternity care) will gravitate toward attitudes in the current social environment (Smith & Hogg, 2008). Environmental exposures, such as other patients' and providers' attitudes, rates of interventions, accessibility of resources, and patient acuity, may be more significant in shaping nurses' attitudes about birth practices than their experience.

Our findings support the effect of environmental exposure on attitude formation because nurses at tertiary hospitals had more positive attitudes toward epidurals and less positive attitudes toward the importance of vaginal birth. Nurses in tertiary hospitals may have more exposure to epidural analgesia due to increased accessibility of anesthetists (Ontario Perinatal Partnership Program, 2006). They may also have a history with more cesarean birth capability than nurses at community or level-two hospitals (Ontario Perinatal Partnership). Both sets of circumstances could contribute to more favorable attitudes to those interventions.

More positive attitudes toward epidurals at tertiary hospitals is consistent with research examining perceptions of 249 nurse-midwives from 11 hospitals about birth practices by hospital level of employment (Mead & Kornbrot, 2004). When presented with the same clinical scenario, nurse-midwives working at institutions with high levels of interventions were significantly more likely to suggest a patient would need an epidural during labor than nurse-midwives working at low-intervention institutions (Mead & Kornbrot). In practice, nurses with more accessibility to and positive attitudes toward epidural analgesia use may be more likely to suggest an epidural for pain relief and less inclined to provide nonpharmacological relief options than nurses with more negative attitudes. Likewise, a nurse's attitude toward the importance of vaginal birth may influence the nurse's level of engagement in trying a range of strategies (e.g., upright positioning) to prevent a cesarean birth in a patient with limited labor progress. Nurses' degree of favorability toward epidurals and the importance of vaginal birth may fit with nurses' attitudes toward providing nonpharmacological labor support and using nonpharmacological strategies to prevent interventions. Exposure and accessibility to cesarean birth and epidural analgesia may contribute to nurses' attitudes and practices around labor support and supporting low-intervention births.

The lack of relationship found between hospital level of employment and routine electronic fetal monitoring may be explained by similarities in rates of electronic fetal monitoring across hospital levels. In other words, electronic fetal monitoring is so ubiquitous that similarities in nurses' exposures and attitudes toward its use would be expected. Unlike rates of cesarean births and epidural analgesia that have differed by hospital level in provinces, provincial figures to support differing rates of electronic fetal monitoring were not available (Ontario Perinatal Programs Partnership, 2006). The Public Health Agency of Canada's (2009) What Mothers' Say Study suggests, in 91% of all Canadian labors, electronic fetal monitoring has been used. This high percentage would imply most nurses at all hospital levels use or are regularly exposed to electronic fetal monitoring, subsequently developing similar attitudes toward this technology.

Consistent with the mere exposure effect that posits repeated exposure leads to more positive attitudes (Grush, 1976), nurses' exposure to care providers seemed to be associated with increased favorability. In this study, higher numbers of nurses working in tertiary hospitals selected obstetricians as care providers and those working in community and secondary hospital levels selected family physicians. Proportionately, more obstetricians work at tertiary hospitals and more family physicians work at rural hospitals (CIHI, 2005). The lack of relationship between hospital level and preference for midwives may be explained by less clear distributions of midwifery care (Centre for Rural Health Research, 2008; National Aboriginal Health Organization, 2008).

Unlike family practitioners and obstetricians, it is difficult to assume nurses have increased

exposure to midwives at different hospital levels. Although it seems intuitive that nurses would more likely to select providers to whom they are more exposed, this explanation is overly simplistic; nurses may be exposed to all provider types at the same hospital level. Some nurses selected obstetricians at level-two and community hospitals and family practitioners at tertiary hospitals. Exposure may be an important factor, but exposure alone does not account for care provider preference.

Understanding other factors contributing to nurses' choice of care provider may be important because differences in nurses' attitudes based on choice of provider were highly significant. Nurses' choice of care provider seemed to correspond with the generally reported attitudes toward birth practices of their care provider of choice. On average, nurses who selected obstetricians for their birth attendants held the most positive attitudes toward epidural analgesia, electronic fetal monitoring, and episiotomies, whereas those who selected midwives held the least positive attitudes. Similarly, Klein and colleagues (2009) found obstetricians held the most positive attitudes toward these birth practices and midwives the least positive attitudes.

Consistent with previous findings that midwives and obstetricians hold different attitudes toward birth (Klein et al.), nurses who selected obstetricians held the least positive attitudes and those who selected midwives held the most positive attitudes toward doulas, the safety of birth, and the importance of vaginal birth. Likewise, the finding that nurses selecting a family physician as a birth attendant expressed attitude scores between nurses who selected an obstetrician and those who selected a midwife concurs with those of Klein and colleagues. Social identity theory suggests nurses will align attitudes with others in their environment; therefore, nurses' attitudes toward birth practices may be positively or negatively influenced by attitudes of the predominant provider group. Nurses' repeated exposure to provider types at different hospital levels may not only influence care provider favorability, but also may contribute to nurses' attitudes about birth practices.

Similarities between nurses' attitudes and that of their providers of choice are significant because providers' attitudes seem to be related to practice behaviors (Abenheim et al., 2007; Allen & Hanson, 2005). For example, Allen and Hanson reported obstetricians who have been documented to have more positive attitudes toward episiotomies were 2.38 times more likely, 95% CI [1.98, 2.87], to perform episiotomies than family practitioners, who hold less positive attitudes (Klein et al., 2009). Nurses' attitudes that are consistent with those of their providers of choice may align nurses' practice with those providers. For example, nurses whose attitudes align with those of midwives might advocate for birth without intervention. The individuals nurses choose as their care providers may be indicators of not only attitudes toward birth practices but also practice behaviors.

Attitudes do not always predict behavior; a meta-analysis based on 41 studies suggests the average attitude-behavior correlation is .52 (Glasman & Albarracin, 2006). The average nurses' attitude-behavior correlation may be stronger because direct experience with an attitude object (i.e., electronic fetal monitoring) contributes to increased attitude accessibility and stability (Bohner & Wanke, 2002; Glasman & Albarracin). Increased accessibility and stability are the key factors that strengthen the effect of attitudes on behavior (Glasman & Albarracin). In this study, analyses based on hospital level of employment only included nurses working in direct practice; therefore, it would be reasonable to expect these nurses have stable, accessible attitudes because of direct experience with interventions and vaginal/cesarean birth. Years of experience may decrease the strength of the relationship between attitude stability, accessibility, and nurses' behavior because newer nurses may face more barriers translating their attitudes into practice behaviors than experienced nurses.

Limitations

A limitation of the study is the use of a convenience sample because it can increase sampling error (Polit & Beck, 2010). Because nurses took surveys to workplaces for colleagues to complete, it is unknown how many nurses were informed about the survey and impossible to determine an accurate response rate. Although some literature suggests education may relate to differences in nurses' attitudes (Bernaix, Schmidt, Arrizola, Iovinelli, & Medina-Peolinez, 2008; Chan et al., 2006), insufficient demographic educational data were available in our secondary analysis to include education as a variable. 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 the betas, and the significance values of standardized *B* may be

invalid, although the regression coefficients will be the same (Field, 2009).

Conclusion

Nurses constitute the largest maternity care provider population; however, limited attention has been given toward factors influencing nurses' attitudes and how these attitudes and behaviors contribute to birth practices. Nurses make many clinical decisions that affect birth outcomes, such as suggesting an epidural or applying electronic fetal monitoring (James et al, 2003; Simpson, 2005). Nurses' communication with primary providers and interactions with patients also influences providers' and patients' views and decision making (Sinivaara et al., 2004). Nurses' attitudes toward birth practices influence the resistance nurses' offer to unnecessary interventions and their commitment to low-technology birth practices.

Relationships between nurses' workplace exposures, attitudes, and practice behaviors require exploration to determine the interface between nurses and common birth practices. Workplace exposures to other providers' attitudes and practices may not only influence nurses' attitudes to interventions but also their support for doulas, factors needed to decrease the cesarean birth rate, the importance of vaginal birth, and the safety of birth. Mere exposure and social identity theory offer a valuable framework by suggesting nurses' attitudes will tend to gravitate toward predominant attitudes in their social environments. Knowledge about the interplay between attitudes and practice behaviors can support education strategies to reduce heavy reliance on technological approaches toward birth.

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