Changes in breastfeeding initiation at hospital discharge between first and second births in Nova Scotia: A population-based cohort study in Nova Scotia

Journal:	*CMAJ Open*
Manuscript ID	CMAJOpen-2016-0116
Manuscript Type:	Cohort (retrospective)
Date Submitted by the Author:	25-Aug-2016
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Keywords:	Obstetrics and gynecology, Epidemiology, Public health
More Detailed Keywords:	breastfeeding
Abstract:	Background: Little research has been conducted to investigate changes in breastfeeding from one pregnancy to another. This study was conducted to describe rates of breastfeeding initiation at hospital discharge for women's first (B1) and second (B2) births and to identify factors associated with changes in initiation at B2. Methods: A longitudinal, population-based cohort study was conducted. Women residing in Nova Scotia who delivered a first and second live born singleton between 2007-2013 were included. Separate analyses were conducted among women who breastfed in B1 and among women who did not breastfeed in B1 to identify factors associated with breastfeeding initiation in B2. Results: Of the 9643 (82.6%) mothers who initiated breastfeeding in B1, 1153 (12%) did not initiate breastfeeding in B2. Of B1 non-initiators, 526 (26.3%) initiated breastfeeding in B2. Mostly, different factors were associated with breastfeeding initiation in B2, depending on breastfeeding initiation status in B1. However, smoking in both pregnancies was associated with breastfeeding initiation in B2 within both subsets of women (increased odds of not breastfeeding in B2 among the subset who breastfed in B1 (OR=1.4, 95% CI=1.2-1.8), and decreased odds of breastfeeding in B2 among the subset who did not breastfeed in B1 (OR=0.7, 95% CI=0.6-0.9). Interpretation: Most women continue the same method of infant feeding in B2 as in B1. Factors affecting breastfeeding status in B2 mostly depended on B1 initiation status. Identifying factors associated with change in breastfeeding status between B1 and B2 may help to inform interventions for optimal breastfeeding initiation in B2.

Changes in breastfeeding initiation at hospital discharge between first and second births in Nova Scotia: A population-based cohort study in Nova Scotia

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Abstract:

Background: Little research has been conducted to investigate changes in breastfeeding from one pregnancy to another. This study was conducted to describe the rates of breastfeeding initiation at hospital discharge for women's first (B1) and second (B2) births and to identify factors associated with changes in initiation at B2.

Methods: A longitudinal, population-based cohort study was conducted. Women residing in Nova Scotia who delivered a first and second live born singleton between 2007-2013 were included. Separate analyses were conducted among women who breastfed in B1 and among women who did not breastfeed in B1 to identify factors associated with breastfeeding initiation in B2.

Results: Of the 9643 (82.6%) mothers who initiated breastfeeding in B1, 1153 (12%) did not initiate breastfeeding in B2. Of B1 non-initiators, 526 (26.3%) initiated breastfeeding in B2. Mostly, different factors were associated with breastfeeding initiation in B2, depending on breastfeeding initiation status in B1. However, smoking in both pregnancies was associated with breastfeeding initiation in B2 within both subsets of women (increased odds of not breastfeeding in B2 among the subset who breastfed in B1 (OR=1.4, 95% CI=1.2-1.8), and decreased odds of breastfeeding in B2 among the subset who did not breastfeed in B1 (OR=0.7, 95% CI=0.6-0.9).

Interpretation: Most women continue the same method of infant feeding in B2 as they used in B1. Factors affecting breastfeeding status in B2 mostly depended on B1 initiation status. Identifying factors associated with change in breastfeeding status between B1 and B2 may help to inform interventions for optimal breastfeeding initiation in B2.

Introduction

Breast milk has well-recognized health benefits for both the infant and the mother [1, 2, 3]. Breastfeeding is unequalled by alternative feeding methods for both providing ideal nutrition for development and growth of the child[3], and reducing long-term healthcare costs [4]. Current guidelines from the World Health Organization (WHO) recommend exclusive breastfeeding for the first six months of life[3]. Atlantic Canada has lower rates of breastfeeding than other areas in Canada[5]. Approximately 83% of Nova Scotian women breastfed at hospital discharge in 2013, exclusively or with supplementation, which was increased from 73.5% in 2006[6].

Numerous studies have been conducted to identify factors associated with breastfeeding initiation[6, 7-15]. Factors found to be associated with breastfeeding initiation included increasing maternal age, exclusive prenatal care by midwives[7], continued support from professionals such as lactation consultants and peers[8-10], socio-demographic factors such as higher levels of education, married/common-law status and higher household incomes[13]. Factors associated with lower rates of breastfeeding initiation were multiple births, preterm birth, not attending antenatal classes[6], having a high BMI[8,9], and being an adolescent parent[6,12,14,15]. These factors relate to breastfeeding status for a single pregnancy and do not consider reasons for changes in breastfeeding status between two pregnancies. A study by Sutherland et al., 2012, investigated maternal and obstetrical factors associated with breastfeeding across multiple pregnancies[16]. Findings showed an overall decrease in breastfeeding rates among multiparous women compared to primiparas, and suggested that unsuccessful breastfeeding with the first child reduced initiation in subsequent births. Rates of non-initiation rose between each subsequent delivery[16]. While this study had a large sample

size, the study was not population-based, did not look at the direction of change over time, and required women to recall breastfeeding experiences 5-10 years after delivery.

The objectives of this study were to describe the rates of breastfeeding initiation at hospital discharge between first and second births in Nova Scotia and to identify pregnancy and newborn factors associated with a change in breastfeeding initiation status from Birth 1 (B1) to Birth 2 (B2).

Methods

Study design and population

We conducted a longitudinal, retrospective cohort study using data from the Nova Scotia Atlee Perinatal Database (NSAPD). The NSAPD is a compilation of information from each hospital providing obstetrical services and registered midwives in the province. Variables are captured for the Canadian Institute for Health Information Discharge Abstract Database and additional variables are obtained specifically for the NSAPD. The database includes information on maternal, socio-demographic, prenatal, labor, delivery and neonatal factors.

Nova Scotia residents who had their first and second births between January 1, 2007 and December 31, 2013 were included. This study was limited to singleton births (in both B1 and B2), both infants with birth weight $\geq$ 500 grams, and both infants surviving $\geq$ 28 days. Women with missing breastfeeding information for B1 or B2 were excluded.

Variables and definitions

The outcome of “any breastfeeding” was described as exclusive or supplemental breastfeeding at hospital discharge, “yes” or “no”, in line with Labbok and Krasovec’s definitions of breastfeeding[17]. Breastfeeding initiation was evaluated at B2 and assessed to identify a change in initiation from B1; for women who initiated any breastfeeding in B1 the outcome variable was no breastfeeding initiation in B2, and for women who did not initiate any breastfeeding in B1 the outcome variable was any breastfeeding in B2.

Explanatory variables were selected based on previous literature of factors associated with breastfeeding initiation or factors potentially affecting a women’s ability to breastfeed. These factors included 1)maternal socio-demographic variables (maternal age, any smoking during pregnancy (yes/no), pre-conceptual folate intake (yes/no), obesity, as defined by pre-pregnancy weight >90kg (yes/no), neighborhood income defined as quintiles of neighbourhood income per single person equivalent based on postal code linked to Canadian census data (low/lowest or mid-highest), rural location based on postal code (yes/no), married/common law (yes/no), inter birth interval <18 months (yes/no)) 2) maternal health conditions during pregnancy (maternal recreational drug use (yes/no), gestational diabetes mellitus (yes/no), pre-existing diabetes (yes/no), gestational hypertension (yes/no), carrier status positive and/or chronic infection during pregnancy of cytomegalovirus, group B strep, herpes simplex, HIV/AIDS, syphilis, toxoplasmosis, or hepatitis A, B or C (yes/no), admission to hospital for hyperemesis (yes/no)), 3) labour and delivery factors (labour onset (none vs. induced/spontaneous), cesarean section (yes/no), obstetrician attending delivery

(yes/no), tertiary delivery hospital (yes/no), 3rd/4th degree perineal tear (yes/no), post partum hemorrhage (yes/no), epidural analgesia (yes/no), spinal analgesia (yes/no), regional analgesia (yes/no)) and 4) infant factors (birth sex (male or female), birth weight ≥2500g (yes/no), APGAR at 0 and 5 minutes <7 (yes/no), birth year (2006-2009, 2010-2011, 2012-2013), special care nursery stay ≥ 72h (yes/no), major head/neck anomaly (yes/no), other major anomaly (yes/no), gestational age <37 weeks (yes/no), infant length of hospital stay ≥72 hours (yes/no), hyperbilirubenemia diagnosed or phototherapy received (yes/no)).

Factors were modeled independently for each possibility of change over time between B1 and B2, with the exception of time-dependent variables such as maternal age and birth year. For example, “any smoking”, has four options for change over time: a woman may have been a smoker in pregnancy for both B1 and B2, become a non-smoker in B2 (after having smoked in B1), become a smoker in B2 (after having been a non-smoker in B1), or remained a non-smoker for both B1 and B2.

Statistical Analysis

Factors evaluated in the study were first analyzed using descriptive statistics and were reported as numbers and percentages. A univariate analysis was conducted for the two subsets of the cohort: one for women who initiated breastfeeding in B1, and a separate model for mothers who did not initiate breastfeeding in B1. Factors included in the initial logistic regression models were those that had a p-value of ≤ 0.10 on chi-square test from the bivariate analysis. Variables were eliminated from the model if they did not contribute to the fit of the regression model at a p value of < 0.05, as determined

by a likelihood ratio test. These logistic regression models were used to estimate adjusted odds ratio (OR) and 95% confidence interval (CI) for each covariate. All analyses were conducted using SPSS 22.0.

Ethics Approval

This study received data access approval from the Data Access Committee of the Reproductive Care Program, as well as approval from the Research Ethics Board at the IWK Health Center.

Results

After applying the inclusion criteria and excluding women with missing breastfeeding information for B1 or B2, there were 11460 women who had their first and second birth during the study period. Figure 1 shows the breastfeeding initiation status at B1 and B2 for the 11460 women who were included in the study. Of the 9463 (82.6%) women who initiated breastfeeding in B1, 8490 (89.7%) also initiated breastfeeding in B2. Of the 1997 (17.4%) women who did not initiate in B1, 1471 (73.7%) remained non-initiators for both children.

Table 1 describes the population characteristics of the cohort, with frequencies shown according to their presence in each pregnancy. Factors containing categories with < 5 participants are not shown in accordance with data access requirements. The average maternal age at B2 among B1 breastfeeding initiators was 30.3 years old, whereas it was 26.2 years among women who did not breastfeed in B1. Very few women had rare outcomes such as congenital abnormalities or NICU stay in both pregnancies, so these factors were examined only for B2.

Table 2 shows the unadjusted and adjusted odds ratios of not breastfeeding in B2, *among the subset of women who breastfed in B1*. Becoming or remaining a smoker, changing to a higher or remaining in a low neighborhood income area, having a c-section in B2 or in both births, not supplementing with folic acid pre-conceptually in both births, non-tertiary hospital in B2 or in both births, recreational drug use in B2, and younger maternal age were significantly associated with the odds of not breastfeeding in B2.

Table 3 shows the unadjusted and adjusted odds ratios of breastfeeding in B2 *among the subset of women who did not breastfeed in B1*. Smoking in B1 and B2, birth year for B2 in an earlier epoch, and having a c-section in B1 and B2 were significantly associated with decreased odds of breastfeeding in B2. Infant length of stay of ≥72 in an NICU for both B1 and B2 was associated with increased odds of breastfeeding in B2 ((OR 2.30, CI 1.58-3.35).

Interpretation:

Breastfeeding was initiated by 9643 women in B1, of whom 1153 (12%) did not breastfeed in B2. A change from not breastfeeding in B1 to breastfeeding in B2 occurred among 526 (26.3%) of the remaining 1997 women. Among the subset of women who initiated breastfeeding in B1, changing from a tertiary hospital in B1 to a non-tertiary hospital in B2 (adjusted OR 2.34, CI 1.47-3.72) was most strongly associated with B2 non-initiation. Among women who did not initiate breastfeeding in B1, increased length of infant stay ≥ 72 hours in both B1 and B2 was with the only factor significantly associated with increased odds of breastfeeding initiation in B2, although

other factors were associated with decreased odds of initiation. Significant factors common for both subsets of women included smoking status and c-section.

Our data demonstrated that there was an overall reduction in breastfeeding initiation rates between first and second pregnancy from 82.6% in B1 to 78.7% in B2. The majority of women in each subset, B1 initiators and B1 non-initiators, did not change their breastfeeding status in B2. This was in keeping with a similar study conducted in the USA[16]. Between the two subsets of women, B1 initiators and B1 non-initiators, smoking and c-section were common factors associated with breastfeeding in B2. Among the subset of women who breastfed in B1, a several variables associated with non-initiation in B2 were related to socio-demographic factors. Smoking in B2 was the factor most strongly associated with breastfeeding non-initiation, a potentially causal factor[18]. A surprising finding was that women who switched from not reporting recreational drug use in B1 to reporting using recreational drugs in B2 had decreased odds of not breastfeeding in B2. This may be attributable to Type I error given the number of variables examined or alternatively, mothers using methadone may have received additional appointments with health care providers where breastfeeding was encouraged[19].

We interpret the significance of pre-conceptual folic acid as a possible proxy for planning a pregnancy, as women are recommended to initiate folic acid prior to becoming pregnant[20]. While remaining unmarried or residing in a low income neighborhoods[11] was associated with increased odds of not breastfeeding in B2 in keeping with similar studies, we unexpectedly found that changing marital status to married in B2 or moving to a higher neighborhood income quintile in B2 was associated

with higher odds of not breastfeeding in B2. Women who delivered in non-tertiary healthcare centers in their second pregnancy had lower odds of breastfeeding, and this may be due to fewer supports available in these communities surrounding the Baby-Friendly Initiative which encourages practices such as less pacifier use and early breast contact[21]. Within the subset of women who did not breastfeed in B1, having an increased infant length of stay ≥72h in B1 and B2 increased the odds of breastfeeding in B2. We hypothesize that this may be related to the potential supports that may be offered to the mother during this time. Regarding more recent birth year being associated with breastfeeding in B2 among women who did not breastfeed in B1, policy change in recent years in Nova Scotia hospitals surrounding breastfeeding may have played a role. The province openly supported the WHO/UNICEF Baby Friendly Initiative, and multiple hospitals in Nova Scotia are currently working towards gaining Baby Friendly status, which we speculate may have positively influenced breastfeeding.

Strengths and Limitations

The strengths of this study included the large, population-based cohort, the ability to look at breastfeeding initiation changes between a first and second birth, and the separation of factors to show the direction of change over time. Limitations of the study include the lack of information on some socio-demographic variables such as education level and on breastfeeding experience beyond discharge from hospital following the first birth. Social factors such as spousal support, and opinions on the quality of education and care around breastfeeding provided by healthcare workers were not available in the NSAPD and could be relevant to breastfeeding in a subsequent birth. We required that the explanatory variables not be missing for both pregnancies/births, resulting in

missing values for some variables. In examining potential bias created by excluding missing values, we observed that the proportion of women who breastfed in B2 among those with missing covariate information was similar to those with non-missing covariate information. The rates of not initiating breastfeeding in B2 (among the subset of women who breastfed in B1) were 10.4% and 10.2% among women who did not have missing data and among women with missing data respectively. The rates of initiating breastfeeding in B2 (among the subset of women who did not breastfeed in B1) were similar between those without missing data and who were excluded because of missing data (26.7% and 23.7% respectively).

Conclusion

Factors affecting breastfeeding status in B2 varied depending on B1 initiation status. Although not necessarily causal, identifying factors associated with change in breastfeeding status from B1 to B2 may help to inform interventions for optimal breastfeeding initiation in B2.

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Figure 1: *Breastfeeding (BF) initiation at hospital discharge at B1 and B2, Nova Scotia 2007-2013 (N=11,460 women, 22,920 pregnancies)*

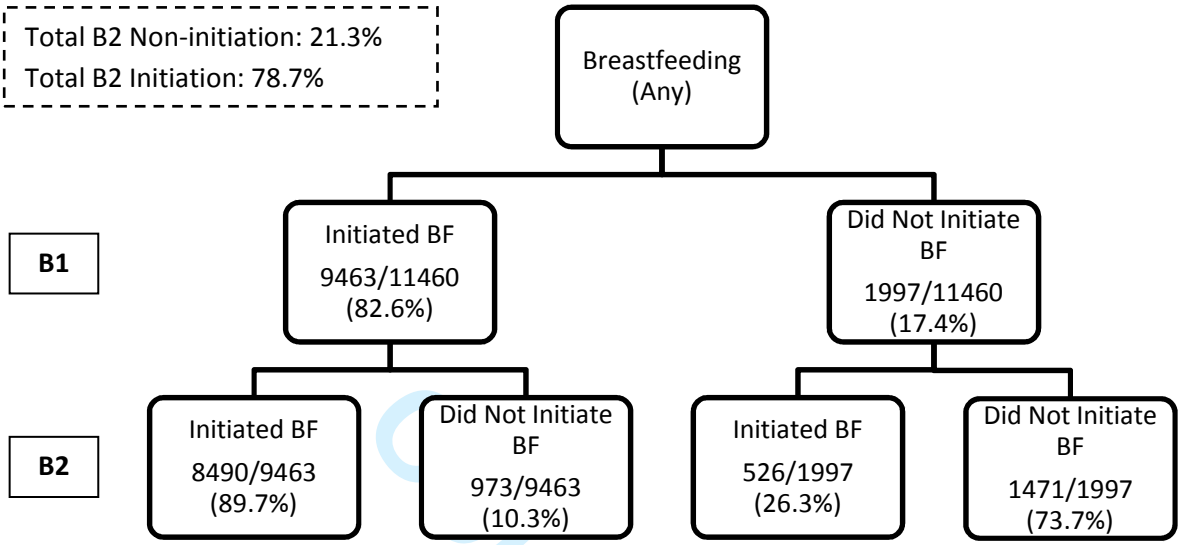

Table 1: *Characteristics of study population according to breastfeeding initiation in B1 and B2, Nova Scotia, 2007-2013*

	B1 Breastfeeding Initiators (n=9463)			B1 Breastfeeding Non-initiators (n=1997)		
Factor	**# Breastfed B1**	**% Did not Breastfeed B2**	**P-value**	**# Did not Breastfeed B1**	**% Breastfed B2**	**P-value**
Socio-demographic						
Maternal Age B2*	Mean: 30.3 SD: 5.0		0.00	Mean: 26.2 SD: 5.1		0.31
Smoking			0.00			0.01
No B1 B2	7075	8.2		940	29.0	
No B1 Yes B2	246	20.7		86	31.4	
Yes B1 No B21	369	13.6		138	28.3	
Yes B1 B2	880	24.5		698	22.2	
Missing	893			135		
Folic Acid			0.00			0.07
Yes B1 B2	2803	5.6		184	28.3	
Yes B1	1017	8.8		131	26.7	
No B1	994	7.9		161	35.4	
No B1 B2	1929	17.8		820	25.2	
Missing	2720			701		
Obesity			0.00			0.61
Not Obese B1 B2	4333	9.3		840	25.2	
Obese B1, Not Obese B2	287	15.7		55	20.0	
Not Obese B1, Obese B2	352	11.6		102	29.4	
Obese B1 B2	1893	12.0		455	26.2	
Missing	2598			545		
Neighborhood income			0.00			0.12
High B1 B2	4048	7.9		662	27.0	
High B1 Low B2	533	13.1		155	34.2	
Low B1 High B2	649	14.3		144	27.1	
Low B1 B2	2271	13.6		695	24.7	
Missing	1962			341		
Rural residence			0.00			0.70
No B1 B2	3550	8.9		1188	25.6	
No B1 Yes B2	353	12.5		98	28.6	
Yes B1 No B21	253	13.0		75	30.7	
Yes B1 B2	2213	13.6		619	27.0	
Missing	3094			17		
Marital status			0.00			0.83
Married B1 B2	6174	7.0		588	25.9	
Married B1, Not married B2	157	17.8		55	30.9	
Not married B1, Married B2	1019	14.0		321	27.7	
Unmarried B1 B2	1069	20.4		653	27.0	

Missing	1044			380		
Interpregnancy interval			0.00			0.44
<18mo	998	17.1		294	24.5	
≥ 18 mo	8465	9.5		1703	26.7	
Missing	0			0		
Maternal Health						
Recreational drug use			0.00			0.39
No B1 B2	9221	10.1		1850	26.1	
No B1 Yes B2	81	17.3		46	37.0	
Yes B1 No B2	123	18.7		83	27.7	
Yes B1 B2	38	23.7		18	22.2	
Missing	0			0		
Pre-gestational diabetes			0.58			0.26
No B1 B2	9390	10.3		1970	26.3	
No B1 Yes B2	25	12.0		8	0	
Yes B1 No B2	8	0		6	33.3	
Yes B1 B2	40	15.6		13	38.5	
Missing	0			0		
Gestational diabetes			0.01			0.56
No B1 B2	8966	10.1		1892	26.4	
No B1 Yes B2	248	10.1		56	28.6	
Yes B1 No B2	126	17.5		17	11.8	
Yes B1 B2	123	16.3		32	28.1	
Missing	0			0		
Gestational hypertension	**	**	0.64	**	**	0.04
Maternal Chronic Infection	**	**	0.65	**	**	0.37
Hyperemesis			0.10			0.09
No B1 B2	9352	10.2		1964	26.1	
No B1 Yes B2	62	11.3		18	44.4	
Yes B1 No B2	38	18.4		7	57.1	
Yes B1 B2	11	27.3		8	25.0	
Missing	0			0		
Labor and Delivery Factors						
Labor			0.03			0.01
S/I B1 B2	7389	9.9		1144	26.3	
S/I B1	1479	12.0		251	23.0	
None B1	188	6.9		15	48.3	
None B1 B2	407	11.8		6	32.2	
Missing	0			0		
C-section			0.00			0.06
No B1 B2	6685	9.9		1414	25.7	
No B1, C-sec B2	464	12.9		111	32.4	
C-sec B1, No B2	457	4.8		69	37.7	
C-sec B1 B2	1855	12.2		403	25.1	
Missing	2			0		

Attending physician			0.01			0.23
Ob B1 B2	4997	11.1		1069	27.5	
Ob B1	1144	8.0		232	27.6	
Other B1	659	10.9		153	28.1	
Other B1 B2	2620	9.4		523	22.9	
Missing	43			20		
3rd/4th degree perineal tear	**	**	0.54	**	**	0.64
Post Partum Hemorrhage			0.637			0.03
No B1 B2	8005	10.3		1711	25.5	
No B1 Yes B2	474	9.1		97	30.9	
Yes B1 No B2	837	10.8		170	28.8	
Yes B1 B2	147	8.2		19	52.6	
Missing	0			0		
Spinal Anesthesia			0.02			0.08
No B1 B2	6533	9.8		1429	25.7	
No B1 Yes B2	1644	11.6		291	24.4	
Yes B1 No B2	567	8.8		84	36.9	
Yes B1 B2	719	12.7		193	29.5	
Missing	0			0		
Epidural Anesthesia			0.23			0.06
No B1 B2	2758	10.0		666	27.9	
No B1 Yes B2	532	9.8		117	35.0	
Yes B1 No B2	2919	11.2		597	25.3	
Yes B1 B2	3254	9.7		617	24.0	
Missing	0			0		
Intravenous Analgesia			0.12			0.33
No B1 B2	1898	8.9		448	26.8	
No B1 Yes B2	497	11.7		129	32.6	
Yes B1 No B2	1816	10.7		394	26.9	
Yes B1 B2	5252	10.5		1026	25.1	
Missing	0			0		
Infant Factors						
Birth Sex B2			0.76			0.68
Male	4921	10.2		1034	24.6	
Female	4542	10.3		963	24.8	
Missing	0					
Birth Weight			0.00			0.01
≥2500 g B1 B2	8923	10.0		1798	25.3	
Low B2	163	16.6		63	28.6	
Low B1	315	14.0		110	38.2	
Low B1 & B2	54	18.5		24	41.7	
Missing	8			2		
APGAR @1 minute			0.14			0.00
>6 B1 B2	7674	9.9		1613	24.7	
>6 B1	554	12.1		124	34.7	
≤6 B1	1080	11.7		237	31.2	

≤6 B1 B2	155	11.6		23	47.3	
Missing	0			0		
APGAR @ 5 min	**	**	0.12	**	**	0.00
B2 Birth Year			0.01			0.00
2007-2009	3819	9.2		761	31.7	
2010-2011	2280	11.6		529	20.4	
2012-2013	3364	10.6		707	25.0	
Missing	0			0		
NICU admission B2			0.72			0.00
No	192	10.9		50	44.0	
Yes	9271	10.3		1947	25.9	
Missing	0			0		
Head/neck Anomaly B2			0.07			0.89
No	9440	10.3		1990	26.3	
Yes	23	21.7		7	28.6	
Missing	0			0		
Other Major Anomaly B2			0.03			0.01
No	9124	10.1		1900	25.7	
Yes	339	13.9		97	38.1	
Missing	0			0		
Gestational age			0.03			0.00
≥37 B1 B2	8534	10.0		1744	24.6	
≥37 B1	329	14.3		79	35.4	
<37 B1	453	12.1		128	37.5	
<37 B1 B2	108	13.0		31	51.6	
Missing	39			15		
Infant Length of Stay			0.54			0.00
<72h B1 B2	5263	10.4		1279	22.8	
<72h B1	754	9.7		200	35.0	
≥72h B1	2207	10.7		324	29.3	
≥72h B1 B2	1239	9.3		194	35.6	
Missing	0			0		
Hyperbilirubinemia			0.00			0.00
No B1 B2	6635	10.6		1535	23.8	
No B1 Yes B2	804	8.5		156	35.3	
Yes B1 No B2	1471	11.5		228	28.1	
Yes B1 B2	553	5.8		78	53.8	
Missing	0			0		

** Continuous variable presented as mean, SD*

***Data not shown because cell size < 5*

Table 2: *Logistic regression analyses among women who initiated breastfeeding in B1, showing associations between factors in B1 and B2 and not breastfeeding in B2*

	No Breastfeeding initiation in B2	
Factor	**Unadjusted OR(95% CI)**	**Adjusted OR* (95% CI)**
Smoking		
No B1 & B2	1	1
No B1, Yes B2	2.91 (1.89-4.39)	**1.61 (1.03-2.52)**
Yes B1, No B2	1.54 (1.01-2.30)	1.02 (0.67-1.57)
Yes B1 & B2	3.13 (2.46-3.96)	**1.58 (1.21-2.08)**
Neighborhood Income		
High B1 & B2	1	1
High B1, Low B2	1.50 (1.03-2.14)	0.99 (0.67-1.45)
Low B2, High B2	1.26 (0.87-1.79)	**1.54 (1.12-2.12)**
Low B1 & B2	1.87 (1.53-2.28)	**1.44 (1.17-1.78)**
C-section		
No B1 &B2	1	1
No B1, Yes B2	1.35 (0.90-1.97)	**1.30 (0.96-1.77)**
Yes B1, No B2	0.46 (0.24-0.80)	0.57 (0.31-1.05)
Yes B1 &B2	1.33 (1.08-1.64)	**1.70 (1.36-2.13)**
Folic Acid		
Yes B1 & B2	1	1
Yes B1 & No B2	1.68 (1.24-2.26)	1.30 (0.96-1.77)
No B1 & Yes B2	1.44 (1.05-1.97)	0.99 (0.71-1.38)
No B1 & B2	3.57 (2.86-4.48)	**1.78 (1.36-2.33)**
Tertiary Hospital Type		
Tertiary B1 & B2	1	1
Tertiary B1, Not B2	3.16 (2.01-4.85)	**2.34 (1.47-3.72)**
Not B1, Tertiary B2	0.80 (0.28-1.87)	0.53 (0.22-1.44)
Non-tertiary B1 & B2	2.03 (1.69-2.45)	**1.54 (1.26-1.87)**
Recreational drug use		
No B1 & B2	1	1
No B1 & Yes B2	0.61 (0.15-1.77)	**0.22 (0.07-0.73)**
Yes B1 & No B2	2.33 (1.21-4.24)	1.24 (0.64-2.38)
Yes B1 & B2	4.73 (1.76-11.8)	2.29 (0.87-6.05)
Maternal Age in B2 (Continuous)	0.88 (0.87-0.90)	0.92 (0.90-0.95)

*Adjusted for other factors in the table

Table 3: *Logistic regression analyses among women who did not initiate breastfeeding in B1, showing associations between factors in B1 and B2 and breastfeeding initiation in B2*

	Breastfeeding initiation in B2	
Factor	**Unadjusted OR(95% CI)**	**Adjusted OR* (95% CI)**
Smoking		
No B1 & B2	1	1
Yes B1, No B2	0.11 (0.69-1.80)	1.13 (0.70-1.84)
No B1, Yes B2	0.96 (0.64-1.42)	0.98 (0.66-1.47)
Yes B1 & B2	0.70 (0.56-0.88)	**0.71 (0.57-0.90)**
Infant Length of Stay		
<72h B1 & B2	1	1
<72h B1, ≥ 72h B2	1.87 (1.34-2.59)	**2.12 (1.48-3.03)**
≥72h B1, <72h B2	1.39 (1.05-1.84)	**1.49 (1.10-2.00)**
≥72h B1 & B2	1.95 (1.39-2.70)	**2.30 (1.58-3.35)**
Birth Year in B2		
2012-2013	1	1
2007-2009	0.33 (0.25-0.44)	**0.55 (0.42-0.73)**
2010-2011	0.42 (0.33-0.54)	**0.69 (0.54-0.87)**
C-section		
No B1 &B2	1	1
No B1, Yes B2	1.43 (0.92-2.20)	1.49 (0.87-2.55)
Yes B1, No B2	1.81 (1.07-3.03)	1.02 (0.64-1.63)
Yes B1 &B2	0.02 (0.78-1.32)	**0.67 (0.49-0.91)**

*Adjusted for other factors in the table

Contributions: K Nix helped with the design of the study, conducted the analyses, contributed to the interpretation of the results and wrote the first draft of the manuscript. L Dodds designed the study, helped with the interpretation of results and critically revised the manuscript. Both authors have seen and approved the final version of the manuscript.

Acknowledgements: The authors thank the Reproductive Care Program of Nova Scotia for access to the data. This research study was undertaken as part of the Research in Medicine program, Dalhousie University for K Nix. She received a summer research stipend from the Faculty of Medicine at Dalhousie University.