

Poverty and Breastfeeding: Comparing Determinants of Early Breastfeeding Cessation Incidence in Socioeconomically Marginalized and Privileged Populations in the FiNaL Study

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Abstract

Purpose: Infant feeding differences are strongly tied to socioeconomic status. The goal of this study is to compare determinants of early breastfeeding cessation incidence in socioeconomically marginalized (SEM) and socioeconomically privileged (SEP) populations, focusing on birthing parents who intended to breastfeed.

Methods: This cohort study includes data from 451 birthing parents in the Canadian province of Newfoundland and Labrador who reported intention to breastfeed in the baseline prenatal survey. Multivariate logistic regression techniques were used to assess the determinants of breastfeeding cessation at 1 month in both SEM and SEP populations.

Results: The analysis data included 73 SEM and 378 SEP birthing parents who reported intention to breastfeed at baseline. At 1 month, 24.7% (18/73) in the SEM group had ceased breastfeeding compared to 6.9% (26/378) in the SEP group. In the SEP population, score on the Iowa Infant Feeding Attitude Scale (IIFAS) (odds ratio [OR] 3.33, $p=0.01$) was the sole significant determinant. In the SEM population, three significant determinants were identified: unpartnered marital status (OR 5.10, $p=0.05$), <1 h of skin-to-skin contact after birth (OR 11.92, $p=0.02$), and negative first impression of breastfeeding (OR 11.07, $p=0.01$).

Conclusion: These results indicate that determinants of breastfeeding cessation differ between SEM and SEP populations intending to breastfeed. Interventions intended on improving the SEM population's postpartum breastfeeding experience using best practices, increasing support, and ensuring at least 1 h of skin-skin contact may increase breastfeeding rates.

Keywords: breastfeeding cessation; poverty; social determinants of health

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Introduction

Breastfeeding is an issue of health equity.¹ Socioeconomically marginalized (SEM) populations with low levels of education and income are much less likely to breastfeed than their relatively privileged peers with higher levels of income and education.² Birthing parents[†] who do not breastfeed are at higher risk of negative health outcomes, including cancer, cardiovascular disease, and Type II diabetes.³ Infants who are not breastfed have higher rates of diarrhea, respiratory tract infections, otitis media, and sudden infant death syndrome.^{4,5} There is also evidence to suggest that children who are breastfed are less likely to suffer from chronic conditions such as Type I and Type II diabetes.^{6,7}

The reasons for low breastfeeding rates in low-income populations are complex and strongly shaped by gender, with women bearing a disproportionate burden of poverty around the world.⁸ Results from our previous research showed that SEM women tend to be disadvantaged in terms of access to formal and informal breastfeeding supports, gendered childcare workloads, access to information about breastfeeding, and cultural shame around the exposure of breasts.⁹ Other similar research conducted in the United States has made clear that this class-based marginalization intersects with race-based marginalization with notably low levels of breastfeeding in low-income and black populations.¹⁰ As breastfeeding is increasingly recognized as a matter of social justice, more research is needed to focus on the structural and systemic factors that hinder a birthing parent's right to breastfeed.

A feminist equity-focused analysis of breastfeeding is important given that, in Canada as in most of the global North, there is a striking contrast between what birthing parents wish to do (breastfeeding intention) and what actually happens once their child is born (breastfeeding duration rates). For example, while 90% of Canadian birthing parents initiate breastfeeding, only a quarter continue to breastfeed their infants to 6 months of age.¹¹ To our knowledge, our study will be the first analysis of breastfeeding duration in SEM and socioeconomically privileged (SEP) populations that focuses on birthing parents who *intend to breastfeed*.

The main goal of this study is to examine socioeconomic status as a social determinant of health in the Canadian province of Newfoundland and Labrador (NL), through an analysis of data from the Feeding Infants in NL (FiNaL) study. Our specific research ob-

jective is to compare determinants of early breastfeeding cessation in SEM and SEP populations in NL intending to breastfeed.

Methods

The FiNaL study is a longitudinal provincial birth cohort survey of prenatal care, birth, and infant nutrition. The methods for the FiNaL research are described in full detail in a separate publication (Twells et al., in preparation).

In brief, pregnant individuals completed questionnaires in their third trimester (phase I) with follow-up at 1–3 months (phase 2) and 6–12 months postpartum (phase 3). Questionnaires collected information on demographics and psychosocial factors, including social supports, breastfeeding knowledge, intent to breastfeed, attitudes to infant feeding, access to prenatal education, formal and informal supports, and maternity care practices, including adherence to the Baby-Friendly Hospital Initiative^{12,13} and the “Ten Steps for Successful Breastfeeding.”¹⁴ Consenting participants were recontacted when their child was 12 months and 4 years of age (phase 4) to examine other health outcomes, including health service usage, obesity, and respiratory illnesses. Attitudes to infant feeding were measured by the Iowa Infant Feeding Attitude Scale (IIFAS), which has been validated for the NL population.¹⁵ Higher total IIFAS scores indicate more positive attitudes toward breastfeeding. Questionnaires were completed either on paper, by telephone, or through SurveyMonkey®. A full list of relevant FiNaL survey questions can be found in Supplementary Appendix SA1. A total of 1283 pregnant individuals completed the FiNaL Pre-Natal Survey.

FiNaL inclusion criteria specified English-speaking pregnant individuals at least 18 years of age, living in NL. Exclusion criteria removed infants who were premature, with major congenital disorders, or unable to feed orally ($n = 59$), birthing parents medically unable to breastfeed ($n = 4$), twins ($n = 12$ [24 infants]), infants deceased at or shortly after birth ($n = 2$), and infants removed from birthing parent's custody ($n = 2$).

The SEM population in this study was defined as those participants who met either or both of two inclusion criteria:

- (1) Total annual household income less than \$30,000 per year[‡]
- (2) Highest level of education attained less than or equal to high school completion.

[†]Following Farrow's (2015) example,²⁷ we use language that is inclusive of all gender identities and families, including trans fathers, and trans-masculine and nonbinary-identified parents who may breastfeed (or chestfeed).

[‡]The 2012 low-income cutoff rate for a Canadian family of four in a community between 30,000 and 99,999 people is \$30,945.²⁸



The SEP population was defined as those participants who met either or both of the following two criteria:

- (1) Total annual household income greater than or equal to \$80,000 per year[§]
- (2) Highest level of education attained is a professional or postgraduate degree.

Early breastfeeding cessation is defined in this study as self-reported complete cessation of breastfeeding by 1 month postpartum.

The study sample included birthing parents who reported “Yes” to the question, *Will you be breastfeeding your new baby?*, conducted at the baseline prenatal survey in the third trimester.

Statistical analysis

Bivariate analyses were used to compare participants who did or did not cease breastfeeding, by variables linked to early breastfeeding cessation in existing research, including sociodemographic characteristics, hospital practices, birthing and postnatal experiences, attitudes, and measures of self-efficacy. Variables with a *p* value <0.1 in χ^2 tests were considered statistically significant and retained as covariates in the multiple logistic regression analysis.

Multivariate logistic regression techniques were used to assess the determinants of incidence of early breastfeeding cessation in both the SEM and SEP populations. Odds ratios with associated 95% confidence intervals are reported. The independent variables included in the final model were those that were statistically significant at the *p* <0.1 level in the univariate analyses, excluding parity, which correlated with previous breastfeeding experience. All data were entered and analyzed using the Statistical Package for the Social Sciences (Version 23.0).

Ethical approval

Ethical approval for this study was received from the provincial Health Research Ethics Authority in NL, Reference No. 09.81.

Results

In total, we analyzed provincial data for 451 individuals. From the initial 1283 pregnant individuals who completed the FiNaL Prenatal Survey, 51.3% (*n* = 658) completed the Post-Natal 1 (PN1) Survey, including sections

determining 1-month feeding mode, and met the study inclusion criteria. Of this total, 14.3% (*n* = 94) of respondents were categorized as SEM. A total of 59.7% (*n* = 393) of PN1 respondents were categorized as relatively SEP. Finally, within these groups, 77.7% (*n* = 73) of the SEM and 96.2% (*n* = 378) of the SEP population reported intention to breastfeed in the prenatal questionnaire, for a total of *n* = 451 individuals.

The analysis in this study compares the infant feeding patterns and determinants of early weaning of the SEM and SEP groups. Table 1 presents the descriptive analysis, comparing the demographic characteristics of participants, measures of the hospital experience, measures of self-efficacy, and a measure of attitudes toward infant feeding. At 1 month, 24.7% (18/73) in the SEM group had ceased breastfeeding compared to 6.9% (26/378) in the SEP group.

Table 2 presents the overall univariate analysis of determinants of incidence of early breastfeeding cessation for the combined population (*n* = 451) of SEM and SEP populations. The incidence of early breastfeeding

Table 1. Comparison of Characteristics of Socioeconomically Marginalized (*n* = 73) and Socioeconomically Privileged (*n* = 378) Participants Who Intended to Breastfeed

Variable	SEM population (<i>n</i> = 73)	SEP population (<i>n</i> = 378)
Prenatal	% of <i>n</i>	% of <i>n</i>
Mother/birthing parent age 18–25 years	47.9	2.9
Marital status: unpartnered	34.2	0.8
Lower than average prenatal IIFAS score (≤68.1)	53.4	38.4
No previous breastfeeding experience	71.2	58.2
Never breastfed as an infant	58.9	55.6
Residence in a rural community-small town ^a	74.0	45.2
Currently smoking	12.3	1.1
Peri-natal		
Cesarean section	26.0	27.8
< 1 h skin-to-skin contact after birth	68.5	64.0
Negative first impression of breastfeeding	50.7	36.8
Inhospital supplementation	39.7	24.6
Postnatal		
Breastfeeding cessation by 1 month	24.7	6.9
Mixed formula and breastfeeding in first month	43.8	19.6
Exclusively breastfed for first month	31.5	73.5

^aRural-small town residence was calculated using the Statistics Canada Postal Code Conversion File provided by the Newfoundland and Labrador Centre for Health Information. “Rural-small town residence” includes out-of-population center (rural) and small population center (1000 to 29,999), while “Urban residence” includes large urban population center (100,000 or greater). (There are no NL communities classified as medium population centers.)

IIFAS, Iowa Infant Feeding Assessment Scale; NL, Newfoundland and Labrador; SEM, socioeconomically marginalized; SEP, socioeconomically privileged.

[§]This was the highest income category measured in the FiNaL survey.



Table 2. Univariate Analysis of Determinants of Early Breastfeeding Cessation in Combined Marginalized and Privileged Populations (n = 451)

Variable	Odds ratio	p
Prenatal		
SEM population	4.43	<0.0001
SEP population	Reference	
Age of mother/birthing parent		
18–25 years	2.16	0.07
>25 years	Reference	
Marital status		
Unpartnered	6.36	<0.0001
Partnered	Reference	
Low prenatal IIFAS score (≤68.1)	3.52	<0.0001
High prenatal IIFAS score (>68.1)	Reference	
Previous breastfeeding experience		
Yes	Reference	0.64
No	1.17	
Was breastfed as an infant		
Yes	Reference	0.05
No	1.99	
Rural-small town	1.11	0.74
Urban	Reference	
Currently smoking		
Yes	6.39	0.002
No	Reference	
Peri-natal		
Cesarean delivery	1.58	0.17
Vaginal delivery	Reference	
≥1 h skin-to-skin contact after birth	Reference	0.07
<1 h skin-to-skin contact after birth	1.96	
Negative first impression of breastfeeding	4.31	<0.0001
Neutral/positive first impression of breastfeeding	Reference	
Inhospital supplementation		
Yes	2.77	0.002
No	Reference	

cessation was significantly associated with factors such as age of birthing parent, marital status, IIFAS score, smoking status, whether the participant had been breastfed as an infant, skin-to-skin contact after birth, first impression of breastfeeding, and inhospital supplementation ($p < 0.1$) (Table 2).

As shown in Table 3, when the analysis was conducted separately in the two groups, including the multivariate analysis of the significant factors in Table 2, one independent variable made a unique statistically significant contribution in the SEP model: low IIFAS score. Negative first impression of breastfeeding does near significance at the $p < 0.05$ level. The marital status and currently smoking variables were removed from the SEP model, given that the number of unpartnered participants and current smokers numbered $n < 5$ in the SEP population. This model was statistically significant, $\chi^2 (6, N = 378) = 16.30, p < 0.000$. In contrast, in the SEM population, three independent variables made a unique statistically significant contribution: marital status, 1 h

of skin-to-skin contact, and negative first impression of breastfeeding. The model containing these three determinants was statistically significant, $\chi^2 (8, N = 73) = 30.49, p < 0.0001$. The model with these three determinants explained between 34.1% and 50.7% of the variance and correctly classified 86.3% of cases (Table 3).

In addition, analysis of interaction terms in the combined model revealed that SEM population \times 1 h skin-to-skin contact was the sole interaction term to reach statistical significance at the $p < 0.05$ level.

Discussion

In a Canadian provincial population of birthing parents intending to breastfeed ($n = 451$), breastfeeding cessation rates at 1 month postpartum were more than three and a half times higher in the SEM population (24.7%) compared to the SEP population (6.9%). In this study, to focus specifically on the role of socioeconomic status as a social determinant of health, we created a hybrid dataset that combined populations at each end of the socioeconomic spectrum. Our focus specifically on individuals who intended to breastfeed allowed us to explore factors that determined early breastfeeding cessation as obstacles to the birthing parent's *right* to breastfeed.

SEP population

In the SEP population, attitudes (as measured by the IIFAS) were the sole significant determinant, with birthing parents scoring below average on the IIFAS over thrice as likely to cease breastfeeding by 1 month postpartum. This finding echoes our earlier study on determinants of nonmedical supplementation in hospital,¹⁷ as well as research on determinants of breastfeeding duration in the general population, which has demonstrated that attitude toward breastfeeding is a powerful predictor of breastfeeding initiation and duration.^{16–19}

SEM population

Previous research on breastfeeding in SEM populations has identified numerous determinants of cessation, including age,^{10,20,21} education,^{20,22} income,²⁰ marital status or presence of a partner,^{20,23,24} ethnic minority status,²⁰ parity,²² previous breastfeeding experience,²¹ return to work,²⁴ smoking status,^{22,24} breastfeeding support from family and friends,²² and encouragement and advice from a physician for breastfeeding.²⁴ However, we have found no other studies that focused



Table 3. Comparative Multivariate Analysis of Determinants of Early Breastfeeding Cessation in Socioeconomically Marginalized (n=73) and Socioeconomically Privileged Populations (n=378) Intending to Breastfeed

Variable	SEM population (n=73)		SEP population (n=378)	
	Odds ratio	p	Odds ratio	p
Prenatal				
Age of mother/birthing parent				
18–25 years	0.73	0.69	1.00	1.00
>25 years	Reference			
Marital status				
Unpartnered	5.10	0.048	N/A	
Partnered	Reference			
Low prenatal IIFAS score (≤68.1)	1.41	0.65	3.33	0.01
High prenatal IIFAS score (>68.1)	Reference			
Was breastfed as an infant				
Yes	Reference	0.55	1.23	0.64
No	1.69			
Currently smoking				
Yes	5.67	0.11	N/A	
No	Reference			
Peri-natal				
≥ 1 h skin-to-skin contact after birth	11.92	0.02	1.19	0.70
< 1 h skin-to-skin contact after birth	Reference			
Negative first impression of breastfeeding	11.07	0.01	2.37	0.053
Neutral/positive first impression of breastfeeding	Reference			
Inhospital supplementation				
Yes	1.75	0.48	1.19	0.71
No	Reference			

specifically on breastfeeding outcomes among SEM birthing parents who *intended to breastfeed*.

One of the most important points to identify in this study is that, in contrast to the SEP population, attitudes were not a significant determinant of breastfeeding cessation in the SEM population. Instead, our analysis of breastfeeding cessation in the SEM population pointed strongly to the gendered, social structural elements that shaped these women’s and birthing parents’ lives.

The first determinant pointed to the importance of partner support: single birthing parents were more than five times as likely as partnered birthing parents to cease all breastfeeding by 1 month. This echoes existing research that has identified marital/partner status as an important determinant of breastfeeding duration in SEM populations.^{20,21,24}

The two remaining determinants of breastfeeding cessation in this population, (1) negative first impression of breastfeeding in hospital and (2) lack of skin-to-skin contact after birth, point to key elements of the postpartum experience. Birthing parents who had a negative first impression of breastfeeding in hospital were >11 times as likely to cease breastfeeding by 1 month. More than half of SEM participants reported a negative first impression of breastfeeding

in hospital. This finding supports previous research that has found that the experience of an initial breastfeeding problem in hospital is a determinant of early breastfeeding cessation¹⁰ and that early positive experiences are an important enabler of continuation of breastfeeding.²⁵ Qualitative research has found that positive experiences in the early days of breastfeeding are crucial to breastfeeding duration for low-income birthing parents and that “[a]ccess to advice at the right time is a key issue for some low-income women.”^{25, p. 240}

Birthing parents who had no contact or <1 h of skin-to-skin contact with their infant after birth were nearly 12 times as likely to cease breastfeeding by 1 month. Less than one-third of SEM birthing parents reported an hour of skin-to-skin contact with their infant after birth. This finding may have importance beyond breastfeeding cessation, given that research suggests that immediate postpartum skin-to-skin and suckling are connected to positive parent–child interaction at 1 year compared to dyads where birthing parent and child were separated after birth.²⁶

This study supports four recommendations to better support SEM birthing parents who wish to exclusively breastfeed.



- (1) Increased birthing and postpartum supports for unpartnered birthing parents;
- (2) Respectful and empowering birthing and postpartum care that focuses on building SEM birthing parents' trust and confidence in their bodies, abilities, and knowledge of normal feeding behaviors and needs of their newborns;
- (3) Public education explaining the importance of skin-to-skin practices for newborns and birthing parents; and
- (4) Qualitative intervention research to explore provider and parental experiences regarding early breastfeeding and skin-to-skin practices in SEM populations.

Conclusion

The findings of our study are particularly striking, given the public health emphasis on individual responsibility for breastfeeding “success” and on promoting positive breastfeeding attitudes. Our research suggests that the focus on attitudes may be less relevant to a SEM population intending to breastfeed. Our findings also reveal that most SEM mothers and birthing parents in our province *want* to breastfeed and that two of the main determinants of whether or not they are able to do so require not individual change, but structural systemic changes in postpartum care.

Strengths and limitations

This study is a province-wide prospective cohort of individuals in a Canadian province. There was a short recall period for each questionnaire, giving the study an advantage over retrospective studies which ask participants to recall and report previous infant feeding details.

However, our study is susceptible to the limitations inherent in voluntary, self-reported questionnaire-based surveys. We used province-wide, population-based recruitment strategies, but an infant feeding questionnaire is likely to interest a population with more positive attitudes toward breastfeeding and a higher socioeconomic status compared to the general population. In addition, there was no clinical chart review to confirm or validate the information reported on the questionnaires.

Author Disclosure Statement

No competing financial interests exist.

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Abbreviations Used

FiNaL = Feeding infants in Newfoundland and Labrador
IIFAS = Iowa Infant Feeding Attitude Scale
NL = Newfoundland and Labrador
OR = odds ratio
SEM = socioeconomically marginalized
SEP = socioeconomically privileged

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