

# “Too Old” and “Too Cold”: Discomfort Towards Photographs of Breastfeeding Beyond Infancy and Public Breastfeeding in Nova Scotia, Canada

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## Abstract

**Background:** Social norms and public perception of breastfeeding are well-established predictors of breastfeeding outcomes; however, little is known about perceptions of breastfeeding beyond infancy or public breastfeeding among the public in Nova Scotia, Canada.

**Research Aim:** To explore public opinion about breastfeeding beyond infancy and public breastfeeding.

**Methods:** In this cross-sectional study participants were recruited from public spaces in Nova Scotia, Canada. Using photo elicitation methods, participants ( $N = 229$ ) viewed six photographs of breastfeeding children aged 2 weeks, 13 months, and 2.5 years, one photograph captured at home, and the other in a public space (a café, a store, or outdoors). Participants were asked to score their self-rated comfort with each photograph on a 10.0 cm visual analog scale and asked to share their feelings about each photograph (open-ended responses).

**Results:** Mean ( $SD$ ) visual analog scale comfort scores for photographs differed by location (private, 7.9 [2.2]; public, 7.3 [2.6];  $p < .05$ ) and child age (2 weeks, 8.5 [2.0]; 13 months, 7.5 [2.6]; 2.5 years, 6.9 [3.0];  $p < .05$ ). Participants who identified as women and parents self-reported significantly higher comfort with all photographs, while younger participants and urban dwellers were generally less comfortable. Open-ended responses varied considerably, but a higher proportion of negative comments were reported for older children feeding in public spaces (e.g., 2.5-year-old in public: “Inappropriate. Indecent. Abnormal.”).

**Conclusion:** Given the importance of social norms in supporting breastfeeding, future public health campaigns should strive to normalize breastfeeding beyond infancy, and in public spaces.

## Keywords

breastfeeding, breastfeeding beyond infancy, Canada, photo elicitation, public breastfeeding

## Background

Infant feeding guidelines, in Canada and internationally, recommend breastfeeding exclusively to 6 months, with continued breastfeeding to 2 years and beyond (Critch, 2013, 2014; World Health Organization [WHO], 2015). The many health benefits associated with exclusive breastfeeding during the first 6 months are well established (Victora et al., 2016), and breastfeeding beyond infancy also is associated with a reduced risk of childhood leukemia, Type 2 diabetes mellitus, overweight and obesity, as well as protection against infectious disease (Bjerregaard et al., 2019; Güngör et al., 2019; Victora et al., 2016). Breastfeeding rates have improved in Canada over recent decades, and while the prevalence of breastfeeding initiation is impressive (92%), only 37% of Canadian mothers reported breastfeeding exclusively to 6 months within the past 5 years (Statistics Canada, 2018). Breastfeeding rates are even lower in Nova Scotia, with only

22% of infants exclusively breastfed to 6 months (Statistics Canada, 2018).

Public perceptions and social norms around breastfeeding have been identified as important determinants of breastfeeding (Rollins et al., 2016). When feeding human milk at the breast, breastfeeding beyond infancy and breastfeeding in public and are two activities that often garner media

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interest and may even be considered controversial (Foss & Blake, 2019).

Public breastfeeding has been protected in Nova Scotia since 2000 (Nova Scotia Human Rights Commission, 2011), and women cannot legally be asked to move or breastfeed more discreetly. However, instances of discrimination have been documented in local news reports since the implementation of this policy, for example, a lack of action around harassment of women for breastfeeding (Sullivan, 2018). Breastfeeding in public is an expected practice if mothers practice responsive feeding and maintain their daily activities, yet maternal anxiety and discomfort with public breastfeeding is common due to perceived societal disapproval (Bresnahan et al., 2020; Scott et al., 2015). The perceived deviance of breastfeeding in front of others has been associated with concealing breastfeeding with the use of nursing covers while in public (Hauck et al., 2021). These negative social norms may ultimately influence breastfeeding outcomes. Scott et al. (2015) found that negative attitudes towards public breastfeeding among European mothers translated to shorter breastfeeding durations, and that breastfeeding social norms were likely more influential on breastfeeding outcomes than maternal knowledge and perceived benefits of breastfeeding. Similarly, Hauck et al. (2021) found that the main challenges of maternal experiences with breastfeeding in public were related to perceived negative social norms, including the sexualization of breastfeeding and concerns around drawing unwanted attention from others.

Breastfeeding beyond 12 months of age is often described as extended breastfeeding, however this term has been criticized for implying breastfeeding past a normal period. Therefore, some researchers favor the terms breastfeeding beyond infancy, long-term breastfeeding, or natural term breastfeeding (Brockway & Venturato, 2016; Thompson et al., 2020). There are limited data available for breastfeeding rates beyond 1 year of age in Canada. However, it is likely low, as it is estimated that only 20% of children aged 12–23 months receive some human milk in high income countries globally (Victora et al., 2016). Similar to breastfeeding in public, breastfeeding beyond infancy is often met with social disapproval, and many mothers report feeling the need to conceal this activity despite perceived benefits of the practice, and global recommendations to continue breastfeeding to 2 years or beyond (Thompson et al., 2020; WHO, 2015). Previously, researchers have primarily assessed maternal attitudes toward breastfeeding (Dowling & Pontin, 2017) or health care providers (Cockerham-Colas et al., 2012), or targeted population subgroups (Magnusson et al., 2017). There is a lack of research about long-term breastfeeding attitudes among the general public.

Both breastfeeding in public and breastfeeding beyond infancy are important components of optimal breastfeeding and, given the importance of social norms, it is important to

## Key Messages

- Societal perceptions of breastfeeding may adversely impact adherence to breastfeeding recommendations, but little is known about these norms in Atlantic Canada.
- Using photo elicitation, we found that members of the public wrote more negative comments about older children feeding in public spaces than younger children breastfeeding at home.
- Women and parents were significantly more comfortable with all breastfeeding photographs, while younger adults and urban dwellers were generally less comfortable.
- Future public health campaigns, ideally delivered through social media, could sway public perception by normalizing images of breastfeeding beyond infancy, and in public spaces.

understand current public support around breastfeeding to inform future public health interventions. The overall aim of this study was to explore public opinion about breastfeeding beyond infancy and public breastfeeding in Nova Scotia, Canada.

## Methods

### Research Design

This cross-sectional survey explored breastfeeding attitudes using an open-ended, self-administered paper questionnaire, and was part of a larger study assessing infant and young child feeding knowledge and confidence among the general public in Nova Scotia (Chan & Whitfield, 2020). This study design was used to reach a socioeconomically diverse sample of participants and to gain insight into an under-studied area. All study activities followed the Tri-Council Policy Statement (TCPS2) protocols, and ethics approval was obtained on March 1, 2018 from the Mount Saint Vincent University Research Ethics Board (MSVU UREB 2017-068).

### Setting and Relevant Context

Nova Scotia is a small province in Atlantic Canada, with 57% of the population residing in urban areas, 7% identifying as a visible minority, and median total household income of approximately US\$47,000 (compared to 72%, 22%, and US\$55,000 at the national level, respectively; Statistics Canada, 2017). A provincial breastfeeding policy was implemented in 2006 to protect breastfeeding and support the implementation of the Baby Friendly Initiative in the province's sole children's hospital (The Healthy Eating Action Group of the Nova Scotia Alliance for Healthy Eating and

Physical Activity, 2005). However, despite implementation of this policy 15 years ago, breastfeeding rates in Nova Scotia remain suboptimal, and there are inconsistencies with assessing breastfeeding practices at the provincial level. Kirk et al. (2012) conducted an evaluation of the policy implementation process in 2011 and identified an unsupportive culture around breastfeeding as a key barrier to improving breastfeeding rates in the province. However, it is unclear if breastfeeding culture has changed since this evaluation.

There is scant research about breastfeeding in Nova Scotia. The most recent data available from the *2018 Canadian Community Health Survey* indicated that 88% of Nova Scotian mothers who had given birth in the previous 5 years initiated breastfeeding, and only 22% breastfed exclusively to 6 months (Statistics Canada, 2018). However, there is a lack of recent research about predictors of breastfeeding in the province. Brown et al. (2013) conducted a longitudinal cohort study on breastfeeding trends in Eastern Nova Scotia from 2006–2009 and found that significant predictors of early breastfeeding cessation included young maternal age, lower educational attainment, lower neighborhood income, maternal obesity, smoking during pregnancy, prenatal decision to not breastfeed, and delayed breast contact after delivery. However, current provincial breastfeeding trends are unknown.

### Sample

The target population for this study was adults living in Nova Scotia. The inclusion criteria for participation included age  $\geq 19$  years, proficiency in English, and reported residence in Nova Scotia at the time of the study. Participants for this study were recruited from 11 purposively selected sites in Nova Scotia to ensure the inclusion of a socioeconomically diverse sample (age, income, education level, parental status, and geographic region), to gain insight into current social norms and public perceptions around breastfeeding. Within the Halifax Regional Municipality, data were collected from a booth installed in front of a community center, church, toddler play group, preschool, recreation center, long term care facility, and university. In rural eastern and western Nova Scotia, data were collected from three grocery stores and one community center. There were no exclusion criteria. Incomplete surveys (we defined as  $> 25\%$  incomplete) were not included in analysis. In total, 259 people were screened to participate and 229 completed the survey; 27 did not meet eligibility criteria, and three participants were excluded due to incomplete questionnaires. Given the estimated population of adults over 19 years of age residing in Nova Scotia (approximately 740,000 residents) (Statistics Canada, 2017), a sample size of 97 was required for a 10% margin of error and 95% CI, and sample size of 384 was required for a 5% margin of error and 95% confidence interval. Due to the exploratory nature of this study, we aimed for a minimum ideal sample size of 200.

### Measurement

Sociodemographic information, including age, self-identified gender, household income, ethnicity, education, and parental status, were collected using a self-administered questionnaire. Age was provided in continuous years, then categorized by the authors for analysis (19–29, 30–44, 45–64,  $\geq 65$ ), for the remaining characteristics, participants selected from a list of pre-determined categories. For gender and ethnicity, participants could also choose to self-identify as a customized category.

Breastfeeding attitudes were assessed using a modified form of photo elicitation, with self-rated comfort measured on a visual analog scale and open-ended emotional reactions. Three women (all white, aged early-30s) breastfeeding children of different ages (2 weeks, 13 months, 2.5 years) were photographed in a private location (at home) and a public location (a café, a store, and outdoors, by age respectively). Six random photograph orders were generated to avoid order bias associated with viewing the photos. Photographs were not controlled for place, composition, or feeding position, and were not intended to predict outcomes, but rather to explore reactions.

Participants viewed each photograph, then were asked two questions: 1) “What thoughts or feelings immediately come to mind when you see this photo?” (open-ended question), and 2) “How comfortable would you feel if you were beside the person in this picture?” (visual analog scale). The open-ended question was employed to assess unprompted reactions to the photographs, as has been used previously by Zhuang et al. (2019). The visual analog scale was a continuous, horizontal 10.0 cm line, ranging from very uncomfortable (0.0 cm) to very comfortable (10.0 cm), and participants marked the visual analog scale with a vertical line to indicate their level of comfort. Participants visual analog scale scores were measured for each photograph to one decimal place for analysis. Self-rated visual analog scale scores have also previously been used to assess comfort with text-based breastfeeding scenarios among the general public in Newfoundland (Vieth et al., 2016), and were used in the larger study to assess confidence in infant feeding knowledge among adults in Nova Scotia (Chan & Whitfield, 2020). Visual analog scales are commonly used among adults to assess subjective experiences, as this tool generates continuous data (unlike Likert-type scales), and has been shown to have high reliability in other health-related fields, such as pain (Alghadir et al., 2018). Research assistants were available to answer any questions participants had about completing the self-administered, paper questionnaires.

### Data Collection

Trained research assistants were present at each recruitment booth to screen interested individuals for eligibility, and obtain written, informed consent. Participants were recruited

**Table 1.** Data Analysis Structure and Definitions for Emotional Responses to Breastfeeding Photographs.

Codes	Code Definitions	Examples
Positive	Comments that expressed explicit positive emotions, positive normative statements, or referred to the photograph positively in another way.	“loving”, “happy”, “breast is best”, “healthy”, “convenient”, “bonding”, “nurturing”, “normal” “natural”
Neutral	Comments that did not express any explicit emotion, simply described the photo, or referenced individual choice.	“baby”, “hungry”, “her decision”, “as long as the mother is comfortable”, “you do what you need to do”
Negative	Comments that expressed explicit negative emotions, negative normative statements, or referred to the photograph negatively in another way.	“unhappy”, “stressful”, “gross”, “baby is too big to breastfeed”, “how old is that child?”, “indecent”, “weird”

on-site via convenience sampling using a booth and poster between March and May 2018, and quota sampling (strata: self-identified gender) was employed at each site. All participants were remunerated with a gift card (CAD\$10). Questionnaires were completed anonymously using alpha-numeric identifiers and data security was maintained during transport from data collection locations; all questionnaires and signed consent forms were kept in separate locked boxes. All papers containing data are stored in locked filing cabinets in locked research rooms at Mount Saint Vincent University.

### Data Analysis

Quantitative data (continuous visual analog scale scores and categorical sociodemographic information) were analyzed using SPSS (Version 26). Sociodemographic characteristics were described by frequency ( $n$  [%]), and self-rated comfort scores were computed ( $M$  [ $SD$ ]). Continuous data were not normally distributed (Shapiro-Wilks test statistic  $p < .05$ ); therefore, non-parametric tests were used to compare mean visual analog scale scores between sociodemographic groups. Mean ( $SD$ ) visual analog scale scores for each photograph were compared within-subject using the Friedman test with post-hoc pairwise comparisons. Mean ( $SD$ ) visual analog scale scores were then collapsed by location (public vs. private), and by child age (2 weeks, 13 months, 2.5 years) to compare mean scores by self-identified gender, parental status, and urban/rural residence using Mann-Whitney U-tests, and by age, education and household income (data not shown) using Kruskal-Wallis tests and post-hoc pairwise comparisons.

Written, open ended responses were analyzed using MAXQDA (VERBI Software, 2018). All responses were recorded and examined, then both authors developed a living codebook using principles of Grounded Theory (Corbin & Strauss, 1990). Codes were then grouped into three main categories: positive, neutral, or negative reactions (Table 1). Some participants wrote multiple comments for each photograph, in which case, each comment was coded and categorized (Richard & Lahman, 2015). The frequency of comments in each category ( $n$  [%]) was described for the six photographs.

**Table 2.** Sociodemographic Characteristics of Study Participants ( $N = 229$ ).

Characteristic	$n$ (%)
Age, years	
19-29	55 (24)
30-44	74 (33)
45-64	66 (29)
$\geq 65$	31 (14)
Self-identified gender	
Woman	134 (59)
Man	90 (39)
Other	5 (2)
Annual household income before tax, CAD\$	
<\$20,000	44 (20)
\$20,000-\$49,999	46 (22)
\$50,000 - \$99,999	70 (33)
$\geq$ \$100,000	53 (25)
Education	
Some high school	15 (7)
High school diploma	35 (15)
Some college or university	51 (23)
College diploma	44 (20)
Undergraduate degree	41 (18)
Some or completed post graduate	39 (17)
Parent (Yes)	158 (69)
Residing in an urban area (Yes)	139 (60)

Note.  $N$  differs due to participants skipping some questions: self-identified gender ( $n = 5$ ), age ( $n = 3$ ), parental status ( $n = 1$ ), education ( $n = 4$ ), no missing data for urban/rural residence. Other gender category included: transfeminine ( $n = 1$ ), gender fluid ( $n = 1$ ), prefer not to say ( $n = 2$ ), and question skipped ( $n = 1$ ). Urban was defined as living within Halifax Regional Municipality, participants were categorized as rural residents if residing in Eastern Nova Scotia or Western Nova Scotia.

## Results

### Characteristics of the Sample

A socioeconomically diverse sample of Nova Scotian adults participated in the study, with the majority of participants living in an urban area and self-identifying as parents and women. Participant age range was 19–95 years, and participants reported a wide range of education and household income levels (Table 2).

**Table 3.** Visual Analog Scale Scores for Self-Rated Participant Comfort With Breastfeeding Photographs ( $N = 229$ ).

Photograph Description (Child age, location)	Visual Analog Scale Score $M$ ( $SD$ )	95% CI
1. Two weeks, at home	8.6 (2.1) <sup>a</sup>	(8.3, 8.9)
2. Two weeks, in a café	8.3 (2.3) <sup>a</sup>	(8.0, 8.6)
3. 13 months, at home	8.2 (2.5) <sup>a</sup>	(7.9, 8.5)
4. 13 months, in a grocery store	6.8 (3.3) <sup>b</sup>	(6.4, 7.2)
5. 2.5 years, at home	7.0 (3.2) <sup>b</sup>	(6.6, 7.4)
6. 2.5 years, outdoors	6.7 (3.3) <sup>b</sup>	(6.3, 7.1)

Note. Visual analog scale ranged from very uncomfortable (0.0 cm) to very comfortable (10.0 cm). Within-subject differences were assessed using a Friedman test with post hoc pairwise comparison. Means that are significantly different ( $p < .05$ ) are indicated by different superscripts (a, b). For example, self-rated comfort scores for Photograph 1 are significantly different from Photograph 4, but not Photograph 2.

### Self-Rated Visual Analog Scale Comfort Scores

Mean self-rated visual analog scale comfort scores for each photograph are shown in Table 3. There was a significant result for photograph condition on self-rated comfort scores ( $\chi^2(5) = 197.2, p < .001, W = 0.174$ ), with significantly higher mean comfort scores for photographs of the 2-week old infant at home and in a café, as well as a 13-month old at home, compared to the 13-month old in a store, and both photos of the 2.5 year old breastfeeding. Mean self-rated visual analog scale scores collapsed by location and age and compared by participant self-identified gender, age, parental status, education, and geographic residency are presented in Table 4. Women and parents felt more comfortable with all photographs compared to men and non-parents. Younger participants felt less comfortable with the breastfeeding photographs, as well as with photographs specifically of the 2.5-year-old toddler compared to older participants. Participants who lived in rural Eastern or Western Nova Scotia had higher comfort scores with private and public photographs, as well as photographs of the 13-month-old and 2.5-year-old breastfeeding, compared to urban residents. There was no significant association between education or income (data not shown) with self-rated comfort scores.

### Emotional Responses

As shown in Figure 1, the presence of positive, neutral, and negative comments varied by photograph condition and revealed a clear trend: negative comments increase with child age, and with public locations. Positive comments were most frequent for the photographs of the 2-week-old infant at home and the 13-month-old infant at home. Negative comments were most frequent for the 13-month-old in a grocery store and 2.5-year-old outdoors. Negative comments also appear to increase in intensity with child age. For example, explicit comments about disgust were only made about the photograph of the 2.5-year-old toddler (e.g., “gross”, “disgust” etc.), but not other ages. A selection of illustrative quotes related to all three dyads at home can be seen in Table 5.

### Discussion

Breastfeeding practices are suboptimal in Nova Scotia (Statistics Canada, 2018), and public perceptions and norms around breastfeeding are important determinants of breastfeeding (Rollins et al., 2016). In the present study, we found that Nova Scotians reported lower comfort with breastfeeding in public versus private locations, and with seeing older children breastfeed compared to younger. Women and parents were most accepting of all breastfeeding photographs, while younger adults and urban dwellers were generally less comfortable with photographs of breastfeeding.

### Photo Elicitation and Breastfeeding

Various instruments have been developed to assess infant feeding attitudes, however they have been developed almost solely to predict maternal breastfeeding behaviors (i.e., duration, exclusivity, or future intention to breastfeed), as opposed to assessing social norms of breastfeeding among the general public (Casal et al., 2017). In addition, these questionnaires generally use closed-ended questions, or measure the degree of agreement with situational statements, which may be a source of potential bias for social desirability in measuring breastfeeding attitudes (Lippitt et al., 2014). In the past, other researchers in Atlantic Canada have identified individual-level conflict between cognitive acceptance of breastfeeding and actual acceptance of breastfeeding; people may express positive attitudes towards breastfeeding and be aware of the health benefits, yet still have negative views of public breastfeeding and associate breastfeeding with discomfort or deviance (Spurles & Babineau, 2011).

In this study, photographs were used to address this disconnect and assess breastfeeding attitudes. Photo elicitation, or the use of photographs in research, has been used since the 1950s and is a powerful tool to explore interpretations of culture (Harper, 2002). For example, Fairbrother and Stanger-Ross (2010), Magnusson et al. (2017), and Acker (2009) have used photographs to assess breastfeeding attitudes by comparing reactions to breastfeeding at breast versus feeding human milk substitutes, as well as

**Table 4.** Comparisons of the Collapsed Visual Analog Scale Scores for Self-Rated Participant Comfort With Breastfeeding Photographs Grouped by Demographic Variables (N = 229).

	Self-Identified Gender				Age				Parental Status				Location									
	Total (N=227) M (SD)	Women (n=133) M (SD)	Men (n=89) M (SD)	U	p	19-29 yrs. (n=55)		30-44 yrs. (n=74)		45-64 yrs. (n=64)		65+ yrs. (n=31)		Kruskal Wallis	p	Parent (n=158) M (SD)	Non-Parent (n=70) M (SD)	U	p	Urban (n=138) M (SD)	Rural (n=89) M (SD)	
		M (SD)	M (SD)			M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)											
Location																						
Private	7.9 (2.2)	8.3 (2.0)	7.3 (2.4)	4149	<0.001	7.2 (2.4) <sup>a</sup>	8.1 (2.1) <sup>b</sup>	8.3 (2.0) <sup>b</sup>	8.1 (2.5) <sup>b</sup>	8.062	0.045	8.3 (2.1)	7.2 (2.4)	7192	<0.001	7.6 (2.3)	8.4 (2.1)	7683	0.004	7.6 (2.3)	8.4 (2.1)	
Public	7.3 (2.6)	7.8 (2.4)	6.4 (2.7)	4056	<0.001	6.3 (3.0) <sup>a</sup>	7.5 (2.3) <sup>ab</sup>	7.7 (2.4) <sup>b</sup>	7.6 (2.5) <sup>ab</sup>	7.841	0.049	7.7 (2.3)	6.3 (3.0)	6903	0.002	6.9 (2.7)	7.9 (2.4)	7462	0.006	6.9 (2.7)	7.9 (2.4)	
Child age																						
2 wks.	8.5 (2.0)	9.0 (1.6)	7.6 (2.3)	3266	<0.001	7.7 (2.5)	8.6 (1.9)	8.7 (1.8)	8.7 (1.9)	6.713	0.082	8.8 (1.7)	7.7 (2.4)	7108	0.001	8.3 (2.1)	8.7 (1.9)	6983	0.15	8.3 (2.1)	8.7 (1.9)	
13 mos.	7.5 (2.6)	7.9 (2.5)	6.8 (2.7)	4160	<0.001	6.7 (2.9)	7.6 (2.4)	7.7 (2.4)	7.7 (2.4)	5.042	0.169	7.9 (2.3)	6.6 (2.9)	6919	0.002	7.1 (2.6)	8.1 (2.5)	7762	0.002	7.1 (2.6)	8.1 (2.5)	
2.5 yrs.	6.9 (3.0)	7.2 (3.0)	6.1 (3.0)	4399	0.001	5.7 (3.1) <sup>a</sup>	7.2 (2.9) <sup>ab</sup>	7.3 (2.8) <sup>b</sup>	7.0 (3.4) <sup>ab</sup>	9.872	0.02	7.3 (3.0)	6.0 (3.0)	6899	0.002	6.4 (3.1)	7.6 (2.8)	7554	0.003	6.4 (3.1)	7.6 (2.8)	

Note. Visual analog scale ranged from very uncomfortable (0.0 cm) to very comfortable (10.0 cm). Missing values: self-identified gender (n = 5), age (n = 3), parental status (n = 1), no missing data for urban/rural residence. Private location includes visual analog scale scores for breastfeeding photographs taken in the home condition. Public location includes visual analog scale scores for breastfeeding photographs taken in the public condition (café, grocery store, and outdoors). For child age, visual analog scale scores for both photograph conditions are combined (for example, 2-week-old infant at home and in a café). Differences in mean visual analog scale scores for age were assessed using Kruskal-Wallis tests with post hoc pairwise comparison. Different superscripts within each category (a, b) indicate difference  $p < .05$ . For example, participants aged 19-29 years scored the public photographs significantly differently from participants aged 45-64 years, but not from participants aged 30-44 years.

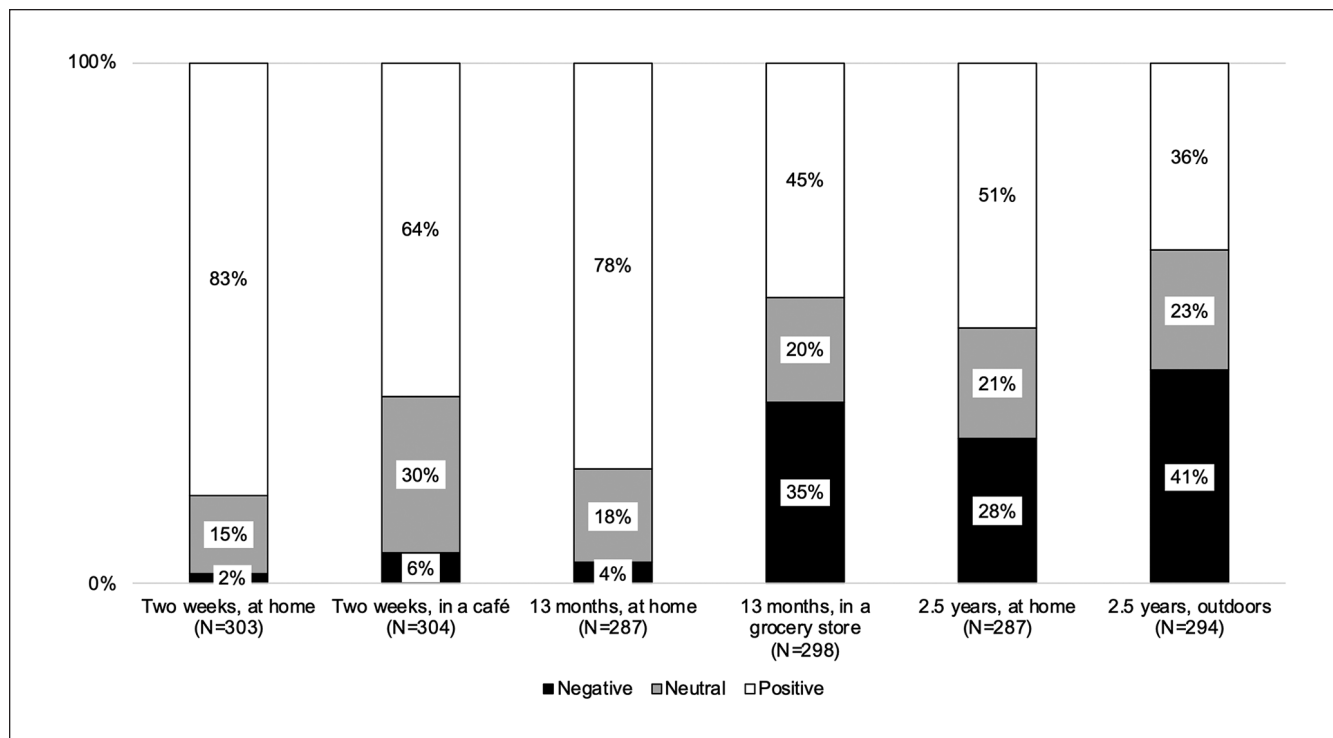


Figure 1. Emotional Responses to Breastfeeding Photographs.

Table 5. Examples of Negative, Neutral, and Positive Participant Quotes From Open-Ended Emotional Responses to Breastfeeding Photographs at Various Ages (2 weeks, 13 months, 2.5 years) at Home.

Code	Data Collection Point		
	2-week-old infant at home	13-month-old at home	2.5-year-old at home
Negative	“She should have a blanket over her shoulder.”	“Needs some covering” “Too old.” “Too big to suck breast.”	“Not comfortable and baby is too big to breastfeed.” “Uncomfortable. Can make baby too demanding.” “Stressful. Gross. Annoying.” “Inappropriate. Gross. Indecent.” “Kind of confused and unsure.”
Neutral	“Meal time.” “Their choice in their own home.”	“I just see a mother feeding her baby.” “As long as the mother’s comfortable.” “Wouldn’t phase me.”	“A woman feeding her child.” “No feelings.”
Positive	“This mom is doing the very best by breastfeeding her child which promotes bonding in her home.” “Way to go mom! Baby is getting the best!” “Appropriate setting and age” “Very inspiring, proud fulfilling motherly responsibility.” “Miss these days. Memories. Precious moments.”	“This seems to be comfortable for mom and baby. Perfectly natural.” “Comforting. Natural. Maternal.” “It’s comfortable. Private. Not too exposed.” “Comfortable. Cozy. Sweet family.”	“Caring. Patient mother. Feeding is for comfort rather than nutrition.” “Proper place to breastfeed.” “Completely natural.” “Bonding. Healthy connection between mother and daughter.”

Note. Open-ended emotional responses to breastfeeding photographs were categorized as positive (explicit positive emotions, positive normative statements, or referred to the photograph positively in another way), neutral (no explicit emotion, simply described the photo, or referenced individual choice), or negative (explicit negative emotions, negative normative statements, or referred to the photograph negatively in another way).

breastfeeding in different locations. Images of breastfeeding, for example, the increasing popularity of breastfeeding selfies (or brelfies) on social media, are becoming an

important tool to normalize breastfeeding, as well as to understand the changing social culture around breastfeeding (Giles, 2018).

## Breastfeeding Beyond Infancy

Breastfeeding beyond 1 year is physiologically normal as human milk remains an important source of nutrition for young children (Victora et al., 2016), and approximately 80% of children aged 12–23 in low- and middle-income countries continue breastfeeding (WHO, 2010). However, breastfeeding beyond infancy is still perceived as abnormal in most high-income countries. For instance, breastfeeding women in the United Kingdom felt stigmatized for long-term breastfeeding, and perceived limited benefits (Dowling & Pontin, 2017), potentially due to perceived judgement and negative attitudes among the general public. In the present study, photographs of the 2.5-year-old toddler breastfeeding elicited the most negative open-ended emotional responses and lowest mean comfort scores. This low self-rated comfort could stem from perceived inappropriateness based on child size or development (Jackson & Hallam, 2021). Even mothers engaged in long-term breastfeeding described having to overcome their own perceived deviance of the practice and often concealed it from others, including their health care providers, family, and friends (Jackson & Hallam, 2021; Thompson et al., 2020). It is also important to note that the toddler in our photographs was a girl; Tomori et al. (2016) found that long-term breastfeeding boys is considered even more deviant due to the sexualization of breasts.

## Breastfeeding in Public

Breastfeeding in public is an important part of successful breastfeeding (Scott et al., 2015), and a “supportive audience” has been identified by breastfeeding mothers as one approach to enhance acceptability of public breastfeeding (Hauck et al., 2021). While 68% of adults in a nationally representative American survey say they “believe women have the right to breastfeed in public” (Centers for Disease Control and Prevention, 2019), and 75% of adults in a large survey in Ontario agreeing that it was acceptable to breastfeed in a restaurant or shopping mall (Russell & Ali, 2017), instances of discrimination for public breastfeeding are commonly reported (Bresnahan et al., 2020) and reactions to this discrimination reveal a divide in public opinion. For example, public backlash occurred after a woman in the United Kingdom was kicked out of a shop for breastfeeding, however analysis of the public response to the backlash revealed overwhelmingly negative reactions towards breastfeeding, including sexualization of breasts and abusive language (Grant, 2016).

Attitudes towards breastfeeding in public have been researched extensively; however, research about attitudes among the general public are often limited to close-ended questions about situational statements (Morris et al., 2020; Russell & Ali, 2017). When study participants have been shown photographs of breastfeeding in public or have

discussed public breastfeeding in qualitative interviews (beyond agreement with situational statements), the discomfort becomes clear (Fairbrother & Stanger-Ross, 2010; Magnusson et al., 2017; Spurles & Babineau, 2011). Similarly, in the present study, participants were significantly more comfortable with photographs of breastfeeding in private compared to public locations. This was also clearly reflected in the proportion of positive comments, which decreased by 15–33 percentage points in public versus private photos within each age category.

These negative perceptions of public breastfeeding may contribute to further decreased visibility of breastfeeding. Dedicated spaces for breastfeeding, and tools to find safe places to breastfeed (e.g., the Feed Finder UK application) may help breastfeeding mothers feel more comfortable, but do not address the negative social norms around the practice in the general public. It is telling that some breastfeeding mothers in Nova Scotia reported positive experiences with isolation due to the COVID-19 emergency measures because there was no longer a need to breastfeed in public (Fry et al., 2021).

## Normalizing Breastfeeding

It is important to note that although we report lower acceptability of public breastfeeding and breastfeeding beyond infancy in this study, we still see relatively high self-rated comfort scores overall. This may be indicative of underlying support for breastfeeding in the general public, and efforts to increase exposure, particularly to breastfeeding in public and with older children, may be effective in normalizing these activities. However, these high scores may also be reflective of social desirability bias associated with breastfeeding support (Lippitt et al., 2014).

We found that breastfeeding is less accepted in public locations, and with increased child age in Nova Scotia, however some researchers have shown that exposure to breastfeeding may be an effective intervention to improve public attitudes. Foss and Blake (2019) found that viewing public breastfeeding in a television show increased participant acceptance of public breastfeeding compared to participants who viewed a clip of private breastfeeding. Vieth et al. (2016) found that viewing promotional posters of women breastfeeding increased acceptance of breastfeeding in some public locations as well. Some Canadian communities have taken steps to increase the visibility of breastfeeding in an effort to normalize breastfeeding. A local news report from Timmins, Ontario, described a campaign to install life-size cutouts of breastfeeding throughout the town (Lagerquist, 2017). Social media also is playing an increasingly important role in normalizing breastfeeding. Marcon et al. (2019) reported that images on the social media platform Instagram were largely promoting and supporting breastfeeding, and image comments were overwhelmingly positive. Similarly, Black et al. (2020) found that breastfeeding women engaging with a private peer-support group on the platform Facebook



reported that social media was an important tool to enhance breastfeeding self-efficacy and potentially increase breastfeeding duration. These social media-based, peer-support networks may be a key opportunity to normalize breastfeeding through visibility as well as for increasing maternal confidence (Marcon et al., 2019).

Health care professionals also play an important role in normalizing breastfeeding in all settings, and throughout the recommended age range. Negative attitudes towards long-term breastfeeding have been identified among physicians (Cockerham-Colas et al., 2012) and healthcare students (Zhuang et al., 2019). Exposure to educational materials (including posters featuring images of long-term breastfeeding) may significantly improve attitudes (Cockerham-Colas et al., 2012); however, there is a lack of recent research about health professionals' attitudes towards long-term breastfeeding, and no research has been conducted on this topic in Nova Scotia. It is also important to note that inconsistencies with infant feeding recommendations may complicate breastfeeding attitudes among healthcare professionals. For instance, the American Academy of Pediatrics recommends continued breastfeeding to 1 year or longer if desired (National Institute of Child Health and Human Development, 2017), while Canadian and global recommendations indicate continued breastfeeding to 2 years or beyond (Critch, 2014; WHO, 2015).

### Limitations

Limitations include our use of convenience sampling and cross-sectional design, which could have introduced selection bias into our sample and which limits our ability to draw conclusions about our findings. However, we attempted to minimize selection bias by recruiting a socioeconomically diverse sample of participants. Another limitation with this pragmatic study was that photographs were not standardized. Mothers in these photos were asked to breastfeed as they normally would, in a public location of their choice, rather than through a standard "pose," resulting in different breastfeeding positions. Because the public condition photograph for each dyad was taken in a different location (a café, a store, and outdoors), there is a possible confounding effect of infant age and breastfeeding location. Although previously researchers have shown similar reactions among men to images of breastfeeding in various public areas, including an outdoor park and market (Magnusson et al., 2017), reactions to standardized photographs of breastfeeding at different ages and in different public locations should be investigated further. Furthermore, analysis of the open-ended emotional responses to photographs was limited by our study design. We aimed to gather immediate reactions to the photographs through short, unprompted comments; however, this limited meaning making. For this reason, responses were only broadly categorized as negative, neutral, or

positive. In the future, qualitative methods could be employed to better understand the meaning behind these complex reactions to breastfeeding beyond infancy and breastfeeding in public (Krauss, 2005). Finally, all models were white. Future research could explore the intersection of race with breastfeeding in various locations, using more standardized "poses."

### Conclusions

Nova Scotians indicated moderate comfort with photographs of breastfeeding; however, participants were significantly more comfortable with private versus public breastfeeding, and with younger versus older infants or young children. Women and parents were more accepting of all breastfeeding photographs, while younger adults and urban dwellers were generally less comfortable with photographs of breastfeeding. Emotional responses to photographs of breastfeeding elicited a wide range of negative, neutral, and positive responses, but we found a higher proportion of negative comments for older children breastfeeding, and breastfeeding in public. Future breastfeeding promotion efforts could focus on improving societal acceptability of breastfeeding through visual campaigns showing older children, and breastfeeding in public spaces.

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The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: At the time the research was conducted, first author Kathleen Chan was in her final year of the BSc in Applied Human Nutrition Dietetics honors program at Mount Saint Vincent University. Dr. Kyly Whitfield was her honors thesis advisor. Authors have no conflicts of interest to disclose. Sociodemographic data in this manuscript have been previously reported in: Chan, K., & Whitfield, K. C. (2020). High confidence, yet poor knowledge of infant feeding recommendations among adults in Nova Scotia, Canada. *Maternal & Child Nutrition*, 16(2), e12903.

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