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**Breastfeeding support in Nova Scotia:
Exploring the gap between policy, health professionals' work practices and the everyday experience of mothers facing food insecurity.**

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Abstract

Background: Breastfeeding is an important contributor to household and community food security. However, lower breastfeeding rates among low-income families represent a health inequity with negative impacts on infant, household and community food security, as well as the health of future generations. Furthermore, despite breastfeeding and food security being public health priorities in Nova Scotia (NS), compared with the rest of Canada, Nova Scotian mothers have lower breastfeeding initiation and duration rates, and relatively higher rates of food insecurity. Although there is some research suggesting why these disparities occur, the direct impacts of the experience of food insecurity on infant feeding decisions are not well understood.

Purpose: This research explores the experience rural NS mothers facing food insecurity in making infant feeding decisions. It aims to explicate the social interactions between mothers and health professionals (HPs), including but not limited to PHNs, and how they are shaped by institutional factors at the health system level that pose structural barriers to breastfeeding among this population.

Methods: Phase 1 involved secondary data analysis of interviews and focus groups conducted among mothers who both met and did not meet their breastfeeding goals. Transcripts were selected for analysis based on the vulnerability of participants to food insecurity, identified by transcript content or recruitment channels. Phases 2 and 3 involved primary data collection through in-depth interviews using a critical health literacy perspective; all participants were recruited from Antigonish, Guysborough or Cape Breton Island. Phase 2 interviews were conducted with 5 mothers who recently breastfed (or tried to breastfeed) and had experienced food insecurity, as identified by the Household Food Security Survey Module. Phase 3 interviews were conducted with 5 PHNs working in breastfeeding promotion.

Results: Perceptions of HPs as "experts" may influence mothers' decisions to breastfeed; however, "breast is best" discourse can contribute to feelings of shame and guilt when breastfeeding is unsuccessful. Most mothers had positive experiences with PHNs and other HPs and felt their support was important to achieving success with breastfeeding. However, mothers also recognized the importance of peer support in empowering mothers to trust their own experiential knowledge, allowing them to reject expert discourse and to make infant feeding decisions that were appropriate for their life circumstances.

Although almost all participating mothers in Phase 2 mentioned cost savings as a key motivation for breastfeeding, some described a lack of nutritious food for themselves as a significant breastfeeding barrier, showing how food and income supports can be important in helping to alleviate stress around their own food intake and their ability to successfully breastfeed. In contrast, PHNs interviewed did not perceive food insecurity itself as a barrier to breastfeeding, but described how stressful life circumstances associated with food insecurity make breastfeeding more difficult. Despite this understanding, PHNs described a limited ability to address food insecurity among breastfeeding mothers in their practice. PHNs descriptions of their role in breastfeeding support were often limited to information provision and encouragement only. Trends towards upstream, health promotion strategies in public health and recent changes in structure of the NS health system were barriers to providing vulnerable women living in rural communities with sufficient breastfeeding support.

Conclusions & Recommendations: PHNs, as well as other HPs, can play an important role in supporting breastfeeding and enabling mothers to exercise autonomy in their infant feeding decisions. However, mothers vulnerable to food insecurity may require unique supports in order to successfully breastfeed. A breastfeeding literacy approach may help to situate breastfeeding within community food security, potentially countering unsupportive "breast is best" discourse. Ideally, a more critical approach combining both expert and experiential knowledge may help HPs to further understand the complexity of infant feeding, which in turn may empower mothers.

These results also demonstrate a disconnection between breastfeeding as a named priority for public health and a lack of mandate to address food insecurity in PHNs' practice. Policies around breastfeeding support should consider the first voice experience of mothers with experience of food insecurity to ensure that institutional changes do not disproportionately affect those vulnerable to food insecurity. Overall, achieving a balance between upstream action and individual support to address breastfeeding among mothers experiencing food insecurity will require thoughtful coordination of inter-professional practice across all levels of the NS health system.

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1. Introduction

1.1   Research Focus

This research explores the role of public health nurses (PHNs) in promoting and supporting breastfeeding among women with experience of food insecurity in Nova Scotia (NS), Canada. First voice experiences of mothers facing food insecurity are explored, along with how food insecurity impacts mothers' infant feeding decisions. This research also examines PHNs' perceptions of ideal breastfeeding support, and how these align with mothers' needs, in addition to explicating the social interactions involving PHNs and other health professionals (HPs) that pose barriers to breastfeeding for mothers experiencing food insecurity. Further, a critical health literacy (CHL) lens is applied to findings to explicate the role that structural barriers (i.e. at the level of the health system) play in infant feeding decisions and breastfeeding success among mothers vulnerable to food insecurity.

1.2   Research objectives

The objectives of this research were to:

1. Explore the everyday experience of mothers facing food insecurity with HP breastfeeding support. This was examined through a CHL lens focusing on the 3 domains of information appraisal, understanding social determinants of health, and collective action.

2. Examine HP attitudes and perceptions of ideal breastfeeding support and the disjuncture with the reality of their everyday work practices, and the needs expressed by mothers.

3. Explicate the social interactions involving HPs and mothers and how they are shaped by institutional factors at the health system level that pose structural barriers to breastfeeding.

1.3   Practical importance of the study

Compared with the rest of Canada, NS has lower breastfeeding initiation and duration rates; 70% of mothers start breastfeeding and 12.4% continue for the recommended 6 months in NS (1) compared with 89% and 26%, respectively, nationally (2). Mothers with lower incomes, less

education and lower literacy levels are less likely to start, while those who are younger and living in rural areas are less likely to continue breastfeeding (3); these same groups tend to be at risk for food insecurity (4) and increased health disparities throughout the lifespan (5). Not only would improved breastfeeding rates contribute to better health outcomes among children and their mothers (6), it would contribute to household and community food security. Food security is an important social determinant of health (7), whereby there is access to enough nutritious food to maintain good health at individual and household levels, within an ecologically "sustainable food system that maximizes community self-reliance, and social justice" (pg. 37) at a community level (8).

Many factors contribute to a successful breastfeeding experience for women. Support from HPs, such as family doctors and public health nurses, can be an important factor in encouraging new mothers to breastfeed. However, past research in NS has identified that this support may be lacking (9), particularly among marginalized populations who may not seek support for themselves (10). In addition, HPs often focus solely on providing information, rather than helping mothers develop the skills and confidence needed to breastfeed (10-12). There may be a need for improved HP training to reduce negative attitudes, emphasize breastfeeding as a public health priority (9), and raise awareness of health literacy -- the ability to access, understand, evaluate and communicate information to support health in a variety of settings (13) -- recognizing these determinants as important factors influencing infant feeding decisions (10). HPs also have a role to play in building CHL among their clients, which may enable them to better understand the social determinants of health, thereby building an understanding of the culture impacting their infant feeding decisions from a more critical perspective. This critical understanding may help mothers to engage in collective action, by building a sense of capacity and engagement in addressing social determinants of breastfeeding, thereby encouraging self-advocacy for supportive breastfeeding environments (14). Through the application of a CHL perspective to the issue of breastfeeding

support among mothers experiencing food insecurity, this research aims to inform

recommendations to not only address barriers to breastfeeding at individual and organizational

levels by facilitating more effective HP support; it may also provide strategies to introduce more

equitable policies aimed at addressing system level barriers, as well as raising awareness of critical

ways of thinking about infant feeding.

1.4 Definitions of key terms

- **Exclusive breastfeeding -** refers to the practice of feeding only breastmilk (including expressed breastmilk) and allows the baby to receive vitamins, minerals or medicine. Water, breastmilk substitutes, other liquids and solid foods are excluded (3). Throughout this document this term is used to refer to feeding only breastmilk for the **recommended 6 months duration**.

- **Client -** for the purposes of this research client is used to refer to mothers and/or families seeking infant feeding support or information from HPs.

- **Household food security –** "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (pg. 28) (15).

- **Community food security –** "a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (pg. 37) (8).

- **Populations vulnerable to (or at risk of) food insecurity –** for the purposes of this research *vulnerability to (or risk of)* food insecurity will be defined based on socio-economic status and past reliance on emergency food programs (i.e., food banks).

- **Populations with experience of food insecurity –** for the purpose of this research *experience* of food insecurity will defined based on the criteria of the Household Food Security Survey Module (16), which identifies household level, income-related food insecurity within the last 12 months.

- **Health literacy –** "ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course"(13).

- **Critical health literacy –** cognitive and skill development that allow an individual to participate effectively in individual, social and political action to improve health circumstances (17).

- **Institutional Ethnography –** method of inquiry focusing on how macro-level sociocultural relations and institutional factors structure the everyday experience of the individual (18).

- **Work practice –** a term used in institutional ethnography to recognize work as any form of action that requires time and effort (19). In this research it may refer to both mothers actions in infant feeding decisions and interactions with HPs, as well as neoliberal forms of work (i.e., job duties of HPs).

- **Grounded theory methods** - systematic, flexible guidelines for collecting and analyzing data to construct theories "grounded" in the data themselves (20).

2. Literature Review

This chapter provides an overview of the literature related to breastfeeding policy (section 2.1) and breastfeeding trends Canada and NS (section 2.2), factors influencing breastfeeding initiation and duration (at both the sociocultural and individual level) (section 2.3) and types of breastfeeding support (section 2.4). Further, literature related to breastfeeding as a component of household and community food security, as well as the experience of food insecurity and associated coping strategies, are also summarized in section 2.5 and 2.6, respectively.

2.1   Breastfeeding as a public health priority

Exclusive breastfeeding is considered the optimal and unequalled form of nutrition for infants and is associated with many favourable health outcomes (6). The World Health Organization (WHO), Health Canada, the Canadian Paediatric Society, Dietitians of Canada and the Public Health Agency of Canada recommend exclusive breastfeeding (i.e., when a baby is fed only breastmilk and not fed other liquids or solids) for the first 6 months of life, continuing with complementary food for up to two years of age (2). Breastfeeding has many nutritional and immunological health benefits for the child, and may also help to protect against obesity (2). For these reasons, the promotion of breastfeeding is increasingly being recognized as a public health priority in the prevention of chronic disease and childhood obesity (9).

To promote and support breastfeeding, the WHO and UNICEF created the Baby Friendly Hospital Initiative (BFI) in 1991 (21). This initiative can be summarized by the 10 steps to successful breastfeeding, which provide best practice guidelines specifically for hospitals providing maternity care, but has also been extended to other healthcare settings (22). The 10 steps include recommendations for institutional breastfeeding policy and adequate training for HPs on how to implement it. It also provides suggestions for supporting the initiation of breastfeeding through the provision of information and encouragement, as well as practising rooming-in, skin-to-skin contact

and on demand feeding. Lastly, the guidelines also suggest avoiding artificial teats or pacifiers, as well as formula samples, and referring mothers to breastfeeding support groups on discharge (22). Other international initiatives to promote breastfeeding include the WHO International Code of Marketing for Breastmilk Substitutes (the Code), which aims to protect and promote breastfeeding "by ensuring the proper use of breastmilk substitutes, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution" (Article 1, pg. 8) (23). This voluntary code applies to all breastmilk substitutes including infant formula, other milk products, as well as complementary foods, feeding bottles and teats (23) and makes provisions for the promotion of breastmilk substitutes and related products to the general public, as well as HPs. It also addresses the labelling and quality of breastmilk substitutes as well as the implementation and monitoring of the Code (23).

The implementation of BFI standards of practice has been widespread across Canada; a survey of Canadian hospitals showed that 85% had breastfeeding policies and 68% provided information on breastfeeding support (2). The Canadian Maternity Experiences survey, conducted in 2006/2007 with a large (n= 8,432), stratified random sample of mothers from each province/territory, suggests that the majority of mothers in Canada received breastfeeding information before their baby was born (92%), were offered help to start breastfeeding from their HPs (81%) and were also given information on community breastfeeding support resources (86%) (24). However, this survey also revealed low adherence to several best practices, such as early skin-to–skin contact, rooming-in, on demand feeding, avoidance of pacifiers, and the provision of formula samples, which may contribute to shorter durations of exclusive breastfeeding (22). While the federal government has approved the Code and made efforts towards voluntary implementation of some standards, it has not enacted legislation that encompasses all or nearly all provisions of the Code, in contrast to other countries. In fact, only some provisions have been adopted through other laws, such as consumer labelling regulations that address quality, labelling

and consumer protection standards outlined in the Code. Unfortunately, this voluntary approach has allowed many marketing practices that are violations of the Code (25) and reinforce a culture where formula feeding is the norm.

In 2005 the NS Provincial Breastfeeding Policy was enacted to support the implementation of the BFI, including recommendations to encourage implementation of the Code, with the ultimate goal of improving the health status of mothers and babies by increasing breastfeeding initiation and duration in the province (26). An evaluation of this policy revealed that it has contributed to an increase in overall awareness and support for breastfeeding (26). However, some additional challenges, similar to those identified at a national level, were the lack of enforcement for BFI standards and inadequate funding to support full implementation from government (27). This suggests the need for further support among high-level leadership to truly prioritize breastfeeding as an important determinant of infant and child health (9). Further, since the publication of this evaluation report the majority of prenatal classes across the province were replaced with the online education website "Welcome to Parenting" in 2014, due to declining attendance (28), despite these classes being an important venue for raising awareness of the BFI among mothers (26).

2.2 Breastfeeding trends in Canada and Nova Scotia

The history of national breastfeeding trends in the 20th and 21st century has been accompanied with large fluctuations in breastfeeding rates related to transformations in economic, political and social structures in Canada. During the 1920s – 1960s breastfeeding were dramatically lower than the present day due to emphasis on scientific knowledge about optimal infant feeding, including prescriptive use of formula as a remedy to common infant ailments, and increased participation of women in paid labour force (29). Since the 1970s breastfeeding initiation rates in Canada have been consistently increasing (29); this decade was associated with the most rapid increase (from 25% to 65%) related to increased international interest and advocacy and reclaiming of maternal breastfeeding knowledge (29). In the 1980s, the Canadian

federal government invested resources in a national promotional campaign that likely contributed to the maintenance of these increasing trends (29). By the end of the 1990s the breastfeeding initiation rate was close to 80%, however, rates of exclusive breastfeeding continued to be low (29). Furthermore, although rates have continued to increase, there has been a lack of government investment in implementation of the BFI since its introduction to Canada in 1998 (27, 29), and limited evidence around the contribution of these policies to continued improvements in breastfeeding initiation and duration (27). While the majority (89%) of Canadian mothers initiated breastfeeding soon after birth, the rate of exclusive breastfeeding remains low with only 26% of mothers continuing for the recommended 6-month duration as of 2011-2012 (2). Mothers who met recommendations tended to be married, highly educated and 30 years of age or older, whereas mothers who did not breastfeed (11%) tended to be younger, had less formal education and were more likely to be single than those who initiated breastfeeding (2).

Compared with the rest of Canada, NS has lower breastfeeding initiation and duration rates; 70% of mothers start breastfeeding and only 12.4% continue for the recommend 6 months (1). While more recent statistics suggest that this gap may be narrowing (as of 2013 83.9% of mothers initiated breastfeeding and 34.5% continued for the recommend 6 months), these statistics should be interpreted with caution due to high coefficients of variation and low statistical precision (30), indicating a need for improved survey methodology and higher quality data. A recent cohort study of 4,533 mothers in Cape Breton and Guysborough-Antigonish Straight regions found an initiation rate of 64.1%, which is well below the national average, with only 10.4% of these mothers continuing exclusive breastfeeding for 6 months (31). Overall there has been an increasing trend with both breastfeeding initiation and exclusive breastfeeding since 2003 at the provincial level in NS (30); this trend was also reflected across most other provinces, as well as at a regional level with exclusive breastfeeding increasing from 11% to 23% in the Atlantic provinces (2). British Colombia has the highest exclusive breastfeeding rate (41%) and has seen the largest increase since 2003 (2).

2.3 Factors influencing breastfeeding initiation and duration

2.3.1 Sociocultural factors

There are a variety of over-arching cultural and societal factors that influence the culture of infant feeding in NS. Examining sociocultural factors is important to understand the socially organized roles of mothers and to make sense of the ruling relations present in popular culture, healthcare systems, and society in general, that constrain mothers infant feeding decisions.

Social norms around breastfeeding at a macro-level are particularly important in shaping breastfeeding culture in NS. Evaluation of the NS Provincial Breastfeeding Policy, first established in 2005, has identified an overarching unsupportive culture in the province that is reflected in a lack of support for breastfeeding as health priority among senior leadership and HPs, as well as the resulting inadequate resource allocation to promote and support initiatives (9). In particular, lack of acceptance of breastfeeding in public spaces is a common constraint identified in published literature (32-36) for many reasons. Breastfeeding has become "invisible" in North American culture, confined to the private sphere (35, 36) and deemed as unacceptable in public and social settings (29, 32, 33, 35). This is reflected in many breastfeeding promotional campaigns in the media, which often lack images of the breast and breastfeeding, contributing to invisibility of breasts and perpetuating exposure as socially unacceptable (11, 34). Marketing practices of formula companies, which are often in violation of the Code, contribute to these perceptions and reinforce formula feeding as a social norm (25). Furthermore, despite bans on formula marketing within healthcare, direct targeting of mothers, beginning in the 1990s, through advertisements, mailings and free samples was used to diversify formula multinationals marketing approaches (29).

The media also contributes to the sexualisation of breasts in popular culture, a related ideational constraint, influencing body image and comfort level with breastfeeding, particularly around men. Since breastfeeding is an act carried out by the woman's body, the decision to breastfeed may be influenced by mothers' perceptions of their bodies and breasts; in fact, these

perceptions may not associate breasts with breastfeeding at all (35). Some women describe

feelings of disgust and embarrassment (33, 37), which indicates a tension between the natural role

of the breast in feeding and nurturing the infant and the sexual objectification of women's bodies

(35, 37). This barrier may disproportionately affect younger mothers (33), as well as socially

disadvantaged groups who may be more susceptible to sexual abuse and lack safe spaces for

breastfeeding (11). As a result, breastfeeding mothers may be socially constrained by this lack of

acceptance (33), which negatively affects their confidence and comfort levels; in fact, some mothers

have discussed their reluctance to breastfeed in public (33, 36). This unwillingness to breastfeed in

public at the individual level contributes to the invisibility of breastfeeding in the public sphere,

perpetuating a lack of acceptance at the societal level. Finally, social norms also influence ideas

around appropriate duration and age of weaning. Toddler breastfeeding is generally perceived as

less accepted even among breastfeeding supporters, such as paediatricians and family physicians

(38), which can affect mothers' adherence to recommendations for continued breastfeeding for up

to two years of age or longer with complementary feeding (39).

Related to the over-arching influence of social norms, is the prominent influence of

neoliberal ideologies in Western society that reinforce the self-blame that mothers experience,

while simultaneously facilitating corporate promotion of breastmilk substitutes. Neoliberalism, a

form of capitalism, is the dominant political philosophy in today's global economy, and has greatly

transformed the global food system, including the corporatization of infant feeding (40). This has

lead to the commodification of food, including breastmilk, where the corporate "steering

mechanisms" of money and power (41), rather than the right to food as a basic human need (42),

drive food distribution practices. Historically, scientific and medical approaches to breastfeeding

(29), where breastmilk and breastfeeding are viewed as a product rather than a process, have

reinforced the belief that formula and breastmilk are equivalent (36, 43). The commodification of

breastmilk and feeding is bolstered by corporate marketing practices contributing to perceptions

that formula feeding emulates the feeding of mother's milk and carries no risk (40). In NS, past research has identified loss of financial support from formula producers as a common concern among HPs (9), with dependence on corporate food systems considered an organizational constraint compromising adherence to BFI policies. The relationship between HPs and formula companies has been considered to also contribute to a devaluing of women's traditional breastfeeding knowledge by HPs and mothers themselves (40), a topic that will be discussed further below.

Furthermore, neoliberal perspectives on health emphasize the concept of individualism, which places full responsibility for infant feeding decisions on the mother, neglecting to recognize unsupportive sociocultural factors that limit her ability to exercise choice (44). This also applies to the issue of food insecurity, which is often framed as an individual or household issue rather than more broadly as a social injustice (45). Crosscutting these neoliberal discourses, are the macro-level influences of female gender roles that can act as both an enabler and constraint to breastfeeding. Providing food for the family has traditionally been an important part of the female/maternal identity (46), potentially contributing to women's personal values and beliefs at an individual level and encouraging them to try breastfeeding. This connection to sense-of-self and identity as a mother may be particularly strong for breastfeeding women who act as a source of food and nourishment for their child (47). For these reasons, "ideologies of motherhood" are inherent to the issue of breastfeeding, which frame a "good mother" as maximizing physical and psychological outcomes for the child regardless of the personal costs (44). Contemporary breastfeeding discourses draw on these ideologies by linking breastfeeding with ideals of "good mothering" (48), moralizing infant feeding decisions and putting undue pressure on mothers to breastfeed. Mothers are "responsibilized" for the nutritional health of their infants, as well as other family members, and blamed when they are unable to breastfeed (47). These ideologies influence

feelings of guilt and self-blame and create a fear of being judged and labelled a "bad mother" when breastfeeding efforts are unsuccessful (49).

While family feeding is recognized as an important and frequently reoccurring, time sensitive task that is fundamental to the overall well-being of the family (46), it has become undervalued and seen as the primary responsibility of those with the least power in society, namely women (47). Food provision has a long history of being connected to maternal identity and begins with the woman providing nourishment to the fetus and breastmilk as the first food, therefore a mother's sense of self is often connected to providing food for their family (46). However, Travers' 1996 research with socially disadvantaged women in NS showed how their feeding work was often invisible and unnamed by the women themselves (50). Further, neoliberalism emphasizes the importance of participation in the paid labour force, encouraging women to leave their traditional "stay-at home" roles, as their household work is no longer viewed as socially or economically important (51). McCarter-Spaulding describes this as a tension between the roles of the mother and paid worker, as the value placed on breastfeeding may conflict with other valued roles such as an income earner for the family (36). These changing family roles, including the increase in dual-earner families and fathers' increased participation in child-rearing responsibilities, may further constrain breastfeeding. Interestingly, past research has indicated a male partner's desire to be involved in infant feeding can hinder breastfeeding efforts by increasing pressure on the mother to switch to breastmilk substitutes (37).

The devaluing of women's work also influences the adoption of unsupportive workplace policies that, in effect, exclude breastfeeding women from the workplace (34, 52). In reality, the return to work appears to dictate weaning and breastfeeding duration for many mothers. Research with Vancouver mothers found that return to work was the most frequently cited factor for weaning among mothers who breastfed for longer than 6 months (53). While this may suggest that working and breastfeeding are incompatible, it is likely that unsupportive policies and workplace

cultures have created assumptions around working moms' inability to breastfeed, which serves to promote other methods of infant feeding (52). As a result, breastfeeding can also be viewed negatively as a socially isolating experience, a disempowering process that acts as a barrier to participation in society (54) and compromises a woman's autonomy (36).

In conclusion, the intersection of these neoliberal and maternal ideologies contributes to a society, and therefore a health system, that neglects to recognize social structures as determinants of infant feeding decisions (44). For these reasons, it is important for research to draw attention to their over-arching effects in order to raise awareness and create momentum for change at a broader systems level. For example, Van Esterik argues that an understanding of neoliberal capitalism from an individual to global scale is important to unravel the complex issue of breastfeeding, and that advocacy efforts will be ineffective without a political analysis of these barriers (40). Lastly, while the impact of these sociocultural factors may be very significant and widespread, affecting most mothers within a given society or culture, their affect in shaping the everyday experience l is likely mediated by individual-level factors, as described in the following section.

2.3.2   Individual-level factors

This section will describe individual demographic and lifestyle factors and how they relate to breastfeeding. Past research in Canada has identified many of these individual factors contribute to social inequalities in infant feeding practice (5) and are therefore very relevant to this research focusing on mothers vulnerable to and with experience of food insecurity. A family's income is an important socio-demographic factor impacting infant feeding decisions. The monetary savings associated with breastfeeding can serve as a particularly important motivator for low-income families (55, 56); however, in contrast research by Guttman & Zimmerman found that these savings did not significantly influence low-income women's infant feeding decisions (33). Canadian statistics show that significantly fewer mothers in the lowest income quintile breastfeed their

babies exclusively (3) but it is not clear how, or if, this decision is influenced by the cost savings that may be associated with breastfeeding. Similarly, in a NS cohort study, residing in an area with the lowest neighbourhood income quintile was a significant predictor of early breastfeeding cessation (31). Therefore, although breastfeeding is significantly more affordable and cost-effective, and would appear to be the logical choice for low-income mothers, other factors related to socio-economic status and life circumstances, including structural barriers, are likely influencing their ability to follow infant feeding recommendations.

Beyond income, research suggests that race and class impact infant feeding decisions (36), indicating another area of health inequity for those who are socio-economically disadvantaged. While breastfeeding may be associated with lower immediate costs, the long-term financial costs associated with maternity leave, and potential extensions to support continued breastfeeding, may be an economic constraint. Some low-income mothers described their return to work as a financial obligation and described a lack of control and sense of powerlessness in these situations (57). Low-income women are disproportionately impacted by the need to return to work (5) as they often have minimal to no flexibility in their household budgets and tend to be employed in low wage jobs, where employers are unlikely to create supportive workplace policies due to a lack of financial incentives (36) and high employee turnover. Women are more likely to breastfeed when married or in a common-law relationship (31) and not employed outside the home, indicating that traditional, dual-parent families in which the male is the breadwinner may be conducive to breastfeeding (36). In fact, a study with low-income mothers showed that they perceive breastfeeding as a socio-economic privilege and an unrealistic ideal for working moms (33). In addition, there may be an independent affect of race on infant feeding, as suggested by American research, as white women are more likely to breastfeed (36). However, the effects of race are difficult to separate from other socio-economic demographic factors (58). Overall, these inequities are potentially significant population health concerns, as inequities in diet during infancy likely

affect the future health status of these vulnerable groups (5), exacerbating other negative health outcomes to which they may be predisposed.

Furthermore, Dubois & Gerard reported that maternal education level was an even stronger predictor of adherence to infant feeding recommendations than socio-economic status alone. Statistics at the national level show that significantly fewer mothers with less than secondary education (17.3%), secondary graduation (20.4%), and some post-secondary education (19.9%), breastfed their last child exclusively for six months (or more) than mothers who were post-secondary graduates (29.1%) (3). Similarly, less than a high school education was associated with early breastfeeding cessation in NS (31). Some research has hypothesized a connection between lower education levels and resulting lower literacy skills, which may prevent women from accessing and understanding breastfeeding resources as a source of education and support (59). This may be particularly relevant in health systems within neoliberal cultures, where personal choices are viewed as the primary determinants of health (60), and mothers are viewed as responsible for educating themselves. In addition, education and professional background may play a role in shaping personal values, which contribute to motivations for breastfeeding.

Maternal age also appears to have a strong impact on breastfeeding initiation and duration; the percentage of mothers whom breastfed exclusively for six months (or more) increased with increasing maternal age. Significantly fewer mothers aged 15-24 (14.3%) and 25-34 (24.6%) breastfed their last child exclusively for six months (or more) than did mothers aged 35-55 (31.2%) (3). In addition, recent NS data show that older mothers are more likely to initiate breastfeeding (31). The immaturity of younger mothers has been described as a barrier to breastfeeding, which may reflect the tendency for younger women to be stereotyped as "bad mothers" (34). Age may be an individual factor influencing perceptions around the onus on the mother, sexualisation of breasts, and breastfeeding as a socially isolating experience, suggesting the need for additional

supports and education for young moms. Partners and other family members may also be more likely to influence younger mothers infant feeding decisions (61).

In addition to socio-demographic factors, the health of mother and child influences breastfeeding initiation and duration. Statistics Canada reports that several factors related to maternal and infant health were common reasons for breastfeeding cessation. These include "not enough milk", difficulties with breastfeeding technique, and medical condition of the baby or mother (2). Concerns around low milk supply appear to be a reoccurring reason for breastfeeding cessation in the literature (44, 53, 57) despite the fact that this is a rare medical condition (2). Interestingly, pre-pregnancy obesity and smoking during pregnancy were associated with early breastfeeding cessation in NS (31). Mothers also perceive that their health, including exhaustion after having a baby, has an impact on breastfeeding success and sustainability (55). More optimistically, the bond and comfort associated with breastfeeding may be an enabling factor contributing to improved emotional health of mothers and fostering close relationships with their children (62).

Lastly, mothers' self-determination and efficacy has been well studied as an important individual factor influencing breastfeeding, particularly in unsupportive family or sociocultural environments. Breastfeeding self-efficacy is a mother's belief that she will be able to organize and carry out the actions necessary to breastfeed her infant (58). It relates to a mother's level of confidence, as well as affirmation that they will be able to perform the behaviour (58). Breastfeeding self-efficacy also appears to involve setting goals and making a commitment, allowing mothers to maintain their breastfeeding intentions and enabling perseverance through difficulties and barriers (63), particularly during the early stages (32). While self-efficacy is an internal factor, various factors in the external environment can also affect the development of breastfeeding self-efficacy including previous personal experience, observation of other women who breastfeed, and verbal encouragement from HPs, as well as family and friends (63, 64). Personal experiences with

behaviour, whether positive or negative, have a significant influence on the development of, or reduction in, self-efficacy to perform that behaviour (18). For example, a positive prior experience, such as success with breastfeeding other children, in addition to the development of confidence over time, have been identified as enabling factors in previous research (32), whereas negative past experiences may dissuade mothers from attempting to breastfeed again. Interestingly, other research has identified no significant differences in self-efficacy related to socio-demographic factors, such as age, marital status, education, and household income (58). This suggests that self-efficacy may be an important breastfeeding enabler and promotion strategies to improve self-efficacy could potentially help to overcome the barriers associated with socio-economic status. The following section will explore the role of family, friends, peers and HPs in breastfeeding support, including their contributions to the development of breastfeeding self-efficacy.

2.4 Breastfeeding promotion and support

Breastfeeding support can involve many different activities, people, and places. It may include practical support, in the form of information, physical demonstrations, or opportunities to ask questions and address challenges. In addition, emotional support such as reassurance, praise, and encouragement are also important for a successful breastfeeding experience (65). Perceptions of effective breastfeeding support are likely very individual and mothers' perceptions likely differ from those of HPs (66). While no one style is likely to meet all mothers' needs, suggesting a need for person-centred approaches (67), a systematic review showed that, in general, face-to-face interactions and active, on-going support is likely to be most effective (65). Some research has found peer support groups facilitated by HPs provide an opportunity for both education and peer networking to meet the needs of most mothers (67); however, more research is needed to determine what aspects of support are most effective (65). Effective support for breastfeeding also includes addressing broader, systemic issues with how breastfeeding is supported and promoted at a healthcare systems level, creating comfortable environments and supportive policies that

prioritize mothers needs, normalize breastfeeding and improve mothers' ability to truly exercise choice in their infant feeding decisions (11, 48). The following sections will examine the existing research on breastfeeding promotion and support including critiques of recent promotion strategies and the complementary roles of social and professional support.

2.4.1   Public health promotion

Recently, public health promotion for breastfeeding has focused largely on communicating the nutritional and health benefits of breastfeeding for baby, seeking to influence mothers' infant feeding decisions through communication of information (11). These campaigns often employ "best for baby" discourses, informed by ideologies around women's duty and responsibility to feed the family (68), which may enable breastfeeding by strengthening mothers' "moral norms" (69). Despite the positive influence on mothers' breastfeeding intentions, this public health messaging can also be seen as contributing to judgment from others and self-blame, particularly when mothers' breastfeeding efforts are unsuccessful, leading to feelings of shame and guilt (44). Kukla describes a further shift in promotional messaging from providing benefits to avoiding harm, framing breastfeeding as a directive rather than a choice (48) and vilifying non-breastfeeders (11). This "contemporary risk discourse" acts as a form of social control, reinforcing neoliberal individualism and blaming mothers' exclusively for the health risks of "choosing" to formula feed (44). In this way, public health promotion may actually compromise maternal autonomy, crossing the line between persuasion and coercion (11, 68) and neglecting to acknowledge mothers' unique needs and life contexts. For these reasons, public health advocacy has been criticized for "re-packaging and re-distributing" information, which may already be well known (37), rather than addressing structural barriers in community, healthcare and workplace settings (11). Therefore, public health promotion can be viewed as both an enabler influencing mothers' intentions, motivations and commitment to breastfeeding, as well as a constraint that disempowers mothers through a judgmental, oppressive infant feeding culture.

2.4.2   Social support

Social support is a commonly cited as an enabling factor for breastfeeding initiation and duration. Relatives, particularly mothers' own mothers, can provide practical support from their personal experience (64). They may be particularly influential as past research suggests that their infant feeding preferences are predictive of their daughters' actual practice (38). In addition, past research in NS has identified family history as a positive contributor to sociocultural environments that support breastfeeding (14). Supportive partners also appear to be particularly important (37, 64, 70, 71). For example, some authors have found that educating male partners on the benefits can improve their attitudes towards breastfeeding, which in turn encourages the mother to breastfeed (61, 70). In addition to influencing infant feeding decisions, family may be very important for emotional support during difficult stages of early motherhood, guiding them through stressful life changes (64). Conversely, family and friends' negative attitudes towards breastfeeding can be a significant barrier (57).

Support from peers, other breastfeeding mothers, also appears to be a particularly important form of social support. A study found that the number of friends who did/did not breastfeed their babies had an affect on breastfeeding practices, suggesting that social norms at a community level are important influencing factors (57). On the other hand, when breastfeeding moms are present in the social network they may act as champions providing a sense of empowerment and "strength in numbers" (32), which is particularly important in unsupportive cultural environments. Sharing stories about the experience of breastfeeding may also be important for the development of self-efficacy (63) by normalizing the challenges experienced by many mothers. Overall there appears to be a need for more peer support (55, 72). In fact, past research has identified peer champions as important strategy for challenging the unsupportive infant feeding culture in NS (9).

Lastly, although different family members and peers may have unique roles to play in breastfeeding support, a mother's social network as a whole may contribute to improved duration. Kaufman & Hall discovered that as the number of supports increased, the risk of stopping breastfeeding decreased (71). Exposure to breastfeeding mothers, both throughout life and during pregnancy, may be important in shaping breastfeeding intentions. Other mothers, including family members, friends, and mothers' mothers, act as role models, reinforcing breastfeeding as natural and normal (33, 71). Furthermore, mothers that set an intention to breastfeed were more likely to follow through with this intention when their social network was perceived as supportive (73). In summary, social support appears to be very influential on the decision to breastfeed, as well as the decision to continue and persevere through breastfeeding challenges.

2.4.3 Health professional support

The influence of healthcare professionals is another theme that is commonly examined in the literature, although the degree to which this impacts infant feeding decisions is debatable. Earle argued that infant feeding decisions are often made prior to contact with HPs and therefore they have little influence (37). In addition, some research has found that, compared with members of a mother's social network, HPs are the least influential on infant feeding decisions (74). On the other hand, many researchers argue for the importance of proactive breastfeeding education and continued support from HPs after birth to affect more positive outcomes (53, 55, 62, 64, 75, 76). The best methods for delivering education and support are poorly understood. For example, some researchers argue for a multi-disciplinary approach (67, 75, 77), while others have recommended one-on-one sessions to ensure continuity of care (67, 72). While HPs are often relied on for informational/practical support (64), they may also have a role to play in encouraging and reassuring mothers particularly in client-professional relationships that involve sustained contact (66).

From the mother's perspective, some barriers to effective HP support include the problem of misinformation (66), as well as HPs' lack of understanding of life circumstances that constrain their ability to breastfeed (57). Although mothers are encouraged to breastfeed by HPs, their actual advice is often contradictory to "breast is best" messages (78), which could potentially lead to significant confusion among mothers. This challenge suggests potential knowledge deficits among HP that could be addressed at the health systems level to improve breastfeeding support. In 2007, only 29% of nurses and 9% of HPs reported being given training in breastfeeding (2); however, it is not known if this has improved in the last decade in Canada. In 2013 Chalmers called for increased HP training, stating that physicians are likely to have received only 1-2 hours of breastfeeding education (27). In addition, other Canadian research has suggested a need for further training to decrease knowledge gaps among nurses and dietitians (79), as well as physicians (38). Further breastfeeding education for HPs may help to promote breastfeeding as a public health priority (38) and foster understanding of the broader sociocultural determinants of infant feeding.

Several studies have also examined HPs' barriers to providing effective support for breastfeeding moms. In primary care settings, some HPs described time constraints as a major barrier to effective support. For example, in a study by Dillaway and Douma, paediatric clinic doctors and nurses felt that providing breastfeeding support required extensive amounts of time, which was difficult to balance with other competing health priorities (66). Similarly, research in NS has found a lack of commitment to breastfeeding among primary care physicians and reluctance to engage in discussion around breastfeeding (9). Several studies have identified the tendency for HPs to offer reactive support, in response to mothers' breastfeeding challenges, when in fact active and early support has been expressed as very important (65, 66). Unfortunately, this may be a missed opportunity as primary care physicians are gatekeepers to the healthcare system (9) and have the unique opportunity to promote breastfeeding at early stages of a mother's pregnancy. This lack of commitment may be perpetuated by confusion around the responsibility of breastfeeding

promotion in the healthcare system. Some family physicians felt that the responsibility falls solely with maternity hospital staff or lactation consultants (66). A survey of New Brunswick nurses and dietitians also found a need for clearly outlined statements of responsibility to influence their perceived professional roles and strengthen engagement in breastfeeding promotion (79). There is also evidence of a lack of role clarity among HPs in NS; research from 2011 in the former Capital District Health Authority, found that although PHNs, family practice nurses, and nurse practitioners all had interactions with moms around breastfeeding support, there was a lack of collaboration between these groups of nurses and barriers in policy and funding that prevented them from working to the full scope of their practice (80). Furthermore, HPs may have low self-efficacy around breastfeeding promotion (79) under the assumption that family and peers have a greater influence on mothers' infant feeding decisions (66).

In contrast to these perceptions, HPs' "expert" status and the associated credibility may make them particularly influential in infant feeding decisions (34, 44). Hausman describes a medicalization of breastfeeding that prioritizes "expert" knowledge over lay knowledge, or experiential knowledge, of mothers themselves (34) and teaches women to distrust their own interpretation and experiences (78). This shift was also accompanied with a decline in informal methods of infant feeding education in the 21st century, with the health system becoming responsible for both emotional and practical support for mothers (29). In traditional Western medicine, the client is dependent on the physician for healthcare and therefore an unequal power relationship is established (81); this type of power relationship is also seen with other HPs, including PHNs (82) and dietitians (83). By using institutionalized language around breastfeeding, HPs often assert their "expert power", complicating the client-professional relationship and influencing their clients' decisions (81). While these findings may suggest that HPs can have significant positive influence in breastfeeding promotion, other researchers (36, 84) have argued that their expertise and authority may also undermine parents' preferences and decisions when

breastfeeding is promoted too forcefully, as evidenced by their feelings of lacking of control in their infant feeding decisions (84).

Knaak further describes this phenomenon as an "ideological blanket" which discounts the mothers' individual needs and life circumstances (48). While this may be recognized as particularly harmful when HPs' practices are unsupportive, promoting formula feeding and supplementation and dissuading mothers who wish to breastfeed (36), mothers who choose formula feeding may also be vilified and labelled as selfish for putting their own needs before those of their child (11, 36, 85). Dillaway and Douma provide evidence that some HPs described a reluctance to promote breastfeeding for fear of shaming mothers who chose to use breastmilk substitutes (66). For these reasons non-breast feeders may seek to validate their decision by replacing expert knowledge with lay knowledge (i.e., their own, and the experiences of other moms), as well as contextualizing their situation within challenging life circumstances (44).

Some authors have discussed the importance of a return to maternal authority through promotion strategies that enhance women's power (36) to make the choice to breastfeed, or not, a true choice and that does not create or perpetuate shame among non-breastfeeders (11). This may explain the success of mother-to-mother support groups (i.e., LaLeche League), which address challenges that are neglected by unsupportive health systems by supplementing medical knowledge on the benefits with the practical, experiential knowledge of mothers (40). While shifts towards client-centred care may help to equalize the power relationship between mothers and HPs (81), HPs should think critically about their practice ensuring that client-centred reflects a true partnership between HP and client where the client is free to express their needs (86). PHNs in one study, for example, describe actively working to equalize the power dynamic between themselves and mothers by helping them to feel a sense of control and choice in their infant feeding decisions (82). As a result, building more supportive relationships focused on highlighting the strengths of the mother and family may be an important strategy for effective HP support (82, 83); this may also

contribute to the development of mothers' self-efficacy, thereby improving the duration and

exclusivity of breastfeeding (63). While mothers themselves are an important part of the

healthcare system (11), with ultimate responsibility for making infant feeding decisions, it is

important for HPs and policy makers to recognize that such decisions are often a moral decision

constrained by a culture of infant feeding that restricts autonomous agency (11).

Evidence also suggests that HPs can play an indirect but important role in supporting

breastfeeding by bringing mothers together to foster social support and creating opportunities for

sharing experiential knowledge (10). This represents a need to move beyond informational

support and to act as breastfeeding advocates, working to address sociocultural constraints that

make breastfeeding difficult (14). In conclusion, understanding conceptualizations of effective

breastfeeding support, and reconciling differences between mothers' wants and needs and HPs'

practices, is important for improving current support initiatives (66).

2.5   Connecting breastfeeding to food security

Breastfeeding can contribute to food security at a household level, helping to enable "all

people, at all times, [to] have physical and economic access to sufficient, safe and nutritious food to

meet their dietary needs and food preferences for an active and healthy life" (pg. 28) (4). For the

purposes of this research, mothers' *vulnerability* to food insecurity will be defined based on low

socio-economic status and past use of emergency food programs. These factors, such as low income,

few physical and financial assets, and reliance on support services, increase vulnerability to

income-related food insecurity by lowering a household's ability to respond to stressors and

compromising overall health and well-being (87). Household income in particular has been shown

to have a strong association with food insecurity, with decreases in income being associated with

greater severity of food insecurity (88). Although food bank usage is sometimes used as another

indicator of food insecurity, and is associated with dependence on income assistance (another risk

factor for food insecurity), food bank use alone should not be used to estimate prevalence of food insecurity as usage rates among food insecure groups are often low (89).

Health Canada monitors food insecurity using the 18-item Household Food Security Survey Module (HFSSM), which identifies through self-report "uncertain, insufficient or inadequate food access, availability and utilization due to limited financial resources, and the compromised eating patterns and food consumption that may result" (16). This validated measure assesses food insecurity at the household level within the past 12 months, using a three category classification system (food secure, moderately food insecure, and severely food insecure)(16), and is sensitive to changes in severity related to changes in household income (88). While the HFSSM does not assess food insecurity at the individual level, 10 of the 18 questions are specific to the experience of adults and the remaining 8 are specific to children (16). In 2014, the prevalence of household food insecurity in Canada and NS was 12.0% and 15.4%, respectively, with 1 in 6 of children living in food insecure households at the national level (4). Families with children under the age of 18 had a higher prevalence of food insecurity (15.6%), with lone-parent households headed by women being the most vulnerable (33.5%) (4).

Exclusive breastfeeding provides total food security for infants for the first six months of life, giving them access to a readily available and highly nutritious food that adjusts to meet the growing infant's needs (90). Breastfeeding is also cost-effective when compared to breastmilk substitutes, which is an important decision factor in the choice to breastfeed, particularly for low-income women (55, 56). Breastfeeding may be a necessity to ensure food security for the infant and allow for allocation of household food budget towards other family members. However, despite the high cost of formula, mothers who experience the social and material deprivation associated with lower incomes, less education and lower literacy levels are less likely to start breastfeeding (91). Canadian statistics also show that significantly fewer mothers in the lowest income quintile, as well as fewer younger and lone mothers, breastfeed their babies exclusively (3). As an important social

determinant of health (7), improved food security in these households has the potential to lead to improved health outcomes for children, and their mothers, throughout the lifespan (6). However, these statistics suggest that specialized promotion strategies and support may be needed for mothers vulnerable to food insecurity who likely face more barriers to food security and breastfeeding. In fact, a recent study in NS showed that maternal food deprivation was a structural constraint to breastfeeding, due to perceived worries about the effect on breastmilk quality (92). The perceived and actual costs of healthy eating to meet nutritional needs to support lactation may be perceived as a barrier for mothers experiencing food insecurity (92). Overall, infant food security requires accessibility and affordability of all infant foods including breastmilk substitutes, as well as recognition of lactating mothers as producers of food (93).

Breastfeeding may also contribute to community food security whereby there is access to enough nutritious food to maintain good health, within an ecologically "sustainable food system that maximizes community self-reliance, and social justice" (pg. 37) (8). Breastmilk has been under-recognized as an important part of a sustainable food system, providing infants with access to a renewable food supply that increases in response to increasing demand (40). In contrast, breastmilk substitutes are non-renewable and promote dependence on corporate food systems for infant feeding (93). When successful the highly individualized process of breastfeeding empowers the mother-infant pair by giving them control over the infant's food supply (40), thereby increasing their self-reliance. From a social justice perspective, breastfeeding advocates have drawn attention to a child's right to breastmilk, as well as a mother's right to breastfeed. This perspective may empower women to breastfeed by justifying their infant feeding decisions and providing a sense of outward support; however, other improvements to the social and economic status of women may be necessary to fully overcome sociocultural barriers, such as unsupportive workplace policies, necessary to better support breastfeeding mothers (68, 90). For these reasons, many of the principles of community food security, including self-reliance, sustainability, and social justice, are

also important for promoting and supporting breastfeeding. Conversely, it can be argued that creating supportive environments for breastfeeding is a prerequisite for food secure communities. For these reasons, other researchers have called for a merging of breastfeeding and food policy agendas (40, 94), to recognize the interrelated nature of these social determinants of health, and begin to address societal barriers that make breastfeeding unsustainable for many mothers (94).

2.6   The experience of, and coping strategies associated with, food insecurity among women and mothers

Household food insecurity is associated with complex, direct impacts on the health and well-being of the individual and household, with broader social implications (95) and is also a unique barrier to breastfeeding (92). Radimer and colleagues' formative study on hunger, now considered one component of the experience of food insecurity, found that the experience of hunger can be characterized in two dimensions at the individual and household level (96). At the individual level they describe four key dimensions of hunger namely the quantitative, qualitative, social and psychological component (96). The quantitative and qualitative components pertain to sufficiency and adequacy of the food intake, while the social and psychological components relate to disrupted food intake patterns and the resulting feelings of deprivation and lack of choice (96). The same four dimensions also apply at the household level; households that have insufficient food may resort to consuming unsuitable food (i.e., of lesser nutrition value) and acquire food in socially unacceptable ways, contributing to psychological consequences such as anxiety over the household's precarious food supply (96).

Building on this work, Hamelin and colleagues characterize household food insecurity based on similar core characteristics of the phenomenon and related reactions by the household (95). These core characteristics include negative impacts on physical health, including hunger and resulting fatigue and malnutrition, as well psychological impacts of stress and anxiety around procuring food (97). Households who experience chronic food insecurity are likely in a constant

state of stress, which is particularly disruptive to household dynamics, which in turn leads to disrupted eating patterns and food related rituals (95, 97). This stress when experienced chronically can negatively impact an individual's relationship with food, removing the pleasure associated with family meals and leading to eating being perceived solely as an act of necessity (97).

Moreover, families experiencing food insecurity are often faced with impossible decisions between food and other necessities, such as shelter and utilities, with food often being perceived as the most flexible expense (98). The cost of food has been shown to drive purchasing decisions (99) with some families experiencing food insecurity purchasing fewer healthy food items that are perceived as expensive, compared with foods that are perceived to be less expensive. For example, Williams and colleagues found that milk consumption is highly income sensitive with low-income lone mother-led families (with two or more children) purchasing fewer servings of milk and other dairy products, and spending a higher proportion of their income on milk (100). As a result, nutritional health of these families may suffer. For pregnant women, food insecurity is associated with increased risk of several negative health consequences, such as increased risk of pre-pregnancy obesity, development of gestational diabetes mellitus, and complications during pregnancy (101). The affect of maternal diet on the nutritional composition of breastmilk is variable depending on the nutrient, with fatty-acids, fat-soluble and water soluble vitamins being the most significantly affected by maternal intake (102). Malnutrition associated with severe levels of food insecurity could impact breastmilk production, thereby leading to a highly vulnerable food supply for the infant (103). Overall, supporting the nutritional health of mothers is important to ensure adequate milk supply and nutrient content of breastmilk (103).

The Canada Prenatal Nutrition Program (CPNP), a federally funded program available in over 2000 communities across Canada, is intended to support the health and well being of high risk pregnant women, new mothers and their babies (104) through education, support and free or low cost supplemental food provision. The cost of prenatal vitamins, essential to promote fetal health

and development (105), adds to the additional expenses incurred by pregnant women. Unpublished research suggests that these vitamins are unaffordable for many women reliant on income assistance in NS, putting them at increased risk for inadequate nutrient intakes during pregnancy (106). Moreover, it is likely that both prenatally and post-partum women who were previously working may be more susceptible to food insecurity due reductions in income associated with maternity leave. Although new mothers may be better off post-partum, due to federal child tax benefits that are accessible after the baby is born, unpublished NS research from 2008 has shown that both pregnant women and breastfeeding mothers reliant on income assistance are unable to afford the cost of a basic nutritious diet, including these essential nutrition supplements, after the costs of other essential expenses, such as shelter and utilities, are factored in (106). In addition, supplemental food assistance and education on food skills, delivered through CPNP and other programs, is insufficient to make up for food deprivation among these vulnerable women (107).

Beyond these nutritional impacts at the individual level, food insecurity and poverty also have serious social implications; families living with food insecurity often experience a sense of alienation within their communities and society in general (51, 68, 97). Hamelin and colleagues describe this alienation related to food insecurity "as a state of frustration due to being deprived of access to food and subjected to unmodifiable circumstances" (pg. 5-6)(97). For these low income single and two-parent families in Quebec, this alienation was associated with feeling powerless over an inability to choose foods that were acceptable to them and having to resort to acquiring food in unsustainable and undignified ways (97). Feelings of guilt and embarrassment were also very common, particularly in relation to an inability to feed their children in the way they wanted (97). Although using food banks was often initially perceived as an undignified and unacceptable way of accessing food, this research described how, for many families, the "unacceptable becomes acceptable" (pg. 12), showing the normalization of the inequities encountered in their everyday experiences (97).

Mothers experiencing food insecurity often have challenges accessing breastmilk substitutes (55, 92) due to increasing prices which, like other foods, are also affected by globalized market forces and profit-motivated infant formula companies (108). These companies aim to influence mothers through promotion of their products to HPs (108), using marketing strategies that are purported to aim to capitalize on the "expert" power of these HPs (81). While food banks and other charitable programs can provide important access to emergency infant formula (55); the types of products available may not always be suitable for baby's needs. Further, making formula more readily available for mothers and babies in need may be in conflict with strategies to promote breastfeeding (92). In this way, families experiencing food insecurity are constrained in their food choices, including their infant feeding choices, as well as their ways of accessing food; in addition, this experience of powerlessness also extends to other aspects of their lives, such as relationships and opportunities for education and employment (51).

Further complicating the challenges that mothers experiencing food insecurity face in accessing healthy food, is the related sense of judgment and degradation, often imposed by those working in social services or charitable food organizations (68). Power considers this using the ideology of neoliberalism, characterized by a market-focused society where human needs are met through consumption of goods (41). In particular, she describes how low income lone mothers in NS are "othered" by their communities as well as social institutions, such as the Department of Community Services (DCS), that is responsible for administering income assistance in NS (51). Her 2005 analysis describes the "othering" of mothers on welfare (now income assistance) through the government's portrayal of them as individuals who are "incapable of exercising their capacities for freedom" (pg. 5) through the consumption of consumer goods (51) The DCS prevented these mothers from exercising autonomy in many aspects of their life, including their relationships, education, occupation, and decisions around household management, by using welfare policies as a type of surveillance (51). The experience of being on social assistance, which is a reality for many

experiencing food insecurity (4), coincided with humiliation and a lack of control in their daily lives. The disciplinary power exercised by DCS in refusing their requests for additional allowances, usually for expenses such as transportation and childcare, that the mothers considered to be basic needs, seemed to directly contribute to these negative feelings. While mothers were aware of the injustice in these practices, they also appeared to have taken up these neoliberal discourses themselves in the importance they placed on finding paid work and getting off social assistance. Although this may have been perceived as a way to exercise more control in their lives (51), it may also indicate a devaluing of their work as mothers (51, 68), showing the impact of ruling neoliberal relations on their daily lives through their desire to be "good citizens" through participation in the market economy.

Similarly, women's work of breastfeeding has been devalued, due to the emphasis on women's participation in the paid labour force, which is often not conducive to breastfeeding (46). As the nutritional and health benefits of breastmilk have become increasingly recognized, breastmilk has become a highly valuable commodity with mothers who are unable to breastfeed sometimes paying large sums to access it through as unregulated sources (93), demonstrating the power of neoliberal market forces in controlling infant feeding (35). Although some peer breastmilk sharing networks do exist to provide breastmilk free-of-charge, regulated milk banks are often inaccessible to women and babies who could benefit from this most, with the affordability being determined by cost sharing arrangements between health institutions and insurance boards (93).

Despite these unfavourable circumstances, the resourcefulness of families living with extreme financial constraints has been well documented in the published literature (68, 99) Dachner and colleagues, in a 2010 Toronto-based study, describe how families facing food insecurity, particularly mothers, go to incredible efforts to access food and stretch their food dollars to ensure food security for their children (99). Key examples included making food from scratch,

being creative with leftovers, using fillers to stretch meals, and using canned food items.

Economizing strategies at point of purchase also included buying in bulk, buying discount or sale

items, using shopping lists, coupons or flyers, and comparison strategies (99). Breastfeeding

children for longer durations has also be named as a coping strategy to ensure infant food security

(100). However, despite this impressive level of resourcefulness, which contradicts widely held

assumptions around a lack of budgeting or food skills among these families (86), parents still

struggled to buy adequate and acceptable food for their children, showing how these coping

strategies are insufficient to address food security in absence of policy solutions to address the root

causes (99). Sometimes mothers themselves felt they should have been able to make ends meet

(51), despite clear evidence of the inadequacy of income assistance in NS (98), showing how

mainstream discourses around poverty may serve to justify the marginalization of these women

(109).

Another coping strategy well documented in the published literature, is the self-sacrifice

mothers make to protect their children from food insecurity, particularly by sacrificing their own

food intakes to ensure that their children had enough to eat (68, 97, 100, 110). This self-sacrifice is

often perceived as socially acceptable and some mothers framed it in a more celebratory way by

associating it with being a "good mother" and something that all mothers, not only those living in

poverty, did for their children (68). The importance of providing their children with certain foods,

especially milk, was described as crucial for fitting society's norms of healthy eating, particularly in

the context of school healthy eating policies (100). Similarly, breastfeeding is also viewed as a type

of sacrifice by some women, due to giving up other roles (i.e., paid worker) and social aspects of

their life, in order to conform to society's norms of a "good mother" (44, 46, 111). This also

extended beyond food; some mothers talked about using a variety of strategies to protect their

children from being judged at school, including buying items that were perceived as helping them

to fit in (68). This shows how the purchasing of goods, including desirable foods for their children,

was perceived as a normal way of showing their love and reflects the infiltration of neoliberal values into their experiences as mothers (51).

Other coping strategies to deal with the emotional and psychological consequences of food insecurity have also been noted in previous research. These included positioning themselves as "better off than others" experiencing food insecurity (68), framing their experiences as righteous (68), being grateful for what they had (51) and hiding poverty/food insecurity from others, including their own children (51, 68). These strategies may have helped to protect them from the negative feelings associated with their situations. In a similar way, justifying the choice to formula feed may help to contradict negative judgments experienced by formula feeding mothers, and may be a way for mothers living in power to negotiate a limited amount of power within their social spaces (111). However, several of these coping strategies may distance mothers from others living in poverty; this may actually serve to increase their isolation and could be interpreted as a way of "othering" themselves (68). Some women even held negative assumptions about other moms in their communities struggling with addictions or unemployment (68).

Other research has suggested that fostering an understanding of shared experience among women facing food insecurity can raise the critical consciousness of mothers (109, 112). For example, participatory research has been shown to foster a sense of empowerment among women, allowing them to create alternative social discourses that overcome self-blame for their life circumstances (109). This critical consciousness raising may allow women to take concrete action towards addressing food insecurity in their communities, through critically assessing the root causes of food insecurity and the impact on their health (109, 112). The importance of social connectedness and shared experiences is also demonstrated in the success of peer breastfeeding support (84, 113). Overall, the parallels between the experiences of breastfeeding and food insecurity raise the question of how similar approaches to breastfeeding support, rooted in building capacity and creating empathy for the daily struggles of infant feeding, may help to liberate new

mothers from oppressive social forces, which this research intends to explore using a CHL

perspective.

3. Theory and Methodology

3.1　　　　Critical health literacy

3.1.1　Defining health literacy

This section will review CHL as an approach to analysis and guiding perspective for the proposed research. CHL is a fairly new concept arising from the more basic concept of health literacy. The term health literacy dates back to 1974 with early definitions from the American Medical Association describing the concept as skills for use in a clinical setting (i.e., reading prescription bottles and health communication materials). This individual framing of the concept continued with the publication of *Understanding Health Literacy*, which defined the concept as "composed of a combination of attributes that can explain and predict one's ability to access, understand, and apply health information in a manner necessary to successfully function in daily life and within the health care system" (pg. 4)(114). For these reasons, early health literacy research focused mainly on the deficit approach, or a risk model of health literacy, whereby low literacy and numeracy levels are viewed as an individual, pre-existing risk factor limiting ability to use health services and understand health information (115). However, health literacy encompasses more than individual literacy, including the delivery of health services and health information in a supportive environment (116, 117). Ultimately, a health literate health system is one that meets user needs and enables users to effectively address their own health concerns (116)

As interest in health literacy has increased in North America and Canada, the concept has expanded to include multiple literacies (117) and several models describing them, some of which will be discussed below. Zarcadoolas and colleagues have defined health literacy as a "range of skills and competencies that people develop to seek out, comprehend, evaluate and use health information and concepts to make informed choices, reduce health risks and increase quality of life" (118). This model involves the four domains of fundamental, scientific, civic, and cultural literacy. While the fundamental and scientific domains reflect basic literacy skills and an understanding of

scientific concepts, civic literacy is a more complex set of skills that enable people to become aware of public issues and participate in decision-making. Lastly, cultural literacy is the ability to recognize and use collective health beliefs, customs, world-view, and social identity in health decision-making (118)

Nutbeam's model of health literacy is one of the most well known and also incorporates multiple literacies. He defines health literacy at an individual level as the "personal, cognitive and social skills which determine the ability of an individual to gain access to and effectively use health information" (pg. 263) (17). Nutbeam's model comprises 3 types of literacy: [1] functional literacy, [2] communicative/interactive literacy, and [3] critical literacy. Similar to Zarcadoolas et al.'s concept of fundamental literacy, functional literacy describes the reading and writing skills that enable people to understand health information. Communicative/interactive literacy describes more advanced literacy and social skills that are applied to health promotion approaches and the development of personal skills. The third dimension, critical literacy, involves analytical skills such as critical appraisal of information that allow an individual to take more control over their health circumstances through an understanding of social and environmental determinants of health (17).

This conceptualization of health literacy is consistent with a public health lens, which emphasizes health literacy skills as assets to build on to support greater empowerment in health-decision making (115). The WHO has adopted the asset model in their definition of healthy literacy: "...the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (119). Nutbeam has advocated for a public health approach moving beyond individual level skill development, although not unimportant, to acknowledge and understand the political aspects of health education and focus on addressing the structural barriers to health (115, 120). This model provides the basis for the original definition of CHL, summarized as the cognitive and skill development that allow an individual to participate effectively in individual, social and political

action to improve health circumstances (17). Despite the evolution of the health literacy concept over time, and a lack of consensus on the best approach to measure and define (13), a systematic review has summarized 12 key dimensions referring to the knowledge, motivation and competencies of accessing, understanding, appraising and applying health-related information within the healthcare, disease prevention and health promotion settings, respectively (121).

3.1.2 Defining critical health literacy

Building on Nutbeam's work, Chinn proposed a model that expands on the definition of CHL by defining three domains of information appraisal, understanding social determinants of health, and collective action (120), across two realms of the individual and the collective. At an individual level, CHL can change and develop overtime as a person acquires new skills, or becomes more motivated to understand the determinants of their own health (122). Chinn acknowledges the importance of enhancing critical appraisal skills, particularly in the "information age" where health information abounds, which may have a positive affect on health outcomes. For example, individual level skills enhanced by CHL might include self-reflexivity to determine personal health needs and make informed decisions (120). More specifically, CHL skills involve critiquing health information, questioning the credibility and considering the purpose of the information in the broader social context (123). However, CHL also goes beyond this and also includes an aspect of emancipation – a second form of criticality –, which gives people the skills to affect social change (117). For these reasons, enabling CHL may contribute to individual empowerment through the development of self-efficacy, increasing personal control over health issues, and self-management of care, which in turn may lead to better health outcomes and more effective use of health services (122). Furthermore, it may also contribute to increased capacity at the community level to address the social determinants of health (117).

A person's health literacy level is also likely to vary between health settings and situations (123). Moving beyond CHL as an individual concept, Sykes et al. describe the interactional role of

CHL between an individual and the health system. An individual's communicative/interactive literacy will affect their ability to ask questions, express concerns and query HPs advice, which ultimately affects effective communication with HPs (123). However, HPs also have a role in CHL; not only do a health system user's skills affect the effectiveness of health system interactions but also the HP's ability to communicate clearly.

With respect to the second and third domains of CHL, a broader understanding of social conditions as determinants of health is an important precursor to collective action (120). CHL also encompasses an understanding of the determinants and policy context of health, creating an opportunity to challenge this at a social and political level (122). Collective action may be the most important domain as it involves engagement in health promotion activism, promoting a sense of community engagement and empowerment, which may in and of itself have benefits for overall well being, self-esteem, and social connectedness (120). In this way, broader definitions of CHL, including collective action, parallel Paulo Friere's concept of "critical consciousness" (17), the perceived ability to critically understand and act to change oppressive social and political conditions (124). In summary, CHL has the potential to challenge traditional forms of health communication encouraging critical analysis of health systems and participation in political advocacy for change(115). For these reasons strategies aimed at improving CHL must include more than information transmission and enhancing reading and writing skills (17), particularly as these functional skills are not necessarily prerequisites for CHL (123). This may be particularly important for women who are vulnerable to or have experience of food insecurity and who may lack political influence due to unfavourable socio-economic conditions (87), limiting their ability to engage in self-advocacy. In contrast, preliminary evidence from participatory food costing in NS has shown that providing women with opportunities to develop shared experiences and participate in activities aimed at affecting social change can help women experiencing food insecurity begin to question social structures that govern their limited ability to access food (86). This demonstrates

that other research, policies or programs that aim to improve CHL may be important for the development of social capital and advocacy for change to reduce health inequities. Lastly at the systems level, creating health literate health systems may help to shift attitudes in leadership to promote service changes rooted in the needs of mothers and vulnerable groups, which could ultimately be a proactive population health strategy to reduce the high costs of health care (13).

3.1.3   Measuring health literacy

In addition to a lack of consensus around health literacy definitions, an additional challenge is the lack of effective measurement strategies for health literacy (13), particularly CHL. Measurement of health literacy has primarily focused on assessment of basic literacy skills (125), sometimes using self-reported measures, which measure perceptions rather than actual skills (123). While their have been some brief tools developed to decrease respondent burden (125), such as Rapid Estimate of Adult Literacy in Medicine and the Short Test of Functional Health Literacy in Adults, other research has identified existing tools as impractical and unfeasible, with limited application across different healthcare systems (126). Further, HPs lack the knowledge and tools to assess their clients' health literacy levels (125), and risk the potential harms of embarrassment and stigmatization through routine screening, particularly in socio-economically and ethnically diverse groups (126). Several authors have suggested a need for measurement of the broader CHL concept in order to distinguish between an individual's ability to acquire information versus how they apply and act on it (120, 123). An example of a more comprehensive assessment tool is the All Aspects of Health Literacy Scale (AAHLS) developed by Chinn and McCarthy to assess the 3 domains of Nutbeam's model for health literacy (126). However, limitations of this tool include difficulty measuring constructs central to CHL, such as information appraisal and individual autonomy. Despite this, use of a more comprehensive assessment tool such as the AAHLS can help to reframe health literacy in more positive light, focusing on individual strengths that can be built on to improve healthcare interactions, rather than emphasizing low

literacy levels as a deficit. Improved measurement is also important to identify recommendations to enhance health literacy supports at a systems level (126).

3.1.4 Health literacy in Canada

The Canadian Public Health Association created an Expert Panel on Health Literacy to determine the state of health literacy in the country, and its impact on the overall health of Canadians (13). While their report defines health literacy as the "ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course" (pg. 3), the panel also identified a lack of consensus around definition and measurement of the concept (13). Although the level of deficit varies greatly from region to region, overall their report identifies a lack of awareness and understanding of health literacy among HPs, as well as a deficit in basic literacy skills among many Canadians which prevent them from "responding to demands of health information". Seniors, recent immigrants, and those with lower levels of education or lower levels of English or French language skills were said to be the most disadvantaged. Adults with low health literacy have a poorer understanding of health and disease, as well poor self-management practices (123). This may be a significant health inequity for these population groups, who have also been identified as being at a higher risk for food insecurity (4), as those with lower health literacy are more likely to experience negative health outcomes (13) and have higher rates of morbidity and mortality (123). In fact, health literacy has been shown to be a stronger predictor of health than other socio-demographic characteristics such as age, income, employment, education, and race (125).

Despite the fact that individual characteristics appear to influence health literacy, the Canadian expert panel also identified many systemic barriers to health literacy in Canada including: challenges in implementing quality school health and physical education programs to address students' health issues; lack of affordable English/French as a Second Language programs and community-based literacy upgrading programs; inadequate workplace training and education;

confusing or conflicting health information from the media and the Internet; complex health systems; demanding self-care regimes for chronic diseases; and lack of awareness and knowledge about health literacy among health and literacy professionals (13). However, they also identified health literacy as an emerging area of health research and suggested a need for a further exploration in several areas, most importantly the costs associated with low levels of health literacy at the population level.

Health literacy has also been recognized as an important determinant of health at the provincial level. *Thrive! A plan for a healthier Nova Scotia*, the provincial strategy to address growing rates of childhood obesity and chronic disease, calls for support to make Nova Scotians more "health literate" – having the knowledge to promote, maintain and improve health and make informed decisions (127). Strategies identified in the action plan focus specifically on developing food literacy and physical literacy among children and youth, as well as their educators. This includes integration of health literacy into curricula for primary and secondary schools, as well as adult education (13). Further, *Thrive* specifically names the importance of promoting breastfeeding "anytime and anywhere" as key strategy contributing to the health of children and families (127), showing how fostering positive social norms around breastfeeding are closely linked to health literacy goals. At the health systems level, making health literacy a mandatory component of HP training and developing guidelines for plain language in health communication may be effective strategies (13). Unfortunately, the Expert Panel's recommendations neglect to address the more critical, emancipatory aspects of CHL. While community-based, participatory approaches have been identified as potentially effective in addressing health literacy issues (13), the absence of concrete strategies to enhance collective action in expert recommendations may indicate challenges with implementation among health systems leadership.

3.1.5 Applying critical health literacy to breastfeeding

This research uses CHL as an over-arching perspective informing the data collection and analytical framing of NS mothers' experiences with breastfeeding promotion, as well as HPs' perceptions of breastfeeding promotion and support, thereby encouraging critical reflection on current practices and identifying potential areas for improvement. Building on formative research in NS (14), the analysis was informed by Chinn's expanded model of CHL to obtain an understanding of how information appraisal, comprehension of social determinants of health, and collective action are incorporated into existing support and promotion practices.

In addition, the concept of food literacy may also be useful to relate the concept of CHL to breastfeeding, as breastmilk is an important first food for infants with potential to improve infant food security (47, 94). Food literacy has traditionally been defined as the ability to understand food and its importance to the individual and household, as well as how to gain information about food, analyze it and use it in the context of making food choices (128). However, critiques of this definition suggest that it blames the individual for poor food choices and therefore reinforces neoliberalism, similarly to the responsibilizing of mothers for their infant feeding decisions. A reframing of the food literacy concept using Habermas' 3 domains of knowledge (129) has been recommended to stimulate action towards social change (130). Sumner discusses the importance of all 3 domains of knowledge for a holistic view of food literacy. While empirical-analytic knowledge involves a more basic understanding of food, nutrition, and health information, by including historical-hermeneutic and critical-emancipatory knowledge in food literacy education, this brings to light the dominant ideologies shaping the current food system, including infant foodways, thereby encouraging a critical perspective. These types of knowledge reflected in the concept of food literacy may be crucial to informing the development of the second and third domains of CHL, particularly in relation to nutrition and food security issues such as infant feeding. **Figure 1** below presents a conceptual relationship between critical health and food literacy,

showing the three forms of knowledge encompassed in a critical food literacy perspective, as defined by Sumner (130), with examples relating to infant feeding. This conceptual diagram suggests critical food literacy may be a key aspect of multiple literacies that inform the development of CHL, with alignment between the three forms of knowledge and three domains of CHL as defined by Chinn et al. (120). Although certain ways of knowing inform the development of some CHL skills more directly (i.e., critical emancipatory knowledge informing collective action), this is not meant to suggest that these relationships between knowledge and skills are mutually exclusive (e.g., historical-hermeneutic knowledge, such as women's ways of knowing related to food provision, could also inform collective action). Further the development of various CHL skills could also increase an individual's ability to understand and interpret the different forms of knowledge; these suggested relationships, therefore, might be bi-directional.

Figure 1. Conceptual relationships between critical health literacy (adapted from Chinn et al. 2012) and food literacy (adapted from Sumner, 2013)
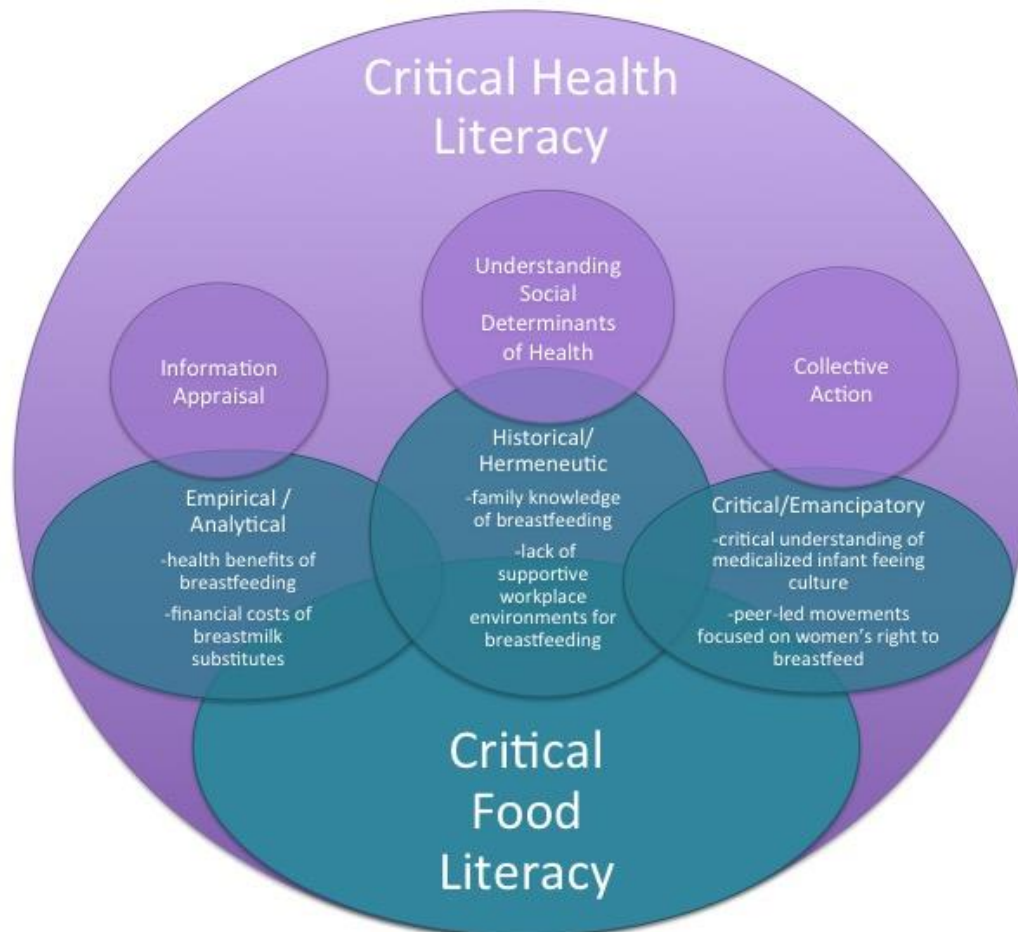
In relation to this research, a CHL perspective can also examine the relative roles of mothers and HPs in their interactions around breastfeeding, which applies to many key issues identified in the published literature (see Gillis et al., 2013 for example) (14). For example, information appraisal relates directly to mothers' infant feeding decisions and their ability to discern their personal values from often-unquestioned expert advice to make the best decision for their life circumstances. In this way empirical or analytic knowledge is used to understand the basic pros and cons of breastfeeding communicated by HPs, while more critical forms of knowledge can be used to reframe these expert discourses within the mother's own context. Enhancing the CHL of mothers may improve mothers' personal involvement, action and control over health issues (122),

such as infant feeding, which may in turn have important implications for their breastfeeding self-efficacy, an important enabling factor (63). Mothers who are empowered by this additional knowledge may also be more able to seek out extra support when needed. For these reasons, CHL may be of particular importance to the mothers of interest in this research who may be more likely to face challenges with low health literacy levels, the associated stigma (10, 123), and social isolation (97, 110), as well as other health inequities that socially constrain their ability to breastfeed and compromise their families' food security. Canadian experts in the field have recommended targeted health literacy initiatives for population groups with lower income and education levels (13) to reduce health inequities at a population level.

In addition, building an understanding of CHL among HPs may positively influence their breastfeeding support practices by working towards capacity building strategies to help mothers develop skills and confidence, rather than focusing solely on providing information, and striking a balance between enabling an informed decision and respecting personal autonomy (10). HPs can engage in reflexive learning in their practice, which may allow them to challenge the social organization of their breastfeeding support work (41), while also contributing to the development of critical consciousness among mothers. While traditional forms of HP education on breastfeeding may be seen as a type of social control by perpetuating "breast is best" discourse (78, 131), enhancing CHL among mothers will give them a greater understanding of social determinants of health and structural barriers to breastfeeding. Further, this is directly relevant to the issue of breastfeeding as these factors have been found to contribute to early breastfeeding cessation (31), and more critical approaches may help to foster an improved understanding of the reasons behind these associations among both mothers and HPs.

The third domain of collective action also relates to the importance of breastfeeding advocacy; taking a CHL approach to breastfeeding issues may help encourage HPs to advocate for breastfeeding mothers, who can use their influence to represent vulnerable mothers' needs. These

more critical forms of knowledge, as seen in the concept of food literacy, may be useful to raise the critical consciousness of mothers, thereby encouraging political action and self-advocacy (130). For example, mothers who experience a lack of control over infant feeding upon return to work may be empowered to advocate for more supportive workplace policies. Furthermore, breastfeeding mothers who have an understanding of collective determinants of health may be more willing to participate in peer support, recognizing that their actions have an impact on other moms in the community, and ultimately community food security through creating outward support and acceptance for breastfeeding. This may also decrease their dependence on HPs for advice (10), which could enable mothers to create their own support networks around infant feeding and provide some freedom from the challenges in accessing these support services.

Lastly, recognizing infant food security as its own complex issue influenced by political and social factors, and informed by multiple ways of knowing around food, may be particularly important in the current neoliberal culture emphasizing the importance of self-management and self-care (120), which "responsibilizes" mothers for their infant feeding decisions. Most importantly, developing an understanding among both mothers and HPs of these oppressive forces that constrain breastfeeding may help to challenge these neoliberal philosophies of health and other unsupportive ideologies that devalue women's work of feeding the family. This will help to prioritize systems-level and inter-sectoral strategies aimed at altering unsupportive social norms, changing interventions to better meet mothers needs, and creating more "health literate" systems of breastfeeding support in the province. Further a CHL lens informed by Sumner's conceptualization of food literacy will help to situate infant feeding within the broader picture of community food security in NS and the potential impacts on the health of future generations. Overall, conceptual links between food literacy to CHL, as suggested in this research, have the potential to position food and food security as key contributors to health and well being for mothers and infants. Further exploration of the linkages between these multiple literacies and how

they may inform approaches to breastfeeding education and support will be discussed in section 5.3.2.

3.2   Theoretical Framework

This section will explore institutional ethnography (IE) as an approach to explicating mothers' interactions with HPs involved in breastfeeding support and how these interactions are shaped by broader sociocultural factors at the institutional level. The use of a modified IE approach compliments the CHL literacy perspective intended for this research by drawing attention to how an awareness of CHL, among both mothers themselves and HPs, may enhance the everyday experience of breastfeeding support, reconciling the discrepancies between breastfeeding promotion practices and mothers needs through the three domains of critical appraisal, understanding the social determinants of health, and collective action. As described in further detail below, these aspects of CHL may be viewed as "work practices" involved in breastfeeding support, which are central to IE methodology.

IE was developed by the Canadian sociologist Dorothy E. Smith (132) and has expanded not only in the field of sociology but additionally in the fields of nursing, education, social work and planning (133). IE has been labeled a sociology for women as it is focused on giving voice to marginalized women, as well as others, who are subject to ruling relations in their everyday lives (18). IE research considers experience as data (18); however, IE moves beyond the individual level of experience to understand the work of "the social" in producing knowledge and actions (19). "The social" is defined as macro-level social relations that coordinate people's activities on a large scale (19). Rather than seeking an explanation for behaviour and phenomena at an individual level and generalizing to others within the same context, it aims to illuminate the institutional forces that have generalizing effects on the everyday experience (19). For this reason, IE projects may span multiple sites and settings to show the overarching nature of "the social" (19) and its influence over

both public and private spheres of activity. The intent is to show how individuals align their actions

with dominant ideologies at a societal level (133), despite the "fault lines" or gaps between these

ideologies and their own personal values and beliefs (19). It aims to find and analyze these gaps

that occur when women try to conform to dominant conceptualization of their situation (132).

IE also focuses on revealing texted-based forms of knowledge and discursive practices that

constitute the ruling apparatuses shaping our everyday lives, and our unconscious participation in

it, through an increased understanding of the broader societal influences on our thoughts and

actions (19). IE prioritizes subjectivity by emphasizing the importance of starting with everyday

experiences, creating maps of the social context that make up that experience. It aims to bring

subjugated "knowledges" to light, by calling attention to how ruling relations silence our true selves

and interests. For example, as much of women's "traditional" role within the home is constituted by

unpaid work, it becomes devalued in capitalist societies which recognize "work" as solely paid

employment (133), creating a form of subjugated knowledge. However, IE frames work as any

actions undertaken with intention that require time and effort (19), bringing attention to the

importance of women's work in supporting Western institutions, such as the nuclear family. In

addition, Smith strongly encourages the feminist practice of self-reflexivity, a process allowing

researchers to acknowledge and examine their social background, life circumstances and

assumptions, and the affect their research (134). Given that this methodology has been applied

across various settings and disciplines, Smith encourages researchers to reflect on their own

research interests and how "the social" may have impacted their research decisions (19). The

researcher must recognize that they are integrated within the ever changing, historically embedded

relations and organization that make up "the social", which influences how research is interpreted

and acted upon (19).

3.2.1 Healthcare research and institutional ethnography

IE research has emerged as promising new methodological approach in healthcare and health policy research. Traditionally, healthcare research has used quantitative, positivist approaches to determine patterns of service utilization and discovering underserved groups or communities. In addition, qualitative research has been used to gather information from marginalized groups who have poor access to health services. However, the marginalization of these groups is rarely connected to health system level barriers (135). IE encourages a more holistic approach to studying health services, recognizing barriers at the health system level that limit access, of marginalized groups in particular, to appropriate healthcare, thereby negatively impacting their health.

IE is well suited to the study of health systems and the impact of health policy in shaping work practices across different sites of care delivery. For example, Quinlan used an IE approach to study knowledge work across various multidisciplinary healthcare teams in Saskatchewan, demonstrating how changes in provincial healthcare delivery were coordinated through the activation of policy texts (136). Similarly, Eni participated in prenatal care delivery programs across several First Nations communities, demonstrating the social coordination of the peer support workers' practices across sites (137). Therefore, IE methodology may bring to light the ruling apparatuses underpinning health systems inequities and compromising quality of care.

IE interviews are well suited to uncovering and mapping the complexities of relations within healthcare systems. Several IE projects in healthcare settings have incorporated multiple perspectives, giving voice to multiple actors within health care systems and uncovering how the ruling relations coordinate their interactions and interconnected work practices within "the social". Interviews with healthcare users can focus on the work practices involved in seeking out healthcare, including information appraisal skills as in CHL. For example, Sinding recognizes the need for marginalized groups with poor access to health services to engage in various work

processes to take control over their own health. She discuses the need for these groups to advocate

on their own behalf by engaging in collective action, in addition to actively seeking out HPs,

reallocating financial resources to prioritize their health needs, and modifying treatment

recommendations to fit their own circumstances (135). Past research in NS has demonstrated that

family resource centres may help to address these inequities in the health system, by providing

opportunities for marginalized women to become engaged in their communities and improving

their confidence and capacity to advocate for their own food security and health (138).

Interviews with healthcare users can also illuminate gaps between the majority voice

dictated in health policy by including voices from outside the ruling apparatus of the larger health

system (137), and recognizing non-traditional forms of work consistent with an IE approach. Other

research has focused on interviewing policy analysts and health administration to analyze the

"mandating texts" that shape the work practices of health care providers. Interviews can identify

texts that may not be formally articulated in written documents, but nonetheless encourage

conformity in professional-client interactions (136). They can also call attention to how

administrators' talk reinforces text from policy documents, or the text-mediated discourses (19),

contributing to a standardization of knowledge and work practices across large health care

institutions (136). Interestingly, Quinlan's research with multidisciplinary health teams discusses

how mandating texts within this health system served to reinforce explicit "evidenced-based

knowledge" as superior to other forms of more practical, experience-based knowledge (136). This

is an excellent example of how IE can be used to uncover the marginalized, experiential knowledge

of HPs and clients within a particular health system.

Interviewing HPs, such as nurses, doctors, peer support workers, etc., may in fact be most

important to an IE approach to health research, as it offers insight into the interface between policy

and practice, as well as its implications for the marginalized health system user. DeVault and

McCoy suggest that studying the "frontline organizational work" taking place in institutions is

crucial, as professionals make the link between users and the institution of the health system itself (19). Professionals often describe their work practices using the institutional language that has become central to their professional discourses (19). The IE interviewer must be able to recognize this language and how it conceals the ruling relations of the institution (19) in order to reveal the hegemony shaping the professionals' work practices. Previous research has been successful in illustrating the "fault lines" between the institutionally organized work practices of HPs and the needs of the people they intend to care for. Campbell (18) has outlined the "bifurcated consciousness" of nurses who view their clients in two ways: [1] as humans who have specific personal needs, and [2] as "objects of professional attention" (pg. 59). Their training may emphasize the importance of attending to social and personal needs (135); however, managerial ideologies of care subordinate this professional knowledge in favour of task-oriented, productivity type goals (18). Inter-professional power relations can also shape what is deemed "important" and "relevant" client information. In Sinding's research the professional dominance of medicine was found to alter nurses' reporting of "relevant" health assessment information, deemphasizing the importance of social constraints to treatment (i.e., low income) (135). This illustrates how HPs are often challenged to accommodate the everyday experience of their clients within the constraints of their professional regime (19).

Overall, IE has important implications for identifying and explicating the "fault lines" between HPs work practices and their personal values and beliefs, but it can also be used to challenge accepted work practices and forms of professional knowledge. For example, if HPs are educated on ruling relations of their institutions, critically reflecting on "mandating texts" has potential to transform the process of text activation into a liberatory process (136). In Eni's work with prenatal care in First Nations communities, peer support workers were able to recognize where their professional training did not meet the needs of the mothers and incorporate traditional forms of indigenous knowledge into their practice (137). Though the field is still emerging, to some

extent, institutional ethnographers in health contexts are already calling for more attention to the

wider social context influencing the health of marginalized groups (135), indicating an area for

potential application of CHL. A greater recognition of how ruling apparatuses in the healthcare

system create inequitable distributions in health (137) may help HPs recognize their role in

collective action for client advocacy.

3.2.2   Applying institutional ethnography to breastfeeding promotion and support

In addition to being applicable to wide variety of healthcare and health policy research, IE is

particularly relevant for studying breastfeeding promotion and support. A modified IE approach

may be beneficial in examining the ruling relations present in breastfeeding support practices, how

they are reinforced by dominant cultural ideologies and health policy texts, as well as how they may

marginalize mothers' true needs and pose barriers to providing effective support.

The decision to breastfeed is highly complex and shaped by many factors in a mothers'

individual experience. However, as with many other health decisions, infant feeding decisions are

greatly influenced by broader sociocultural constraints and power relations that are often

unaddressed through promotion strategies (44). IE can play a role in examining a mother's

challenges from an individual level, while simultaneously considering the ruling relations in health

systems that produce shame and guilt and compromise maternal agency (11). Kukla suggests a

need to challenge the socially produced ideologies of "good mothers" by recognizing the

complexities of infant feeding decisions, particularly among marginalized populations, and shifting

promotion strategies to target culturally embedded barriers to breastfeeding (11). IE research may

play a role in linking the individual experiences of mothers with breastfeeding to organizational

and health system level barriers. In fact, Dillaway and Douma have shown that mothers'

perceptions of ideal breastfeeding support may be very individualized (66); therefore, tailoring

support initiatives to the local context may be more effective. Lastly, adopting an IE view of work

practices, encompassing women's work of feeding the family and mothers' themselves as important

players in the healthcare system (11), may help to re-prioritize their work and advocate for successful workplace breastfeeding programs and policies, facilitating improved breastfeeding duration.

More specifically, this research uses a modified IE approach to explore the everyday experience of breastfeeding mothers in NS. IE is particularly relevant to the marginalized population of interest (i.e., mothers vulnerable to or with experience of food insecurity) who likely experience unique disadvantages arising from social inequities in health, which may include low levels of health literacy. Focusing on the everyday experience of these mothers helps to explicate their interactions with HPs, drawing attention to structural constraints at the institutional level of the NS health system. Further, it also illuminates the "lines of fault" between HPs values and perspectives and the reality of their breastfeeding promotion practices as they relate to the three domains of CHL, as well as highlights the discrepancies between HPs and mothers' views of effective breastfeeding support. Finally, IE methodology may be relevant in examining how ideologies present in the provincial policy texts are reproduced at a community or organizational level through HPs' talk, showing how HPs' everyday work practices are institutionally organized, and the resulting health literacy demands placed on mothers.

3.3   Overview of research design

This research involved three phases of data collection and analysis. Phases 1 and 2 were intended to focus on understanding the perspectives of mothers experiencing food insecurity in relation to their infant feeding decisions, and the role of HPs in supporting them, to fulfill research objective 1. Phase 1 involved the secondary data analysis of seven focus group/interview transcripts with mothers who both met and did not meet their breastfeeding goals, collected as part

of the project, Activating Change Together for Community Food Security (ACT for CFS)[1]. A more detailed description of methods and participants is available in section 3.4.1 and the report *Making Food Matter: Strategies for Activating Change Together[2].* The purpose of this phase was to provide preliminary findings around breastfeeding support in NS and identify key themes to further explore in relation to gaps and barriers in HP support. This secondary analysis was then used to inform Phases 2 and 3 of primary data collection and guide the development of research questions. This phase was also used to provide the principal investigator with insight into the experience of new mothers, as this was an area that she was unfamiliar with both personally, not being a mother herself, and professionally. Although this Phase 1 research was not planned with an IE theoretical perspective, and a modified IE approach would not typically start with a secondary analysis, it was only used as a preliminary exploration of relevant themes and gaps in the research; therefore, it did not impede the focus of first voice experience examined in subsequent phases.

Phase 1 was supplemented with five interviews with mothers with experience of food insecurity (Phase 2) in order to further explore key themes emerging from Phase 1. These interviews helped to delve deeper into mothers' challenges from a CHL perspective, examine their perceptions of HP support in greater detail, and gain further insight into the mother's perspective as it relates to the experience of food insecurity. Phase 2 is described in further detail in section 3.4.2. Lastly to address the 2nd and 3rd research objectives, Phase 3 of this research involved five interviews with HPs within a rural context to examine their work practices related to breastfeeding support from a CHL perspective. Preliminary analysis of the data from Phases 1 and 2 was used to

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[1] "Rooted in lived experiences, real community needs and innovative solutions to social and policy change for community food security" (pg. 4), Activating Change Together for Community Food Security (ACT for CFS) was a five-year (2010-2015) Community University Research Alliance (CURA) funded by the Social Sciences and Humanities Research Council of Canada (139). that was guided by participatory action research and participatory leadership approaches, led by FoodARC and the NS Food Security Network.

[2] This report is available from: http://foodarc.ca/wp-content/uploads/2014/11/MakingFoodMatter-ACTforCFSReport-Nov2014.pdf (139).

identify HP relationships that are most influential in participants' experiences with breastfeeding. Further detail on this process is described in section 3.4.3.

3.4   Research Methods

3.4.1   Phase 1 – Secondary data analysis

As one component of the ACT for CFS research, Participatory Community Food Security Assessments (PCFSA) were conducted in four case communities in NS -Eastern Shelburne County, North-eastern Kings County, Spryfield (Halifax), and Pictou County. A participatory process was used to select the communities to provide representation of both rural and urban communities and diverse elements of food systems in NS (139). As a critical component of community food security (40), "conditions that support breastfeeding" was identified as a key indicator for the PCFSAs.

A variety of different recruitment channels were used to reach potential participants including, word-of-mouth, posters, blog posts, other social media and print media. Demographic data (e.g., income or experience of food insecurity) were not collected; however, due to the recruitment methods used several women who were experiencing food insecurity likely participated, but in most cases, participants represented a range of experiences with food security, as well as diversity in age.   Focus groups and interviews were conducted in the four case communities in 2012, by community members trained in research methods and research ethics, with mothers who met and (9 focus groups; N=29) and mothers who did not meet (4 focus groups and 6 one-on-one interviews; N=19) their breastfeeding goals. For the purposes of this research, mothers self-selected into the "goals met" or "goals not met" groups based on their perceived level of success with breastfeeding relative to their own breastfeeding goals. Transcripts from three of the four case communities participating in ACT for CFS were eligible for inclusion. Data from Spryfield (Halifax) were excluded due to the focus on rural communities in this research. Participating mothers vulnerable to food insecurity were identified in two ways:

(1) Consultation with ACT for CFS community-based research assistants involved directly in the recruitment of participating mothers. The research assistants were likely to have knowledge of participants' vulnerability to food insecurity, based on prior knowledge of the participants' life circumstances, socio-economic status, and participation in programs for vulnerable groups, including previous use of emergency food programs; and

(2) Using retrieved coded segments and lexical search functions in MAXQDA, the focus group/interview transcripts were searched for evidence of vulnerability to food insecurity. Participants were considered vulnerable to food insecurity if they referred specifically to breastfeeding as a necessity due to limited income and/or inability to afford formula.

Seven out of fifteen transcripts from North-eastern Kings, Eastern Shelburne, and Pictou Counties, NS were included based on meeting either of the above criteria. Two transcripts were selected based on fitting both criteria. Four of the selected transcripts were included solely based on the first criteria. Although the participants in these four transcripts all referred generally to the cost savings associated with breastfeeding as an important motivator, they did not specifically talk about breastfeeding as a necessity due to limited income. Finally, although the community research assistant did not describe the participating mothers from the seventh transcript (Shelburne Focus Group Breastfeeding Goals Met 2) as vulnerable, one participant clearly referenced an inability to afford formula in their comments. Therefore, this participant's comments were included in the analysis. See Appendix A for a summary of the selected transcripts and details about how participants were identified as vulnerable to food insecurity. Ethical approval for this secondary analysis was obtained from the Mount Saint Vincent University research ethics board on January 5, 2015 (Appendix B).

3.4.2   Phase 2 – Interviews with mothers

Phase 2 involved primary data collection through interviews with mothers who had recently breastfed, or tried to breastfeed, and had experienced food insecurity. Ethical approval for

Phase 2 was obtained from the Mount Saint Vincent University research ethics board on March 11, 2015 (Appendix C). Participants for Phase 2 were recruited from three areas in North-eastern NS including Antigonish County, Guysborough County and Cape Breton Island. Located on the Northumberland Straight, Antigonish County covers 1,457.81 km^2 with a population of 19,589 in 2011 (140). The largest population centre is the Town of Antigonish, home of St. Francis Xavier University (140). Neighbouring Guysborough County, covering 2000 km^2 on the northeast end of mainland NS, is less populated with only 8,143 residents in 2011 (141). Cape Breton Island, which is 10,311 km^2 in size, is separated from the NS mainland by the straight of Canso. The island had a total population of 135,974 in 2011, with the largest population centre being the Cape Breton Regional Municipality (142). Cape Breton Island is comprised of four separate counties; although all interviews for this research took place within Cape Breton and Richmond Counties. Together Guysborough, Antigonish and Richmond counties (as well as a small portion of Inverness County) were part of the former Guysborough Antigonish Straight Health Authority (GASHA), while Cape Breton District Health Authority (CBDHA) administered Cape Breton County's health services. As of April 1, 2015, the 9 district health authorities, including GASHA and CBDHA, merged into the NS Health Authority (NSHA)(143), with the geographic areas described above becoming part of Management Zone 3[3], or the Eastern Zone.

These areas of the province were selected to explore breastfeeding experiences in other rural areas of the province (external to rural ACT for CFS case communities examined in Phase 1 [Eastern Shelburne County, North-eastern Kings County, and Pictou County]) and due to thesis committee member contacts within these regions, which helped to facilitate recruitment. A rural focus was determined to be important for this research in order to understand differences in rural

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[3] The NSHA is divided into four management zones: Zone 1 - Western NS; Zone 2 - Northern NS; Zone 3 - Eastern NS; Zone 4 - Central NS.

dwelling mothers' breastfeeding support needs, as well as their food security challenges. Data from the Canadian Community Health Survey show that rural communities in NS had a high proportion of households experiencing food insecurity, compared with urban areas, indicating a need to understand life circumstances in these communities. Further exclusive breastfeeding rates are consistently lower in rural communities in Canada (3), indicating that different supports may be need to help mothers in rural areas (144, 145).

Recruitment strategies involved word-of-mouth and poster advertising through Family Resource and Women's Resource Centre[4] contacts. Participants were offered honoraria of $20 gift cards to grocery store chains as an incentive for participation. Interested mothers made the initial contact with the principal investigator (PI) via email or phone. The PI then contacted potential participants via phone to complete screening. To ensure interviewees truly represented the perspective of mothers experiencing food insecurity, potential participants were screened using the 18-item HFSSM (see Appendix D). According to the Canadian Community Health Survey classifications, affirmative responses (i.e., yes, often, sometimes, almost every month etc.) to 2-5 of Adult Food Security Scale questions indicate moderate food insecurity, or compromised quality and/or quantity of food consumed. Affirmative responses to 6 or more of the Adult Food Security Scale questions indicates severe food insecurity, or reduced food intake and disrupted eating patterns (16). However, this two-category classification system may underestimate food insecurity, masking the poorer quality of life associated with food anxiety (147). Therefore, participants with one affirmative response were classified as marginally food insecure, in alignment with current thinking on the issue (88). Potential participants falling into any of these three categories were eligible for the study. While the Child Food Security Scale questions were used to determine the food security status of children within the household, these items were not part of the

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[4] Women's Resource Centre's in NS are not for profit organizations providing programs and services with the aim of improving the well-being and economic status of women, through raising awareness of and advocating for women's issues (146).

inclusion/exclusion criteria; mothers identified as moderately or severely food insecure were eligible to participate regardless of the food security status of their children. Inclusion criteria with respect to infant feeding were left broad to maximize the potential participant pool. Any mother with experience of food insecurity who had tried breastfeeding within the last two years, regardless of duration and level of success, was eligible to participate.

Interview questions focused on their general breastfeeding/infant feeding experiences, their interactions with HPs around breastfeeding, as well as how their experience facing food insecurity may have impacted their infant feeding decisions (see Appendix E). These interview topics were highlighted as key gaps in emerging research questions from Phase 1 analysis (see Table 1, section 4.1) and were also informed by the review of literature. Questions were checked for content validity through consultation with thesis committee members and one other key informant who had recently conducted research with breastfeeding moms in rural NS.

The PI arranged locations convenient to participants to conduct in-person, one-on-one interviews with each of them between June – July 2015. Interviews were audio recorded and later transcribed. At the time of the interview, participants were informed of the purpose of the study, plans for using the data, and reviewed and signed consent forms. Participants were invited to review summary notes and key quotes and asked to give permission to be contacted again at the time of the interview; all but one mother wished to participate in this review. Following transcription of the interviews, the principal investigator created summary notes from each of the interviews and sent to the participants by email for review. This was intended to validate the experiences of the mothers and ensure that their perspectives were not misrepresented. After writing the first draft of the findings, mothers were also sent a list of key quotes to ensure that they were comfortable with the information being shared and that no identifying information would be disclosed. Of those four mothers, only one provided feedback, which resulted in additional cleaning

of the data to remove unnecessary colloquialisms or slang and inclusion of further details on the bonding experience between the breastfeeding mother and her infant.

3.4.3   Phase 3 – Interviews with health professionals

For Phase 3, one-on-one in-depth interviews were conducted with five HPs involved in promoting and supporting breastfeeding. Based on the findings from Phases 1 and 2, public health nurses (PHNs) and lactation consultants were identified as having the most significant role in breastfeeding support for the mothers interviewed. Four out of five Phase 2 participants mentioned lactations consultants while PHNs were mentioned by three out of five. Although interactions with nurses in hospital were mentioned across all five interviews, their interactions with participating mothers around breastfeeding were short-term, whereas PHNs and lactation consultants provided more continuous, on-going support in the post-partum period. For this reason, both PHNs and lactation consultants whose work activities involved regular, direct interactions with mothers around breastfeeding were determined to represent the perspective of interest for the purpose of this study. To ensure that the HPs work practices were reflective of what Phase 2 participants experienced, only PHNs or lactation consultants working in Zone 3 (Eastern Zone of the NS Health Authority [NSHA]), comprising Antigonish, Guysborough and Cape Breton), were eligible for participation (see section 3.4.2).

Ethical approval for Phase 3 was obtained from the Mount Saint Vincent University research ethics board March 11, 2015 (Appendix C). Clearance from the NSHA ethics board was also required as participants could potentially be employed by the NSHA; this approval was obtained on October 23rd, 2015 (Appendix F). Potential participants were invited to participate through an email invitation circulated by a manager in Public Health at the Health Management Zone level. Interested participants then contacted the PI via email to confirm inclusion criteria and schedule interviews. In an effort to reach lactation consultants the invitation to participate was also circulated to local LaLeche League and Family Resource Centres; however, no responses were

received. Similarly, lactation consultants working in hospital settings were also contacted directly but did not respond to the invitation.

The PI arranged convenient locations to meet participants to conduct in-person, one-on-one interviews in early April 2016. Interviews were audio recorded and later transcribed. At the time of the interview, participants were informed of the purpose of the study and plans for using the data and reporting findings, and signed consent forms. Interview questions focused on perceptions of their role in breastfeeding support and their barriers to providing effective support, as well as how the experience of food insecurity may affect a mother's decision to breastfeed (see Appendix E). Interview questions were piloted with the first participant, a PHN who did not work directly with mothers at the time of the interview. However, because of her considerable previous experience supporting moms on an individual basis, she was determined to be an important key informant to test the suitability of the interview guide. Since minimal changes were made to the interview guide following the pilot, and her responses were relevant to the research questions, these data were included in the results.

As with Phase 2, participants were invited to review summary notes and key quotes and asked to give permission to be contacted again; all participants volunteered to participate in this review. Feedback was used to clarify details on professional background and current practice around breastfeeding, as well as to remove any details that could be potentially identifying. All five participants responded to requests to review summary notes and key quotes. Some quotes were modified to protect anonymity of the participants by removing place and program names. Some participants also suggested changes to wording of the quotes to ensure their points were clearly articulated. Every effort was made to make modifications according to the participants' suggestions while preserving the integrity of the original interviews.

3.4.4 Analysis

For Phase 1, secondary data analysis involved qualitative thematic coding using MAXQDA Qualitative Data Analysis Software. The approach to coding was informed by Grounded Theory, particularly the techniques used in constant comparative analysis (20). For this reason, clean transcripts, with other coding removed, were used to allow themes to be emergent. However, due to the principal investigator's familiarity with the data this likely affected the approach to coding and the organization of the data into themes. All sections of the transcripts from interviews and focus groups were coded thoroughly and related to many aspects of breastfeeding, including individual influencing factors, personal experiences and complications, cultural norms and social and professional support. However, due to the research focus on breastfeeding support, particular attention was paid to this topic and related themes and therefore these sections of the transcripts were coded in more detail.

Line-by-line, open coding was used as a first step and involved constantly comparing coded segments with previously coded segments under the same category (148). An axial coding approach was used to sort through large segments of the transcripts using the most frequently occurring codes. This included reflection around the "who, what, where, when, why, and how" of breastfeeding, as described by these mothers. From this process breastfeeding support, and lack of support, emerged as central, overarching variables with contributing factors and consequences emerging as subcategories. An additional level of coding, similar to selective coding used in grounded theory, was used to identify the work practices of mothers around breastfeeding support and how they relate to functional, interactive and critical health literacy. As CHL is central to the research objectives, this stage was important for identifying gaps in the data and areas to further explore in Phases 2 and 3 of the research.

Phase 2 and 3 data were coded using a similar approach to Phase 1, including the three levels of open, axial and selective coding. In order to be consistent with grounded theory each

phase was analyzed independently, ensuring that different themes were able to emerge. However, due to the PI's approach and previous understandings around breastfeeding and HP support, the coding frameworks for Phases 1 and 2 were quite similar. Again selective coding was deemed to be important to examine mothers' interactions with HPs using a critical healthy literacy lens. Selective coding of the Phase 2 data was used useful in identifying key lines of fault in HPs work practices and the experiences of mothers, in order to guide the Phase 3 interviews. For Phase 3, selective coding using the CHL lens was used to identify how HPs use health literacy, or aim to enhance mothers' health literacy, through their work practices around breastfeeding.

4. Results

4.1 Phase 1 Findings - Summary of emerging themes

Secondary analysis of Phase 1 transcripts was intended to help provide insight into participating mothers everyday experiences with breastfeeding support services in NS and determine key themes to further explore in relation to gaps and barriers in HP support. Particular attention was paid to mothers' talk around public health promotion and support, as well as their interactions with HPs in different health settings, and strategies mothers used to fill gaps when their needs were unmet. These areas of focus helped to uncover emerging lines of fault between mothers' needs and the promotion of breastfeeding by the health system, in alignment with objectives 2 and 3. This section summarizes these emerging themes, as well as gaps in the data that were used to guide interview questions for primary data collection.

Breastfeeding support emerged as an overarching, central theme with many subcategories and was a key part of these mothers' infant feeding experiences. In some cases mothers' comments referred to support they received as well as ideas for improved supports. In general mothers described several different types of support and support providers, including a variety of HPs, who were helpful at different stages of the breastfeeding experience. Although not always described as supportive, nurses contributed to the sense of support mothers felt in hospital by providing encouragement in the early stages of learning to breastfeed. Doctors were only mentioned generally as a source of support in two of the seven interviews/focus groups and were also described as unsupportive by one mother. Lactation consultants and PHNs, who were available through support groups and home visiting programs, were more frequently mentioned as supportive, particularly by providing information and encouragement.

While some aspects of support related directly to interactions between individuals, others contributed to the culture of breastfeeding in their communities. Other moms were important for creating this sense of outward support, a general acceptance and support for breastfeeding in the

broader community, which was described as helping to foster social norms and contributing to women's confidence and comfort level with breastfeeding in public. Supportive settings also emerged as a key subcategory in relation to where mothers felt comfortable breastfeeding. For example, participants generally described hospitals as a supportive setting for breastfeeding. This related to mothers' comfort level with breastfeeding in hospitals, hospital policies and procedures that promote and support breastfeeding, as well as the support they received from HPs in this setting. Lastly, timing of support seemed to impact mothers' ability to cope with challenges, particularly on-going and continuous support provided in the post-partum period.

Overall, the extent and effectiveness of support, or lack thereof, appeared to have several direct and indirect consequences for mothers and their level of success with breastfeeding. Establishing self-confidence and a comfort level with the act of breastfeeding around others were key enablers that mothers who received adequate support described. On the other hand, lack of support was also experienced by several mothers and contributed to difficulties with the mechanics of breastfeeding and low milk supply, as well as negative emotional consequences, such as feeling upset, stressed or overwhelmed. Generally, this lack of breastfeeding support involved negative experiences with unsupportive HPs and/or health system, as well as unsupportive family members. Some participants described how breastfeeding was promoted in a forceful manner, both at a systems level as well as by individual HPs. This led some mothers to feel pressured and may have compromised their agency in making an informed choice for themselves and their children. Another example of unsupportive interactions with HPs, which was mentioned by four different participants, included recommendations to switch to formula when mothers were experiencing challenges breastfeeding. While this may be medically indicated in some cases (149), these stories show how mothers were influenced by HPs advice, despite their own maternal instincts and commitment to breastfeeding.

While these interviews/focus groups did not directly ask mothers about their experience with household food insecurity, there was evidence that food security status affected mothers' motivations for breastfeeding. The cost savings associated with choosing breastfeeding over formula feeding was cited as a main decision factor across all interviews/ focus groups. Three mothers described breastfeeding as a necessity as they were unable to afford formula. For these mothers, household food insecurity may have directly influenced their decision to breastfeed, as well as their commitment to persevere through their breastfeeding challenges; interestingly, all of these mothers self-selected as having met their breastfeeding goals. However, in contrast, some mothers who met their breastfeeding goals described breastfeeding as a barrier to earning an income, due to working moms being unable to (or perceived as unable to) continue breastfeeding. Therefore, despite breastfeeding associated cost savings, continued breastfeeding beyond one year may be a financial constraint for some families.

On the whole, several key research questions for further exploration in Phases 2 and 3 were identified. They are listed here in **Table 1** along with the research objective they intend to address. This list is not exhaustive and represents the most important questions that emerged from the Phase 1 analysis, in addition to those already identified directly in the research objectives. Due to the focus on understanding the experience of rural dwelling mothers, research question #5 was added as a secondary research question.

Table 1. List of emerging research questions from Phase 1 analysis and corresponding research objectives

#	Research questions emerging from Phase 1 Analysis	Research Objective(s)
1	Does the experience of food insecurity directly affect mothers' infant feeding decisions? If so, how? Are mothers faced with food insecurity more committed to breastfeeding due to a lack of financial resources?	Objective 1
2	How do mothers experiencing food insecurity manage the decision to switch to formula? What emotional and financial consequences result from this decision?	Objective 1
3	What is the relative value of expert versus experiential knowledge for mothers in making their infant feeding decisions? What is the role for HPs in providing breastfeeding support from the perspective of mothers? Does this differ for mothers experiencing food insecurity?	Objectives 1 & 2
4	What coping strategies do mothers use to deal with a lack of support? What is the role of mothers in identifying their needs and seeking out additional support?	Objectives 1 & 2
5	What is the experience of rural mothers in accessing support? Does living in a rural community affect awareness of support resources and access to these supports?	Secondary research question
6	What is the impact of changes in the NS public health system on mother's experiences with HP breastfeeding support?	Objective 3

HP, health professional; NS, Nova Scotia

4.2 Phase 2 Findings – Participant characteristics

All five mothers who were screened met the eligibility criteria; of the five participants, two mothers reported severe levels of food insecurity, while three reported moderate food insecurity, within the past 12 months. Participants also described a range of different breastfeeding experiences; however, only one mother was a first-time mom and had no previous experience with breastfeeding. Three out of five mothers from Phase 2 described having a successful breastfeeding experience with their youngest child. **Table 2** describes the participant characteristics in more detail. Pseudonyms are used to refer to Phase 2 participants through the remainder of the document to protect their anonymity.

Table 2. Summary of Phase 2 participant characteristics

Pseudonym	Age (yrs)	Family	Breastfee-ding[1] History	Level of success with most recent breastfeeding experience	Food Insecurity (HFSSM Adult Scale)	Food Insecurity (HFSSM Child Scale)
Jane	20	-One son age 2 -One daughter age 9 months	Limited success with first child	Successful (9 months duration at time of interview)	6 (Severe)	1 (Marginal)
Maria	21	-One daughter age 6 weeks	None, first time mom	Limited success (switched to formula at 5 weeks)	6 (Severe)	0 (Food Secure)
Alise	36	-One son age 12, one daughter age 10 from previous relationship -Partner has two children from previous relationship ages 13 and 10 -One son together, age six weeks	Successful with two older children	Successful (6 weeks duration at time of interview)	5 (Moderate)	3 (Moderate)
Margaret	Unk.	Single mom of two, one daughter age 5 and one son age 1	Did not breastfeed first child due to low milk supply	Limited success (switched to formula at 2 months)	5 (Moderate)	2 (Moderate)
Rebecca	34	Single mom of two, one son age 13 and one daughter age 17 months	Did not breastfeed first child due to difficulty with latch	Successful (duration of 13 months)	5 (Moderate)	5 (Moderate)

yrs, years; HFSSM, Household Food Security Survey Module; Unk, unknown

4.3 Phases 1 and 2 – Detailed Findings

In order to present the results cohesively, this section integrates key findings and supporting quotes from both Phases 1 and 2 of this research; however, emphasis has been placed on new themes emerging from Phase 2 (interviews with mothers experiencing food insecurity). Findings from Phases 1 and 2 have been compared and contrasted to highlight differences that may result from the differences in geography and time of data collection. In addition, this section attempts to address the gaps (research questions), described above in **Table 1**, to further illuminate the key lines of fault between the everyday experience of food insecurity and the work practices and policies of HPs promoting and supporting breastfeeding. In particular, the results from Phase 2 build on the themes of HP support (research question 3) and the connection between the experience of food insecurity and breastfeeding (research questions 1 & 2). Throughout this section, pseudonyms are used to refer to Phase 2 participants; however, due to the principal investigator's limited knowledge of Phase 1 participants and the fact that some of these data were gathered in focus groups, Phase 1 participants were not assigned pseudonyms.

4.3.1   The experience of breastfeeding

Overall, most participating mothers from both phases described breastfeeding as a positive experience for themselves and their children. Interestingly, all Phase 2 interviewees who were successful had previous experience with breastfeeding, although only one was successful in breastfeeding all of her children. In fact, previous experience with breastfeeding, as well as general experience as a mother, was described by these moms as playing an important role in achieving breastfeeding success with a second child.

"I: Yea... can you tell me a little bit more about [...] having personal experience with breastfeeding your other kids and [...] what that did for you this time?

*P: [...] that my confidence level was there I think. Even though that I got sick this time I **know** what I did with them. And I knew that... they're very healthy kids."*

~Alise, Phase 2

Similar to how confidence and comfort level with breastfeeding were important enablers for Phase 1 moms, participants in Phase 2 discussed how their experience as a mom helped them to navigate infant feeding decisions. One mother described how her challenges with breastfeeding as a first time mom enabled her to make the decision to switch to formula feeding, which she ultimately felt was best for her and her second child. Margaret described choosing formula feeding with her second child as the best decision for her family, having had a negative experience previously with breastfeeding that extended to other aspects of her family life. Jane, who had limited breastfeeding success with her first child but was successful with her second child, also emphasized the importance of understanding that breastfeeding is an individualized practice depending on what works best for the mother-infant pair.

"I guess [I was] *just more experienced and comfortable as a person in general. I was few years older I sort of had a better idea of who I was as a person and what worked for me and what worked for me as a mom..."*

~Margaret, Phase 2

Although the majority of Phase 2 mothers described breastfeeding as a positive experience, most moms described challenges with complications (e.g., mastitis, thrush) and/or the mechanics of breastfeeding, which resulted in pain and discomfort for the mother. However, Alise described breastfeeding as a type of partnership between mother and baby that strengthened the bond between them, in particular how the act of breastfeeding her son helped to relieve the symptoms of her mastitis. Other negative aspects reported included a sense of isolation experienced as a new mom, particularly when breastfeeding, which could be exacerbated by social exclusion experienced

in association with food insecurity (97, 150). Several mothers described how self-determination and seeking support was key to persevering through these challenges.

"Everybody was kind of shocked that I could [...] still breastfeed throughout the [mastitis]. *Because* [breastfeeding] *makes it better actually. Even though you have the antibiotics working it makes it better if the ducts are cleared out with him eating. And he works better than a pump too [...] But... [...] we kinda worked as a team through that."*

<div align="right">~Alise, Phase 2</div>

"...you know you have to be strong and you have to put your mind to it... and [...] if you do... experience issues with it like don't give up [...] definitely have to... believe you can do it and seek the support you need... even if you think you don't need it just go and use the support systems to your full advantage and things so just... you know."

<div align="right">~Maria, Phase 2</div>

In contrast, Margaret, who encountered challenges in breastfeeding both of her children, described this as a completely negative experience. She made the decision to switch to formula due to the negative ways that she felt breastfeeding was affecting her mental health and her relationships with other family members. Interestingly, although the improved bond between mother and child is often described as an important factor in the decision to breastfeed (57, 62), and was described as a key motivator for the four other Phase 2 participants, Margaret described that breastfeeding prevented her from forming a bond with her baby due to the burden and high stress levels she felt. Overall, many of the negative emotions associated with challenging breastfeeding experiences, such as guilt and stress, are also closely linked to the experience of food insecurity (97, 150).

"I really found breastfeeding [...] impacted how I bonded with the baby [...] to the point where I was just resenting even being a mother, but I felt like I had to keep trying. Because it's pushed that it helps form the bond... but for me it was the opposite. It hindered the bond, we didn't have a bond until I went to the bottle feeding and got rid of that resentment ..."

<div align="right">~Margaret, Phase 2</div>

4.3.2   Breastfeeding support

Building on Phase 1 findings of support as an overarching, central theme that significantly impacts mothers' experiences, the results have been organized in relation to types of support, aspects of support, timing, supportive settings and support providers.

Types of support – What is considered supportive?
In Phase 1, **support groups/programs** were one of the most commonly mentioned types of support. Overall, the support groups/programs seemed to be important in connecting breastfeeding moms with each other; however, mothers who met their goals mentioned support groups, such as those provided at family resource centres, more frequently as an important source of support compared with mother who did not meet their breastfeeding goals. Two mothers from Eastern Shelburne County also mentioned volunteer-run breastfeeding support phone lines administered by Public Health as an opportunity to access support.

P: I think with the [local family resource centre] *and the Healthy Beginnings* [program]*, and them being very determined to get me out there where there were other breastfeeding moms and letting me know that past 6 months is fine. You don't have to wean. You don't have to. […] And then it was like I got to a breastfeeding café and there were toddlers nursing, and it seemed normal. It just clicked for me that was normal.*

~ Kings Focus Group Breastfeeding Goals Met 1, Phase 1

More specifically, interviewees from Phase 2 described **mom-to-mom groups** and **prenatal classes** as important sources of social support for breastfeeding in their communities. However, not all participating mothers accessed these supports. While the physical distance was often a challenge, other mothers described breastfeeding support as less active in their rural communities compared with larger population centres. Interestingly, Margaret observed that small rural communities are not necessarily close-knit and mothers may not have adequate social support from other moms in their immediate communities.   Mothers experiencing food insecurity

may be particularly in need of these supports due to social exclusion that is often experienced (68, 150).

"It feels like a lot of people around here say the same thing too […] They don't know a lot of people here… you do, but you don't. Like you know everyone to see them but… you don't necessarily have a lot of friends here. Yea so… it [mom-to-mom group] *would […] be a good way for mums to kind of interact with each other and then they could call someone and say you know what… 'I've got this happening… what do you think?' or 'Can you come take a look?' or… you know… 'what did you do'?"*

~Margaret, Phase 2

Phase 1 findings indicated that support networks (i.e., family and friends) may have a direct influence on an individual's success with breastfeeding. Similarly, Maria described having supportive friends who were comfortable around breastfeeding as an essential source of support, helping to alleviate the sense of isolation that is sometimes experienced in early motherhood.

"…my friends and stuff too who don't even have kids they would come and […] these are my friends who've never seen me in anything less than my clothes and… you know here it is now… my boobs hanging out… I don't even care… and they're all just so cool about and it just made it so much easier and… they didn't stop coming to visit and they didn't stop wanting to hang out and stuff […] but yea the support system is definitely a huge thing… if you don't have."

~Maria, Phase 2

Although not described as a concrete type of a support, **outward support**, general acceptance and support for breastfeeding in the broader community, was an underlying theme which was described as helping to foster social norms and contributing to women's confidence and comfort level with breastfeeding in public. While some Phase 1 participants perceived this as improving over time, several mothers described a need for more of this type of support.

Similarly, **general acceptance of breastfeeding** was talked about by Phase 2 mothers. Although participants had a range of experiences, in general they also perceived that community attitudes towards breastfeeding were mostly positive. However, some mothers also described the challenge of understanding what was comfortable and socially acceptable regarding breastfeeding in public.

"…there were people that would be like 'oh it's good that you nurse but do you use a cover…' […] they try to… they sneak that in 'do you use a cover?' […] they ask the… the weird questions and they kinda hint that they're ok with me breastfeeding but if I was to breastfeed around them would I use a cover or you know… you know what I mean?"

~Jane, Phase 2

"…but for the most part […] people are so positive about it. I was up at [major grocery store chain] *up… in Antigonish they have the upstairs and I was sitting up there feeding her and people walked by and just asked how the baby was… and we're saying how cute she was and nobody mentioned anything about the fact that I was breastfeeding and… it was just so nice. And it was like… it made me feel good about actually being out in public."*

~Maria, Phase 2

Aspects of support – Why /how are these activities supportive?
        Sense of normalcy was the most frequently mentioned aspect of support, particularly among Phase 1 mothers who met their breastfeeding goals, and related closely to outward support from family and other moms. Participants described how their previous exposure to breastfeeding helped them to perceive it as natural and normal, which in turn influenced their own comfort level.

P1: For me it was like everybody in my family who ever had a baby breastfeed and my sister did a real good job breastfeeding she didn't seem to have any problems that I could see and I don't know it just felt like the only, I just felt like it was weird to give a baby a bottle, I just felt natural, I just had to do it.

~Pictou Focus Group Breastfeeding Goals Not Met 1, Phase 1

        In Phase 1, **encouragement**, from a variety of people was also mentioned frequently across several of the focus groups. This was closely related to **learning from the real experiences** of other moms, which helped to normalize the everyday struggles associated with breastfeeding. These aspects of support were also mentioned more frequently by Phase 1 moms who met their breastfeeding goals compared with those who did not meet their goals. Similarly, **reassurance**, from both HPs and family, was a key aspect of support mentioned by four out of five Phase 2 interviewees.

"[Lactation consultant] *was just encouraging, it meant to me that… cause a lot of moms they think that they're doing all these things wrong… other than breastfeeding. It was good to know… it meant to*

me that no matter what I did as long as I nurse that it was… I was doing the right thing for me and my child… whether if I did have to give it up and do formula. Like knowing that… it meant that I could leave and be confident… enough to do it. It gave me a little bit more of confidence."

<div align="right">~Jane, Phase 2</div>

Learning from the real experiences of other moms was also described as a particularly important form of support by several moms in Phase 2. More specifically, the two moms who had limited success with breastfeeding described the importance of peer support in communicating the **realities of the breastfeeding experience**, acknowledging that breastfeeding can be an uncomfortable and trying experience for the mother.

"…you have to know about all the negatives before you breastfeed I find. Because you hear all the positives about it […] … so you think 'okay I've got this… I can do this'. And then you're just… you get so discouraged when nothing's going right. I feel like they should talk more about the negative… side effects… you know… like what could happen or what may not happen. You know your nipples might get cracked and blistered… you know but that could be horrible you know? […] …as much as nobody wants to hear the bad side of things… sometimes it's just good to have the information. And then at least you know…"

<div align="right">~Maria, Phase 2</div>

Furthermore, Phase 2 participants felt that **acknowledging the individuality** of each mother-infant pair's breastfeeding experience is important for providing of effective support. This has implications for how support is provided and may show that mothers require support tailored to their specific needs. Two participants also suggested that support should be **unconditional**, so that mothers who decided to formula feed or switch from breastfeeding to formula can also feel supported. This type of support was described as helping to reduce shame and guilt among mothers who do not breastfeed.

"I feel like there's no 100% way to breastfeed, right way to breastfeed your child except for latching. You know what I mean? However else you breastfeed, if you breastfeed in public, if you breastfeed like this, if you lay down in bed with your… and breastfeed your child there's no right way to breastfeed […] breastfeed however you want!"

~Jane, Phase 2

"…you need the support no matter […] which way you go especially when you decide to breastfeed…
like I said before if you don't have the support it's… really tough… and you need that positive
reassurance that it's your choice, it's nobody else."

~Maria, Phase 2

In addition, **demonstrating** breastfeeding techniques was also discussed for its practical
importance, which emphasizes the value of being around other breastfeeding moms. Phase 2
mothers talked about HPs frequently providing support with correcting latch and positioning to
reduce pain and discomfort. Also, HPs roles often involved **providing information** and **answering**
questions, through written materials as well as direct interactions.

P: She's [nurse] *amazing. And… she explained it like you want to hear this sound and this is how it*
should feel. And she stayed there…XXX [referring to her daughter] *nursed for 2 hours.*

P1: Wow!

P: And I was like is this ever going to stop?

P1: [laughs]

P: And she's like, 'Oh, this is good. This is really good. Remember, 12 hours she went without it.' So it
was just, you know, she was amazing.

~ Kings Focus Group Breastfeeding Goals Met 1, Phase 1

Lastly, **physical comfort**, which was talked about mostly in relation to designated areas for
breastfeeding in public spaces, was mentioned across Phases 1 and 2. A lack of designated areas
was described as a barrier for those that otherwise felt comfortable with breastfeeding in public.

P: In public it was just, well, it wasn't awkward because of any people, it was just because of space and
if I wanted to sit somewhere comfortable then it was easier for me to be at home or at a friend's house
or…than… But it wasn't… uncomfortable for me to breastfeed in public.

~Kings Breastfeeding Goals Not Met Interview 4, Phase 1

Timing of support – When is support needed/When is it most helpful?
Participating mothers described several key periods for breastfeeding support. **Prenatal**

support was mentioned most frequently across both phases; in particular some mothers talked

about a need for more prenatal support. Others discussed having prenatal education specific to

breastfeeding as an important part of preparing for parenthood, which would ultimately contribute

to their level of success with breastfeeding.

"[with prenatal education on breastfeeding] *it would definitely be a little easier going into the hospital and they* [other mothers] *would feel a little more relaxed knowing that that's one less thing that they have to learn about [...]. Because it was definitely a whole lot, you're learning how to... bath your baby, what your baby likes, how to feed your baby [...]"*

~Maria, Phase 2

Other Phase 1 mothers described a need for education around the resources available to

enable **early intervention** from HPs and help mothers persevere through breastfeeding challenges

as soon as they arise. In addition, **post-partum** support on a more on-going, continuous basis may

enable mothers to develop more comfortable relationships with HPs, thereby enabling interactive

health literacy.

"And then all of a sudden ... there's seven different people involved with... [...] bringing baby home and care after delivery. So... it would be nice kind of if there was an introductory period of all the resources available and who's who and what to expect before... [laughs]... before it's show time because the mother is exhausted at that time. You know what I mean? And it kind of ... was overwhelming for me to be so tired and then my body feeling the effect of birth. And then having to deal with strangers."

~Alise, Phase 2

Similarly, interviewees from Phase 2 talked about **proactive support** from HPs, rather than

the mother having to seek out support for herself after she has already experienced challenges. In

hospital support after birth was described as a crucial period for HP advice; Rebecca felt that the

level of support received at this time would ultimately determine a mother's success with

breastfeeding.

"I think... if you have a good base when you come out [of the hospital] *... I think it's determined in the first couple of days whether or not you're gonna breastfeed or not."*
~Rebecca, Phase 2

Supportive settings - Where is support felt/given?

As described above (section 4.1), Phase 1 participants generally described **hospitals** as a supportive setting. Although some Phase 2 mothers had positive experiences in hospitals, mostly related to good support from HPs, hospitals were not frequently mentioned as a supportive setting in their communities. Jane talked about a lack of comfortable spaces to breastfeed in hospital (described further below), showing how the physical environment of hospitals is sometimes unsupportive despite institutional mandates to support breastfeeding.

"... in the mother baby recovering room there's not really ... a comfortable place to nurse. There's in the bed which can get a little ...if you don't have a nursing pillow with you it gets a little uncomfortable and there's only one chair in the corner."

~Jane, Phase 2

Most mothers across both phases described **home** as a supportive setting for breastfeeding, as a place where they experienced physical comfort and a lack of judgment. **Designated areas**, which related closely to physical comfort, were discussed by three participants in Phase 1. Overall they described creating designated areas in their community as a way to increase outward support for breastfeeding moms. Phase 2 mothers echoed this perspective and felt that "breastfeeding friendly" stickers and signs played an important role in raising awareness.

P: I feel like there should be a space set aside for nursing moms because there are a lot of nursing moms and there should be more so, a comfy spot or something. Which maybe is a lot to ask from companies like that but really, if you want people shopping there it would make it a lot easier. I know [major grocery store chain], *they do have the community room open so you can use the community room which is good.*

~Shelburne Interview Breastfeeding Goals Not Met 1, Phase 1

For some Phase 2 participants, **family resource centres** were described as particularly supportive community settings for moms. For Jane, the family resource centre was a unique setting in her community where she experienced acceptance and a lack of judgment. However, not all moms used these supports, although they were available in their communities. Family resource

centres were also described as a designated area in the community where mothers were encouraged to breastfeed; however, Alise talked about how this may lead to breastfeeding becoming invisible in the community, which contributes to a lack of acceptance in the public sphere.

"...So I feel like... in [Local Family Resource Centre] *the age doesn't matter [...] we get that we're all on the same maturity level with it. Whereas outside of* [local family resource centre], *you feel like you're less of a nurser because you're younger but... really you could know a little bit more than somebody else."*

~Jane, Phase 2

"I remember a situation where my kids did ... a swim program in Guysborough with the school. And there was a... mother who had just had a baby there [...]. She dropped her older kids off for swim lessons and then she went to [local family resource centre] *to breastfeed and then she came back. So... in my mind I was like... she could have just sat poolside and did it there. You know what I mean? So maybe it's not just me either it's other moms that kinda know that... [...] I guess culturally here it's not supported that much* [except] *where it is supported so in your home and then at* [local family resource centre]*."*

~Alise, Phase 2

Support providers - Who provides support?

As described above, **other moms** appeared to contribute to several types and aspects of support. For example, other breastfeeding moms are able to provide practical tips through physical demonstrations, as well as encouragement. In a more general sense, exposure to other moms in the community was felt to increase comfort level and confidence with breastfeeding, contributing to a sense of outward support.

P: I did think of one thing though for what would be good, in the hospital we'll say if they would have breastfeeding courses, actually have moms who would be willing to come in and show how they do it, how it's done. Do you know what I mean? There's a lot of moms who don't, like I mean I had done it before but for a new mom who is struggling to do it... it would be good to see it happening but I mean a lot of times that's not something that people do... you don't see it. I mean you can watch a video but it's not the same.

~Shelburne Interview Breastfeeding Goals Not Met 1, Phase 1

Family was described as very influential on mothers' breastfeeding success by providing

ongoing encouragement on a daily basis. Family members are also able to help alleviate some of the

stress associated with early motherhood by helping with other household tasks such as meal

preparation.

P: If it hadn't been for my husband being there the whole time, even though he had never been around
breastfeeding going, 'You can do this. I know you can do this.' And you know, sitting up at night.

~Kings Focus Group Breastfeeding Goals Met 1, Phase 1

Having a family history of breastfeeding was important for helping mothers develop a sense

of normalcy around breastfeeding, thereby improving their individual comfort level. Mothers who

had not breastfed themselves, or whom had not been around other family members who breastfed,

described a lack of knowledge around the realities of the experience. This shows that **generational**

influences can be a significant influence on mothers' infant feeding decisions.

"And my parents are very opinionated… when we were raised, we were raised on carnation milk. So
they were sort of… you know 'well just put them on carnation milk, it didn't hurt you guys any'. So they
sort of had that mind frame of… 'don't worry about formula….' […] My mother especially was against
breastfeeding."

~Margaret, Phase 2

Building on these findings from Phase 1, interview participants from Phase 2 described

partners in particular as one of the most important sources of support throughout the entire

process of making decisions, interacting with HPs, and persevering through challenges.

"… the first most important thing was support of my partner, my boyfriend. That wouldn't… I mean
probably still would've but I probably wouldn't have did it [breastfeeding] *as long, probably wouldn't*
have felt as good about it."

~Rebecca, Phase 2

4.3.3   Health professional support

Several types of **HPs** were mentioned as providers of breastfeeding support. These included

nurses, PHNs, doctors, lactation consultants, doulas and midwives. These mothers' attitudes

towards HP breastfeeding support varied. While the majority of participants described receiving

positive support from HPs, some also described unsupportive interactions, which negatively

impacted their breastfeeding experience. In general, participating mothers felt that HP

breastfeeding support had influenced their infant feeding experiences and felt that HP support was

important to achieving success with breastfeeding. Rebecca, a Phase 2 participant, observed that

HP support had improved since the birth of her first child, which spanned 14 years. Some Phase 1

participants also described an improvement in hospital policies, which further supported mothers

to breastfeed.

"There's a world of difference between 14 years ago and today [...] there was a reason why I was really sore is because I didn't have a good latch [...] fourteen years ago that's why I gave up and all that stuff. And so they [nurses]... *It was just night and day from when I had my first child and today."*

~ Rebecca, Phase 2

Although not always described as supportive, **nurses** contributed to the sense of support

mothers felt in hospital by providing basic information and encouragement in the early stages of

learning to breastfeed. All five participating mothers from Phase 2 described interacting with

nurses in hospital around breastfeeding. However, Jane felt that breastfeeding support should not

be the nurses' responsibility and that mothers should be referred to lactation consultants who have

expertise in the area.

"So I was having trouble latching on... and they [nurses] *said 'If you're... when you get ready to feed him, you know come in we'll make sure he's latched on...help you get latched on'. There was one nurse that was really great. She showed me different positions to hold him in, helped me get latched on. She was really great, very patient."*

~Margaret, Phase 2

Doctors were only mentioned generally as a source of support in two of the seven

interviews/focus groups in Phase 1, and described as unsupportive by one mother. Similarly,

findings from Phase 2 indicate that family doctors were not a significant source of breastfeeding

support for these mothers. However, Maria did receive significant support from her obstetrician.

This doctor supported her through her breastfeeding challenges and provided a safe space to discuss other feeding options.

"…she [obstetrician] *was telling me some of her bad experiences and some of her good experiences and she was saying … to give myself a goal and if things don't get better, come see her again […] … and she wanted to help in anyway that she could."*

<div align="right">~Maria, Phase 2</div>

Lactation consultants and **PHNs,** were more frequently mentioned as supportive across both phases, particularly by providing information and encouragement. Lactation consultants in particular were described as being very knowledgeable, both through expert and experiential knowledge, which enabled them to provide more effective support. Phase 2 mothers described seeing lactation consultants both in hospital, clinic and community settings, while PHNs were mostly accessible through home visiting programs.

"… they'd [lactation consultants] *have stories 'oh I just went to a conference about this or I just went to a workshop about this'… […] they'd have little tidbits of information and they definitely knew what they were… you know they weren't just thrown into a position where they had no idea they… they definitely knew."*

<div align="right">~Maria, Phase 2</div>

Home visits from PHNs were described by three mothers living in Guysborough County as an important source of support which helped to reduce barriers to access (i.e., physical distance to clinics), as well as provided an opportunity for adult interaction, reducing their sense of isolation. These visits often centred around monitoring the baby's growth, which provided reassurance to some mothers that their baby was adequately nourished.

"It [public health nurse visits] *was very enjoyable and it was more… making sure XXX* [son] *was the right weight, making sure he was the right length, making sure his head was the right size… it was comfortable and it was very much focused on… making sure that the baby was okay."*

<div align="right">~Margaret, Phase 2</div>

Furthermore, **teamwork** between different HPs seemed to enhance the support mothers received; when one HP was unable to meet their needs having the systems in place to refer them to someone else was described as highly beneficial.

"...the doctor had said straight up... 'I only know personal experiences for the whole breastfeeding part' ...she doesn't specialize in breastfeeding. She's like 'so I only know the basics'. She's like '...but that's why I have the lactation consultants on speed dial [...] because if I can't answer your questions [...] I'll make sure I get it answered'."

~Maria, Phase 2

Two mothers who made the decision to **switch to formula** described the role of HPs in supporting mothers through this transition. This continued support can play a role in empowering mothers to make infant feeding choices that are right for them. In fact, some mothers also felt that HP support should shift to a more neutral attitude toward infant feeding practices and providing information on formula feeding as well as breastfeeding. Due to the emphasis on breastfeeding some mothers felt unprepared to transition to infant formula due to a lack of information.

*"...And you need that positive reassurance that it's **your** choice, it's nobody else. [...] And the doctor [...] ...she just changed it for me. Hearing that* [the decision was up to her] *just made me feel so much better. I was like ok now it's my choice. I can choose how long I do this for... I can stop when I want to."*

~Maria, Phase 2

4.3.4   Unsupportive infant feeing culture

Despite the positive factors described above, overall, mothers also described an overarching, **unsupportive infant feeding culture**, for both breastfeeding and formula feeding mothers, at the community and health system level. These factors may negatively influence how HP support is provided, as well as family and peers' attitudes towards infant feeding practices.

Beginning with the first few weeks following birth, mothers described the stressful and overwhelming experience of learning about infant care. New mothers described expectations and pressure to learn a large amount of information in a relatively short period of time. This relates to the importance of having early, prenatal education and support so mothers are equipped with knowledge around infant feeding prior to birth.

"…I was like 'I don't know how to change a diaper, I don't know how to feed a baby'. I felt completely in the dark… so it's very… I guess confusing at first when everything's thrown at you that you have to breastfeed. And I'm like… 'Sure! I've never done it before. I've never really been around babies before, whatever they tell me I have to do! And they say it's easy, it'll be easy!"

~Margaret, Phase 2

However, participating mothers described that sometimes information provided prenatally can perpetuate **unrealistic expectations** around breastfeeding, similar to findings from a previous study in the UK (84). In particular, participating mothers described discourses around breastfeeding being "natural and normal" can lead to the impression that breastfeeding will come easily when in reality the experience can be very challenging. Participants also described how "breast is best" discourse could lead to a pressure to breastfeed and a lack of choice in their infant feeding decisions.

"I expected it to be very easy that… we would just kind of instinctively know what to do. […] All the pamphlets, all the books all say 'It's natural, just put them to the breast, they'll latch on, it's… it's been done for centuries'… you know babies know what to do. So I was sort of expecting that… it would just come. […] So I expected it to just happen. So then when it didn't… it's not what I expected."

~Margaret, Phase 2

"And I think that was my issue. I felt like I had no say in whether I breastfed her or formula fed her. I felt like the only choice I had was to breastfeed and I had to stick it through."

~Maria, Phase 2

In contrast, some mothers described that there was still a **lack of acceptance and awareness** around breastfeeding in their communities. In particular, they talked about a continued need for education, particularly among young people, to continue to foster positive attitudes and counter the sexualisation of the breast in popular culture. Alise had observed generational differences in acceptance of public breastfeeding and felt that mothers were less open about breastfeeding in rural communities.

*"…their dad said to me the other day, cause I buy organic peanut butter, 'Why don't you just buy normal peanut butter?' And I say… well the funny thing is that peanut butter, organic peanut butter, **is**… the normal peanut butter […] the natural peanut butter it is the most normal peanut butter you*

can get. So whereas breastfeeding is the normal way that people have been feeding their children for […] I mean formula was only invented not even a hundred years ago I think."

~Jane, Phase 2

Unsupportive health system and health professionals

Although most mothers perceived HP support as important for achieving success with breastfeeding, in some cases HP support did not meet their needs. While Jane was the only participant who experienced interactions with nurses who were unknowledgeable around breastfeeding, three Phase 2 mothers described having to actively seek support when they were having challenges. They described how it was their own responsibility as a mother to identify when breastfeeding challenges were occurring in order to reach out to HPs or other sources for further support, pointing to a need for interactive health literacy.

"And I think that could have been a lot of it too because they [nurses in hospital] can't actually see what's going on [with the latch] they can only guess by how much breast tissue is actually in their mouth or the way their head is or the way their lips are so they kinda have… you know unless you as a person tell them what's going on like… they can only judge from what they can see."

~Maria, Phase 2

Phase 1 mothers described a variety of unsupportive interactions with HPs, as well as broader health system level factors that act as barriers to breastfeeding. Some participants described how breastfeeding was promoted in a **forceful** manner, both at a systems level as well as by individual HPs. This lead some mothers to feel pressured and may have compromised their agency in making an informed choice for themselves and their children.

P1: In the prenatal classes that I went to there was a pretty strong push. Quite honestly you are almost well…I have a guilt complex…but you would almost be made to feel like you were a second grade mother if you didn't. That is the public health push right? So it was kind of this given, yeah I would do it […]

~Shelburne Focus Group Breastfeeding Goals Met 2, Phase 1

Alise and Margaret also described experiences with PHNs support that were "aggressive" and "pushy". This was related to feeling a lack of control in their infant feeding decisions and having "expert" advice from HPs imposed on them. Alise described feeling "monitored" and felt that there was a lack of trust in her ability to feed her child.

"At first I found it [frequent visits from PHN]*… […] to be a little exhausting and [I was] kind of thinking well they're monitoring as if this is my first baby and I kind of don't know what I'm doing. But then in the end […] I kind of took it as … well someone is visiting me so I wasn't so bored."*

~Alise, Phase 2

Similarly, Margaret described **feeling pressured** to breastfeed by a PHN, contributing to her feelings of guilt around her lack of success with breastfeeding, as well as deeper feelings of shame around her abilities as a mother, and creating barriers to exercising autonomy in her infant feeding decisions. The experience of shame, associated with an inability to successfully breastfeed, may be damaging to a mother's self-worth, similar to the impacts of the shame associated with the experience of food insecurity (97, 150). This shows how HP promotion of breastfeeding, particularly using discourse describing breastfeeding as natural and normal, can also negatively affect mothers, particularly when they are not experiencing success with breastfeeding and vulnerable to food insecurity.

"So I sort of felt like I was doing everything wrong. And then when she [PHN] *was saying well 'use this pump', she kept bringing over different pumps and saying 'well just try it, just try it' and I was just saying 'well I don't want to.' […] So… I… sorta felt like I wasn't even in control of… trying to raise my child. And I felt so lost to start with that…* [I felt] *like 'why are you crying all the time? What am I doing wrong? I can't feed you…this is supposed to be easy. And I can't do it!' and so definitely a lot of… frustration and a lot of… guilt. Thinking that […] all the other moms can do it, I can't do it."*

~Margaret, Phase 2

Advice from HPs to **switch to formula** when the mother is experiencing challenges can also be unsupportive, however, as described by four Phase 1, and two Phase 2 participants. While switching to formula may be medically indicated in some cases, the findings indicate that mothers' breastfeeding experiences may be undermined by HPs' practices, despite their own maternal

instincts and commitment to breastfeeding. For example, Jane described how complications during

birth lead to supplementation with formula for her first child, against her wishes.

"After one week they were like 'we should just give him formula' and they didn't help me try to get my milk supply up or anything like that… I mean I get it that he was sick and stuff like that but I feel like breastmilk should have… been a main… thing to try and get into him. […] It was just hard and you just kind of got cut off from nursing […] I would have nursed him for however long he would have wanted to nurse but… it was between the doctors and him being sick […] he just stopped."

~Jane, Phase 2

Supplementation of breastfed infants with formula seemed to be recommended to several

participants by HPs when there was concern around the infant's weight gain, suggesting that this

may be a common practice. Other findings from the UK and Canada also show that

recommendations to supplement with formula were common when mothers experienced

breastfeeding challenges (55, 84); in fact The Canadian Maternity Experiences Survey from 2009

showed that 37% of mothers surveyed in NS were offered or given free formula samples (22). In

contrast, the Reproductive Care Program of NS states that supplementation is required in very few

cases when ***medically indicated***, such as when infants are born preterm or with a birth weight of

less than 1500 grams, or when the infant is severely malnourished and too weak to breastfeed

(151). Unfortunately, such advice resulted in disrupting the breastfeeding routine of mothers and

their infants. For example, Alise was also advised to supplement with formula while pumping to

increase her breastmilk production however she ultimately disregarded this advice. Importantly

this shows her ability to critically appraise information from HPs. This was also similar to the

experience of some Phase 1 mothers:

F1: So what happened in the hospital was that your son was started on formula and after that he was unable to breastfeed?

P1: Well he was, I was breastfeeding that's all I was doing and I went to the hospital and they're like, 'well he keeps losing weight, he's not gaining any weight, he's not gaining any weight', and 'I'm like well, I'm breastfeeding' and they are like 'well he should still be gaining weight' and I was like 'he was 10 pounds when he was born, it was all fat he's losing it, [...] he's looking like a healthy child now not a big um-pa-lum- pa', they were like 'well does he have wet diapers and all this?' And I was like 'yeah he has plenty' and they were like 'well, do you feel he is getting a lot of milk?' And I'm like 'well he's not fussy or cranky and everything' and their like 'well he is not gaining any weight so we have to put him on formula, like we strongly recommend you supplement' and all this stuff, so they gave me a box of the readymade formula and told me to give it to him a couple times a day and still breastfeed so I was giving him the bottles and he just, he wouldn't breastfeed after that, he just wanted the formula, he would not latch, nothing. So they completely ruined it on me - it just killed me, I will never ever, ever, ever, ever go back to the hospital after having a baby again.

~Pictou Focus Group Breastfeeding Goals Not Met 1, Phase 1

Rebecca and Jane also observed, through their own experiences and interactions with other moms, that **younger moms** were more often encouraged to switch to formula in the early stages of breastfeeding. They attributed this to an assumption among HPs, as well as other mothers, that younger moms are less committed to breastfeeding and less able to persevere through challenges. The judgment perceived to be experienced by younger mothers; similarly described by Murphy and Brown (85, 152), is another key factor contributing to an unsupportive infant feeding culture.

"...and it's funny... because... you can tell the nurses treat them [younger moms] a little bit different because... they say 'Okay I'm gonna try to breastfeed' ... but they give them [...] the formula. You go in there the formula's right by their bed [...] when I had [first child] ... they gave me the formula so quick [...] because it's such an easy out... you know?"

~Rebecca, Phase 2

Lastly, unsupportive factors at the health systems level included **lack of access to, and awareness** of, support services and **unsupportive healthcare environments**. Two Phase 1 participants mentioned a lack of access to lactation consultants and material resources such as lactation aids. Similarly, two moms from very rural areas in Phase 2 talked about their challenges in accessing HP breastfeeding support. Due to unavailability of supports in their immediate

communities they had to drive long distances to regional service centres, which sometimes made accessing supports available impractical.

"Sometimes it's hard to get to places. Antigonish has the breastfeeding clinics and things like that, but there's nothing necessarily here so some people have trouble getting to it. If… even like there's a medical centre here in [town], if there was someone that came in say once a week or once every two weeks that you could make an appointment and go in with them. Just to make things more accessible…"

~Margaret, Phase 2

Related to this, some mothers also perceived that HPs had a **lack of time and/or resources** to sufficiently support breastfeeding. Furthermore, some HPs who may have been able to support mothers were described as having too many other competing responsibilities.

"I feel like they [nurses] knew what they were doing but they didn't necessarily have the patience or the time to teach you what they know. Or it's… maybe they deal with it so much that it's sort of second nature and they sort of forget that it's your first time."

~Margaret, Phase 2

However, three of these mothers also described disconnects between the promotion of breastfeeding by the healthcare system and the **lack of supportive environments** in these settings. For example, although maternity nurses in hospital may be directed to encourage and support breastfeeding, the hospital environment was described as unsupportive due to the presence of formula samples in mothers' rooms. Furthermore, Jane expressed a need for hospitals to be more baby-friendly by designating areas for mothers to feed their infants.

"And… I heard some rumours about getting a place… there was a room that you could nurse … in the hospital. Especially if you do nurse and you are sick and you have to bring your baby and there's so many other sick people around you. And that's when you usually get the… 'Can't you pump or… can't you nurse before you leave the house?' And that's coming from the professionals too."

~Jane, Phase 2

Unsupportive family
A lack of family support was described as a major barrier across the majority of Phase 1 interviews, but mentioned more frequently by mothers who did not meet their breastfeeding goals. Family was often described as generally unsupportive; however, some mothers were more specific

and described this as **misinformation** about breastfeeding received from older family members.

Similarly, two mothers from Phase 2 felt that having unsupportive family members directly

impacted their breastfeeding experience. They also did not have a close family member that could

provide a sense of empathy for their challenges.

P: Well, for me especially with my first one, like a lot of my family is just like 'it's just so much easier to bottle feed. Why would you bother to go through that, this and that?' And the second time was very… my father said in the hospital like, 'I don't know why you would, it's much easier to bottle feed, why would you bother to do that [breastfeed]?' I said, 'I don't want to hear it, I don't, I'm doing it so I'm going to do it…' I had it in my mind but I think just the lack of support in that way was a big thing for me with family and they're just not understanding why it's important to me.

~Shelburne Interview Breastfeeding Goals Not Met 1, Phase 1

Moreover, infant feeding decisions were seen as impacting other **family relationships**. In

some cases, breastfeeding was seen as barrier to the father's involvement while placing onus on the

mother for infant feeding responsibilities. In some cases, this may have been a factor perpetuating

negative attitudes towards breastfeeding, thereby encouraging family members to influence

mothers to switch to formula.

"He [father] likes the formula better, just for the sense that he can help more. But… when I was breastfeeding […] other than the fact that he said 'I wish I could help more' […] he was still really supportive of the fact that I wanted to breastfeed. And I think that's a lot of… families' obstacles to get over is […] making it almost 50/50 so… even the dad feels like he is helping."

~Maria, Phase 2

Unsupportive peers

Although other moms were most often described as supportive, one participant described **a**

tension between younger and older moms in peer support, indicating that interactions with

other mothers can sometimes have a negative effect. Older moms are sometimes positioned as

"experts" and may try to provide advice to younger mothers, when encouragement and reassurance

would be better suited to their needs. Jane felt that she experienced this judgment firsthand from

others mothers, similar to assumptions made by HPs around young moms' commitment to

breastfeeding.

"You get the moms who are like 'Oh yea you nurse, this is what I did' and then you get the 'Do you do this while you nurse? But do you do this?' [...] and before they even know your nursing history they kind of try and spit information at you."

<div align="right">~ Jane, Phase 2</div>

4.3.5   Consequences

These mothers described a variety of negative consequences related to a lack of support for breastfeeding. In some cases, the consequences of insufficient support directly and negatively affected breastfeeding, leading to difficulties such as **poor mechanics** and **low milk supply**. In other cases, a lack of support led to **emotional consequences,** which in turn affected participants' success with breastfeeding. Some of these emotions included feeling uncomfortable, upset, stressed, guilty or pressured, findings which are described in further detail below.

In Phase 1 and 2 data, **feeling uncomfortable** related to mothers' own individual feelings and lack of comfort with the idea of breastfeeding, which was often related to a lack of exposure and negative perceptions of body image. Some mothers described **feeling awkward,** due to their perceptions of others as uncomfortable when around breastfeeding moms. These feelings seemed to affect success with breastfeeding in public among the participants in this study, which in turn may affect overall success with breastfeeding.

F1: And so [participant 2] *you didn't feel comfortable breastfeeding in public, and so why do you feel you weren't?*

P2: I don't know, it's just the opposite of her [other focus group participant] *I just didn't feel comfortable, none of my family breastfed, and I'm the first one to have a grandchild and stuff, I don't know it's just weird, I didn't like it, I was uncomfortable with myself I guess.*

<div align="right">~ Pictou Focus Group Breastfeeding Goals Not Met 1, Phase 1</div>

Mothers also described **feeling upset** and **frustrated** as result of negative interactions with others, including HPs, and their own disappointment when their breastfeeding efforts were unsuccessful.

"And I'm like this all could have been avoided if you [hospital nurses] *had of just listened to me… and helped me nurse him… […] at least acknowledge that he was nursed rather than saying 'we should give him formula right now!' You know what I mean… it was… just really frustrating."*

~Jane, Phase 2

Feeling stressed and overwhelmed was often related to lack of support from HPs and family, as well as individual life circumstances that made breastfeeding even more challenging. Furthermore, four out of five Phase 2 mothers described how **self-sacrifice** was necessary in order to breastfeed. This was related to the onus that breastfeeding places on the mother, including the physical and emotional demands, as well as having to give up other social activities that were perceived to interfere with breastfeeding. This led some mothers to feel isolated from friends and family and some mothers felt like others, including their partners, had a lack of empathy for their experience.

"I sort of had a bit of a breakdown at one point where I was like 'I feel like I'm a cow, I'm just walking around with my shirt open all day […] that's all I am… I'm not even a person, I'm a milk machine'."

~Margaret, Phase 2

Lastly, **feeling pressured,** was often related to forceful promotion of breastfeeding and the resulting feelings of guilt if they were unsuccessful. Two Phase 2 mothers who were unsuccessful with breastfeeding described **self-blame** when they decided to switch to formula feeding, showing how mothers often put pressure on themselves as a result of infant feeding discourses that shame formula feeding mothers. Maria also described how the transition to formula is emotionally challenging due to the impression that she had less bonding time with her child. On the other hand, switching to formula feeding when breastfeeding was too challenging also provided Maria, as well as Margaret, with a sense of relief.

"The first time I gave him a bottle I sat down and I cried… and I called his father and he's like 'What's wrong? Why are you crying?' I was like 'I am so happy! I just sat down and I gave him a bottle and he's satisfied' and it just felt a huge relief. It felt like such a relief and weight off the shoulders."

~Margaret, Phase 2

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Again, many of these emotions – feeling upset, stressed, overwhelmed and under pressure - parallel the experience of mothers facing food insecurity (68, 97, 150), showing how these mothers may be dealing with a multitude of issues causing these negative consequences.

4.3.6   Breastfeeding as it relates to household food insecurity

Building on the preliminary findings from Phase 1, Phase 2 interviews directly asked participants about their experience of food insecurity and whether this had any effect on their breastfeeding decisions. All participants discussed strong connections between infant feeding and food security for their family. Mothers used "breast is best" discourse to describe breastmilk as a **readily available and highly nutritious food supply for their infants**, showing that they recognized how breastfeeding can be important in enabling infant food security. For example, Alise described the sense of comfort she felt knowing that her baby was satisfied and well nourished from her breastmilk.

"It [breastfeeding] *has* [been a positive experience] *… because it's comforting for me too. I see him so satisfied after the* [breastfeeding] *like he's cooing now and… smiling and stuff and content and everything he's growing like really fast… it's a good overall experience."*
~Alise, Phase 2

In addition, almost all Phase 2 moms talked about the **cost savings** associated with breastfeeding as a key motivation for choosing to breastfeed and persevering through challenges.

"…we didn't save a lot but I feel like it [breastfeeding]*… helps. It does definitely help. […] A lot of people… think there's not a lot of money that goes into nursing but you need to buy nursing bras, […] if they do need nipple shields you need to buy the nipple shields and obviously mothers who pump, pumps are expensive […] just because you nurse I guess […] doesn't mean that you have extra."*

~Jane, Phase 2

"It [worrying about where food was going to come from] *did [affect my choice to breastfeed] because then I knew that as long as I could feed myself really good that my baby would eat [laughing] really good too. And I can't afford formula at all. So that […] was never an option. I couldn't afford it when my other children were small either…"*

~Alise, Phase 2

However, Jane in particular described **hidden expenses associated with breastfeeding**, such as breast pumps, which are not often acknowledged. Interestingly, she also described experiencing stigma around breastfeeding as a way for mothers to save money and described being judged for her motivations to breastfeed. Similar to Murphy's findings (44), many mothers experienced a sense of shame when they were not able to breastfeed. Likewise, these findings suggest that mothers who *do* breastfeed may also be susceptible to feelings of shame when breastfeeding is not the norm and judgments around "selfish" motivations (i.e., saving money) are prevalent in their community.

"…when people see me nurse my little girl and I have my little guy next to me I feel like people just look at you and think 'oh she's got two kids, you only nurse because of the money… situation'. I get that a lot 'do you nurse to save money?' and 'you have enough money with your baby bonus to buy your child milk why don't you buy your child milk?'"

~Jane, Phase 2

Although mothers recognized the affordability of breastfeeding, some Phase 1 mothers who met their breastfeeding goals described **breastfeeding as a barrier to earning an income**; participants who worked found that they were unable to (or perceived as unable to) continue breastfeeding. Therefore, continued breastfeeding beyond the one year of maternity leave some mothers were eligible for, may be a financial constraint for some families despite associated cost savings. Mothers described breastfeeding while working as an extremely stressful experience.

P: […] We do it because it's what we wanted. But it doesn't mean it's easier because I mean it would be easier if I was working and we had more money. But we've chosen that I would stay home. It was a big discussion we had before we ever decided to have children. […]

~ Kings Focus Group Breastfeeding Goals Met 1, Phase 1

"I think that the breastfeeding is associated […] with being tied down. […] If you can't afford to stay home or […] you have to get [out] and hustle for money and get all this other stuff then how are you gonna do that with the baby on the breast? So […] it's kind of a juggling act…"

~Rebecca, Phase 2

In fact, young families may experience compounding factors that make them more vulnerable to food insecurity, such as significantly **reduced income during maternity leave**[5] (153) and the increased costs of feeding the family. For example, in this study, Maria described needing financial support from her extended family to afford formula and compromising her own food intake to ensure her child's needs were met, a common coping strategy used in households struggling with food insecurity (100, 110). For these reasons, mothers vulnerable to food insecurity may experience increased stress when making the decision to switch to formula.

"Before I got pregnant and I was working all the time, even when I was working, we never had issues with food but it was like once I went off work and I ended up going… a month and a half without any income because you have to wait for it and you have to get approved and stuff, and it just set us back so far that… it was like okay 'make sure we get enough groceries for the little one and then whatever we'll just make do with the rest' or you know… we'll see if we can get you know food vouchers just to kinda get a little extra and things like that."

~Maria, Phase 2

Two moms described **good nutrition** for themselves as an important precursor to successful breastfeeding; however, almost all Phase 2 participants talked about healthy food being unaffordable. Similar to Frank's findings (92), this study shows that breastfeeding moms who are experiencing food insecurity may feel additional guilt around their own food intake (i.e., quality and quantity of food) and how this will affect their baby. Although she did not feel this way herself, Rebecca described how perceptions of maternal diets as inadequate could in fact discourage mothers experiencing food insecurity from breastfeeding; however, she felt that ultimately breastfeeding was better for the child regardless of the mother's diet.

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[5] In Canada, the basic rate for calculating employment insurance (EI) for maternity leave is 55% of average insurable weekly earnings, up to a maximum of $50,700 over a period of 52 weeks. Therefore, the mother's income is reduced by almost half during the 52-week maternity leave period. If the net family income is $25,921 per year or less the family may be eligible for the additional EI family supplement, which is up to 80% of average insurable weekly earnings.

"Going to get groceries was very stressful. And especially when I was breastfeeding I was thinking… 'Ok whatever I eat the baby's gonna eat. I can't do this. Okay I'd better get this.' and… so it definitely impacted how I shopped."

~Margaret, Phase 2

"But I mean… it could be discouraging when you read pamphlets [that] *say 'you have to eat this way, you have to eat that way' And you may not be able to but… […] you can't eat perfectly all the time."*

~Rebecca, Phase 2

Interestingly, Alise talked about her special diet requirements (i.e. gluten-free), which made affording healthy food even more challenging. She described **nutritional guidance** from dietitians as another key component of prenatal support in order to teach mothers how to meet their nutritional needs on a limited budget. Alise, as well as Rebecca, also described teaching mothers to grow their own food as an essential strategy to improve food security, particularly for rural-dwelling families.

"Even if you learned how to can things or even if you learned how to… grow what you can and then freeze it. Because you can freeze beans, you can freeze a lot of vegetables that you can eat… you know and have as a back-up without having to buy things from the grocery store all the time."

~Alise, Phase 2

For some Phase 2 moms their ability to make nutritious food choices was limited by inadequate social assistance. For these reasons, participants described **food supports for moms** as particularly important to facilitate and encourage breastfeeding. Other research has shown that food programs have the potential to provide moms facing food insecurity with more nutritious food that might otherwise be unaffordable, thereby helping to offset gaps in the mothers' diets (107). In particular, Rebecca described that programs that provide food support without requiring personal information (i.e., income level) may help to reduce judgment and stigma that is often associated with charitable food assistance (138, 154). In particular, she described family resource centres as an important source of additional food and financial support, provided in a way that expressed

empathy for the experience of food insecurity. This is similar to past unpublished research in NS, which found that family resource centres provide support using approaches that emphasize dignity and social justice (138).

"… [Local Family Resource Centre] doesn't want [personal information] … they're just providing… for you because they know that it takes… more when you're pregnant and when you're breastfeeding. That… even social services wouldn't even come close to… being able to provide that kind of diet that… you deserve and need when you're breastfeeding right."

~Rebecca, Phase 2

4.3.7 Mothers work practices in infant feeding

Using an IE lens, participating mothers' tasks and interactions around infant feeding and HP support are described here as "work practices". This section also analyzes the findings using a health literacy perspective, specifically how these mothers use functional, interactive and CHL to make decisions around infant feeding and seek out support when needed. For the purpose of this section, health literacy skills are considered to be assets that help mothers navigate the practices, culture and environment of infant feeding.

Setting breastfeeding intentions
Participating mothers described varying levels of **commitment** to breastfeeding. While some were very determined to breastfeed successfully and persevere through challenges, others described **trying** out breastfeeding without the same level of assurance.

P: I'm very strong-minded about it, I tried to do everything to make it work.

~Shelburne Interview Breastfeeding Goals Not Met 1, Phase 1

P: I thought it was healthier for my kid, and I wanted to try new things. So I thought, okay, well, I'll try it and see what happens. And I just wasn't able to do it. But I wanted to try it and work with it to make it happen because I knew it was cheaper, and I knew it was better for her. But it just didn't happen.

~Kings Breastfeeding Goals Not Met Interview 2, Phase 1

Also related to setting breastfeeding intentions, mothers frequently **justified** their infant feeding choices with respect to their own values, as well as information provided by others such as HPs. Breastfeeding mothers described having to explain that breastfeeding meets infants' complete nutritional needs, while mothers who chose to formula feed described defending their decision, in order to avoid judgment from others, including HPs.

"[Questions from other moms around why she was not breastfeeding] *sort of made me embarrassed or like I had to explain myself? People were saying… 'why aren't you breastfeeding?' so I had to explain… you know she's still eating. She's still… being fed! But… so it definitely felt like… people thought I wasn't doing the right thing.*"

~Margaret, Phase 2

Some mothers showed an understanding of the **social determinants of health,** a domain of CHL (120), in justifying their infant feeding decisions and described their life circumstances as an important influencing factor. As described above, Phase 2 participants discussed how the experience of food insecurity may have influenced their infant feeding decisions. Other commonly discussed examples include external factors such as place of residence and their proximity to HPs/support groups, social and/or financial support from family and friends, as well as previous exposure to breastfeeding.

P: Well it's cause it's the healthiest option for the baby obviously, I believe that God gave us that ability for that reason so I really wanted it […] plus I mean it's, it's free, like not that that was my main reason but I mean that helps. The bonding experiences. All of the things about it I guess.

~Shelburne Interview Breastfeeding Goals Not Met 1, Phase 1

Claiming a sense of self-efficacy

Participating mothers also explained ways that they coped with challenges on their own without support from others. These included **preparing in advance** and **learning form past experiences.** These work practices seemed to allow mothers to claim a sense of self-efficacy, enabling them to persevere through breastfeeding challenges with confidence or make the decision to switch to formula with conviction and without guilt.

Preparing for the breastfeeding experience was described as an independent effort for the

mother to improve her chances of success. Interestingly, this was discussed more frequently by

mothers who did not meet their breastfeeding goals, who indicated they should have done more in

advance to prepare for the realities of the breastfeeding experience. In some cases, this preparation

was associated with doing independent research and/or interpreting written information accessed

through HPs. This shows a certain level of **functional health literacy** is needed to access,

understand and effectively use breastfeeding supports in the form of written materials or online

sources, particularly when moms are seeking out reliable information independently.

"Before [son] *was born I spent a lot of time watching YouTube videos and going on websites and
things like that showing how to latch babies on and… different positions and things like that. So I did
spend a lot of time… trying to get more information. So I could make it work."*

~Margaret, Phase 2

Participants described **learning from their mistakes** or past experiences breastfeeding

other children, which seemed to give them additional confidence. In some cases, mothers felt that

they needed less support with their second child; however, some Phase 2 participants cautioned

against this assumption and felt that HPs should not provide multiparous mothers with less

support.

*P: […] And the experience was night and day because I had a lot of trouble with the first one. I had no
idea what I was doing. And I really thought even though everybody said, you know, it's something you
have to learn, I really thought that it would come naturally. […] But overall, the whole experience was
just so much better the second time around. That I just was like, wow! [laughs] It can be so different.*

~ Kings Focus Group Breastfeeding Goals Met 1, Phase 1

Furthermore, some mothers described a **continuous process of appraising information,**

including long-term health benefits, short-term costs to the mother/family, financial barriers etc.,

which affects how their infant feeding experience develops and changes over time and from child to

child. As a mother learns about breastfeeding or formula feeding through personal experience or

exposure to other mothers their perspectives and attitudes may change.

"I was like 'You know what? If it doesn't work, I'm not beating myself up. It just doesn't work. I'm not forcing myself to try it.' I was like 'If it doesn't work, I'm going to formula'. So the difference was... I was sort of... more experienced. And I just said to myself 'I know what works, I know what doesn't and if it doesn't work I'm not... beating myself up to do it'."

<div align="right">~Margaret, Phase 2</div>

These factors discussed above - preparing, learning from mistakes, and appraising information- seem to enable mothers to **exercise autonomy** in their infant feeding decisions; they were able to make decisions that were best for themselves and their child by considering the various benefits and disadvantages of breastfeeding that related to their personal beliefs and life circumstances. Margaret described more **neutral support**, providing information and support for both breastfeeding and formula feeding, as a way to further empower mothers and reduce stigma for formula feeding mothers.

"It's a personal choice and either way doesn't work for everyone. Not everyone will work [with] *bottle feeding, not everyone will work with breastfeeding. So I feel like if it was more of a* [message saying] *it's your choice. Here's all the information... let you decide what's best. And that's the saying 'breast is best'. So it feels like you're giving your children less than they should have."*

<div align="right">~Margaret, Phase 2</div>

P1: Yeah, yes I'm not listening to other people who say I can't do it and say that it's not working, whether they like it or not, because I know, I'm the baby's mother, I know what's going on – and I'm breastfeeding.

<div align="right">~Pictou Focus Group Goals Not Met 1, Phase 1</div>

Actively seeking support
Conversely, some mothers recognized the need to get help from others as challenges arose. Similarly to preparing for the breastfeeding experience, this was also described more frequently by mothers who did not meet their breastfeeding goals in Phase 1. For Phase 2 participants, this went beyond breastfeeding support and also extended to food supports in the community which mothers felt enabled them to provide more nutritious food for themselves, and in turn their children. Actively seeking support relates to interactive healthy literacy (17), whereby mothers have enough confidence to act in seeking support from HPs or appropriate others. However, this may point to

existing gaps in HP support, particularly as proactive support was discussed as essential in the early stages of breastfeeding. Mothers described having to make an extra effort to fill these gaps. For example, Jane described needing to ask assertively to see a lactation consultant during her postpartum hospital stay.

"…with her [daughter] *I was 24 hours in there* [hospital] *but I knew at that point, I demanded it, I was more assertive I said 'I'm not leaving without seeing her* [lactation consultant]*!' I knew that I was latching… I knew that she was good but…. I knew that I wanted […] her to see my latch."*

<div align="right">~Jane, Phase 2</div>

Moreover, ineffective, or lack of, **communication between mothers and HPs** seemed to be a reoccurring problem. In some cases, communication around infant feeding was viewed as the responsibility of the HPs in order to understand the mother's infant feeding intentions and refer to other HPs (i.e., lactation consultants) as needed.

"…this all could have been avoided if you [maternity nurse] *had of just listened to me […] and helped me nurse him. […] Maybe my milk wouldn't have come up overnight but at least let me nurse him and supplement him or something… at least acknowledge that he was nursed rather than saying 'we should give him formula right now!' […] it was just really frustrating."*

<div align="right">~Jane, Phase 2</div>

Some mothers, however, described needing to communicate more openly themselves in order for HPs to understand their needs and adjust their recommendations accordingly. For example, Alise described how better communication on her part may have prevented her mastitis:

"…it's just that I didn't know to tell them [HPs] *'Hey I think that … my breasts are feeling a little bit lump[y], and infected and too engorged… I don't know if this is right or not?' [laughs]. If I would have spoke up and said that I think they would have known… maybe you're pumping too… much and then feeding alongside and you can slow down a little bit."*

<div align="right">~Alise, Phase 2</div>

Appraising expert versus experiential knowledge

Perceptions of HPs as experts may influence mothers' decisions around infant feeding. Some mothers described **appraising HPs advice**, which directly relates to **information appraisal** domain of CHL (120). This involved not taking HPs advice for granted and weighing the options

relative to their own life context, beliefs, and maternal knowledge. In Phase 1, these stories were most often related to HPs recommendations to switch to formula.

P1: Yeah! With my son - the hospital was extremely unsupportive - and my family was still super supportive, I was just like I should probably just listen to the hospital, they are supposed to know better, and so I listened to them, I should have listened to my other support, the good support.

~ Pictou Focus Group Breastfeeding Goals Not Met 1, Phase 1

For Phase 2 mothers, HPs that had not breastfed themselves were perceived as less able to provide effective support, showing how some mothers value direct experience over expert knowledge. Similarly, several moms talked about how **HPs' advice seemed "generic"** and was not tailored for the individual needs of the mom.

"Well I think a lot of the nurses that I had I don't think… many of them were moms… themselves so it was kinda 'this is what I learned in school this is how it's supposed to be but I've never actually done it myself' type thing, whereas the lactation consultants… all three of them were moms and all three of them did breastfeed… so they kinda had… not only the education but the experience behind it as well."

~Maria, Phase 2

Furthermore, HP advice was sometimes contradictory to mothers' experiential knowledge, creating confusion for some mothers. Alise described an "aggressive feeding plan" from a PHN that required her to use a breast pump to increase milk production and ensure her son was gaining sufficient weight. However, she attributes the development of her mastitis and further complications directly to this advice. She perceived that PHNs, as well as other HPs, put the **baby's needs first and foremost**, despite potential difficulties or challenges for the mom in following their advice. This perception could potentially lead to feelings of guilt if the mother was not able to follow their advice, depending on their sense of self-efficacy as a mother (63). Alise talked about having to assess her own needs and effectively communicate with HPs in order to receive the support she needed, showing how interactive health literacy (17) was required in her interactions with HPs.

"Because sometimes even if it's not necessary they just want you to do it. [laughs] Because… it's erring on the side of caution versus just… maybe it may not be necessary. Because then towards the end I was told to assess whether I felt like I needed to keep pumping or not. And I was saying that my breasts were feeling very full… you know and because […] I was producing a lot more. Yea so I guess they were being precautionary and… thinking of the baby first. But then you know I ended up having a little hiccup [mastitis] there so…"

~Alise, Phase 2

Negotiating breastfeeding in public and around others

Mothers also described the process of negotiating breastfeeding in public and around others. This involved trying to understand others' comfort level with breastfeeding, as well as the strategies used to cope when others were unsupportive.

"I knew the baby was covered they couldn't see anything but I'm like 'Okay should I be doing this differently? Am I doing it wrong[…]' You know 'Is he [man in public place] *just trying to be modest to give me some space to do it? Or is he offended by it?' I really… wasn't sure how to interpret it… Cause I was thinking you know is he uncomfortable so he's moving or is he trying to make me more comfortable so he's moving."*

-Margaret, Phase 2

Although participating mothers' comfort levels varied, and some mothers described positive experiences with breastfeeding in public due to general acceptance of breastfeeding in the community, public breastfeeding was generally described as uncomfortable due to a lack of comfortable spaces and designated areas. Three Phase 2 mothers described how they perceived this lack of acceptance to be related to the small, rural nature for their communities. For example, Alise, who raised her other children in an urban area, perceived that smaller, rural communities were less accepting, attributing this to a **lack of visibility** in the community and perceived lack of education among older generations. Overall, it appears that interactive health literacy is also essential to negotiate breastfeeding in public.

"I've gone to the bakery to eat in Guysborough and in town there and people stare and stare but… […] so maybe just people aren't comfortable … and a lot of the community here is older too… and I think mainly women just did that in private, not in public [back then]*."*

~Alise, Phase 2

Advocating for breastfeeding

Some Phase 1 mothers, largely those who met their breastfeeding goals, described

advocating for breastfeeding through a variety of different activities, which directly relates to

collective action. These activities included helping other moms by directly providing

breastfeeding support, as well as milk sharing as a way to support moms with low milk supply.

Likewise, Phase 2 moms described raising awareness and educating other mothers as a key

motivation for participation in this research and were eager to share their breastfeeding knowledge

with others.

"I also feel like people need to learn about it and know about it and when something like this [research
study] *comes along […], it's really good to talk about so I just felt like awareness was a good thing."*

~Jane, Phase 2

Rebecca in particular, talked about supporting younger mothers in her family by sharing

her stories with them and providing encouragement. She also **advocated for younger moms**

because she felt that they received less support and experienced more judgment from HPs, related

to an assumption that younger mothers are less committed to breastfeeding. In this way Rebecca

acted as a breastfeeding role model for these younger moms and aimed to fill the gaps in HP

support.

*"I went to go visit those girls in the hospital […] my boyfriend's younger cousin. I was just like ok
everybody get out the room. I'm just going to show her what I've learnt and [say]… take […] the ready-
to-serve bottles […] out of here for now and let's just sit down […] and have a conversation for… an
hour or so… and […] try again and then leave it. It's all… very, very emotional… for them when you're
that young."*

~Rebecca, Phase 2

Phase 1 and 2 mothers also talked about the importance of **making breastfeeding visible**

in their communities; they felt other moms who are comfortable with breastfeeding in public had

the opportunity to set an example and make it more comfortable for others. This was described as

key strategy to create more supportive environments for breastfeeding and shows how the act of

breastfeeding itself could be a type of self-advocacy. Some moms described that although

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breastfeeding in general was well-accepted in the community, it was still fairly uncommon to see breastfeeding in public.

"...if the breastfeeding moms... were more open I guess in Antigonish. Because you see... now that I'm not breastfeeding... I hear of so many people who are... and I'm like 'oh I didn't even know you were breastfeeding' I could have went to you ... if I needed advice or ... I just feel like everybody hides it so much... like that would be one thing I would like to see change... people just being more open about it."

~Maria, Phase 2

P1: When I first had XXX [referring to her daughter]*, I had this idea that I was going to 'show the world' right. I was going to do exactly what you are talking about - that was my intention and I really wanted to make it a thing where everywhere I went, young people, old people everyone got to see that this was happening and that it was natural [...].*

~Shelburne Focus Group Breastfeeding Goals Met 2, Phase 1

4.4 Phase 3 Findings – Participant Characteristics

Based on the findings from Phases 1 and 2, PHNs and lactation consultants were identified as providing a key role in breastfeeding support for mothers interviewed due to their more continuous, on-going support interactions with moms in the post-partum period. For this reason, both PHNs and lactation consultants whose work activities involved regular, direct interactions with mothers around breastfeeding were likely able to provide appropriate insight to meet research objectives 2 and 3. However, only PHNs (some of whom were also qualified as lactation consultants) volunteered to participate in the study despite recruitment targeting both HP groups.

Table 3 below shows the characteristics of the Phase 3 participants. As with Phase 2, pseudonyms will be used to refer to participants to protect their privacy. All of the participants were registered nurses. Four of the five PHNs worked directly with moms at the time of the study, whereas the first participant (Danielle) currently worked in breastfeeding promotion, with considerable previous experience providing one-on-one support, and therefore was determined to be eligible to participate. Three of participating PHNs primarily interacted with post-partum moms through home visits or phone support, while one provided primarily prenatal support around

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breastfeeding through a CPNP group. Participants also indicated varying levels of experience with breastfeeding support ranging from 1 – 20 years. Four out of five participants had personal experience breastfeeding their own children; all four of these women described successful experiences with at least one child; however, they reported different levels of difficulty and challenges with the experience.

Table 3. Summary of Phase 3 participant characteristics

Pseudonym	Qualifications	Years of experience promoting/ supporting breastfeeding	Description of work	Personal experience with breastfeed-ing	Description of personal experience
Danielle	Registered Nurse	20 years	Previously worked in a hospital maternity setting providing direct one-on-one support to moms, not working directly with moms in current practice	Yes	Breastfed two children successfully, however described a lack of family support which made it difficult, also described experiencing common challenges
Marsha	Registered Nurse	5 – 6 years	Currently works with moms in CPNP prenatal group, as well as post-partum screening visits in hospital and providing phone support	Yes	Breastfed three children however described a challenging experience with her first child due to a lack of knowledge around breastfeeding
Paula	Registered Nurse	11 years	Currently works with moms through home visiting support and some prenatal clinic visits, member of BFI working group	Yes	Breastfed three children successfully, described experiencing common challenges
Gillian	Registered Nurse	12 – 13 years	Currently works with moms through home visiting support, former facilitator of HP training on breastfeeding and member of BFI committee	Yes	Breastfed her first two children successfully however she described it as very challenging and uncomfortable, 3rd child was not breastfed
Brianne	Registered Nurse	~1 year	Currently works with moms through home visits and phone support, also coordinates peer support program and member of BFI committee	No	N/A

CPNP, Canada Prenatal Nutrition Program; BFI, Baby-Friendly Initiative

4.5 Phase 3 – Detailed Findings

The main objective of this section is to address the second research question, relating to HPs'
perceptions of their role in breastfeeding support and how this aligns with their perceptions of
ideal support and the needs expressed by participating mothers in Phase 1 and 2. Beginning with a
description of their various roles at the various levels of individual, health system and community,
their work practices in supporting and promoting breastfeeding are also discussed with a view to
CHL, in particular how these PHNs work practices enhance or diminish CHL among mothers facing
food insecurity. This section also begins to examine institutional factors at the health system level
that create barriers to providing effective support; however, this will be discussed in more detail in
section 5.3.4.

4.5.1 Description of the role of PHNs

Overall the PHNs interviewed described a variety of roles in supporting and promoting
breastfeeding. As the focus of these interviews was around individual interactions with moms
around infant feeding, the findings with respect to this level of work are more detailed.

Individual interactions with moms

For the four participants whose work practices involved direct interactions with mothers,
individual level support, provided through home visits, group classes, clinic visits or phone support,
made up a large majority of their work practices around breastfeeding. In particular, these PHNs
felt their primary role in supporting mothers was to provide them with **evidenced-based
information** on topics including the health/nutritional benefits of breastfeeding, as well as the
economical and practical benefits. Even more important was providing education on the **realities
of the experience** to prevent unrealistic expectations and help the family be prepared for common
challenges in the transition from hospital to home.

"[Key messages around the realities of the breastfeeding experience] … *they're important for the expectations of… what the next few weeks are going to be like and… yes… so it helps them to have a more realistic picture I think… and… also to understand that… some of the challenges are normal and… if you're struggling that there's help. And so setting… that stage.*"

<div align="right">~ Gillian, Phase 3</div>

Danielle also described a professional responsibility to discuss the **risks associated with formula feeding** to help mothers make fully informed decisions; however, she also described this as a challenge for many other HPs. In contrast, all participants discussed the importance of providing all mothers with **unconditional support**, regardless of their decision. This included educating mothers on safe techniques for the preparation on formula, provided they had already made the decision to formula feed.

"*…it's also informing about the risks to not breastfeeding. And that's where people* [other HPs] *run into difficulty. Because there is risks to not breastfeeding because breastfeeding is the norm. So it's just the adequate nutrition… a baby's body expects to receive. So… when they don't … they are more at risk for illness and disease. And we* [HPs] *kind of don't… portray it as that.*"

<div align="right">~Danielle, Phase 3</div>

Overall they viewed the above types of information as particularly important to **empowering mothers** to persevere through breastfeeding challenges and make informed infant feeding choices that reflect their own needs. Some participants also described how a well-informed mother would be more able to seek support for breastfeeding and other related health issues. In this way, information transmission from HPs may contribute to enhancing mothers' information appraisal skills and ability to seek out support. This critical appraisal may be particularly important to evaluate unsupportive interactions with HP; for example, three PHNs perceived that mothers place considerable weight on their physician's advice which could negatively affect their infant feeding experience.

"And so that [providing information on common challenges] *actually… helps women to feel more empowered. Helps their partners to feel more empowered with knowing what they need to do and what to try and… knowing this* [is] *normal, this is what you should expect to see. In carrying that forward… from day to day."*

~Gillian, Phase 3

"Not to blame physicians either [laughing] but what they say carries so much weight so if we have moms… and I know in my own personal experience to that… the baby was cluster feeding and if the baby didn't pee by a certain, you know, in that initial 24 hours and stuff that… the physician was saying we should supplement. [With] *the knowledge I had I knew I wasn't going to do that. […] So that's… a challenge because then it of course is going to interrupt the success that mom's gonna have."*

~Paula, Phase 3

In addition, all participating PHNs described the importance of **reassurance and encouragement** in helping to improve mothers' self-efficacy and confidence. They also described engaging mothers in goal-setting and supporting her through challenges in whatever way possible to achieve these targets, which is indicative of interactive health literacy supported by two-way communication (10).

"I guess in the post-partum period we definitely support and we encourage them to keep breastfeeding if that's what they're doing and just… validate that they're doing a wonderful thing… for their baby. And we… I think demonstrate to them that we… are committed to helping them… achieve their breastfeeding goals."

~Brianne, Phase 3

Lastly, **monitoring the health of the baby** and the mother was described as important part of their practice for all four PHNs who provided direct care, particularly those doing home visits. Monitoring the baby's weight gain appeared to be an important indicator used by PHNs to assess the baby's overall health and the level of success with breastfeeding, which although was received with mixed reactions among Phase 2 mothers, does seem to provide some reassurance.

Community supports

Four out of five participants described engaging in community-level breastfeeding promotion activities aimed at **normalizing breastfeeding in the community**. The level of

engagement in community level work varied, with most PHNs overseeing this in addition to their responsibilities in providing care to individual mothers. In general, some participants described a role for themselves in advocacy for breastfeeding moms, particularly marginalized groups including women experiencing food insecurity.

"Well it's just normalize breastfeeding so [...] that's one of the big things from a public health perspective... is trying to... get it out there that it is normal to breastfeed, it is okay to breastfeed. And it's informing women of their right as well."

<div align="right">~Danielle, Phase 3</div>

Promotion activities often involved overseeing, or participating in, **programs or committees.** Examples included "Make Breastfeeding Your Business", aimed at making public places and business breastfeeding friendly, as well as community groups working towards supportive environments, including "Building a Breastfeeding Environment" or "BABE" based in Antigonish. Engaging mothers in these groups is an example of fostering collective action around breastfeeding issues. Other more formal roles included sitting on BFI working groups/committees and planning the necessary step to work towards BFI designation.

"So it's [her role in community breastfeeding group] *kind of to use the resources that public health has to kind of... work on the projects that* [the group] *wants to accomplish. And because public health we're in like a perfect position with breastfeeding mums and... [...] prenatally [...] we can kind of link up the mums [...] who are interested in joining..."*

<div align="right">~Brianne, Phase 3</div>

Further all participants described some involvement in **facilitating peer support**. For some this was a formalized role, such as training peer support moms, whereas others simply provided opportunities for moms to be exposed to breastfeeding through group prenatal sessions or referrals to peer support programs. All five participants seemed to recognize the importance of peer support in enabling mothers to discuss their challenges without fear of judgment and learn from the personal experience of other moms, which suggests that PHNs value the importance of

experiential knowledge. Supporting mothers to be peer advocates was also described as a way to

build breastfeeding friendly communities, which could be viewed as a form of collective action.

"And… connecting them hopefully with… those peer support connections. Cause I think that can really… play an important part for them to be confident that… whatever they're facing you know this… so and so also went through that and this is what she did and so I think… sometimes that… word of mouth or that personal experience has more power than what a book… tells somebody [laughing]… has more weight on that I guess."

~Paula, Phase 3

Health system

Within the health system, participants described two main activities related to promoting

and supporting breastfeeding. **Collaborating with other HPs** was described as a key activity to

create effective inter-professional networks and to help mothers access the support they need. For

example, PHNs commonly described referring to lactation consultants when breastfeeding

challenges arose that were beyond their scope of practice. This inter-professional network was

also described as an asset for HPs themselves to feel supported in their work.

"[…] if we go out there and we try everything we can… still not working… we would refer them back to the lactation consultants… cause they can… like if they have to pump… the lactation consultants have a program where they lone pumps out for a short term… basis just to kind of get them on their feet… until they get their own pump so we would facilitate that."

~Brianne, Phase 3

Furthermore, three participants described training other HPs, or identifying areas for

improved HP training, as a part of their promotion efforts and working towards BFI designation.

Primarily this was through the "Making a Difference" program or identifying specific staff education

needs based on feedback from mothers themselves.

"We are working on physician education as well… as part of the BFI. Because there's a lot of… so if a mom goes [to see her family physician] *…you know is struggling with nursing or the baby's slow to gain weight… instead of… trying maybe some of the things we would suggest… it's… right to formula. So that's a challenge because then it of course is going to interrupt the success that moms gonna have."*

~Paula, Phase 3

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4.5.2 Assets in providing support

Phase 3 participants described several different assets that facilitated their ability to provide effective support to mothers. The four participants who had **personal experience with breastfeeding** described how it guided their work with moms, particularly if they experienced similar challenges, and allowed them to be more confident in their work. This personal experience also appears to enable PHNs to have a sense of **empathy for the experience of breastfeeding**, which may enable them to better understand mothers' needs and provide more effective support. However, they also acknowledged that personal experience was not a prerequisite for providing effective support. Two participants described a reluctance to share personal information, which may indicate a desire to maintain a client-professional relationship, despite research showing that self-disclosure may help to equalize the power imbalance and build rapport between a mother and her care provider (10, 82). In fact, building rapport with mothers was described by these participants as crucial in helping mothers to feel comfortable discussing emotional aspects of the experience, in addition to factors related to food insecurity.

"You don't have to have breastfed… to be able to… educate people about breastfeeding. It may change… your own confidence… as to the information you're providing. […] So I say that carefully that just because I nursed my kids doesn't make me a confident expert. But… I think it gives me more confidence because I have. You know?"

~Marsha, Phase 3

"…my goal is to hopefully have them comfortable [enough] *to speak with me and about… how they're feeling and experiencing… like the emotional aspects of it. As well as the physical of course of how they're latching and… all those things. Sometimes that's easier for people to talk about then… the emotional impact stuff… so yea I guess I'm trying to establish that comfort level initially…"*

~Paula, Phase 3

In addition, participants also talked about the development of their professional experience through working with moms over time. **Training** can provide an important knowledge base; however, two participants talked about a need for educational updates to ensure they were aware

of the most current information. Brianne, who was relatively new to her position, described the

importance of hands-on training with other PHNs in the orientation to her job.

"I had orientation with the other public health nurses and… just went out with them on their home visits and do latching and all that stuff and… a lot of it was like on the job. [laughing] And I think that's how you learn the best with breastfeeding… it was cause… it can be tricky sometimes."

<div align="right">~Brianne, Phase 3</div>

As mentioned above, having a **network of colleagues** working on breastfeeding promotion

and support was described as a key strategy in determining effective promotion strategies. These

networks included other public health staff working on breastfeeding policies or programming, as

well as other HPs, particularly lactation consultants, who were crucial in supporting moms with

more difficult challenges, similar to the findings from mothers in Phase 2.

"Say like the lactation consultant at the hospital… for me …like I know her… because we've had opportunity to work together or… you kind of build a relationship too. So… it's much easier if I'm comfortable to call her. If I have to, or… you know… so I think establishing those working relationships too. If you have that positive [relationship] *… than it can make it easier."*

<div align="right">~ Paula, Phase 3</div>

Consistent with the findings from interviews with mothers, **family resource centres** were

also perceived as an important support in the community, providing peer breastfeeding support as

well as food support in times of need, and meeting mothers' needs for both breastfeeding and

short-term food assistance. Women's centres and LaLeche League groups were also described as

helpful community supports. These PHNs seemed to play a key role in linking mothers with these

services, showing how PHNs can enable interactive health literacy through helping mothers to seek

out different supports beyond what they can provide themselves.

"We also have… [family resource centre] has… a breastfeeding support group that meets once a week. And they just started that rurally as well… so that's exciting for us that it's been expanded. There's also a LaLeche leader in the area… when moms are discharged from the hospital they're giving.… an information sheet with all the resources [...] in the community."

<div align="right">~Danielle, Phase 3</div>

4.5.3   Barriers to providing support

Despite describing numerous assets that enable them to fulfill their roles, the PHNs interviewed also described several barriers to providing breastfeeding support. Many of these barriers were related to the context of the public health system in NS, discussed critically in section 5.3.4. For example, the recent transition in 2014 from prenatal classes delivered by public health to online prenatal courses through the "Welcome to Parenting" website was described as a barrier to making connections with mothers in the prenatal period. Two participants also described how a resulting **lack of visibility** lead families and other HPs, including family physicians, to be unaware of the resources public health had to offer, leading to an under-utilization of their services.

"I think… and again [my] *personal opinion I guess is just that we've changed […] so often of what we do and how we do it that… the public and physicians even aren't really aware what we do… so… you know I think that we're not as visible as we once were […] so we just are kind of an afterthought. Like they don't… until there's something really urgent or until there's something that… you know that we're not thought of as often… for the supports that we can provide."*

~Paula, Phase 3

In turn, this made it difficult for PHNs to provide mothers with education prenatally, a key period for interventions to promote breastfeeding (53), which was also identified as a barrier by participating mothers in this study. Further, due to the systems in place, often the HPs interacting with mothers prenatally do not provide breastfeeding support post-partum. For example, Marsha described that she was able to build relationships with mothers prenatally through CPNP prenatal group; however, she was then unable to provide home visits to these mothers due to her job responsibilities that confined her to office-based or telephone support. In fact, three participants described how this type of system is **lacking in continuity of care**, which prevents them from establishing rapport with their clients and hinders the development of a supportive relationship.

"But I think that being able to go see somebody on my own terms... when I want to see them. I think would be... one thing that would help with my ability to support people. Like you know you build relationships within this group [CPNP prenatal group] *and... I'm not the one that's going to go see them at home. After sitting here with them every week for 5 months... or 4 months or 2 months... whatever it is. Then... I'm sending some other person into the home and that's fine... but... before* [changes in job responsibilities] *it would be me."*

~Marsha, Phase 3

Further exacerbating the above challenges, for PHNs working in rural areas, is a **lack of transportation** for many moms to access HP services. Although home visits helped to address this, only moms assessed as high-risk are eligible for this service currently, a change from when all moms were offered home visits in 2009. While this screening likely targets moms who are vulnerable to food insecurity, this was perceived as a barrier in providing all moms with adequate supports, particularly when lactation consultant support, for more complex needs, was only accessible through clinic visits in regional service centres.

"And that's another thing too like if a mom's in [remote rural area] and she's breastfeeding... and she has challenges... it's hard for her to get into [main town] with a newborn to see the lactation consultant. So it's really... as a public health nurse I feel it's very important to provide support to those mums [...] especially in the more rural areas. Cause it's... it's hard for them to travel in here and if they have... financial issues... gas is another concern."

~Brianne, Phase 3

This was also related to the challenge of **negotiating their role in breastfeeding support** relative to the role of other HPs including other PHNs, family physicians and hospital nurses. Consistent with the challenges expressed by mothers in Phase 2, lack of prenatal education on the realities of the breastfeeding experience and how to deal with common challenges with breastfeeding initiation was identified by PHNs as a key gap in the information mothers receive. Despite having identified this gap, however, Gillian described her own lack of clarity on who should fill this role.

"I also think we need to prepare women and partners better… prior to leaving hospital so they know… over the next 24-48 hours this is what's going to happen. […] And these are things that are going to make the most difference with getting you over the hump… until public health can contact you. That's a missing piece that I'm thinking we really need to work on more. And I don't know who should be doing it. Should we be doing it prenatally? Cause there's a lot happening in hospital… So where do we fit that piece in so that people know what to expect… in that window of time."

~Gillian, Phase 3

Also related to individual interactions with moms, all interviewees described an **awareness of the unintended consequences of breastfeeding promotion**, namely creating feelings of guilt among mothers who choose to formula feed. This was not attributed solely to interactions with HPs, but more so the overarching negative culture around infant feeding. Danielle, who had 20 years of experience promoting and supporting breastfeeding, described a fear among HPs of making the mother feel guilty, which she felt impacted their ability to fully inform moms on the risks of formula feeding.

"[Key messages around the benefits of breastfeeding/risks of formula feeding] *should be delivered in a non-judgmental manner so moms feel comfortable discussing their concerns and values around breastfeeding. We have to be careful with our approach ensuring we create an environment of support and yet deliver all the information moms need to make an informed decision which would include discussing the risks as well."*

~Danielle, Phase 3

Due to the **power relationships** between mothers and physicians (81), which also exist between mothers and PHNs (82) as well as dietitians (83), breastfeeding promotion messages may be perceived as particularly judgmental, especially among mothers who have experienced marginalization. Although they felt that educating about breastfeeding was an important part of their role, they also described how the "breast is best" discourse could have an overall negative impact on families. For this reason, three participants described the importance of delivering messages around the benefits of breastfeeding and the risks of formula feeding in a sensitive and non-judgmental manner to avoid shaming mothers and felt that this should be a key component of HP training.

"I think in general... probably the biggest unintended consequence on like a societal level is the 'breast is best' message gets... construed as... you're not a good mother if you don't breastfeed. And... all the mom guilt that goes into that... so... I think that's probably the... the worst unintentional consequence because we... our job is to promote it and to support moms. But... depending on how people interpret that and their own experiences with... it's... like even just the way a nurse can phrase a question can impact... how that moms feels about her... decision and... so it's the power of words and being really... cautious of those things."

~Paula, Phase 3

"[...] I know we [PHNs] try really hard to look at our own biases [...] and not judge people. You know I think it's very, very important. [...] But I think the system... society sometimes pushes too hard... with that breastfeeding piece. And as much we think it's important... it can go against the grain and have a stressful effect on families and... I don't think we want that. Right? That's... not the healthy, important aspect of it that [...] we want to get across when we're sending messaging out."

~Gillian, Phase 3

In terms of policy level solutions to breastfeeding, Danielle described how policy change to create supportive environments for breastfeeding, as well as social change to make breastfeeding more accepted, was a **slow process** and a significant barrier in moving her work forward. Although she perceived that breastfeeding was now a priority for the majority of stakeholders in public health, she described needing to create buy-in among other organizations and local governments in order to advance the work more efficiently. The implementation of the BFI was a commonly mentioned type of overarching policy dictating HPs' work practices, and was usually viewed as supportive of both breastfeeding and formula feeding mothers. Some participants, however, perceived BFI policy as *"strict"*, limiting their ability to provide mothers with education on formula.

"We've done presentations at all the municipalities and they've all agreed to come up with a breastfeeding policy and that... but only one has actually... followed through with that. [...] They all agree to it... yea but it's not their priority, it's mine."

~Danielle, Phase 3

"The BFI really… helped us… to self-identify as an organization on… what our policies should look like. What they need to include… the kinds of things we need to be mindful of as practitioners. Not only in the work that we do but also in what's important to ensure that we've… educated families on…. […] following like a checklist of things to be sure that we've done everything we can… to support those families not only in their choice but if they've chosen to breastfeed… that whole experience."

~Gillian, Phase 3

4.5.4 Perceptions of ideal support and desired changes

Overall, these PHNs described several changes related to broader infant feeding culture, as well as more specific changes to public health practice, that they felt would improve breastfeeding support for moms in their communities. In general, their perceptions of ideal support seemed to reflect many of the supportive aspects described by mothers in Phases 1 and 2. However, these PHNs also described disconnects between their perceptions of ideal support and the realities of their everyday work practices in supporting moms. In particular, they described being constrained by several factors at the public health system level.

For example, some Phase 3 participants envisioned a future where breastfeeding promotion was unnecessary because it was fully accepted and normalized. Although two participants felt that social acceptance was improving, they described strategies to continue to move toward this vision by creating a more supportive environment, such as increasing engagement from municipalities and educating younger generations about breastfeeding from an early age. For this reason, they viewed their participation in work at the community and policy level to be very important. This also included a **shift in discourse** used in their interactions with moms to promote breastfeeding as "normal" rather than "best". Similar to previous research with professional and lay breastfeeding practitioners in NS (10), Marsha used "give it a try" messaging in an effort to encourage mothers without passing judgment on their decisions.

"I used to think 'breast is best' and 'breastfeeding is best', all the slogans that would stick in your head… and it's to… simplify it that… it's not even the norm, it might be someday. […] I think that… we have breasts, they make milk for babies. Why not just go with that? We don't have breasts for other reasons […] the reason we have them and we still have them and they still make milk is for nurturing babies."

~Marsha, Phase 3

On the other hand, two participants discussed a key tension within the public health system between continuing to provide individual support for moms, while also shifting to population health approaches. In fact, one participant felt that her work at the individual level was 'invisible' to her colleagues due to their **focus on more upstream action**, but maintained that PHNs can have a significant impact through one-on-one interactions.

"I think it's important for public health to have that one-on-one interaction with families and […] doing home visits because it does inform your work. But it's also important to be out in the community and involved at that… higher level… working on more upstream action… it's definitely a balance. And it's hard when… some people don't always… their priorities are different. I find [in] public health… when you're working one-on-one with families that's invisible work or it can be… cause you can't really go and share a lot of those successes… you know, might be [the] simple success of just that baby latched better than he was [laughing]… and you know that might keep that mum breastfeeding. To me that's such a wonderful thing."

~Brianne, Phase 3

Four out of five participants felt that HPs needed to make more contact in the **prenatal period** to have a positive impact on mothers. More specifically, the lack of interaction with mothers in the prenatal period, related to the discontinuation of prenatal classes in 2014, was described as a missed opportunity for PHNs to support mothers in a crucial timeframe when many infant feeding decisions are made. Interestingly, in some NS communities, prenatal classes have continued "under the radar" supported by non-profit, community organizations with PHNs and other HPs participating as guest speakers (155). There was also some evidence of this in the PHN interviews; for example, Gillian described providing prenatal classes to French Acadian organizations in her community at the request of some mothers.

This reflects the findings from Phase 2 mothers who described the importance of learning about breastfeeding prenatally in order to overcome the very stressful first days of motherhood. Furthermore, the lack of mandate to contact mothers prenatally also affects their ability to establish rapport with their clients and provide effective, ongoing support post-partum. To address this, three nurse participants talked about improving access to public health's services by raising awareness in the community, as well as extending services to address current gaps (i.e., no weekend coverage).

"Yea I guess... having the prenatal... contact. I think... is... crucial to set the stage for the post-partum period. Like... after they have their baby it's kinda... not to say it's too late but... people have made up their mind by [then] *or it's just such an emotional time that... whatever decisions they're making it's... a flurry of... things happening so... I think... if we could have that better prenatal... education and support."*

~Paula, Phase 3

"...that's where I see public health... could at least start doing some prenatal classes again. At least offering that... and then so people would be more aware of what the word public health is. And then... in the post-partum period they might be more apt to... [...] accept a home visit [...] they might be more comfortable with the PHN."

~Brianne, Phase 3

In addition, **more interdisciplinary approaches** for breastfeeding support were mentioned as a way to improve the process in the current health system. Although several participants described that they had networks of colleagues already in place, two participants (Paula and Gillian) felt that their collaboration and communication could be improved to create a more "seamless system" in the transition from hospital to home. This interdisciplinary approach was also perceived as way to provide more holistic healthcare to families, and begin to address the social determinants of health and understand how they affect mothers' infant feeding decisions. Further training, particularly for physicians, was also mentioned as an area that would help to improve inter-professional collaboration around breastfeeding. Related to this was an identified

need for more access to lactation consultants, particularly in rural areas; two participants felt that more PHNs could be supported to attain the International Board Certified Lactation Consultant designation.

"That's why I always think… all of our centres should have multi-disciplines in them. So that it's an ability to help people with the whole thing! Like how wonderful it would be to come to a community centre, and if you're seen by the physician or your primary healthcare provider… they can make referrals then and there. And that person is leaving there and they're going down to visit public health, they're going down to visit a social worker, they're going down to visit someone that can help them with their finances through community services or whatever that might look like. To food banks, to everything… all in one building!"

<div align="right">~Gillian, Phase 3</div>

"…having more lactation consultants. Like if we had all our public health nurses as lactation consultants that would be awesome. So the more training for staff and for physicians too… to be able to support it… I think that would be a big factor. And then… how those HPs connect… so… you know whatever issues that arise that we have a seamless system that… can communicate and not be so disconnected."

<div align="right">~Paula, Phase 3</div>

Finally, in addition to the above changes to HP support, four out of five PHNs interviewed also mentioned the importance of further developing **peer support networks**. Although these PHNs described making a conscious effort to discuss infant feeding in non-judgmental manner, they perceived that the nature of the client-professional relationship places PHNs in a position of power, which could lead mothers to feel judged. Peer support, in combination with HP support, was described as essential to provide mothers with non-judgmental support and the opportunity to discuss their challenges openly. Further it could also help to address gaps in public health services by providing afterhours access to support. Lastly, Phase 3 participants also described different levels of social connectedness in their communities, which either hindered or facilitated the development of these peer networks.

"Well I guess with another mum she's been through it. And… I think sometimes… […] as a PHN they might not tell you the whole [story] *… […] like when you have them on the phone they might not tell you the whole… all of their frustrations. So they might just feel more comfortable because… there's no… power difference you know what I mean? Like they're both… mums and… yea… and even like I mean the other… I'm not a mother myself but there's other PHNs who do have children and they still experience that. The new mothers […] they might not be as comfortable telling them… you know everything."*

<div align="right">~Brianne, Phase 3</div>

"…the community piece of networking with other moms [would be a part of an ideal system]. *I think that… because just the nature of our communities now people don't know their neighbours even… you know everyone is very isolated I find. And even in […] like people would say Cape Breton is small, tight-knit communities but… at the same time there's still a lot of isolation. So I think… finding ways to connect people* [are important].*"*

<div align="right">~Paula, Phase 3</div>

4.5.5   Interactions with mothers experiencing food insecurity

Interestingly, PHNs in this study viewed the connection between breastfeeding and food security for families similarly to the mothers in Phase 2. Primarily, they talked about breastmilk being readily accessible and affordable for families, particularly those who may be struggling financially. For this reason, some participants felt that the cost saving associated with breastfeeding would be a particularly influential factor for families facing food insecurity, similar to the findings from Phase 2. Four out of five participants talked about **emphasizing cost savings** with families they knew were struggling as a way to encourage them to breastfeed. In contrast, Danielle recognized that motivations for breastfeeding were more complex, given research showing that socio-economically disadvantaged mothers tend to breastfeed less.

"I think when they're making the decision it [ability to access healthy food] *likely… would impact because if you're looking at the cost of formula versus the cost of breastfeeding… you're gonna say well I really can't afford formula. And then… you know you might… maybe you might be more likely to choose breastfeeding but I don't know if that's always the case."*

<div align="right">~Brianne, Phase 3</div>

This practice of emphasizing the financial benefits of breastfeeding could reflect an assumption around the motivations for breastfeeding that mothers facing food insecurity have, with the assumption that cost is the primary motivator influencing their decisions. For example, Marsha described how mothers facing food insecurity might place less value on health and healthy food for themselves and their families, related to the cycle of poverty and lack of entitlement that is experienced (51, 97). This may be related to feelings of powerlessness and lack of control often experienced in conjunction with food insecurity (51, 68, 95).

"It makes sense if you've never had access to healthy food choices then… why would you… think to breastfeed… for the health benefits. […] Like I don't know that they… are wired to think that way. If I can't access healthy food for me to eat… I'm thinking the mind might [not] *go to… well because breastmilk is the healthiest for my baby I'm gonna breastfeed them. I think some people are thinking… why bother? […] And… so if you're just buying what you can to get by… and to feed somebody. Whether it's your kids and not yourself three meals a day… then you may not be thinking that… breastfeeding would be advantageous to… changing that… cycle… for the start of this baby's life."*

~Marsha, Phase 3

These assumptions were also reflected in Jane's comments that described experiencing judgment around saving money as a motivation for breastfeeding, although she reported feeling this judgment from other moms rather than HPs. Furthermore, these comments show how HPs, as well as other mothers, may unintentionally place negative judgments on women experiencing food insecurity. This judgment and stigma placed on people experiencing food insecurity has been observed in past research in NS (51, 68, 112, 150), and is sometimes used by mothers themselves as type of coping strategy to distance them from the experience of poverty (68). In contrast, Gillian described that despite having an understanding of a family's struggles with financial or food insecurity, she strived to provide all families with the same information on infant feeding to avoid these types of unintentional judgments. In fact, giving families experiencing food insecurity an opportunity to breastfeed was described as way to break the cycle of poverty and poor health.

"I'd like to… wave my magic wand or twinkle my little be-witched nose and fix it all. You know? And everybody have you know… a… living wage that everybody can live and eat healthily and…feel… like they matter and that their families matter and that their children are as good as the other children who have all the things that they have. Or… you know that everybody could see that people who are struggling and… financially insecure and… don't have food for their kids or filling their carts with pop. If they could step back and think why they're doing that… you know? I wish people would have a bigger social conscience, as to not judge people."

~Marsha, Phase 3

"I don't have it set in my mind based on someone's income, or where they live, or what they have for material things […] that doesn't make my decision or affect when I go into see someone whether I talk about certain things. I raise it [cost benefits of breastfeeding] *with everybody, we have a standard and … I think it's important whether someone has a great place to live or whether it looks like they have a lot of material things … I don't let that judge whether… we talk about the most basic of everything. For both mom, baby and the whole family."*

~Gillian, Phase 3

In contrast to the experiences of participating mothers, food insecurity itself was not perceived as a barrier to breastfeeding by PHNs. While they acknowledged that adequate nutrition is important for the breastfeeding mother, they talked about the need to dispel the common myth that breastmilk is negatively affected by poor diet quality of the mother and therefore negatively affects the health of the infant. This points to the role of PHNs in enabling mothers to be critical of mixed messages received from other sources, such as family or peers, which may not be based on evidence. In reality, they felt that the underlying conditions influencing household food insecurity (primarily income insecurity and lack of affordable housing) created stressful life circumstances for these mothers, which is well-documented (95). This stress and anxiety was viewed as a more direct influencer of their infant feeding decisions, rather than a lack of access to healthy food itself. However, some PHN participants described some mothers as reluctant to discuss their life circumstances and how this complicated their breastfeeding experience.

"Other things I think about too with breastfeeding and if people are having trouble with food security is... the stress that they have in their life... and I think that might impact breastfeeding more than anything. Because... in our society we don't... it's something we need to change [...] we need to make breastfeeding the easier choice not the harder choice. And I think that we often see breastfeeding as hard... and... I think if you're under a lot of stress in your life which you could be, of course, if food security is an issue... that affects your coping."

~Danielle, Phase 3

Overall, most Phase 3 participants seemed to have a good understanding of the root causes of food insecurity and the significant impact this had on the health of families in their community. Further, assessing risk for food insecurity seemed to be a part of their regular interactions with mothers, particularly those PHNs who completed screening for enhanced home visiting programs. Despite this understanding, these PHNs' strategies to address food security reflected only **short-term solutions** to deal with acute issues, such as referrals to food banks or other community programs, which could indicate a lack of professional responsibility and/or mandate to address these issues. While one participant described support from management in accessing gift cards for food in crisis situations, she described a need to "be creative" in accessing a variety of community supports for families to meet their short-term needs. Only one participant specifically described a role for PHNs in advocacy for their clients living in poverty:

"It's not okay that there are so many people that live in poverty. It's not okay that 1 in 5 or 1 in 3 kids... don't even have healthy food. It's not okay that moms and dads don't have healthy food to put on their table let alone everything else. And how that impacts the choices they make from day to day. That shouldn't be happening. [...] And our job in public health like in many other organizations, and I know that the direction we're moving in, is we need to lobby, we need to advocate, we need to fight for policy change from the municipal level all the way up the line... to make some of this stuff happen. Cause it's not okay."

~Gillian, Phase 3

"In past situations we've gone to our manager and requested gift cards. If there are situations where the mother is breastfeeding and it's going well, however there are other challenging areas, food perhaps being one of them, we tap into different resources, you have to be creative with who you can contact."

~Brianne, Phase 3

5. Discussion

In this Chapter I discuss the findings in relation to the 3 research objectives, critically examining these in relation to previous research and applying a CHL lens that focuses on the 3 domains of information appraisal, understanding social determinants of health, and collective action. An assumption underlying this discussion is an "asset" approach to health literacy, whereby health literacy is defined broadly as a set of skills that improve an individual's ability to have control over their own health (115), suggesting that HPs can help to build health literacy in partnership with their clients, thereby increasing their clients' level of empowerment (117). While breastfeeding support has been extensively studied in NS (9, 14, 26, 92, 139, 156) and elsewhere in Canada (22, 38, 55, 79, 111, 157), much of this has focused solely on either HPs' or mothers' perspectives of support. The use of an IE approach, unique to this field of health research, allows for the weaving together of research findings from 3 phases of focused qualitative research, comparing and contrasting the perspectives of mothers and PHNs within the NS public health context. While the small sample size does not allow the experience of breastfeeding among mothers living with food insecurity to be fully captured, the findings providing in-depth insights into the first voice experiences an understudied population with respect to the impacts of food insecurity on a key population based strategy for optimal infant feeding (158). Moreover, this research was also very timely in exploring the impact of relatively recent institutional changes in NS, in particular the elimination of prenatal classes provided by public health (in 2014)(28) and the merging of nine district health authorities to form the NSHA (in 2015)(143), on breastfeeding support for mothers who are vulnerable to food insecurity.

Section 5.1 describes and explicates mothers' breastfeeding experiences, and emphasizes those that are uniquely related to the perspective of rural-dwelling mothers facing food insecurity, including new findings around the judgment among mothers potentially associated with financial motivations for breastfeeding, as well as the motivation of mothers facing food insecurity to

persevere through their breastfeeding challenges. While many other studies have focused on breastfeeding barriers of socially and economically disadvantaged mothers (62, 75, 144, 145, 159, 160), building on formative research in NS (92), the current study contributes to understanding food insecurity as direct barrier to breastfeeding, while also illuminating the potential role of breastfeeding as an enabler of food security at the household level.   To address the second research objective, section 5.2 describes important findings from Phase 3, highlighting PHNs perceived roles in breastfeeding support, how this compares with the needs expressed by mothers facing food insecurity, as well as PHNs perceptions of ideal support. In section 5.3, findings across all three phases are examined to explicate four key lines of fault with how breastfeeding is promoted and supported by PHNs, including the influencing institutional factors at the health system level, and the everyday experience of mothers that emerged directly from these research findings. I also draw upon other research to explore implications of the findings for practice, policy and research, as well as identify potential recommendations or strategies to improve breastfeeding support, particularly for families experiencing food insecurity. Finally, section 5.4 summarizes these key areas of disjuncture with a view to illuminating the influence of ruling relations in the NS infant feeding culture and the public health system, as well as how this impacts the work practices of PHNs and the experiences of mothers facing food insecurity.

5.1 Breastfeeding experiences of mothers living with food insecurity

Overall, the Nova Scotian mothers participating in this study illuminated perspectives of rural-dwelling mothers who experienced moderate to severe food insecurity based on HFSSM classifications; however, given that they were recruited through family and women's resource centres they were perhaps not the most socially disadvantaged, isolated or food insecure as they may have had access to food and other types of support through these programs.

Consistent with recent research (92), mothers in this study, who all faced either moderate or severe food insecurity, described three unique challenges with respect to choosing an infant feeding method, namely financial access to formula, the perceived importance of maternal diet when breastfeeding, and breastfeeding as a barrier to earning an income. Although my findings suggest financial constraints were an important motivator of breastfeeding initiation, breastfeeding was not perceived as a way to save money by participating mothers due to the cost of eating a nutritious diet. As Frank's findings suggest mothers perceive adequate nutrition for themselves as an important enabler of adequate milk production and in turn breastfeeding success (92). Given that women's perceptions of poor breastmilk supply is a common reason for breastfeeding cessation (53, 57, 161), the finding that some participating mothers experienced judgment from other mothers for trying to save money by breastfeeding, along with Frank's research, suggests that household and maternal food insecurity should be considered unique factors affecting women's perceptions of poor breastmilk supply (92). These findings clearly suggest a lack of financial resources may predispose mothers to negative infant feeding experiences by exacerbating stress and anxiety (92) and limiting ability to exercise choice in their infant feeding decisions. Interestingly, in contrast to Frank's findings (92), the current research also suggests that mothers facing food insecurity may be more determined to persevere through their breastfeeding challenges, shown in their accounts of breastfeeding as a true necessity.

With respect to support for breastfeeding in communities in rural NS, the results indicate that the "breast is best" discourse (37, 85) is still pervasively used in public health promotion of breastfeeding despite the concerns raised over a decade ago by Knaak (48, 162) and more recently by Jung (163); this is not surprising given current recommendations globally (6, 158), in Canada (39) and NS (1) that breastfeeding be promoted as "the normal, safest, and best way to feed infants..." (1) and an "unequalled way of providing ideal food for the healthy growth and development of infants" (158). Nova Scotia's recent social marketing campaign *The First 6 Weeks*

(164), however, reflects a shift towards breastfeeding as a "learned behaviour" and a more balanced approach to breastfeeding as recommended by the findings in this research. However, findings suggest that the prevalent discourse around "breast is best" still seems to infiltrate mothers' talk about, and decisions related to infant feeding and may have unintended negative consequences for mothers experiencing food insecurity. These findings raise questions about the reach and effectiveness of *The First 6 Weeks* website as a resource to support moms with experience of food insecurity living in rural NS.

Moreover, the findings suggest that the "breast is best" discourse promotes judgment of infant feeding decisions among mothers experiencing food insecurity, contributing to perceptions of a negative infant feeding culture in this rural area of NS. Similarly, Flower and colleagues found that rural communities in North Carolina and Pennsylvania, US, had lower breastfeeding rates compared with national averages, concluding that different promotion efforts are needed to make breastfeeding attainable and desirable for rural mothers (145). The finding that the mothers in this study perceived rural communities in NS to be less supportive of breastfeeding compared with more urban areas, due to the limited access to peer and HP supports, as well as lack of acceptance of public breastfeeding, is in contrast to the findings by Price and colleagues that show a supportive culture of breastfeeding in the small, rural community of Tatamagouche, NS (156). However, the finding from previous NS research that judgment of mothers facing food insecurity was more pronounced in rural communities, compared with larger towns or cities, due to a lack of privacy (150), is in alignment with these perceptions of small, rural communities being less supportive. In addition, the finding that there is a perception of an unsupportive breastfeeding culture in this area of rural NS is supported by research documenting consistently lower exclusive breastfeeding rates (31), and that different supports may be needed in rural settings (144, 145). While research examining the sociocultural and/or practical reasons behind these differences is currently lacking, this study does provide some insight into the underlying factors (i.e., lack of access to peer and HP

support, lack of acceptance of public breastfeeding) that may be contributing to these discrepancies.

Overall, navigating the culture of infant feeding in rural NS, and particularly within the health care system in NS, required mothers to simultaneously use a variety of different health literacy skills. Although most mothers felt that HP support was important and helpful, in most cases, family and peer support were often considered more important, a finding which has been well documented in the literature (56, 74, 144, 165). In contrast, due to the strong focus of the health system in NS on the promotion of breastfeeding, the finding that mothers who choose not to breastfeed, or stop breastfeeding early, may be left with a lack of support and information to make key decisions related to formula feeding may be particularly concerning for mothers facing food insecurity. Consistent with Frank's research (92), these findings suggest that mothers facing food insecurity may experience this uncertainty around formula feeding coupled with anxiety around financial access to breastmilk substitutes.

Taken together, these findings suggest that all three domains of CHL, as defined by Chinn et al. (120), are important in empowering mothers in their infant feeding decisions and may be particularly important when HP support is lacking, another finding from this research. Similar to Gillis and colleagues' research in NS (14) as well as an Australian study (12), the current study suggests that CHL skills may be important for helping a mother to develop realistic expectations of the breastfeeding experience, persevere through challenges, and ultimately make the decision that is best for her and her child. In addition, findings suggest that high breastfeeding self-efficacy may also contribute to mothers' ability to engage in self-advocacy, another domain of CHL. This self-efficacy may enable mothers to act as role models and foster positive social norms, lending support to several studies calling for self-efficacy-enhancing strategies to breastfeeding education (58, 63, 161). These self-efficacy-based strategies are similar to capacity building approaches that are reflected in a CHL perspective (117); however, Gillis and Gray suggest a more critical aspect to

breastfeeding education is necessary when working with clients who are faced with socio-economic and cultural barriers, such as mothers experiencing food insecurity, to challenge assumptions that all mothers are able to exercise choice in their infant feeding and other health-related decisions when provided with appropriate information (117).

Moreover, it appears that functional and interactive literacy were also essential to several of mothers' work practices in their interactions both with HPs and other mothers around infant feeding, namely seeking out breastfeeding support, appraising expert and experiential knowledge, negotiating breastfeeding in public, and advocating for breastfeeding. All of these work practices seemed to involve some level of functional, or basic literacy skills to understand information received on breastfeeding, as well as interactive literacy skills, enabling effective communication between mothers and HPs. Some of these work practices also revealed critical ways in which mothers interact with both other mothers and HPs around infant feeding, particularly the critical appraisal used in interpreting information received from others relative to their own beliefs and the self-advocacy used in justifying their infant feeding decisions that went against sociocultural norms (both for breastfeeding and formula feeding), showing the use of CHL.

However, these findings also suggest that while functional and interactive literacy likely contributed to mothers' ability to seek out HP support and effectively interact with HPs, critical knowledge about infant feeding may be developed through more informal sources of knowledge, such as personal experience and exposure to breastfeeding role models. Although there is a debate in the literature around the extent to which functional and interactive health literacy are prerequisites for more critical skills (117), these findings may suggest that CHL skills can be developed through alternative sources of information (i.e., through the act of breastfeeding and observing others breastfeeding), which require relatively few basic literacy skills. Given findings showing that experiential knowledge of mothers themselves may be important for questioning "expert" advice and allowing mothers to listen to their own ways of knowing around infant feeding,

there is potential for HPs to play an important role in enabling the development of the critical aspect of CHL (14, 117).

5.2 Public health nurses' experiences in supporting breastfeeding among women experiencing food insecurity

Overall, this study provided insight into the roles of PHNs in North-eastern NS in promoting and supporting breastfeeding at individual, health system and community levels. With the exception of one participant, who worked in breastfeeding policy and community-level promotion but had previously spent several years providing breastfeeding support in a maternity hospital setting, PHNs primarily worked with mothers on a one-on-one basis through providing prenatal support or post-partum home visiting services. Their experience with breastfeeding promotion ranged from one to twenty years, with four of the five participants having previous personal breastfeeding experience. This section will summarize their main roles in breastfeeding support, compared and contrasted to Phase 2 findings, as well as how they perceived food insecurity to affect the breastfeeding experiences of mothers and how they dealt with this in their practice.

The roles that PHNs most commonly mentioned with respect to breastfeeding support were at an individual level, i.e., providing information, reassurance and encouragement. The roles of breastfeeding support that PHNs articulated were closely aligned with participating mothers' perceptions of HP roles, showing that PHNs' perceptions of their own roles may be well-aligned with the support that mothers *expect* to receive from HPs; however, there were several gaps between how PHNs fulfilled these roles and mothers' perceptions of *ideal* breastfeeding support. Although information transmission was still perceived as the most important role for HPs, similar to formative research in NS (10, 14), findings from several studies have shown that information alone may not be sufficient in enabling mothers to breastfeed successfully (10, 12, 84). CHL skills could help to enable mothers to critically appraise the conflicting information on infant feeding received from multiple sources (117) particularly in the context of oppressive social forces, such as

"breast is best" and related expert discourse. Furthermore, when PHNs provide mothers with information on breastfeeding only, Gillis and Gray (2012) suggest that this may imply that breastmilk substitutes are ***not*** an informed choice (117). This may reinforce breastfeeding as a directive, as previously described by Knaak (48, 162), which is contrary to my finding of PHNs' intentions to enable mothers to make their own decisions. Although PHNs provided education on formula feeding once mothers had made their decision, the findings of the current study suggest that the pervasive nature of the "breast is best" discourse may result in mothers feeling judged by HPs in the absence of any clear criticisms or judgments around the use of breastmilk substitutes. As a result, PHNs' focus on information provision may serve to reinforce ruling relations of "breast is best" discourse and neglect to build the capacity of mothers to engage in critical ways of thinking about infant feeding, similar to Gillis and colleagues' findings from previous research with HPs in NS (14).

The finding that PHNs participating in this study were personally aware of the social determinants of health, and acknowledged these factors as having significant effects on mothers' infant feeding choices, was consistent with recommendations by the Canadian Nursing Association to include an analysis of factors contributing to health inequities in nursing education (166). Moreover, while there is a lack of research on HPs' understanding of food insecurity, PHNs in this study demonstrated an in-depth understanding of both the challenging life circumstances of mothers facing food insecurity, as evidenced by their anecdotes around working with vulnerable mothers and how this affects their ability to breastfeed, as well as the complexity of the root causes of food insecurity. However, there was little mention or acknowledgement of these social, cultural and political forces in PHNs' interactions with mothers around breastfeeding. There was also a clear line of fault between their understanding of food insecurity as a complex social problem requiring policy interventions and how they described their day-to-day work practices involved in addressing food insecurity with the mothers they encountered.

The finding that PHNs referred mothers to food banks or other community supports aimed at addressing issues in the short-term, rather than addressing underlying issue such as income insecurity, is consistent with unpublished case study research in NS, which found that family resource centres are often called upon by public health practitioners to address mothers' immediate food needs among mothers living in poverty (138). Although there is a lack of other research on where PHNs and other HPs in Canada are referring clients for emergency food, the Canadian Medical Association has called for HPs providing direct service to clients to refer individuals experiencing food insecurity to community programs, such as food banks and soup kitchens, as necessary (167), supporting findings from this research that this may be a common practice among primary care providers. While family resource centre programs have been compared to charitable food assistance as fostering dependence and neglecting to address root causes of food insecurity (154, 168), Shaw's case study shows the "power of food" in drawing people to these programs may help to engage those with first-hand experience of poverty in partnerships and activities aimed at addressing the inequities they experience in their everyday lives (138). An understanding of external social and political factors is an important first step in fostering engagement in collective action, an important domain of CHL (120), as evidenced by NS women's participation in participatory food costing, who described a greater ability to assess and understand the root causes of food insecurity and appropriate policy solutions, using a holistic perspective (86, 112). Although evidence of capacity building was not a direct finding of this research, participating mothers did describe the important role of family resource centres in providing food support and linking them to other mothers in the community, showing how they were important source of social support. Some participating mothers also developed a critical understanding of cultural factors contributing to the sexualization of breasts, which enabled them to feel more comfortable challenging others who were unaccepting of public breastfeeding. In this way, family resource centres may act as an intermediary between vulnerable families and the

health system, providing them with access to immediate support while also working towards building a critical understanding of the social and political circumstances shaping their everyday struggles (138). Overall, this research suggests that family resource centres fill an important gap in providing mothers facing food insecurity with short-term food assistance and programming that may support capacity building around breastfeeding, demonstrating a clear disconnection between the public health mandate to support vulnerable populations (169), the work practices of PHNs, and mothers' experiencing food insecurity needs.

The finding that the majority of PHNs did not see a role for themselves in directly advocating for their clients living in poverty who are experiencing food insecurity, is concerning. While this may have reflected, in part, that this was not part of their job responsibilities, these findings along with by Gillis and colleagues (14) show that helping mothers and PHNs to further understand structural barriers to breastfeeding is an important strategy to move beyond information transmission and support mothers to claim a sense of self-efficacy in their infant feeding decisions. Indeed, the Canadian Nursing Association Code of Ethics states that "nurses should endeavour as much as possible, individually and collectively, to advocate for and work toward eliminating social inequities" (pg. 3) (166); this is consistent with calls to action for other HPs, such as dietitians (83), as well as health researchers (170) to advocate for improved health policy. The finding that PHNs in this study did not, or were not able, to advocate for mothers facing food insecurity raises questions about constraints imposed by management, such as strict job responsibilities or the overburdening of these PHNs in fulfilling roles in both individual and collective breastfeeding support, a common concern for primary health practitioners (171). While there was no direct evidence of management or time constraints affecting the ability of PHN in this study to advocate, limited time and resources, as well as limitations in their scope of practice (i.e., where and how often they could see mothers requiring support) were described as barriers to providing better breastfeeding support.

While there was recognition of the pressure to breastfeed and the resulting judgment mothers face irrespective of their choice, and how this can be compounded by the experience of food insecurity (172), unintentional assumptions around these mothers' motivations for breastfeeding and/or formula feeding surfaced in the PHNs' comments, including cost savings associated with breastfeeding as a primary motivator for these mothers. However, an American study among participants in The Supplemental Nutrition Program for Women, Infants and Children (WIC) found that cost might not be a sufficient motivator for low-income mothers who intend to use breastmilk substitutes (160), suggesting that emphasizing cost savings may be an ineffective promotion strategy. Consistent with other recent research in NS (92), this demonstrates an important disconnect between PHNs' perceptions of the cost savings associated with breastfeeding as a motivator for breastfeeding, and the reality for mothers experiencing food insecurity in this research. Although yet to be studied among HPs, this finding also shows that while PHNs are trained to think critically and in a non-judgmental manner (82), deeply embedded cultural beliefs and stereotypes about people facing food insecurity (150) may infiltrate their ways of thinking, leading to these unintentional assumptions.

5.3 Explicating lines of fault between the everyday experience of food insecurity and HP breastfeeding support

This section explicates four key lines of fault emerging from Phases 1, 2, and 3 in the context of relevant literature. These include, disempowering "breast is best" discourse, the value of "expert" versus experiential knowledge, the relative financial and personal costs of breastfeeding and formula feeding, and individual versus collective health as a tension for public health practice.

5.3.1 Disempowering "breast is best" discourse

Building on the findings from the experience of mothers facing food insecurity, this section critically examines the overarching influence of "breast is best" discourse on the NS infant feeding culture, particularly within the public health system, including a discussion of the inter-related

ideologies, such as neoliberalism, ideologies of motherhood, and the medicalization of birth and breastfeeding, informing these approaches to breastfeeding promotion. While the finding that the "breast is best" discourse can have a positive influence on mothers' infant feeding intentions by reinforcing breastfeeding as a social norm and educating mothers on the nutritional benefits of breastfeeding (37) is not surprising, findings also suggest that there is a disconnect between knowledge and awareness of "breast is best" and the realities of putting this knowledge into practice in the everyday experience among mothers living with food insecurity. In particular, mothers in the present study recognized the benefits of breastfeeding but were sometimes unable to breastfeed due to numerous social and financial constraints (explicated below in section 5.3.3) that may make breastfeeding an unviable option for many mothers (78, 84), particularly those with experience of food insecurity (97, 100, 173). Therefore, findings point to a need for different approaches to promotion of breastfeeding among this population. Whereas findings suggest that these barriers were well-recognized by PHNs participating in this study as major influencers of infant feeding decisions, practice guidelines from the Reproductive Care Program of NS, as well as some PHN participants in this study, continue to frame infant feeding decisions as an "informed choice" (151) which responsibilizes the mother and results in the depoliticization of the issue. The implications of this finding include perpetuation of neoliberal discourse that shames the mother when breastfeeding is not successful (37, 48, 113), as experienced by some mothers in this study, which has been shown to result in a sense of failure as a mother (32, 44).

The finding that participating mothers and PHNs felt a need for education around the complications and challenges of breastfeeding to prepare them for the true reality of the experience is supported by previous research by Leurer and Misskey in Canada (157) and Fox et al. in the UK (84). While discourse around breastfeeding being natural and normal may potentially be empowering for some mothers by connecting breastfeeding to their maternal identity (69), these findings show that these discourses may perpetuate unrealistic expectations around the

breastfeeding experience, framing it as "easy", similar to research from Western Canada where results suggest that information on common challenges was a key gap in HP education strategies (157). These normative discourses may enhance feelings of failure when mothers are unsuccessful, as shown in Margaret's case in this study. Important to note are the recent efforts of *The First 6 Weeks* campaign website to provide mothers with stories of firsthand experience of the common challenges experienced in early breastfeeding stages; however, the findings of this study indicate that it may not be reaching all mothers. A possible criticism of educating mothers on the challenges of breastfeeding is that it may discourage some mothers from initiating; however, ultimately these findings suggest a need for mothers to be fully informed to address breastfeeding challenges as they arise, as recommended by Leurer and Misskey (157).

In these findings the consequences associated with "breast is best" discourse also included judgment towards other mothers who chose not to breastfeed, thereby isolating them from their peer community. Unfortunately, Kukla describes how perpetuation of "breast is best" discourse among mothers themselves may serve to further vilify formula feeders (11), which as the findings of the current study show may result in feelings of stress, guilt and shame among mothers with experience of food insecurity. Each of these experiences while seemly related have different emotional consequences for the mother; while feelings of guilt are likely connected to the action of switching to formula feeding as a "bad behaviour" and may be more easily overcome (174), a sense of shame resulting from a "flawed sense of self" (175) could contribute to a sense of "failed mothering" (92) associated with formula feeding. This mirrors the experience of mothers facing food insecurity in NS who described a "damaged sense of self-worth" in their inability to provide optimal food for their families in a study by Williams and colleagues (150). Similar to previous research by Murphy (44), guilt and self-blame were common emotional consequences associated with having to switch to formula in this research. In addition, external shame, experienced through interactions with other mothers around sociocultural norms (174), was also evident in Jane's story

of other mothers expressing judgments around saving money as her motivation for breastfeeding versus more noble motivations such as infant health, showing that breastfeeding mothers can also be susceptible to shame. Similarly, these feelings are likely heightened by the experience of food insecurity, where socially embedded judgments constrain mothers in many aspects of their everyday lives (97, 150). While some mothers may be able to use various coping strategies to reduce impacts and maintain a positive self-image (68), the pervasiveness of these judgments may lead mothers to internalize them with negative consequences for their sense-of-self (109). Participating mothers in this research did not appear to internalize this shame, as they were able to justify their decision to formula feed within their life circumstances and the needs of family, showing how a critical understanding of sociocultural expectations relative to personal expectations can help to build resilience to shame (175); however, it is not clear if this is true for all mothers experiencing food insecurity or if this is a result of the participating mothers involvement with family resource centres, which may help to build this capacity to advocate for themselves in their health-related decisions (138).

Therefore, although the "breast is best" and related discourses may have been intended to empower mothers to exercise choice in their infant feeding decisions, these findings and other research (32, 44, 48, 49, 85, 162) show how they now serve as a type of ruling relation in the health system, and more broadly in the community, contributing to the stigmatization of non-breast feeders. The finding that participating PHNs used these discourses in their interactions with mothers suggests that these discourses may also represent a type of medical, institutionalized language, perpetuating power imbalances in the client-professional relationship (81). Extensive promotion of breastfeeding in an effort to normalize and create supportive environments for breastfeeding appears to have had the opposite effect for formula feeding mothers. Despite PHNs' sensitivity to these issues, the pervasive nature of these discourses apparent in these findings may mean that mothers will be predisposed to feel judged regardless of any specific negative

interactions with PHNs. This is consistent with Dillaway and Douma's findings showing that unsupportive interactions with HPs around breastfeeding were often not overtly unsupportive, but left mothers feeling discouraged regardless (66). Overall, the present study demonstrates that formula feeding mothers may feel unsupported by HPs, as evidenced in the disconnection between participating mothers' experiences and PHNs best intentions to provide equal support to all mothers.

The finding that mothers who switched to breastmilk substitutes needed to justify their decision to HPs to avoid judgment demonstrates how mothers may feel constrained in their infant feeding decisions, supporting Knaak's discourse analysis of breastfeeding promotion in Canada and the US, which describes a further shift in public health promotion that frames breastfeeding as a directive rather than a choice (48); this may lead some mothers to feel forced to breastfeed in their desire to be a "good mother". This fear may be heightened for mothers experiencing food insecurity, who experience negative assumptions and stigma in many aspects of their everyday experience and, as a result, are often left with a sense of powerlessness (97, 150). Despite recent efforts in NS, through *The First 6 Weeks* campaign to be more realistic around the challenges of breastfeeding (164), findings suggest that public health promotion of breastfeeding may continue to compromise maternal autonomy, crossing the line between persuasion and coercion (11, 68) and neglecting to acknowledge mothers' unique needs and life contexts. Although the PHNs interviewed were well aware of these unintentional consequences, they did not feel that HPs were directly responsible for mothers' guilt and attributed this to the pro-breastfeeding culture. The finding that some PHNs described a professional responsibility to communicate the risks associated with breastmilk substitutes suggests that PHNs may have adopted "contemporary risk discourse", which emphasize the neoliberal responsibilization of formula feeding mothers for exposing their infants to health risks (44). However, in contrast to this perspective, findings also suggest that PHNs viewed communicating these risks as providing mothers with important knowledge, describing how

without such information mothers would be unable to make an "informed choice". This information, delivered in a sensitive and non-judgmental manner, was viewed by PHNs as an important part of empowering mothers, particularly those experiencing food insecurity, to make decisions that would positively benefit the health of their family and help to prevent the negative health outcomes associated with the cycle of food insecurity (101, 176); however, this finding also shows how neoliberal philosophies of health continue to be a pervasive part of strategies to promote breastfeeding.

In addition to unsupportive "breast is best" and related discourses, these findings suggest that ideologies around infant care, including the medicalization of birth and breastfeeding, as well as monitoring infant growth, may serve to unintentionally undermine mothers' autonomy in the early stages of motherhood, particularly in the first six weeks after birth where mothers may experience high stress levels and when common breastfeeding challenges often arise (164). The finding that some mothers experienced a lack of control in their birth process and the negative impact on their ability to breastfeed is related to the medicalization of infant feeding that has been well-documented in the literature (29, 177) and is also reflected in the prescriptive nature of breastfeeding recommendations (29). The practice of monitoring infant growth through home visiting programs[6], mentioned by several participating mothers, and confirmed as a common work practice of PHNs, was viewed by some mothers as a supportive, comforting practice reassuring them that their infants are adequately nourished; these mothers appreciated having support focused on the infant, rather than herself and her infant feeding choices. In contrast, other mothers viewed it as a type of surveillance reflecting a lack of trust in the mother. Interestingly, this finding calls into question a recommendation based on an evaluation of breastfeeding support in Tatamagouche, NS, to reframe support practices to focus on meeting the needs of the mother (156).

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[6] In general, a guideline for the frequency of weight monitoring used by PHNs in NS is three to seven days of age, ten to fourteen days of age, and two months of age, with more frequent monitoring if the infant is slow to gain weight (151).

While a mother-centred approach also includes meeting the needs of the baby, and is emphasized in the language used in *The First Six Weeks* campaign (164), approaching infant feeding from the perspective of the mothers' needs deviates from traditional health care system approaches (156), rooted in the ideologies of motherhood that emphasize maximizing physical and psychological outcomes for the child regardless of the personal costs (44, 48). Likewise, children's feeding programs, a common solution to children's food insecurity, have been criticized for disempowering the family by feeding the children rather than supporting the family to feed their children themselves (154). Although both of these practices are intended to protect infants and children from food insecurity and the associated consequences, McIntyre and colleagues suggest that these paternalistic approaches may increase families' dependence on these services, rather than providing them with the resources and skills to nourish their children independently (178); with respect to these findings while some NS public health strategies may be shifting towards mother-centred approaches (e.g. *The First Six Weeks*), the nature of other HP support strategies may promote reliance of vulnerable mothers on these services in solving their breastfeeding challenges.

The finding that the BFI was perceived by PHNs to be a major influencer of their work practices, including key messages they communicated to moms around infant feeding, is similar to previous findings with midwives (179). While findings suggest generally positive views on the public health system mandate to work towards BFI implementation due to its focus on improved health outcomes for all moms and babies, BFI-related policies also prevented PHNs from discussing formula in-depth, except on a one-on-one basis following the mother's final decision to formula feed. This is similar to Battersby's finding of a tension between following BFI policies and providing information to formula feeding mothers among midwives in the UK (179). Although PHNs perceived that the education and support they provided for formula feeding moms was adequate, the finding that some participating mothers felt uninformed on formula feeding options also reflects a need for prenatal education on formula to support mothers to be educated on

breastfeeding alternatives. This finding reflects a clear discrepancy between PHNs practices, influencing BFI policies, and mothers' needs and is similar to concerns expressed by Leurer and Misskey whose cross-sectional study showed that mothers from Western Canada feel uninformed on infant feeding alternatives(157). However, given the institutional policies such as the BFI and related practice guidelines (see Healthy babies, healthy families: Postpartum and postnatal guidelines) within public health, as well as the pro-breastfeeding culture within the health system (48, 162, 163), it is possible that this shift to more neutral support may be met with much resistance. Moreover, such a shift in policy and practice opens up the possibility of further manipulation of mothers by formula companies, who already aim to influence mothers by marketing infant formula to hospitals (180). As described by mothers in this study, this communicates mixed messages to mothers who may interpret this as HP endorsement of formula (180). For example, one cross-sectional study found that distribution of formula discharge packs to mothers from birthing hospitals was associated with a significantly shorter (<10 weeks) duration of exclusive breastfeeding (180). Given Van Esterik's research that shows boycotts of formula from mother activist groups and implementation of the WHO Code have done little to disrupt the industry's marketing, which continues to expand (40) particularly through direct marketing to mothers (29), shifts in infant feeding messages at the health system level must be considered carefully to prevent the industry from further capitalizing on mothers' vulnerability during early post-partum stages. Furthermore, the findings from this research raise concerns that free formula samples could be particularly influential on mothers who are vulnerable to food insecurity. In all, these findings along with other recent research in NS (92) illustrate a key tension between the promotion of breastfeeding and making formula more readily available for mothers and babies in need. Furthermore, prevision of emergency formula to families in need may be criticized for creating dependency on these services (92), similar to other findings which show food bank/food program users may be susceptible to unintended negative consequences such as stigma and social

exclusion (154) and lack of control over food choices (168). Frank's research also showed that formula feeding mothers facing food insecurity are often reliant on charity sources for free formula due to it's unaffordability, resulting in an inability to choose preferred products, regular switching of formula types and potential exposure to expired formula (92). While this was not part of the everyday experiences of participating mothers in this study, potentially due to their ability to rely on family or partners for financial support for formula, similar findings around the considerable stress of accessing enough formula were evident in participating, formula feeding mothers' stories.

In summary, the findings of this research suggest that "breast is best" and related discourses may contribute to an unsupportive infant feeding culture, both in health systems and more broadly in communities, and are rooted in over-arching ideologies of motherhood and neoliberalism. Ultimately these findings suggest that HP support strategies need to take a more balanced approach by continuing to promote breastfeeding as natural and normal, while avoiding unintentionally contributing to shame experienced by mothers who choose not, or are unable, to breastfeed and may already be vulnerable to shame due to the experience of food insecurity (172). In fact, concerns around shaming mothers may lead to avoidance of promotion of breastfeeding entirely (66), which may lead to missed opportunities for HPs to support mothers in positive ways. PHNs in this study were well aware of these consequences and described shifting away from "breast is best" messages in their practice to promote breastfeeding as "normal" rather than "best", and encouraging mothers to "give it try", similar to practices revealed in past research in NS (10). While there are still potential negative consequences of these normative discourses, namely creating unrealistic expectations and feelings of failure when breastfeeding is unsuccessful (84, 157), these could likely be addressed by building on the approaches used in *The First 6 Weeks* campaign (164) and educating mothers prenatally on the realities of the breastfeeding experience, a key area for improvement in HP support identified by both moms and PHNs.

Moreover, these findings demonstrate the importance of individualized breastfeeding support and tailored messages around infant feeding to meet the needs of the mother, countering the medicalized nature of some aspects of breastfeeding support. This is supported by a 2001 review of the literature on factors that contribute to increased breastfeeding among Community Action Program for Children (CAPC)/CPNP participants, which described tailored, individualized support as an ideal strategy for mothers who are vulnerable due to limited financial resources (181). The finding that some PHNs use a process of determining the mother's needs, in terms of understanding their infant feeding goals, their existing knowledge about infant feeding, and what they would like to learn, is consistent with Aston and colleagues' findings showing similar practices in post-partum visits by PHNs in NS (82). Further, shared decision-making may help may help to equalize power dynamics between client and professional, which is central in enabling two-way interactive communication (81-83) and was advocated by PHNs in this study and as well as Aston and colleagues as an essential part of providing client-centred care (82).

Together these findings suggest the importance of building interactive health literacy skills among mothers and PHNs to understand life circumstances of mothers and the impact on their infant feeding decisions (117), which may help to avoid making unintentional assumptions about mothers facing food insecurity. Although findings show that some PHNs already incorporated this in their practice, in contrast to findings by Heinig et al. who found HPs had a poor understanding of mothers' needs (57), this would likely involve more thorough assessments of mothers' life circumstances in order to provide the most relevant information in alignment with mothers' infant feeding goals. Further, using a strength-based approach, as show in Aston and colleagues findings, focusing on the assets of a particular family and deemphasizing traditional expert approaches, may contribute to improved confidence and self-efficacy (82), an important factor in enabling mothers to persevere through breastfeeding challenges (58, 63, 161).

5.3.2 The value of "expert" versus experiential knowledge

Feminist sociology literature on breastfeeding often describes a medicalization of infant feeding (34, 36, 43, 177) related to perceptions of HPs as "experts", which gives more weight to HPs' advice in mothers' infant feeding decisions compared with lay knowledge (34). The findings in this research also highlight that advice from HPs with perceived power or expertise carried significant weight among mothers. Moreover, PHNs perceived that advice from other HPs, such as family physicians, carried more weight with mothers given physicians' traditional position of power (81), even though they were not perceived by mothers or PHNs in this research as particularly knowledgeable about breastfeeding. Lactation consultants were also more commonly described as "breastfeeding experts", compared with physicians or nurses, by both participating mothers and PHNs, which is consistent with research by Dillaway and Douma showing that other HPs felt breastfeeding support was the primary responsibility of lactation consultants (66). However, findings from participating mothers in this research also suggest that there is a lack of access to lactation consultants, particularly for those in the most rural areas (i.e., Guysborough County), which shows that women in rural North-eastern NS may not have access to their specialized services. Given that lactation consultants are often only accessible through clinic visits in regional service centres as a result of the centralization of the health system (182), these findings raise questions about the impact of confining breastfeeding support to medical settings and whether this neglects to address the needs of vulnerable mothers in these areas.

These findings suggest that another limitation of the current breastfeeding support system is the perceived power imbalance between PHNs and these moms, a perception that results in positioning HPs as authority figures or "experts" (81). Findings show how this may create barriers to expressing empathy in client-professional interactions with implications for negatively impacting optimization of breastfeeding rates among mothers experiencing food insecurity. Although the PHNs participating in this study demonstrated considerable empathy for the

experience of new moms, validated by the similar personal and observational stories they shared around common breastfeeding challenges, the finding that PHNs withheld personal information about their own infant feeding experiences suggests that this may be contributing to the privileging of expert versus lay knowledge about breastfeeding, posing barriers to supportive interactions between mothers and PHNs. Although their personal and professional experiences with breastfeeding informed what PHNs talked to mothers about, the finding that PHNs felt it was more appropriate for peers to engage in self-disclosure around their personal breastfeeding experiences, rather than HPs, suggests a desire to maintain a professional relationship with their clients. In contrast, Aston and colleagues (2015) found that PHNs in the Halifax area had a binary relationship with mothers (i.e., professional and friendship-based), which enabled them to develop trusting and empathetic relationships with mothers (82). Anderson suggests that dietitians should also strive to achieve a balance between working as partner versus expert, and describes the potential benefits with partner-type relationships that may enable clients to take control over their own health (83). Conversely, the finding that PHNs observed reluctance from mothers to fully disclose their challenges and feelings associated with their breastfeeding experience, for fear of being judged, suggests an important barrier to two-way knowledge sharing between mothers and PHNs and in turn effective PHN support.

For these reasons, PHNs described a need to critically assess the language used by HPs, including themselves, to promote breastfeeding, remaining aware of power relationships undercutting all interactions between client and professional. Although not specifically examined in this research, these relationships may be even more pronounced for mothers experiencing food insecurity, who experience marginalization in many aspects of their everyday experience (100, 150). Mothers' perception of HPs' competing responsibilities and time constraints preventing them from providing sufficient breastfeeding support may be reflected in the lack of access to primary care and long wait times that is a result of overburdened primary care practitioners in Canada

(171). A reluctance to seek support indicates the value of strategies to enhance interactive health literacy, the more advanced literacy skills that can be used to actively participate in different health settings (17), in allowing mothers to actively seek support when these challenges arise. In contrast, PHNs described a strong intent to support mothers in anyway possible and seemed to prioritize their one-on-one support with mothers over other job responsibilities, as well as personal needs.

Despite the privileging of "expert" knowledge from HPs, participating mothers seemed to also place a high value on experiential knowledge and peer support. This was described as equally important, if not more important, than HP support by some mothers, particularly those who had previous experience with breastfeeding, and is consistent with findings from research with peer breastfeeding supporters in Tatamagouche, NS that highlighted the importance of experiential knowledge in valuing the insights of the mother herself (156). Similar to the perspectives of PHNs in this study that peer support was crucial to meeting mothers' needs, a systematic review on peer breastfeeding support showed it is particularly important in the postnatal period to help mothers integrate breastfeeding into their everyday lives (165). PHNs perceived this to be particularly important in rural communities where daily access to professional support was not always feasible. Peer support programs have been shown to improve the continuity of support and make up for limited healthcare resources to provide post-partum support (165). Furthermore, the finding that HPs who had breastfed their own children were perceived by participating mothers as more effective in supporting the breastfeeding decisions of the mothers, along with similar findings by Dillaway and Douma (66) and Battersby (179), shows the value mothers place on experiential perspectives over scientific advice. Taken together these findings suggest a shift in the relative value of different types of knowledge, where direct, experiential knowledge has become a form of highly credible "expert" knowledge, de-legitimizing the institutionalized, medical knowledge wielded by physicians (81) and other HPs, including the PHNs in this research. Reclaiming this experiential knowledge as a valued, credible source of information may show that mothers can be

liberated from the disempowering social forces, such as the medicalization of birth and infant feeding (34, 36), working towards liberating mothers from an oppressive infant feeding culture.

Moreover, the finding that mothers with previous, successful breastfeeding experience became role models for other mothers, or expressed a desire to share their experiential knowledge with other mothers in future, shows the development of breastfeeding self-efficacy and an interest in contributing to supportive environments for other new moms. Further investment in peer support services has potential to fill gaps in HP support demonstrated in these findings, such as a limited capacity of PHNs to provide ongoing reassurance and encouragement, and support mothers in the transition from the hospital to the home environment. Although the present study did not directly describe involvement in peer support as a source of empowerment, a systematic review of peer breastfeeding support programs (165) suggests that another benefit of peer support may include providing an empowering experience for the mothers acting as peer supporters. With respect to the finding that mothers experiencing food insecurity struggle with the decision to choose formula, peer support groups may provide a key opportunity to "speak shame", a concept introduced by Brown which involves women coming together to show empathy for their shared experiences and developing ways to become more resilient through collaboration (175). The finding that formula feeding mothers experiencing food insecurity did not feel supported by either HPs or other mothers in their communities, suggests a lack of this type of support in the rural communities studied. In contrast, "lactivists" – mothers who purposefully challenge cultural norms by exposing their bodies through nursing in public spaces (34) - may help to re-introduce breastfeeding into the public sphere fostering greater acceptance in these communities, which could help to counteract negative perceptions of public breastfeeding in these rural areas. The potential of the capacity-building and empowering role of peer breastfeeding support parallel the experience of women who took part in participatory food costing in NS. Williams and colleagues' findings demonstrate how food costing participants gained a greater understanding of their own

personal experiences with food insecurity, as well as the impact of broader socio-economic forces on their daily lives, resulting in a sense that they were not in this alone; in turn these women were able to overcome feelings of shame and self-blame (86), showing how participation in peer support and collective action can provide some relief from these negative emotional consequences. In addition, some food costing participants were able to share this broader perspective on food insecurity with other women, showing how this empowerment at an individual level can help to support others dealing food insecurity (86). For this reason, peer breastfeeding (and infant feeding) support programs that encourage the sharing of experiences and the development of empathy, empowerment, and agency among women may lead to improved community support networks, a stronger sense of outward support for all moms, and a critical understanding of factors shaping their infant feeding experiences.

However, adoption of the "breast is best" discourse by the mothers in this study, as described in section 5.1, raises concerns about the influence of judgment among mothers and HPs within peer support relationships, which may have negative consequences for the effectiveness of peer support. For example, perceived assumptions made by HPs and other mothers around younger mothers' lack of commitment to breastfeeding may in fact discourage them from breastfeeding in the first place, a concern also raised by Hausman (34). Therefore, education for all mothers, particularly those involved in peer support, on both the positive and negative experiences associated with breastfeeding is necessary to counter these perceptions and avoid perpetuating negative stereotypes. While a systematic review of the literature showed that training for peer supporters was one of the key factors in successful peer support models as identified by mothers (165), and teamwork between peer supporters and HPs has also been shown to be effective in rural NS (156), it is not clear how, or whether, the needs of mothers who are vulnerable to food insecurity and other forms of material deprivation have been addressed. However, a 2001 review of factors contributing to breastfeeding success among CAPC/CPNP programs suggests that

effective peer support may be particularly beneficial in targeting vulnerable groups; for example, peer support was well-received by younger mothers, a group where bridging the gap between "professional" and "client" may be particularly difficult (181). Overall, as recommended by PHNs participating in this study, these findings suggest that a combination of peer and professional support may be most effective, in enabling rural mothers facing food insecurity to successfully breastfeed. Given previous research showing a lack of clarity in HPs' respective breastfeeding support roles in the former Capital District Health Authority (80), education for HPs to understand their role in relation to the role of peers and other HPs may be important to providing comprehensive support services (165). Although PHNs in this study viewed themselves as providers of evidenced-based information, "deprofessionalizing" their knowledge may help them to be more relatable to mothers and encourage a partnership between the PHN and client that builds on the skills and strengths of the mother (82, 83) and is likely also an important strategy to compensate for an under-resourced health care system (29, 165) and better meet mothers' needs .

These findings demonstrate that some mothers develop a type of "expert" experiential knowledge around breastfeeding, particularly through previous experience, including knowledge of common challenges and exposure to other breastfeeding in their social network. This is similar to Dennis's examination of breastfeeding using self-efficacy theory, showing that personal accomplishments and observational learning through interactions with other mothers are key factors contributing to the development of breastfeeding self-efficacy (63). Furthermore, the findings from this research suggest that mothers may develop a type of "breastfeeding literacy" whereby mothers become educated about breastfeeding and the influencing sociocultural and political circumstances, through personal experience, exposure or education, which in turn positively influences their perceptions of breastfeeding as natural and normal while simultaneously raising their awareness of the common challenges. This breastfeeding literacy may positively influence their self-efficacy and improve their chances of success, and could potentially help to

overcome challenges associated with the experience of food insecurity by enabling an understanding of constraining and disempowering factors that affect their "choices". Alternatively, these findings also show that women may be empowered through similar ways of knowing (i.e., previous *negative* breastfeeding experience) to choose breastmilk substitutes as the optimal choice for their family; however, this may not be feasible for all mothers facing food insecurity who lack the financial support to do so. Overall, this empowerment through breastfeeding literacy approaches may be similar to the capacity building and empowerment of women experiencing food insecurity, enabled by a better understanding of the underlying issues, improved ability to critically appraise this information, and prolonged engagement in action to improve food security (112). Likewise, mothers who understand the broad social factors contributing to their infant feeding decisions may be more able to overcome self-blame when breastfeeding is unsuccessful and engage in self-advocacy for a more positive infant feeding culture.

In this way, breastfeeding literacy may be an unrecognized component of food literacy; in particular the concept of breastfeeding literacy relates to Sumner's framework for critical food literacy, which focuses on three types of knowledge including empirical-analytical knowledge, historical-hermeneutic knowledge, and critical-emancipatory knowledge (130). As described above, this framework for food literacy, rooted in Habermas's three domains of knowledge (129), aims to provide a more critical lens in looking at food literacy issues, which have traditionally been framed as individualistic and apolitical (130). Interestingly, Sumner does not describe breastfeeding or infant feeding in relation to this framework for critical food literacy suggesting that it is in fact an unrecognized component; however, these findings demonstrate considerable relevance to the political nature of the breastfeeding issue. **Figure 2** shows breastfeeding literacy as sub-category of food literacy and shows how the broader concepts of critical health and food literacy directly relate to breastfeeding. While it is possible that infant feeding literacy may be a more appropriate label for this concept, this research focused primarily on breastfeeding. Thus,

this conceptual relationship, with breastfeeding literacy being fully embedded in the concept of critical food literacy, is informed by the notion of breastmilk as a crucial first food for infants and breastfeeding as a sustainable food system, in and of itself (94), helping to promote self-reliance and reduce dependence on corporate food systems for mothers and their infants (40). In this way, fostering breastfeeding literacy through the three forms of knowledge described here aligns well with the goals of critical food literacy (i.e., to critically analyze food systems and suggest alternative solutions)(130).

Figure 2. Conceptual relationships between critical health literacy, food literacy and proposed concept of breastfeeding literacy
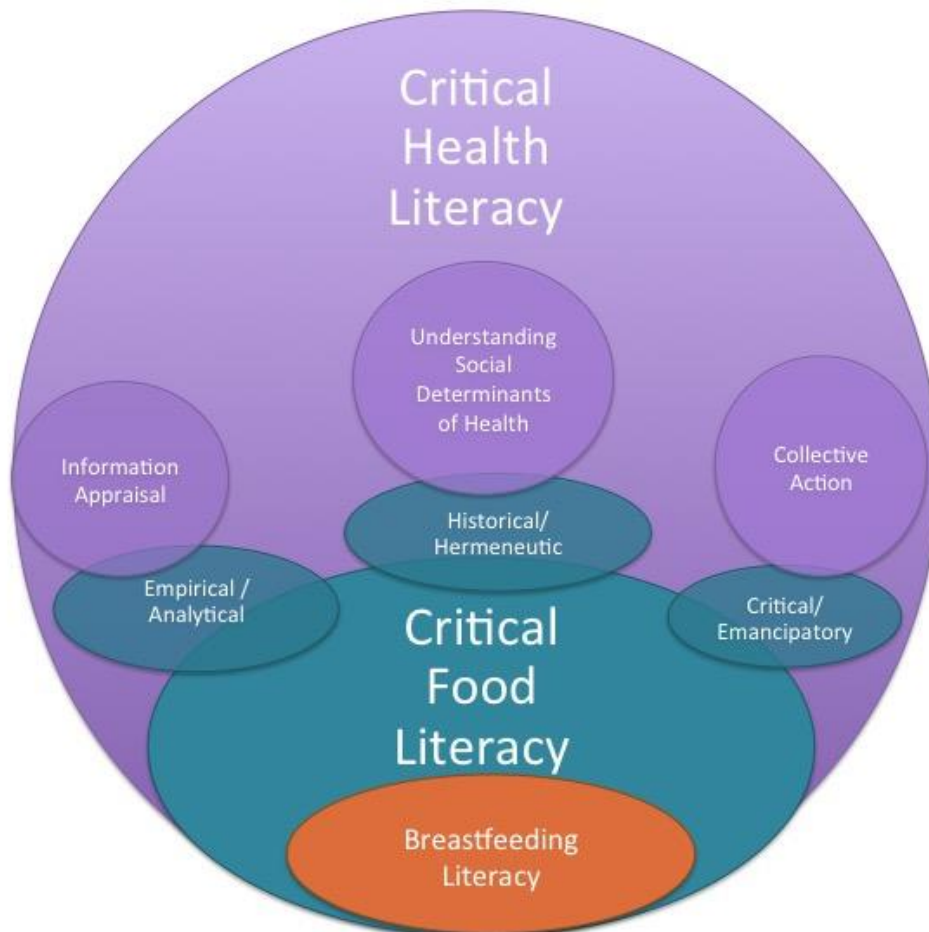
Applied to the issue of infant feeding and drawing upon the findings from this research, empirical-analytical knowledge might involve using functional literacy skills to understand and weigh the relative pros and cons of infant feeding options. While an understanding of the basic information around infant feeding is an important first step in making infant feeding decisions, as described by several PHNs in this research, Sumner argues that this level of knowledge does not serve marginalized groups (130) by neglecting to acknowledge the sociocultural constraints influencing their experiences with breastfeeding. Interestingly, despite the financial and social constraints to breastfeeding experienced by mothers in this research, participating mothers also valued the importance of credible information on infant feeding and described seeking out their own information when necessary to inform their infant feeding decisions.

To build on this more basic level of knowledge, historical-hermeneutic knowledge emphasizes understanding "interpretations of meanings" (183) and how discourses shape the everyday experience. With respect to the findings of this research, historical-hermeneutic knowledge involves interpreting advertisements for infant formula or breastfeeding promotional materials, using critical appraisal skills to recognize "breast is best" discourse, and a recognition of "women's ways of knowing" (130) or "experiential" knowledge around breastfeeding. Lastly, critical-emancipatory knowledge, based in raising critical consciousness through critical reflection and transformative learning (130), has the potential to raise a mother's awareness of the oppressive nature of the infant feeding culture and encourage participation in self-advocacy. This was evident in mothers' accounts of critically appraising HPs' advice (to breastfeed or formula feed), recognizing that it in some cases this advice was not the best choice within their constraining life circumstances. The finding that some mothers experiencing food insecurity were able to reject the sociocultural and public health imposed norms around breastfeeding (10, 32, 44, 85), and engage in self-advocacy by justifying their infant feeding decisions with respect to their life circumstances, shows the potential of this critical-emancipatory knowledge to reduce their susceptibility to shame (175) when breastfeeding is not successful. Although not a direct finding from this research due to the focus on breastfeeding, breastfeeding literacy approaches, as one sub-component of food literacy, may help in the process of developing transferable CHL skills, which may be relevant to other health contexts (117) that mothers encounter in caring for themselves and their children. Conversely mothers with well-developed CHL skills may be better able to understand more complex, critical forms of knowledge around infant feeding, showing the potential bi-directional nature of this relationship between breastfeeding literacy and the process of building CHL.

Although PHNs described a role for themselves in building this breastfeeding literacy among their clients, particularly through education on the realities of the breastfeeding experience

and common challenges, providing information alone to these women is likely insufficient to build their CHL skills (115). Further, by focusing on information transmission, PHN support is limited in providing only empirical-analytical knowledge and neglects to inform mothers on sociocultural constraints of the infant feeding experience and how to challenge these neoliberal perceptions of health (44). On the other hand, a critical breastfeeding literacy approach to infant feeding education may develop mothers' CHL skills, which in turn will help mothers to better understand the medicalization of infant feeding and other highly politicized aspects of breastfeeding in today's society. This approach may also bring to light the ruling relations and oppressive nature of the current infant feeding culture that shapes the everyday experience of mothers. This may be particularly beneficial for mothers experiencing food insecurity, who are constrained in their infant feeding decisions by many additional factors (92), described in further detail below in section 5.3.3.

In this way, examination of these findings using a CHL lens has revealed breastfeeding, or potentially infant feeding literacy, as a plausible new way of knowing and making meaning of mothers' infant feeding experiences. As an important, yet unrecognized, component of critical food literacy (130), the proposed concept of breastfeeding literacy has potential to further unify breastfeeding and food policy agendas, as previously recommended by Frank (92), increasing recognition of creating supportive conditions for all mothers and infants, regardless of their feeding choice, as a key component of community food security. As with food literacy, this subcomponent avoids prioritizing any one form of knowledge, recognizing the limitations of focusing on any one type of knowledge (130). It also takes a more systemic approach to understanding motivations for infant feeding decisions, recognizing the social and political factors influencing mothers, rather than aiming to influence individual behaviours and skills (184). Although this concept has been termed *breastfeeding* literacy here, which implies that this method of infant feeding is paramount, it should be emphasized that it also intends to refer to critical forms of knowledge, developed through experience as a mother and effective support, that enable some women to reject oppressive "breast

as best" discourses and choose breastmilk substitutes as an ideal method of infant feeding for themselves and their children. Overall, a breastfeeding literacy approach provides an alternative perspective for breastfeeding promotion and education and raises questions about the usefulness of reframing breastfeeding as a component of community food security in creating positive infant feeding cultures for all mothers.

5.3.3 Relative financial and personal costs of breastfeeding and formula feeding

Although there are many factors contributing to the reason why fewer moms who have a lower income and less education may succeed with breastfeeding (3), a review of the literature has suggested that mothers with a low-income are likely predisposed to a lack of support due to fewer financial resources (181), which limits their ability to access transportation and childcare (185), as well as material deprivation that leads to compromised health (4). While previous research in NS with mothers experiencing food insecurity has shown that the experience of food insecurity seems to lead mothers to initiate breastfeeding due to worries around the cost of formula (92), inadequate supports may lead to early cessation, as shown in the case of several participants in the current research. Conversely, this study's findings also show that when breastfeeding is viewed as a true necessity for infant feeding for financial reasons, some mothers may be more determined to persevere through challenges, consistent with previous research that shows that mothers are willing to sacrifice their own needs for their children, particularly those who are the youngest (110). PHNs in this study felt that emphasizing the cost savings associated with breastfeeding could be a key motivator for mothers experiencing food insecurity and described using this as a type of targeted promotion strategy. However, this could also reflect an assumption around vulnerable families' motivations for breastfeeding, with cost being their primary motivator, which findings suggest may be stigmatizing. Although almost all participating PHNs described being well aware of the judgments and stigma people facing food insecurity experience in their daily lives, the fact that similar judgments appeared in their comments, albeit unintentional, points to how

judgment based on assumptions are socially embedded as a type of ruling relation in our culture; this is similar to previous research on milk insecurity in NS which found that these assumptions were pervasive in organizations and institutions with implications for population health (150).

In contrast, consistent with past research with women who have low incomes (177), the finding that continued duration of breastfeeding was a barrier to earning an income, could directly impact food security at a household level, leading to further stress about maintaining an adequate food supply for the family. If fewer financial resources are available it is reasonable to assume that the family's risk for food insecurity may increase, as evidenced by the sensitivity of food insecurity to household income levels (88), particularly due to compounding factors associated with this time period (i.e., increased costs of feeding the family, reduced family income). Findings also suggested that mothers facing food insecurity experienced a lack of supportive workplace policies which often makes it impossible for working women, particularly those employed in low-wage jobs (where employers may have less incentive to provide benefits) (177), to breastfeed and thereby removing choice from the equation and de-valuing women's work of feeding their children (52, 177). This parallels historical trends in breastfeeding in the early 20th century, where lower breastfeeding rates among families living in poverty were linked to the mothers working outside the home (29). Despite the immediate cost savings associated with breastfeeding, the long-term costs associated with staying home from work may be greater, as previously show in findings with WIC participants in the US (57); this may be particularly unfeasible for mothers who are vulnerable to food insecurity, leaving them with a sense of powerlessness or lack of control, as described by mothers in this research. Consequently, the current research suggests the need for advocacy for increased financial support during maternity leave, as well as increasing income assistance and minimum wage to be closer to providing a living wage, a well-recognized contributor to improving household food security (150, 173). In addition, although less commonly discussed by these participants (potentially due to partner and family financial support for some of the mothers), support for

working moms to continue breastfeeding is necessary to encourage longer durations of breastfeeding (33, 36, 53, 60). Although successful breastfeeding can be an empowering act, the finding that some participating mothers in this research felt burdened and disempowered when breastfeeding challenges arose is consistent with feminist perspectives that also suggest that shifting the burden of infant feeding to fathers by switching to formula, thereby by increasing reliance on breadwinner (often the man) for cash, may also provide mothers with an increased sense of control (78).

Another barrier that mothers experiencing food insecurity face is the cost of eating a nutritious diet in order to support lactation. Similar to Frank's research where mothers perceived the cost of additional food to be more expensive than formula (92), accessing enough nutritious food to support lactation was perceived as very expensive by mothers in this research. Recent data from 2012 Participatory Food Costing research in NS suggest that the extra food needed for a lactating mother (between the ages 19 to 30) costs $35.33 per month on top of the cost for a basic nutritious diet, which was $222.47 (98). While comparable 2008 research on affordability scenarios show that lone mother and two-parent families on income assistance in NS were able to afford the cost of a basic nutritious diet including recommended supplements for breastfed infants ($502.48 for a lone breastfeeding mother with 2 children and 1 infant; $662.17 for family of five, breastfeeding mother, male partner with 2 children and 1 infant), remaining funds were limited at $304.95 and $292.92, respectively (106). Given a trend towards rising food costs (186) with increases in income not keeping pace (98), income assistance rates may be increasingly inadequate to ensure adequate basic nutrition for breastfeeding. Moreover, the remaining funds would also need to factor in the cost of purchasing equipment and supplies necessary to infant care, such as crib, stroller, car seat, diapers etc. (106) which would certainly affect the household funds available for food. Lastly, these amounts are calculated with figures for best case scenarios in terms of access to subsidized childcare, full access to federal and provincial income supports, and conservative

estimates of fixed expenses such as shelter and power. Overall, NS Participatory Food Costing data

likely underestimate the available funds for food for breastfeeding women on income assistance,

and raise questions about the implications of these findings with respect to breastfeeding mothers'

true financial vulnerability to food insecurity.

The finding that mothers experienced considerable stress around their own food choices,

and the effect of their lack of access to nutritious food on the quality and quantity of their

breastmilk, supports conclusions from Frank's 2015 research that mothers facing food insecurity

may be particularly vulnerable to breastfeeding cessation (92). This may be influenced in part by

marketing strategies of formula companies, promoting formula as meeting the complete nutritional

needs of infants, which Van Esterik suggests has led to over-sensitivity among the public to the

safety of mothers' milk (40). In Frank's research, as well as the current findings, breastfeeding was

perceived as equally unaffordable for families experiencing food insecurity who may feel

discouraged from breastfeeding due to their own concerns around low milk supply or low nutrient

density (92), despite the weak association between maternal diet and breastmilk macronutrient

composition in several studies (187). This finding shows a potential need to clear up this

misconception and provide advice around optimal nutrition for breastfeeding, which was described

as supportive by participating mothers. However, HPs should exercise caution in putting pressure

on the mother to eat according to strict guidelines, particularly as this may reinforce feelings of

exclusion from an inability to follow mainstream healthy eating guidelines, as shown by Williams et

al. in previous research on food insecurity (100). In this way, nutrition guidelines for lactation may

be perceived as unattainable for mothers facing food insecurity, and in turn may act as another type

of ruling relation governing their infant feeding decisions. Interestingly, the finding that PHNs did

not feel lack of, or suboptimal, food was a significant barrier to breastfeeding, and described this as

a common misconception among mothers due to a lack of scientific evidence, shows a potential lack

of understanding of the experience of food insecurity, and related social and psychological

consequences (95, 97), as it relates to breastfeeding. PHNs also emphasized the importance of dispelling this myth in their breastfeeding support interactions with mothers; however, this may not be sufficient to address mothers' concerns about breastmilk supply, which other authors have described as deeply rooted (40, 92).

In contrast to perspectives among the mothers participating in this study, food insecurity itself, or lack of access to sufficient, safe, and nutritious food to meet dietary needs and food preferences (4), was not viewed as a direct barrier to breastfeeding by participating PHNs. Instead, they described the stressful life circumstances that have been shown to be associated with, or underlying, the experience of food insecurity (150), such as financial difficulties, lack of stable housing, and poor social support, as the main influencing factors of complicating the breastfeeding experience. All of these factors were viewed by PHNs as negatively affecting mothers coping skills to enable them to deal with the challenges of the breastfeeding experience, as well as their ability to access support resources. The amplification of stress experienced as a result of stressful life circumstances, in combination with a lack of economic resources for food, is also observed in the current study with respect to purchasing infant formula. Maria and Margaret, who switched from breastfeeding to formula feeding at 5 weeks and 2 months post-partum, respectively, described experiencing significant stress related to the financial implications of this transition. In the absence of adequate supports (i.e., family support to purchase formula) formula feeding may have be difficult or even unfeasible for these mothers.

In contrast, Frank's similar research among mothers experiencing food insecurity in NS has also shown that mothers with few financial resources are more pre-disposed to formula feeding due to lack of access to breastfeeding support resources (92); the current research suggests that this may be particularly difficult for rural-dwelling mothers. The findings suggesting a lack of outward support, related to a lack of education and acceptance of breastfeeding, as well as limited social connectedness among mothers with experience of food insecurity in rural communities,

shows how these mothers may lack access to peer and community support. Overall, there is a paucity of research focusing on breastfeeding support in rural Canada to suggest reasons behind this phenomenon, consistent with findings from a literature review on strategies to increase breastfeeding among low-income rural women in the US (144) and research by the Public Health Agency of Canada showing a lack of access to other health services and increased vulnerability to other health inequities in rural areas (188). The current exploratory study, however, provides some insight into these gaps in rural communities in North-eastern NS, demonstrating the importance of understanding mothers' life circumstances, both with respect to place of residence and vulnerability to food insecurity, in understanding motivations for infant feeding decisions and in turn how to provide appropriate culturally sensitive HP support.

Overall, this research shows that mothers facing food insecurity are constrained on multiple levels in their infant feeding decisions, both with regards to breastfeeding and formula feeding. Although mothers in this study described a variety of other factors influencing their infant feeding decisions, it was clear that the life circumstances associated with food insecurity, as well as the experience of food insecurity itself, were significant influencing factors. When breastfeeding mothers experiencing food insecurity in this study were unable to eat an optimally nutritious diet they described feelings similar to the guilt experienced by mothers who switch to their babies to infant formula prior to the recommended six months of age (11, 37, 84). Similarly, mothers who switched to breastmilk substitutes described feeling a sense of failure as mother, likely related to a general inability to provide optimal food for their families as has been shown in previous research (92). Among mothers experiencing food insecurity, it is possible that feelings expressed as guilt may be connected to feelings of shame (97), which has also been documented in previous research (97, 100, 150). Since mothers experiencing food insecurity may also experience institutional and systemic judgments around their abilities as a mother (95, 150), these mothers may be prone to exacerbated feelings of shame, as evidenced by forthcoming research on the experience of

marginalization and judgment among lone mothers facing food insecurity (172). The isolation and alienation resulting from this experience may exacerbate the emotional consequences and negatively impact their willingness to seek support when needed.

These findings also highlight the importance of food support programs to enable moms to meet their nutritional needs while breastfeeding or alternatively finding acceptable ways to provide emergency infant formula. While similar conclusions have been drawn from two other Canadian studies (55, 92), there is concern that provision of formula will dissuade mothers from breastfeeding (40, 145), and therefore must be considered with caution. Previous research in NS (139) has shown that food programs that are associated with fewer stigmas and allow the mother to exercise choice are important to reduce feelings of shame. PHNs in this study seemed to play a key role in referring moms to these supports in their community, similar to research in Kings County, NS (138), showing how collaboration between HPs and other community groups can help to provide mothers with more holistic care than HP support alone. Alternatively, some mothers in this study suggested capacity building strategies, such as learning to grow their own food, to promote self-reliance for themselves and their family, which has also been shown to promote empowerment (112). In contrast, PHNs in this study provided short-term solutions to food insecurity, limited to food banks and other community food programs, despite their acknowledgement of the systemic inequalities and stigmatization encountered by these families in their everyday experience of working with families. These findings suggest that addressing the root causes of food insecurity was not within their scope of practice as PHNs, despite numerous calls to action to address social determinants of health, including food insecurity, from the Canadian Nursing Association (166, 189) and food security being named within public health protocols in NS (127, 190). The finding that PHNs emphasized the importance of a holistic approach to nursing practice, and the articulation of these principles in key public health guiding documents (127, 190),

shows a disconnection between these values within the public health system and the inability of PHNs to implement them in their practice with mothers to address food insecurity.

These findings suggest that support strategies in rural NS should allow sufficient time and resources for PHNs to develop rapport or relationship with the mother built on trust and mutual respect (82, 113, 159) and tailored to their individual needs (92), as suggested in other local and international studies. Aston et al.'s research among PHNs in Halifax shows that supportive relationships may help to shift the power dynamic between mothers and PHNs, improving mothers' willingness to discuss sensitive topics (82). Although it is unclear if this is sufficient to support mothers experiencing food insecurity with the challenges they face with breastfeeding and infant feeding more generally, Aston and colleagues' findings suggest that taking the time to develop supportive relationships, based on empathy and mutual sharing of breastfeeding experience, may in turn improve HPs' ability to understand mothers' vulnerability to food insecurity and how this may impact their infant feeding decisions. The importance of this rapport was highlighted in the findings of the current study, with PHNs describing building relationships with mothers as an essential part of encouraging mothers to open up around their breastfeeding challenges. While Frank's (92) research emphasizes the importance of tailored supports strategies for moms experiencing food insecurity in reducing unsupportive HP interactions and negative emotional consequences, the findings of the current research suggest that PHNs were restricted in their ability to tailor their support to meet the unique needs of mothers experiencing food insecurity, limiting this to emphasizing the cost savings associated with breastfeeding. In contrast, providing all mothers with similar information around breastfeeding may help to avoid negative assumptions about mothers facing food insecurity and provide everyone with equal opportunities to breastfeed, as suggested by some PHNs in this research. In particular, enabling mothers struggling with food insecurity to breastfeed was described by PHNs as a key turning point to help break the cycle of poverty and poor health. However, as suggested by this and other research (14, 117), focusing on

individual interventions only neglects to recognize the complexity of the infant feeding culture in NS. Frank suggests that if community food security is to be realized in NS, creating communities where all mothers feel supported and where all types of infant food are accessible and acceptable (92) is a crucial component of this vision. This research provides further support to this argument by showing a key tension between a vision for community food security, whereby families and communities have access to affordable, healthy and culturally appropriate food produced in sustainable ways (139), and the social, political, and economic factors surrounding mothers facing food insecurity in rural NS, which limits the acceptability and affordability of both breastmilk and breastmilk substitutes. These findings demonstrate that both breastfeeding and formula feeding may be socially and culturally unacceptable depending on the context, as evidenced by the judgment experienced by both breastfeeding and formula feeding mothers in this research; overall this suggests the negative infant feeding culture is an overarching factor contributing directly to infant food *insecurity*, thereby preventing the realization of food secure communities in NS.

In conclusion, given the finding that mothers experiencing food insecurity are socially and economically constrained in their infant feeding decisions, and the potential negative impact on community food security in NS, it is critical that breastfeeding promotion strategies help to foster breastfeeding literacy among mothers. This type of approach may help mothers to understand the social, economic, and institutional forces in the health care system, and society in general that affect their individual decisions. Although PHNs' discourse and practice guidelines around infant feeding often emphasized the importance of "informed choice" in the current study, Fox and colleagues have described how this neglects to acknowledge the complexity of social and cultural factors constraining women's decisions (84). In contrast, Hausman acknowledges that whether a mother chooses to breastfeed or formula feed is likely based in "rational" decision-making based on the context of their lives (78). In some ways, this framing of "choice" may unintentionally blame the mother for failing to follow recommendations to breastfeed, similar to the ways in which nutrition

education practices sometimes blame women experiencing food insecurity for not following healthy eating recommendations, and neglecting to acknowledge the significant barriers to accessing food in their daily lives (50). These findings suggest that PHNs should also strive to critically reflect on their practice and challenge the dominant individual orientation by reflecting on social changes that are necessary to improve the health of their clients, similar to previous research focused on nutrition professionals (50, 83). More specifically, a CHL lens could also help to challenge HPs' assumptions around mothers facing food insecurity, as well as other marginalized groups such as young mothers, thereby enabling a more positive culture within the health system. Lastly, helping to make breastfeeding a feasible option for all mothers who wish to do so may also help to increase their self-reliance and promote liberation from reliance on corporate foods systems; as a more just and sustainable infant foodway (47, 90) this would contribute to community food security.

5.3.4 Individual versus collective health – a key tension for public health

An overarching influence shaping the work practices of PHNs in this study was the tension between supporting breastfeeding on an individual versus collective basis. The findings show that a shift in priorities within the NS public health system towards more upstream, community level strategies to promote health, affected PHNs work practices including the emphasis on policies and programs aimed at normalizing breastfeeding in the community. Almost all participating PHNs described a portion of their breastfeeding role being directed towards these types of upstream strategies. This tension at the systems level was reflected in their own practice as several PHNs described the challenge of juggling their responsibilities in community level work with the needs of individual moms, and in some cases a lack of clarity in priorities for the role of the PHN. To add to this uncertainty, some participants anticipated further changes to their roles in the near future, due to the merging of the nine district health authorities into the province-wide NSHA with four management zones in 2015 (143). These future changes were perceived to involve standardizing

the delivery of support services across the province, which is also implied in the NSHA Strategic Plan 2016-2019 that describes the goal of implementing "provincial health service plans" at the local level (191).

The findings around key changes in the delivery of breastfeeding support services in recent years, including targeting of breastfeeding support services to at-risk populations only (i.e., enhanced home visiting) (190) and elimination of services such as prenatal classes delivered by public health staff, reflects a shift in values prioritizing health promotion approaches (192) and focus on upstream strategies to promote maternal and infant health in NS (127). Interestingly, although the NS *Health Equity Protocol* suggests that support for new parents is provided using "targeted universalism" (pg. 5) (190), through providing support for the whole population as well as specific strategies to address barriers faced by vulnerable groups, these findings suggest that families in need of support may be falling through the cracks. Although PHNs in this study suggested the importance of both health promotion and individual approaches, one-on-one work with moms was perceived as becoming undervalued in the public health system, leading Brianne, a PHN in this study, to call this work "*invisible*" among her colleagues in public health. Unfortunately, although upstream action is important to improve outward acceptance of breastfeeding in the community (11, 14), the PHNs in this study felt these changes led to several negative consequences for the quality of support provided to mothers on an individual basis. In particular, due to the elimination of prenatal classes and replacement with online education (28), PHNs were often not able to make contact with mothers in the prenatal period. This lead to a perceived lack of visibility of public health in the community, which PNHs felt may have contributed to mothers being unaware of their services. This may represent a significant missed opportunity to intervene in the crucial prenatal period, with prenatal intentions (53) and support (156) being described as important influencers of breastfeeding initiation in previous Canadian research, similar to perceptions around the effectiveness of prenatal support in enabling successful breastfeeding

among mothers in this study. Further, the absence of prenatal contact, which in turn impacted continuity of care, was described as a key challenge for PHNs in establishing rapport with clients affecting their ability to provide effective support post-partum. In a general sense, mothers felt that HPs lacked the time and resources to effectively support mothers in their infant feeding decisions, while PHNs described a challenge in balancing their community level work and individual support. The similarity between mothers' and PHNs' experiences suggest that these practitioners are overburdened in their breastfeeding support work and demonstrates a gap between institutional policies that prioritize breastfeeding as a crucial part of infant care and mothers' unsupportive interactions with HPs. These findings are similar to an evaluation of the Provincial Breastfeeding Policy conducted in 2011 in NS, showing that although the policy positively affected the resources allocated to breastfeeding, and a greater acknowledgement of breastfeeding as an important issue among management within the public health system this was still perceived as inadequate to significantly affect breastfeeding rates in the province (9). This tension between individual support and population-based approaches may crossover into other areas of public health, and reflects a significant challenge in today's health system of moving towards upstream, preventative approaches while continuing to provide adequate healthcare services (171), particularly among vulnerable populations. In this way the under-resourced health care system itself can act as a barrier to breastfeeding (29).

Altogether, the findings from both mothers and PHNs show a clear line of fault between the somewhat limited support available to mothers through public health services, and improved breastfeeding rates as a named priority for public health (9); interestingly this gap was identified directly by some participating PHNs showing how it was a reality of their everyday work practices. Further, the standardization of support services across the province (191) likely to contribute to finding efficiencies in the public health system, may neglect to acknowledge the unique needs of mothers in the lowest socio-economic group, particularly those living in rural areas, who are most

at risk of health inequities. As evidenced by this research and a similar study in NS (92), mothers experiencing food insecurity would benefit from more tailored and accessible breastfeeding support in their immediate communities. For example, the fact that lactation consultants were often only accessible through clinic visits in regional service centres shows how breastfeeding support has been medicalized and removed from the community, showing a lack of consideration for the needs of the most marginalized mothers. Further, the provision of prenatal education through online courses, rather than group classes, represents another departure from delivering client-centred care. While Kukla (11) and Gillis and colleagues (14) have called for non-individualistic approaches to address the sociocultural barriers to breastfeeding, these findings show a need for both individual and collective support to address the complex needs of mothers facing food insecurity with respect to breastfeeding, similar to Kirk and colleagues' research in the province showing the importance of a continuum of care across multiple settings and time points (26). This is also supported by Chinn's model of CHL, which argues that both individualistic and collective approaches are required to challenge the hegemony in the healthcare system (120). For example, development of an individual's CHL skills can help to improve self-reflexivity in determining personal health barriers and making informed decision, while collective health literacy approaches centre around improving the health of communities (120). PHNs and other HPs may have an important role to play in enhancing this critical breastfeeding literacy among mothers and in the community as a whole.

Ultimately, if the public health system is to affect changes in breastfeeding rates, particularly longer-term duration of breastfeeding, consideration of marginalized groups' needs, including mothers experiencing food insecurity, is essential. Pérez-Escamilla and colleagues have argued for the importance of an equity lens in breastfeeding policy implementation using multi-pronged approaches to ensure equal access to services and empower disadvantaged women to make infant feeding decisions that are right for them (193); this is consistent with the finding that

PHNs acknowledged solutions aimed at addressing unsupportive cultural norms around infant feeding were an important strategy but felt somewhat powerless to address them. Importantly, addressing health inequities in infant feeding also involves working towards addressing the root causes of food insecurity, which while not a part of the work practices of PHNs who participated in this study, was recognized by them as important to improving the overall health of their communities. It is concerning that although upstream actions to address breastfeeding are becoming the focus of public health's work, food insecurity is continually more commonly addressed with individualistic, unsustainable approaches, such as referrals to food charity, described as a common strategy in this research and previous unpublished research in NS (138). Salmon (93) and Frank (92) have called for a merger between infant feeding and food policy to address some of the structural barriers that make breastfeeding unfeasible for low-income families. For these reasons, increased recognition of the intertwined nature of these health determinants – breastfeeding and food security - particularly for vulnerable families, among public HPs and public health management is likely necessary to facilitate complementary approaches to addressing household, as well as infant, food security in NS through improved breastfeeding rates.

5.4 Summary of ideologies, sociocultural forces, policies and public health practices shaping the interactions between PHNs and mothers

As the findings of this research show, the culture of infant feeding in NS is shaped by many social and institutional ideologies that influence the everyday interactions between mothers and PHNs around infant feeding. Although not unique to this research, some of the most prominent social forces reflected by the findings in this study were the ideologies of motherhood, as described by Murphy et al. (44), as well as neoliberal philosophies of health. These ideologies emphasizing putting the baby's needs first and foremost are apparent in the "breast is best" discourse used in the health system to encourage mothers to breastfeed; however, for mothers in this research this discourse appeared to have a disempowering effect, infiltrating their own language around infant

feeding and contributing to the judgment and stigma imposed by both HPs as well as other mothers. Further, neoliberal philosophies of health responsibilize mothers themselves for their inability to provide their infant with optimal nutrition (44), which these findings suggest may lead to an exacerbation of the feelings of shame (97) common among women who feel they are not fulfilling expectations of "good mothering" associated with food insecurity. Mothers facing food insecurity were constrained in both their ability to afford breastmilk substitutes, as well as their ability to afford a nutritious diet for themselves, which was often perceived by mothers as a necessity for nutritious breastmilk, supporting Frank's findings showing how maternal food insecurity can negatively affect mothers' ability to breastfeed, as well as formula feed, due to a lack of economic resources (92). In this way, breastfeeding becomes the responsibility of "good citizens" as governed by "expert" ways of knowing about infant feeding (29), which mothers facing food insecurity may struggle to live up to due to the realities of material deprivation that characterize their everyday life.

Policies at the health system level replicate these ideologies in HPs' breastfeeding promotion strategies. While PHNs in this study recognized the potential negative consequences of "breast is best" messages for mothers, policy texts, in particular the BFI, as well as mandated job responsibilities coordinated their work practices when interacting with mothers, preventing them from providing education on formula (an identified need for participants in this study). Ultimately, this shows how their ability to address mothers' needs was sometimes limited by breastfeeding policies that are often perceived as supportive, providing evidence for these policies as a type of ruling relation governing PHNs interactions with mothers. The findings in this research provide support for other studies that suggest a shift to normative discourses (69, 84, 157) is necessary to reduce the negative emotional consequences associated with formula feeding. Moreover, consideration of the benefits of breastfeeding beyond health, such as enabling infant food security, may help to further reduce the blame, and self-blame, mothers may experience when breastfeeding

is unsuccessful by positioning it as a right to food for mothers who choose to breastfeed (47).

However, a broader understanding of breastfeeding through multiple forms of knowledge, as with CHL, may help to further shift breastfeeding promotion away from its history in disempowering health rhetoric (44) while centering it within the broader movement for community food security in NS (139) and beyond (8).

At the health system level, findings revealed several important changes within the NS health system that were reflected in the work practices of PHNs and other HPs they collaborated with, namely public health's shift to upstream breastfeeding promotion strategies and increased standardization and centralization of other HP breastfeeding support services (i.e., lactation consultations). This disconnection between approaches to supporting breastfeeding in public health compared with clinic-based services appears to have led to a significant gap in support, as identified by mothers and PHNs in this research. PHNs described how these changes contributed to challenges in providing tailored, client-centred care, which they perceived to be an essential part of nursing practice, similar to previous findings from PHNs working in Halifax (82). Furthermore, these changes to the public health affected PHNs ability to provide what they perceived as "ideal" breastfeeding support (i.e., access to home visits for all mothers); these findings also suggest that these changes may disproportionately affect mothers facing food insecurity, which raises questions about how efforts to increase efficiencies in healthcare may contribute directly to these inequities.

This research also suggests that the shift towards standardization and centralization of services in NS appears to contribute to further medicalization of breastfeeding, which may also lead to a lack of breastfeeding support in the community sphere and promotion of "expert" forms of knowledge around infant feeding. This is a potentially disempowering factor for mothers and may perpetuate unequal power relations that privilege the HPs perspectives', as shown in previous research with PHNs (82) as well as physicians (81) and dietitians (83); this "expert" position may also contribute to difficulties PHNs experience in building empathetic relationships to support

women around sensitive issues such as breastfeeding and food insecurity, as shown in findings by Aston and colleagues (82). Similarly, dominant discourses around food insecurity are also disempowering in nature, leading to sense of helplessness and self-blame (109), which provides further evidence for the inter-relatedness of the experiences of food insecurity and new mothers. In contrast, this research also provides evidence for a reclaiming of experiential maternal knowledge by mothers, through their work practices of seeking support, building a sense of self-efficacy and engaging in self-advocacy. In fact, effective peer support networks could act as a type of self-advocacy (113) in rural communities and could help to reduce dependency on the health system, as suggested by several other authors (113, 165, 194), while simultaneously improving sociocultural factors, such as judgments associated with breastfeeding and formula feeding, that negatively impact mothers.

These findings may highlight a key opportunity to shift ways of knowing around infant feeding through a critical breastfeeding literacy lens, which may help women to recognize the social and institutional forces within health systems contributing to their infant feeding decisions. However, it appears that supportive and empathetic relationships between mothers, peer supporters, and HPs involved in these peer support networks may be an important foundation for collective action to address sociocultural constraints to breastfeeding, as evidenced by two studies in the UK (84, 113). Lastly, PHNs or other HPs may have an important role to play in raising the critical consciousness of mothers by using CHL approaches in their practice (12, 14), increasing the capacity of mothers to look after their own health and the health of their families, which may be particularly liberating for mothers experiencing food insecurity who encounter oppression and judgment in many other aspects of their everyday experience (97, 109). While this will likely involve significant shifts in ways of thinking at a health systems level, given increasing demands on the health system and HPs (171), individual changes in practice by PHNs and other HPs may serve as a starting point for more significant systems change. There may already be some momentum

towards improving access to primary care services and address shortage to physician services, by moving towards more inter-professional and collaborative practice, as shown in the creation of new nurse practitioner jobs across NS (195). Systems change will ultimately be necessary; however, maintaining a balance between holistic, client-centred care using an inter-professional model while also avoiding overburdening HPs may be an important strategy in the shorter term.

6. Conclusions and recommendations for practice, policy and research

This chapter describes the overarching conclusions from this research with respect to HP practice, public health policy, and directions for future research. These conclusions are put into context of other research, particularly other studies within the NS and Canadian context, while also highlighting the implications of findings that are unique to this research. Further, recommendations are made to address the key lines of fault between current breastfeeding policy and HP practice, and the everyday experience of mothers, especially those who are vulnerable to food insecurity. In addition, this chapter also discusses potential ways in which policy and practice could enhance the "breastfeeding literacy" of HPs and in turn the mothers they support. Although this research specifically examined the work practices and perspectives of PHNs, some recommendations are framed more generally as they also likely apply to other HPs who work with mothers in similar ways.

6.1 Practice

Despite the dynamic nature of severe and moderate food insecurity (97) experienced by participating mothers and their varying levels of experience and success with breastfeeding, all described similar barriers and enablers to breastfeeding at both personal and community levels, that were generally consistent with findings from the body of Canadian literature on breastfeeding barriers and support, but seemingly amplified by the rural context in which they live. While mothers described receiving good support from HPs generally, limited access to support in remote communities compounded by food insecurity within the mothers' households, was a key barrier to accessing HP services when breastfeeding challenges arose. Moreover, despite PHNs goals to provide equal support to all mothers, regardless of their infant feeding choices, and avoid judging those who choose formula, participating mothers described the negative effects of the "breast is best" discourse that remain pervasive in many aspects of the NS and Canadian infant feeding

culture (14, 29, 139). These findings are consistent with previous studies in NS (92, 156), and

provide further supporting evidence to support the following **five strategies** as best practices to

shift negative attitudes around formula feeding mothers and promote a more inclusive and

accepting infant feeding culture in NS. These best practices are summarized below in **Table 4** and

discussed with respect to the key findings from this research and other literature. Furthermore, all

Phase 2 mothers experienced moderate to severe food insecurity themselves within the past 12

months and most had other children who were also impacted by this food insecurity. Thus, these

findings point to important recommendations to better meet the needs of these mothers, including

addressing food insecurity as a direct barrier to successful breastfeeding.

Table 4. Best practices to improve breastfeeding promotion and support as identified by literature review and supported by current research

1	Shift promotion discourses to promote breastfeeding as "normal" rather than "best" and reduce unintended shaming of mothers who choose formula
2	Tailor support strategies using a "mother-centered" approach that respects autonomy and provides advice on breastfeeding alternatives when needed
3	Provide proactive prenatal support to all mothers to establish successful rapport in client-professional relationship
4	Ensure PHNs and public health management recognize food insecurity as a direct and indirect barrier to breastfeeding and are equipped with strategies to address food insecurity in their practice
5	Provide mothers with access to both peer and professional support based on both expert and experiential knowledge

PHN, public health nurse

First, a **shift in breastfeeding promotional discourses to "normal" rather than "best"**

was suggested by participating PHNs as a way to reduce the unintended shaming of mothers. While

such a shift, in NS (14, 26) and in the US (145) has been suggested by various others authors, the

findings of the present study suggest that it may be insufficient to reverse the moralization (10) of

women's infant feeding decisions, especially among mothers experiencing food insecurity.

Reinforcing breastfeeding as a "norm", as suggested by participating mothers and PHNs in this

study and by Murphy and colleagues (44), may do little to disrupt the social control of mothers

through their duty to provide their families with breastmilk, thereby fulfilling the role of a "good

mother"(32, 37, 44, 48, 49, 85). In contrast, framing equal access to breastmilk and breastmilk substitutes as a key component of community food security for infants as recommended by other Canadian researchers (55, 92) may help to frame the issue of breastfeeding more holistically, as an issue of the right to food (47) increasing mothers' ability to make decisions that fit the context of their everyday life. This research raises the question of how a breastfeeding literacy approach could be used to inform this reframing by drawing attention to subjugated knowledges related to infant feeding, including the three forms of knowledge in Sumner's concept of food literacy (130). In particular, historical-hermeneutic knowledge and critical-emancipatory knowledge may have potential to promote alternative ways of knowing about infant feeding, bringing to light maternal experiential knowledge and raising critical consciousness around the social control of mothers, thereby contributing to understanding the social change necessary to foster community food security for mothers and infants.

However, at the household level, the constraints faced by families living with food insecurity likely impact their ability to exercise choice in their infant feeding decisions, as with many other aspects of their daily lives (68). Unique to these findings, with the exception of Frank's 2015 research (92), is the first voice accounts of the maternal experience of food insecurity and how this directly affects their infant feeding decisions, particularly with respect to breastfeeding. Some of the constraints experienced included an inability to afford a nutritious diet and its perceived impact on breastmilk quality, the prohibitive cost of formula feeding, as well as breastfeeding as a barrier to earning an income. While these findings were consistent with Frank's recent findings (92) among mothers living in rural and urban communities in NS, an important and novel contribution of the current study is the findings around judgment that seems to be associated with financial motivations to breastfeed among mothers experiencing food insecurity and the determination of these mothers to persevere through breastfeeding challenges, which sometimes had negative consequences for their own health and well-being. While not the only influencing factors, these

constraints appeared to have a significant impact on mothers' infant feeding decisions, showing how vulnerable families may have fewer opportunities to make decisions based on their own personal beliefs and values, as previously suggested by Pérez-Escamilla and colleagues (193). Further, these women may experience intensified feelings of what they described as guilt around their infant feeding decisions and what were more likely feelings of shame tied to an overarching desire to provide optimal food, including breastmilk, for their families and fulfill expectations of a "good mother" (32, 111). This research also suggests that mothers facing food insecurity may be predisposed to these feelings, supported by forthcoming findings from NS (172), and raises questions about the life circumstances of food insecurity compounding these negative emotional outcomes associated with infant feeding. This research provides evidence that current breastfeeding promotion strategies in NS may also lack sensitivity for the material circumstances of mothers vulnerable to food insecurity in NS; as Hausman suggests these promotion strategies may cause mothers living with this material deprivation to view breastfeeding as inappropriate and unachievable, thereby alienating these women and potentially causing them to doubt their capabilities as mother (78). These findings provide further explanation of the reasons behind the socio-economic disparity in breastfeeding rates in Canada, with fewer low-income mothers breastfeeding their babies exclusively (3), which may have serious health implications for future generations (5) and could contribute to inter-generational experience of poverty and poor health (196). Given the high prevalence of food insecurity among lone mothers (33.5%) and couples with young children (11.8%) at a national level (4), these findings point to a significant gap in our health system that has serious implications for population health.

As evidenced by the recommendations of mothers and PHNs in this research, vulnerable mothers including those experiencing food insecurity, as well as young mothers, may require **tailored support strategies** to improve their chances of success with breastfeeding. Tailored support strategies using a "mother-centered" approach that respects autonomy and provides

advice on breastfeeding alternatives has been discussed in-depth in global research and commentary (156, 193, 197) and has been shown to promote shared-decision making between mothers and HPs, thereby equalizing the power imbalance and helping to promote maternal self-determination (82). This evidence, together with findings from the present study, show the importance of supporting PHNs to engage in critical reflection on their practice to population health in NS, in particular to ensure the principles of "client-centred" care truly reflect an emphasis on understanding the needs of the mother (83). As described above, a breastfeeding literacy approach that emphasizes looking beyond the health benefits of breastfeeding and focuses on food security may enable HPs to impart a breastfeeding literacy to mothers they work with.

The finding that PHNs interviewed in this research had a high degree of empathy for the challenges associated with the breastfeeding experience, showed that their perceptions of ideal breastfeeding support were very similar to those of mothers. However, in this study there were several gaps between these ideals and the reality of their current work practices in supporting and promoting breastfeeding, many of which could be linked to fairly recent changes within the public health system. Most notably this included a lack of prenatal contact, which ultimately seemed to contributed to a lack of continuity of care and decreased opportunities to develop rapport between mothers and PHNs. As recommend by participants, as well as both international (62, 65, 84, 179) and local research (156), proactive prenatal support for all mothers would allow for development of supportive client-professional relationships; facilitating these early relationships with HPs may increase their familiarity with mothers' life circumstances affecting their infant feeding decisions, as well as their ability to support women to develop confidence in their abilities as a mother. Further, findings raise questions about the need to reinstate prenatal classes in these rural communities as key strategy to provide women with links to breastfeeding support for when challenges arise. Prenatal classes provide an important opportunity to develop trusting relationships, which is also likely to influence the development of interactive health literacy among mothers and HPs (117),

thereby enabling improved communication and two-way sharing of knowledge between mothers and HPs. While there are cost implications for the public health system, there is also significant short and long term benefits associated with prenatal support, namely the opportunity for mothers to be reassured by their breastfeeding supporters, reducing the stress experienced by new mothers (156), as well as the association with improved breastfeeding initiation and duration (76). With mandates of the NSHA increasingly reflecting a focus on vulnerable populations (169, 190), demonstrating the potential significant impacts for mothers and families facing food insecurity may be an important advocacy strategy to reach health system leadership

On the whole, this research provides support for past studies showing that the issues of breastfeeding and food insecurity are inextricably linked (47, 94). Therefore, in order to improve breastfeeding rates among vulnerable families, there needs to be increased **recognition of food insecurity as a direct and indirect barrier** to breastfeeding and an important public health issue requiring attention from HPs, as well as public health management. Although PHNs in this research understood the root causes of food insecurity and the associated negative health consequences, the findings revealed that they did not have the capacity to address these issues in their practice beyond referring mothers to emergency food and community programs. For this reason, PHNs should **be equipped to address food insecurity through advocacy** for their vulnerable clients, supporting previous calls to action for nurses to help disadvantaged communities understand the social determinants of health and organize to take action (189); however, this will require policy shifts at the health system level (as described further below in section 6.2). While participating PHNs were somewhat aware of how food insecurity, and the associated life circumstances, affected infant feeding decisions, they did not describe communicating this understanding to mothers, which could be a missed opportunity to enhance their CHL skills. HPs have a key role to play in enhancing these understandings among mothers (117, 120), which in turn may empower mothers to engage in collective action to create breastfeeding friendly communities. This collective action

may take the form of peer support, an identified area for improvement, which may be particularly important in rural communities to increase a sense of social connectedness and agency to address underlying issues related to infant food security. Although a systematic review showed minimal difference in the effectiveness of combination support compared with peer or professional support only (65), several international studies have described potential benefits of **combination support from both peers and professionals** including decreased health system costs (165) and providing support based on credible information as well as real experiences (84). PHNs in this study seemed to have a key role in enabling peer support, similar to other Canadian research (159), particularly by providing organization and training for peer supporters. Most importantly, two-way communication between peers and professionals may help to fill gaps in support services, as seen in Tatamagouche, NS (156), and may help to avoid confusion from conflicting information, showing the importance of interactive health literacy between moms, peers and HPs alike. For this reason, both peer and professional support strategies combining experiential and expert ways of knowing may contribute to a critical understanding of our infant feeding culture, as well as the sociocultural factors and ideologies shaping mothers' decisions.

Further, breastfeeding literacy, as a component of food literacy, may provide a more critical framework for teaching HPs and mothers alike about infant feeding, thereby shifting the focus from information transmission to capacity building to address sociocultural barriers. This is similar to the asset approach to health literacy, whereby HPs can play an important role in building transferable skills among their clients that will crossover into other aspects of their lives and promote emancipation from oppressive sociocultural forces (117). For example, efforts to create breastfeeding friendly communities should continue in order to improve the visibility of breastfeeding in the public sphere, increasing exposure for all mothers. At an individual level, this also includes an awareness of the realities of the breastfeeding experience and encouragement to persevere through these challenges, which shows how HPs have a key role to play in enabling this

breastfeeding literacy. These two factors, verbal encouragement and observations of other breastfeeding mothers, have been found to increase breastfeeding self-efficacy (58), particularly for moms who lack previous personal experience. However, building on the concept of two-way sharing of knowledge, mothers who are "breastfeeding literate" may be empowered to teach HPs about the realities of breastfeeding, as suggested by Hausman (78), showing a reversal in traditional information transmission from professional to client and the potential impact of mothers' collective action on health system practices. These benefits would be particularly important for mothers experiencing food insecurity who may lack social support and self-assurance (68, 95) due to the systemic judgments experienced in society (51, 68), including the health system. For this reason, although adopting critical approaches to breastfeeding promotion and support, such as the breastfeeding literacy lens proposed in this research, may be of benefit in practice, the influence of health system level and public health policy on mothers' experiences should not be left unaddressed. Overall, using approaches that emphasize education only neglect to acknowledge the tension between the realities of everyday life and the scientific and moral imperative to breastfeed (29) reinforced by the health system; these approaches may perpetuate suboptimal breastfeeding rates, which have negative consequences for maternal and infant health (6, 9) as well as broader social development and poverty reduction (6), potentially adding to increased financial burden on the under-resourced NS health system.

6.2   Policy

Overall, these findings show how reductions in services at the public health system level in NS, related to a shift in focus to upstream health promotion, may disproportionately affect vulnerable mothers, limiting their ability to exercise autonomy in their health decisions, including the decision to breastfeed or formula feed. While breastfeeding has been named as public health priority at the provincial level, particularly in NS's healthy eating and physical activity strategy *Thrive* (127), and was recognized as such by PHNs in this research, this is not reflected in the

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services provided to mothers in the Eastern Zone (Zone 3) of the NSHA. In reality, these findings

suggest that the current public health system in NS may neglect to acknowledge the needs of rural

women facing food insecurity and continues to reinforce ruling relations in the health system, such

as the standardization and medicalization of breastfeeding support services as described by several

other authors (34, 36, 177). For example, although home visiting programs were viewed as way to

increase rural access to services, the finding that services were targeted to at-risk clients only

shows how this efficiency strategy contributed to the inequity in access to health services for rural

residents and led some vulnerable families to fall through the cracks. This is similar to findings

from an Ontario study showing that women living in rural areas experience a multitude of social

and political forces that complicate the challenges of rural life which further constrained their

ability to protect their health (198). This finding is in contrast to the NS *Health Equity Protocol,*

which names targeted breastfeeding support services as a key approach to addressing structural

inequities (190), showing the importance of challenging assumptions around the perceived positive

impacts of these changes in service delivery for vulnerable groups. Overall, these findings suggest

that policies around breastfeeding support provided by PHNs may be inadequate to address health

inequities in infant feeding and calls for careful assessment of the full impacts of changes in public

health services intended to promote health equity. **Table 5** suggests **five alternative policy**

solutions to coordinate the delivery of breastfeeding support services in equitable ways while also

streamlining the services provided by various HPs.

Table 5. Recommendations to improve health system policies related to breastfeeding support

1	Consider first voice experiences of mothers with food insecurity in policy recommendations for breastfeeding support
2	Provide universal access to home visits and lactation consultants for rural mothers
3	Design service provision models that facilitate inter-professional practice and continuity of care in breastfeeding support
4	Promote public health strategies that address structural barriers to breastfeeding while also addressing the underlying factors (i.e., food insecurity) that limit vulnerable mothers' ability to successfully breastfeed
5	Work towards cross-departmental strategies that improve the socio-economic circumstances of women to support their role of feeding the family
6	Review provincial breastfeeding policy and associated practice guidelines with a CHL lens to understand how current policies may affect vulnerable groups

CHL, critical health literacy

An over-arching recommendation with respect to policy is the **consideration of first voice experiences of new mothers facing food insecurity** in all future modifications to breastfeeding-related policies, which govern promotion discourses, as well as the delivery of HP breastfeeding support. In addition to the present study, there is a wealth of in-depth research on mothers breastfeeding experiences in NS (14, 92, 139, 156) which could be used to inform comprehensive policy briefs for key decision makers. This first voice experience may help to challenge the majority, "expert" voice in current breastfeeding-related policies, illuminating the gap between current practices and the needs of vulnerable mothers (137). Recognition of these gaps may in turn lead to more equitable and holistic breastfeeding support systems, as well as showing the intersection between food security for all families and improved breastfeeding rates.

In contrast to trends towards reduced individual services and targeting approaches to at-risk mothers (190), PHNs and mothers in this research suggested **universal access to home visits and lactation consultants** as important strategies to improve the accessibility of support for rural-dwelling mothers. While the feasibility of universal access with respect to budget and staffing requirements would need to be examined, an American review recommends phone support as a good complement to face-to-face home visits, with improved exclusive breastfeeding rates for participating mothers (144), which could help to reduce the frequency of home visits required. As

described above, establishing stronger peer support networks may help to reduce dependency on the overburdened health system (171) in rural communities and reduce the sense of isolation experienced particularly by mothers living with food insecurity (68, 97).

Other suggestions for improving breastfeeding support and related policies include improved efficiencies in the health system to **facilitate continuity of care and inter-professional collaboration**. In particular, the findings of this study point to the need to provide PHNs or other HPs with the opportunity to follow mothers throughout their pregnancy and post-partum period and suggest the importance of determining distinct, yet complementary roles for different professions. This may help to avoid duplication of work, ensuring that different HP skill sets are being used optimally to provide mothers with a variety of supports suited to their particular needs or challenges. Inter-professional primary care teams have also been recommended by the Conference Board of Canada to improve the overall sustainability of the Canadian healthcare system and improve access to healthcare (199). While these recommendations represent ideals for a cohesive and supportive health system, as described by mothers and PHNs in this research, not all of these recommendations should necessarily become the responsibilities of PHNs or other public health staff. However, future changes to breastfeeding support in NS might consider how to build linkages between different levels of the health system, including primary care, acute care settings, and public health, to implement these recommendations. A more seamless and coordinated system cross-cutting all levels of the health system may help to ensure the delivery of consistent messages around infant feeding, avoiding confusion and misinformation among mothers, a finding from this study as well as other research in the US and Australia (66, 200). In addition, improving the efficiency of breastfeeding support work by creating differentiated and complementary roles may help to reduce the lack of clarity around professional responsibilities in breastfeeding support, which was also a finding from previous research in Atlantic Canada (79, 80). However, ensuring that strategies towards improved efficiency in the health system do not unintentionally, and

disproportionately, affect those who are most vulnerable to health inequities by considering first voice experience of these groups is an important task for policy makers.

Although breastfeeding initiation has improved in NS by 8.4% from 2011 to 2014 (30), overall, PHNs in this study identified the need to **remove structural barriers to breastfeeding** as an essential strategy to support continued improvement in exclusive breastfeeding duration, especially among women experiencing food insecurity. While past approaches to improving breastfeeding rates have focused on individual skill development (10), more recent guiding strategies for public health's work, such as *Thrive,* emphasize upstream breastfeeding promotion, including the implementation of BFI (127). Findings indicate the need to continue implementing policies which strike a balance between empowering individuals and acting on the sociocultural barriers, including food insecurity, that collectively impact infant feeding as an important goal for public health to work towards (115, 120). This is consistent with Frank's 2015 findings with respect to mothers experiencing food insecurity (92), as well as Price and colleagues' findings from rural NS (156). Interestingly, while breastfeeding promotion strategies continue to shift towards population-based approaches, PHNs responses to food insecurity in this study remained focused on individual level solutions, which have been shown to be ineffective (139). Although PHNs in this research demonstrated an in-depth understanding of the social determinants of health, including food insecurity, and the effects on families' overall health, there appeared to be a lack of mandate to address the root causes of these issues within their practice and move beyond short-term solutions. Although food insecurity work may be the primary responsibility of other HPs (i.e., public health nutritionists), overall, supporting PHNs to build their capacity in addressing food insecurity may be an important strategy to **resolve the underlying factors making breastfeeding a health inequity** for marginalized women and fulfill the vision of key public health guiding documents (127, 190). Most importantly, increasing breastfeeding duration among mothers experiencing food

insecurity may be important to break the cycle of poverty and poor health among vulnerable groups (5).

For these reasons, women's work of feeding the family should be viewed as a separate and unique part of infant healthcare, as suggested by Kukla (11), which has significant potential to impact the health of Nova Scotians. However, inter-sectoral collaboration beyond the health system will likely be needed to address the sociocultural barriers to breastfeeding (193). For example, Pérez-Escamilla and colleagues suggest creating easily accessible opportunities for HPs to receive training on breastfeeding, as well as collaboration with civil society organizations to address barriers in the broader community (193); these strategies were described by PHNs in this study but have the potential to be implemented more widely. Policy strategies should also include addressing root causes of food insecurity, such as unsupportive policies around social and economic welfare, as previously suggested by Frank (92). For example, **cross-departmental strategies** within government could help to improve financial supports (i.e., maternity leave allowance, income assistance rates for new mothers) for mothers fulfilling child-rearing responsibilities as a potential strategy to improve breastfeeding duration and food security, thereby reducing financial burden on the health system (201). In fact, others have argued that breastfeeding advocacy must include action for maternity leaves and benefits for mothers (36, 193), showing an important alignment between social and health policies. Further, this acknowledgement may help to elevate the importance of women's work of feeding the family, leading to complementary food policy strategies that promote household food security and thereby support women to be producers of food for infants.

In summary, it appears that promotion strategies using a breastfeeding literacy approach have potential to be implemented at both an individual and collective level and are well-aligned with *Thrive* objectives, which aims to improve the health literacy of Nova Scotians (127). However, provincial healthy eating policies, including the NS Provincial Breastfeeding Policy, may perpetuate

unattainable healthy eating "norms" and exacerbate the negative experiences of the most

vulnerable Nova Scotians, as suggested in two previous studies in the province (100, 202). For this

reason, the NS Provincial Breastfeeding Policy should be **reviewed with a CHL lens** to understand

how it may act as a ruling relation governing the work practices of HPs and mothers in their infant

feeding decisions. Furthermore, education of policy makers using a CHL lens, and informed by a

breastfeeding literacy approach, may be a first step towards creating sustainable solutions that

promote improved breastfeeding rates, and in turn improved community food security. This is

similar to commentary from Pérez-Escamilla et al. (193), who suggest policy implementation to

promote breastfeeding should use a health equity lens to ensure equitable access to supports for all

mothers; the NS *Health Equity Protocol* suggests that these processes for analyzing policy are

already place (190), but may need to be implemented more broadly with respect to public health

breastfeeding support. These authors also call for an avoidance of "one size fits all" solutions to

breastfeeding (193), reflecting similar findings from mothers in this research; however, although

targeting of public health support to at-risk families may be perceived as a way to reduce health

inequities in infant feeding, this research shows that some families in need may be overlooked in

this type of system, similar to a recent media report from Halifax (169). Continuing to emphasize

breastfeeding as a priority at the public health management level, as discussed in previous

evaluation research in NS (9), is likely an important strategy, but this should be done in a way that

draws attention to the voices of marginalized women, as previously recommended by Van Esterik

(47). Further, alignment of social, health and food policies that affect mothers and their children is

required to create the social and economic supports to enable breastfeeding, thereby making

breastmilk an equally accessible and appropriate food for all infants and fulfilling public health's

mandate to address health inequities (190).

6.3 Research

Overall, this study's unique IE approach to understanding the everyday experiences of food insecurity and the impacts on infant feeding decisions of mothers has helped to illuminate key lines of fault between vulnerable mothers' breastfeeding support needs, HPs' practices and perceptions of ideal support, and policies at the institutional health system level acting as ruling relations. Most notably, recent institutional changes in public health breastfeeding support (i.e., targeting of home visits, elimination of prenatal classes), were visible, particularly in the comments of participating PHNs who described the direct and indirect effects on their ability to support mothers. Although the small scope and specific population of interest may be viewed as a limitation from a positivist sense, this research plays an important role in giving voice to these mothers by allowing them to express their concerns with HP breastfeeding support, and contributes to the growing body of knowledge connecting breastfeeding to the overall picture of community food security. This first voice experience may also be particularly useful in providing insight into the daily lives of an under-represented and "silenced" group of women (86), rendering visible the ruling relations serving the health system, and potentially informing more equitable breastfeeding support practices and policies within NS.

Another strength of this research is the triangulation of data from three phases of qualitative research that allow for the weaving together of similar and contrasting findings, providing the basis for comprehensive discussion on the experiences of both mothers and PHNs. In particular, the in-depth interviews from Phases 2 (mothers experiencing food insecurity) and 3 (PHNs) provide unique insight into both sides of the client-professional relationship, exploring important discrepancies between PHNs' practices and vulnerable mothers' needs, and the overarching influence of institutional forces at the health system level. The Phase 1 secondary data was limited in that the participating mothers were not recruited based on experience of food insecurity, and although reasonable assumptions could be made based on transcript content and

recruitment strategies (see Appendix A), their true food security status is unknown. However, this secondary analysis provided the PI with important direction to develop key research questions, allowing for the intentional focus on the support relationship between mothers and PHNs in the in-depth interviews. Although this is a departure from traditional IE approaches, every effort was made to ensure that it did not impede the emphasis on first voice experiences. The findings from Phases 1 and 2, although similar in many respects, may have varied due to the differences in geography and the time of data collection. These external factors may have affected mothers' experiences with HP breastfeeding support, however this cannot be directly inferred from the findings. Moreover, due to the recruitment of Phase 2 mothers through family resource and women's resource centres, these women are likely not the most socially isolated and vulnerable to food insecurity, which means that these findings may not capture the stories of mothers and their children who are likely most susceptible to negative social and health outcomes.

With respect to the Phase 3 data, lactation consultants working in clinical settings did not volunteer to participate in this study, despite recruitment strategies targeting them, thereby limiting the perspective of HPs in this research. However, this similarity between all Phase 3 participants allowed for a more detailed and in-depth description of the PHN's perspective, representing a variety of roles in breastfeeding support within this profession, and showing the interface between policies and their work practices, an important component of an IE approach (19). Although PHNs were interviewed almost one year following Phase 2 interviews, there were relatively few changes in the public health system in NS within this time frame. Therefore, it is reasonable to assume that many of the Phase 2 mothers' interactions with PHNs would have occurred within a similar context at the public health system level. Moreover, the use of a modified IE approach also compliments the CHL perspective of this research by drawing attention to how an awareness of CHL, among both mothers themselves and HPs, may enhance the everyday experience of breastfeeding support, reconciling the discrepancies between breastfeeding promotion practices

and mothers' needs through the three domains of critical appraisal, understanding the social

determinants of health, and collective action. Due to the evolving nature of CHL (120), this research

may play a role in demonstrating its practical importance, by providing an example of how CHL can

be applied to the systemic issue of breastfeeding promotion and support in NS. **Table 6** suggests

four methodological recommendations for future research on breastfeeding practice and policy

in NS, including additional HP perspectives to explore.

Table 6. Recommendations for future research with vulnerable mothers on HP breastfeeding practice and policy in NS

1	Explore the perspectives of lactation consultants and family physicians due to their high perceived level of influence on mothers with respect to breastfeeding
2	Conduct a complete IE study in NS focusing on breastfeeding policy and related texts, as well as the influence of health policy makers in reinforcing the ruling relations governing the everyday experiences of mothers
3	Explore the interrelatedness of multiple literacy concepts including CHL, critical food literacy and breastfeeding literacy through future research
4	Examine the usefulness of a breastfeeding literacy approach to HP breastfeeding support practice and related policies through future studies in NS and beyond

IE, institutional ethnography; NS, Nova Scotia; CHL, critical health literacy; HP, health professional

Future research in NS should consider examining the **perspective of lactation consultants**

working in clinical settings, due to their key role in supporting mothers through breastfeeding

challenges in these findings. **Family physician perspectives** could also be useful to explore

considering their perceived high level of influence on families (81), which was also a finding from

this research. In addition, other researchers should consider **the use of an IE approach on a**

larger scale to better represent the needs of NS mothers from other areas of the province and

revise policies accordingly. Typically, IE projects are only able to explicate very specific social

processes (133) and multiple studies may be needed to map how these processes weave to together

to create the ruling relations of complex institutions such as healthcare systems, which was beyond

the scope of this thesis research. This examination of health system level barriers only reflects

challenges in select North-eastern NS communities, which does not provide a complete picture of

institutional barriers at a NSHA zone or provincial level. To fully understand the influence of

institutional policies, a provincial level IE study examining discourses used in provincial

breastfeeding policies and related texts, complemented with interviews with public health policy makers, would be beneficial to understand more completely how these texts coordinate the actions of both HPs and mothers.

This research also introduces the concept of breastfeeding literacy, shaped by participating mothers' accounts of developing experience as a mother and a critical understanding of infant feeding culture and related policies. The development of these experiential and critical ways of knowing provided a sense of empowerment among these women in illuminating the institutional forces surrounding their infant feeding "choices" and work practices of HPs. This breastfeeding literacy can also be viewed as a component of critical food literacy, as defined by Sumner (130), providing a framework for understanding the different ways of knowing informing mothers' infant feeding experiences. In addition, breastfeeding literacy approaches, informed by Habermas' 3 domains of knowledge, could help to inform liberating and empowering education strategies around infant feeding for marginalized women, providing alternative types of HP support focused on going beyond information transmission, an identified in need from previous NS research by Gillis and colleagues (14). Further, a broader understanding of breastfeeding through multiple forms of knowledge may help to situate breastfeeding within the broader movement for community food security, helping to shift promotion strategies away from the disempowering health rhetoric (44) and situating infant feeding within the broader concept of community food security. Similarly, Hausman has called for a combination of biological and political perspectives on breastfeeding, which maintain the importance of the health benefits while also avoiding stigmatizing the infant feeding decisions of vulnerable women (78). As described above, this may have implications for policy development around breastfeeding promotion strategies at the health system level and beyond.

While this research proposes an embedded framework of multiple literacies with breastfeeding literacy as a sub-component of food literacy, and food literacy as a way of knowing informing the

development of CHL, this discussion is preliminary and exploratory in nature. Further

theorization by research scholars within the health literacy field may be necessary to fully

understand the inter-relatedness of these concepts. Future research should also consider the ways

in which these multiple literacies can be applied to the study of infant feeding practices of mothers

and the related support practices of HPs. Given critiques of the conceptual and practical

implications of CHL, and the limited amount of research directly linking CHL to enhanced health

outcomes (120), the concept of **breastfeeding literacy (or infant feeding) literacy identified in**

this research should be studied further to determine its relevance to policy and practice. For

example, it is not known if applying a breastfeeding literacy framework to infant feeding education

will help to enhance mothers' CHL skills and whether a critical understanding of infant feeding can

transcend into other aspects of health decision-making, thereby empowering women to increase

control over other aspects of their own health and the health of their families. In contrast,

breastfeeding literacy may have more relevance at a policy level in analyzing the ways in which

promotion discourses and support policies unintentionally and inequitably affect vulnerable

mothers, namely rural mothers experiencing food insecurity. Thus, there is more clarification

needed in order to move beyond the individual-level framing of these multiple literacy concepts

focusing on basic literacy skills (120), so as not to lose the potential for empowerment and

advocacy for change (122).

7. Concluding remarks

Through the application of a CHL perspective to the issue of breastfeeding support, this research has explored the experiences of women facing food insecurity with respect to HP breastfeeding support, and the institutional forces at the health system level that act as ruling relations and govern interactions of PHNs around breastfeeding. By illuminating four key lines of fault between the everyday experiences of these mothers and breastfeeding support practices and policies in NS, this research has helped to make visible the challenges to breastfeeding among mothers experiencing food insecurity within the current infant feeding culture, both within and external to the health system. The recommendations that are grounded in this research and the existing body of knowledge, with respect to support for breastfeeding among mothers facing food insecurity, aim to address not only barriers to breastfeeding at individual and organizational levels by facilitating more effective HP support, but also provide strategies to address system level barriers. The findings described with a view to CHL also aim to raise awareness of critical ways of thinking about infant feeding, potentially empowering mothers, health and social service professionals, scholars and the broader community towards political advocacy for supportive breastfeeding environments.

Ultimately this research provides support for recognition of breastfeeding as more than a health issue, but also closely tied to the right to food, which may help to shift disempowering discourses and foster greater support for women in their role of feeding the family (78). Similarly, feminist scholars have called for attention to breastfeeding as an issue of women's rights, emphasizing the need for advocacy from a political perspective (68, 78). Recognition of, and emphasis on, breastfeeding as an ecologically sustainable and readily accessible food may help to embed the issue more centrally within food movements and help to unify breastfeeding and food policy agendas, as suggested by Frank (94). Further, increased attention to food movements in recent years (139) may indicate a key opportunity to build support for new mothers with a view to

breastfeeding as a key component of community food security, creating a culture where breastfeeding becomes the easy choice (for those who do choose to breastfeed) thereby contributing to improved exclusive breastfeeding rates. This research adds compelling evidence, along with other published work (86), that suggest a need for collective solutions that address the root causes of food insecurity, such as the sociocultural conditions that constrain mothers' infant feeding decisions, rather than individual level strategies only.

A breastfeeding literacy approach to both infant feeding education and policymaking may help to increase understanding of the relationship between infant feeding and community food security. Although further research is needed to determine how breastfeeding literacy develops and the impact it has on mothers and infant health and well-being, critical approaches to breastfeeding support will likely enable mothers with experience of food insecurity, and other vulnerable groups, to experience some degree of liberation from the oppressive social and economic forces governing their daily lives (109). HPs and policy makers who understand these connections may be better equipped to support mothers and their young children, and most importantly advocate for conditions that respect maternal autonomy and aim to address barriers at the health system level, beginning to rewrite the history of blaming mothers' decisions for broader social problems (29).

Lastly, this research suggests that lower breastfeeding rates among marginalized women should be viewed as a social injustice independent of mothers' individual responsibility; therefore, promotional strategies that contradict these neoliberal views are required to disrupt culturally embedded beliefs around mothers facing food insecurity. Although challenging mainstream ways of thinking will be a slow process, a breastfeeding literacy approach, informed by multiple literacies such as food literacy and CHL, may be one way forward in beginning to uproot unsupportive beliefs and work towards critically conscious infant feeding cultures, thereby supporting actions towards public health goals in improving health equity.

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Appendix A – Identification of Phase 1 transcripts with participants vulnerable to food insecurity

Table 7. Identification of Phase 1 transcripts with participants vulnerable to food insecurity

Transcript Name	Identified as vulnerable to food insecurity by community member/ recruiter	Identified as vulnerable through transcript (i.e., evidence of household food insecurity)	Comments
Kings Breastfeeding Goals Not Met Interview 2	Yes	No	-referred generally to "not having enough money for formula" P: Ah, they might decide to breastfeed because they don't have enough money for the formula or they want to make it healthier for their child ... [8]
Kings Breastfeeding Goals Not Met Interview 4	Yes	No	-referred generally to breastfeeding being financially easier P: I wanted to breastfeed because it's healthier, it's financially easier. You don't have to buy formula and bottles and liners if that's the type of bottle you use. So it's a lot easier on money... [4]
Kings Focus Group Breastfeeding Goals Met 1	Yes	Yes	-"cheaper" referenced as the primary reason for breastfeeding F: So what made you decide to breastfeed? P: It's cheaper. P1: I had a baby. [laughs] P: It's cheaper and I thought it would be more convenient. Boy, was I wrong! [3-7] P: ... And then of course there was the fact that it's a lot cheaper. And even though it was really hard starting out, it was more like, ah, there's no way I could afford to buy formula. And if I stop breastfeeding right now... [10]

Transcript Name	Identified as vulnerable to food insecurity by community member/ recruiter	Identified as vulnerable through transcript (i.e., evidence of household food insecurity)	Comments
			==-referred to not having enough money to buy formula -> Suggests vulnerability to household food insecurity== P: Being broke. [laughs] P: I think that's what really... Like there were days where I did not want to breastfeed anymore. I was so sore, I was so tired. And the fact that we literally had no money, like my baby would have starved if I didn't breastfeed. So it was like, yeah, that... There was no way I could stop so... [291-293] P: So... But um, yeah, it just the...having those supports is what really, besides the fact that I was broke, kept me going.
Pictou Focus Group Breastfeeding Goals Not Met 1	Yes (identified in participant summary as recruited through programs for young food insecure moms)	No	-mentioned breastfeeding as "cheaper" - important motivation for choosing breastfeeding F1: What made you decide to breastfeed? P2: Just a better bond and it's way cheaper and you get better nutrients and stuff and you know nothing is going to harm the baby or anything, that's why I choose to breastfeed in the first place. [5-6] F1: So, from your perspective, why do mothers, in general, in our community choose to breastfeed or not? P1: It's cheaper, it's healthier. [13-14]

Pictou Focus Group Breastfeeding Goals Met 3	Yes (identified in participant summary as recruited through programs for young food insecure moms, Held at KidsFirst)	Yes	==-participant mentioned that formula was unaffordable -> Suggests vulnerability to household food insecurity== P2: The fact that I can't afford formula. I cannot afford formula and I want to breastfeed, I like breastfeeding. I prefer to breastfeed. [75] -also mentioned breastfeeding as "cheaper" as an important motivation for breastfeeding F1: From your perspective, why do mothers (in general) in our community choose to breastfeed or not? P1: Because it's cheaper. F1: So the once who breastfeed, you believe most of them choice to because of the price. P1: Yes. P2: I think mainly because it's cheaper [15-19] P2: Cheaper, free, easier. P1: Save money. [5-6]
Shelburne Interview Breastfeeding Goals Not Met 1	Yes	No	-mentioned breastfeeding as "free" and one of the factors in her decision to breastfeed and a potential influencing factor for other moms F: So question number is, what, originally what made, made you decide to breastfeed? P: Well it's 'cause it's the healthiest option for the baby obviously, I believe that God gave us that ability for that reason so I really wanted it, like I wanted, plus I mean it's, it's free , like not that that was my main reason but I mean that helps. Um, the bonding experiences. All of the things about it I guess. [5-6] F: Okay, um, so from your perspective, why do mothers in general in our community choose to breastfeed or not? What do you think? P: I think they choose to because they realize um, the nutr---maybe the

			nutritional benefits of it because it is free um, the bonding, all the reasons I guess why I did it [21-22]
Shelburne Focus Breastfeeding Group Goals Met 2 - PARTICIPANT 1 ONLY	No	Yes	==-one participant mentioned that formula was unaffordable (P1)-> Suggests vulnerability to household food insecurity== P1: [...]My answer to this question is not so much what made me decide to breast feed but what kept me breast feeding all those days when I really wanted to give up, was the cost. Financially, we could not afford formula, and once I read what was in formula it was bleh! [sound of disgust] There was that to right but on those days that I really thought, no, I'm done with this I really can't handle it anymore, nope that's the only way we are getting through plus our cloth diapers. Those two things right? Huge expenses! Yeah it's just a huge money saver. [16]

Appendix B – MSVU ethics certificate Phase 1

MOUNT SAINT VINCENT UNIVERSITY

University Research Ethics Board

Research Ethics Clearance for Use of Secondary Data

Effective Date	January 5, 2015	Expiry Date	January 4, 2016

File #:	2014-062
Title of project:	*Breastfeeding support in Nova Scotia: Exploring the gap between policy, health professionals' work practices and the everyday experience of mothers facing food insecurity*
Researcher(s):	Madeleine Waddington
Supervisor (if applicable):	Patty Williams
Co-Investigators:	n/a
Version :	1

The University Research Ethics Board (UREB) has reviewed the above named research proposal and confirms that it respects the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* and Mount Saint Vincent University's policies, procedures and guidelines regarding the ethics of research involving human participants. This certificate of research ethics clearance is valid for a period of **one year** from the date of issue.

Researchers are reminded of the following requirements:	
Changes to Protocol	Any changes to approved protocol must be reviewed <u>and</u> approved by the UREB **prior** to their implementation. **Form: REB.FORM.002 Info: REB.SOP.113 Policy: REB.POL.003**
Changes to Research Personnel	Any changes to approved persons with access to research data must be reported to the UREB immediately. **Form: REB.FORM.002 Info: REB.SOP.113 Policy: REB.POL.003**
Annual Renewal	Annual renewals are contingent upon an annual report submitted to the UREB prior to the expiry date as listed above. You may renew up to four times, at which point the file must be closed and a new application submitted for review. **Form: REB.FORM.003 Info: REB.SOP.116 Policy: REB.POL.003**
Final Report	A final report is due on or before the expiry date. **Form: REB.FORM.004 Info: REB.SOP.116 Policy: REB.POL.003**
Unanticipated Research Event	Researchers must inform the UREB immediately and submit a report to the UREB within seven (7) working days of the event. **Form: REB.FORM.008 Info: REB.SOP.115 Policy: REB.POL.003**
Adverse Research Event	Researchers must inform the UREB immediately and submit a report to the UREB within two (2) working days of the event. **Form: REB.FORM.007 Info: REB.SOP.114 Policy: REB.POL.003**

*For more information: http://www.msvu.ca/en/home/research/researchethics/policies/default.aspx

Dr. Derek Fisher, Chair
University Research Ethics Board Hwy Halifax Nova Scotia B3M 2J6 Canada
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msvu.ca/researchethics

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Appendix C – MSVU ethics certificate Phases 2 and 3

Certificate of Research Ethics Clearance

Effective Date	March 11, 2015	Expiry Date	March 10, 2016

File #:	2014-074
Title of project:	Breastfeeding support in Nova Scotia: Exploring the gap between policy, health professionals' work practices and the everyday experience of mothers facing food insecurity
Researcher(s):	Madeleine Waddingham
Supervisor (if applicable):	Patty Williams
Co-Investigators:	n/a
Version :	1

The University Research Ethics Board (UREB) has reviewed the above named research proposal and confirms that it respects the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* and Mount Saint Vincent University's policies, procedures and guidelines regarding the ethics of research involving human participants. This certificate of research ethics clearance is valid for a period of **one year** from the date of issue.

Researchers are reminded of the following requirements:	
Changes to Protocol	Any changes to approved protocol must be reviewed <u>and</u> approved by the UREB **prior** to their implementation. **Form: REB.FORM.002 Info: REB.SOP.113 Policy: REB.POL.003**
Changes to Research Personnel	Any changes to approved persons with access to research data must be reported to the UREB immediately. **Form: REB.FORM.002 Info: REB.SOP.113 Policy: REB.POL.003**
Annual Renewal	Annual renewals are contingent upon an annual report submitted to the UREB **prior** to the expiry date as listed above. You may renew up to four times, at which point the file must be closed and a new application submitted for review. **Form: REB.FORM.003 Info: REB.SOP.116 Policy: REB.POL.003**
Final Report	A final report is due on or before the expiry date. **Form: REB.FORM.004 Info: REB.SOP.116 Policy: REB.POL.003**
Unanticipated Research Event	Researchers must inform the UREB immediately and submit a report to the UREB within seven (7) working days of the event. **Form: REB.FORM.008 Info: REB.SOP.115 Policy: REB.POL.003**
Adverse Research Event	Researchers must inform the UREB immediately and submit a report to the UREB within two (2) working days of the event. **Form: REB.FORM.007 Info: REB.SOP.114 Policy: REB.POL.003**

*For more information: http://www.msvu.ca/en/home/research/researchethics/policies/default.aspx

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Appendix D- 18-item Household Food Security Survey Module
(16)

The following questions are about the food situation for your household in the past 12 months.

Q1. Which of the following statements best describes the food eaten in your household in the past 12 months, that is since [current month] of last year? *

1. You and other household members always had enough of the kinds of food you wanted to eat.
2. You and other household members had enough to eat, but not always the kinds of food you wanted.
3. Sometimes you and other household members did not have enough to eat.
4. Often you and other household members didn't have enough to eat.

– Don't know / refuse to answer **(Go to end of module)**

Questions 2–6 — ask all households

Now I'm going to read you several statements that may be used to describe the food situation for a household. Please tell me if the statement was often true, sometimes true, or never true for you and other household members in the past 12 months.

Q2. The first statement is: you and other household members worried that food would run out before you got money to buy more. Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true

– Don't know / refuse to answer

Q3. The food that you and other household members bought just didn't last, and there wasn't any money to get more. Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true

– Don't know / refuse to answer

* Question Q1 is not used directly in determining household food security status.

Q4. You and other household members couldn't afford to eat balanced meals. In the past 12 months was that often true, sometimes true, or never true?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q5 AND Q6; OTHERWISE, SKIP TO FIRST-LEVEL SCREEN

Now I'm going to read a few statements that may describe the food situation for households with children.

Q5. You or other adults in your household relied on only a few kinds of low-cost food to feed the children because you were running out of money to buy food. Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

Q6. You or other adults in your household couldn't feed the children a balanced meal, because you couldn't afford it. Was that often true, sometimes true, or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

FIRST-LEVEL SCREEN (screener for Stage 2):

If AFFIRMATIVE RESPONSE to ANY ONE of Q2–Q6 (i.e. "often true" or "sometimes true") OR response [3] or [4] to Q1, then continue to STAGE 2; otherwise, skip to end.

Questions 7–11 — ask households passing the First-Level Screen

IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q7; OTHERWISE SKIP TO Q8

Q7. The children were not eating enough because you or other adults in your household just couldn't afford enough food. Was that often, sometimes or never true in the past 12 months?

1. Often true
2. Sometimes true
3. Never true
– Don't know / refuse to answer

The following few questions are about the food situation in the past 12 months for you or any other adults in your household.

Q8. In the past 12 months, since last [current month] did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

1. Yes
2. No (Go to Q9)
– Don't know / refuse to answer

Q8b. How often did this happen?

1. Almost every month
2. Some months but not every month
3. Only 1 or 2 months
– Don't know / refuse to answer

Q9. In the past 12 months, did you (personally) ever eat less than you felt you should because there wasn't enough money to buy food?

1. Yes
2. No
– Don't know / refuse to answer

Q10. In the past 12 months, were you (personally) ever hungry but didn't eat because you couldn't afford enough food?

1. Yes
2. No
– Don't know / refuse to answer

Q11. In the past 12 months, did you (personally) lose weight because you didn't have enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

SECOND-LEVEL SCREEN (screener for Stage 3):

If AFFIRMATIVE RESPONSE to ANY ONE of Q7–Q11, then continue to STAGE 3; otherwise, skip to end.

Questions 12–16 — ask households passing the Second-Level Screen

Q12. In the past 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?

1.Yes

2. No (IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q13; OTHERWISE SKIP TO END)

– Don't know / refuse to answer

Q12b. How often did this happen?

1. Almost every month
2. Some months but not every month
3. Only 1 or 2 months
- Don't know / refuse to answer

IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q13–16; OTHERWISE SKIP TO END

Now, a few questions on the food experiences for children in your household.

Q13. In the past 12 months, did you or other adults in your household ever cut the size of any of the children's meals because there wasn't enough money for food?

1. Yes
2. No
– Don't know / refuse to answer

Q14. In the past 12 months, did any of the children ever skip meals because there wasn't enough money for food?

1. Yes
2. No
- Don't know / refuse to answer

Q14b. How often did this happen?

1. Almost every month
2. Some months but not every month
3. Only 1 or 2 months
   – Don't know / refuse to answer

Q15. In the past 12 months, were any of the children ever hungry but you just couldn't afford more food?

1. Yes
2. No
– Don't know / refuse to answer

Q16. In the past 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

1. Yes
2. No
– Don't know / refuse to answer **[End of module]**

Appendix E - Interview guides

Phase 2 – Interviews with mothers experiencing food insecurity

<u>Introduction</u>
"Thank you for agreeing to participate in this interview. This interview will take the form of a conversation where I'll ask you to reflect on your personal experiences with breastfeeding. I'm here to listen to your stories and so hopefully you'll be doing most of the talking and I'll just be asking you some questions along the way.

I would like to gain a better understanding of your breastfeeding experience related to health professionals and the healthcare system. By health professionals, I mean people you would see in a medical or healthcare setting, such as family doctors or hospital nurses, as well as people you see in community settings like public health nurses. I want to know about your interactions with these different health professionals and how they may have helped or hindered your breastfeeding. I am also interested in how this relates to you and your family's ability to get enough healthy food.

The interview will be audio recorded and typed up following the interview. Quotes from the conversations may be used in reports and other publications, but we will remove all information that could potentially identify you or your family. I may jot some notes down during the conversations just as reminders to myself. If there are any questions you are uncomfortable answering please let me know and we can move on to the next question or take a break at any time. There are no right or wrong answers. Your responses should be based solely on your experience. At the end of the interview I can provide you with a list of community resources in case you are in need of assistance or would like to talk with someone further about your experiences. Do you have any questions before we begin?"

<u>Questions guiding reflective pattern of dialogue:</u>
1. What is your experience in ...? What happens when...? Tell me about when you... What do you do when...?
2. Why do you think this happened?
3. So what does this say about ...?
4. Now what ... ?

<u>General Probes</u>
- Tell me more...
- Tell me a little bit more about...
- Can you expand on that?
- What did you mean by that?
- What does that mean to you?
- How does that make you feel?

Table 8. Phase 2 interview guide

Key Topic Area	Questions	Probes
Introduction	Why did you want to participate?	Why are you interested?
	Can you tell me a bit about yourself and your family?	What year were you born? Where do you live? How long have you lived in [name of community]? How many children do you have? How old are they? What was pregnancy like for you? Were they full-term?
General experience with breastfeeding	Tell me about your experience with breastfeeding.	If you have more than one child, did you attempt to breastfeed before? Did that experience differ? If so, how?
	What was surprising about the experience? What was confusing?	How did that differ from what you expected?
	Are you currently breastfeeding? When/why did you stop?	What changed for you when you stopped breastfeeding/switch to formula/expressed breast milk? -Personal values/factors -family/social network

Key Topic Area	Questions	Probes
	What was breastfeeding like for you? Was it a positive experience overall… negative?	-environment/community
	What worked well or helped you with breastfeeding? AND/OR What did you do to manage these challenges?	Why was that helpful? -Personal values/factors -family/social network -environment/community Seeking out own information, reading, talking to others (i.e., HPs, other moms, family)
General breastfeeding Support	Tell me about the supports for breastfeeding in your community. Who were your supports for breastfeeding? Tell me more about what your [family/partner/friends] did. In general, did you feel supported to breastfeed?	Were you aware of support resources in your community? Were they easy to access? Was there anyone in particular that was important? What role did they play?
Desired improvement to HP support	In an ideal world, what would support look like for you?	What would have made a difference for you?

Key Topic Area	Questions	Probes
	How would you improve HP breastfeeding support for yourself and other mothers?	-better access/availability, different types of support, different timing of support etc.

<u>Closing Remarks</u>
"Thank you for your participation. I appreciate you sharing your experiences with me. Your comments have been recorded and will be typed up. Once again, all of the information will remain completely confidential and will only be shared between my thesis committee members and myself. If you have any questions about the research, please don't hesitate to contact me."

Phase 3 - Interviews with PHNs

<u>Introduction</u>
"Thank you for agreeing to participate in this interview. This interview will take the form of a conversation in which I will ask you to reflect on some of your experiences with promoting and supporting breastfeeding in your practice. I want to know about your everyday interactions with mothers around breastfeeding. The goal of this interview is to understand your role(s) in breastfeeding support and any barriers you encounter in fulfilling these role(s).

The interview will be recorded and transcribed. I may jot down some notes during the conversations as reminders to myself. Quotes from the conversations may be used in reports and other publications, but every effort will be made to remove identifying information. However because the quotes may be specific to your practice/organization it may be possible for people with in-depth knowledge of your work to identify you through the quotes. For this reason I'll ask you to please only share information you are comfortable with. You will also be given the opportunity to review key quotes to ensure that any identifying information is removed and that quotes accurately reflect your comments. If there are any questions you are uncomfortable answering please let me know and we can move on to the next question or take a break at any time. There are no right or wrong answers. Your responses should be based solely on your experience. Do you have any questions before we begin?"

<u>Questions guiding reflective pattern of dialogue:</u>
1. What is your experience in ...? What happens when...? Tell me about when you... What do you do when...?
2. Why do you think this happened?
3. So what does this say about...?
4. Now what ...?

<u>General Probes</u>
- Tell me more…
- Tell me a little bit more about…
- Can you expand on that?
- What did you mean by that?
- What does that mean to you?
- How does that make you feel?

Table 9. Phase 3 interview guide

Key Topic Area	Questions	Probes
Introduction	Why did you want to participate in this study?	Why are you interested?
	Can you tell me a little bit about your professional background?	Occupation, total years of practice, total years experience with promoting and supporting breastfeeding
	Why did you go into this field? How did you end up doing this job?	
	Tell me about what (if any) education or training you may have received regarding breastfeeding?	-formal/informal -academic education -job orientation/training -workshops/in-services
	Do you have any personal experience with breastfeeding?	If yes, do you feel comfortable sharing your experience? How does your personal experience with breastfeeding influence how you support breastfeeding moms?
Perceptions of role in breastfeeding support	Tell me about your role in promoting and supporting breastfeeding.	-enabling access to information/services -linking with other supports in the community -providing easy to read materials -enabling client-provider interaction -enabling women to feel confident and comfortable with breastfeeding -advocacy on behalf of mothers -Discussing realities of the everyday experience/sharing experiential knowledge

Key Topic Area	Questions	Probes
	Tell me about who or what is involved in defining your role in breastfeeding support.	-policies, standards of practice, professional responsibilities, organizational mandates.
	Is breastfeeding promotion and support an important part of your practice?	Why/why not?
	How important do you think HP support is to mothers?	In what ways is HP support important? If not, why is this the case? Probes: compared to family/peer/community support
	What are your goals/objectives when interacting with pregnant women and mothers around breastfeeding?	
	What are your main messages that you communicate to promote/support breastfeeding?	Why are these messages important? In your opinion are there any unintended consequences of these messages?
Mothers' barriers to breastfeeding	In your opinion, what are some barriers to breastfeeding that mothers who you encounter in your practice face?	-Personal values/factors -family/social network -environment/community -financial barriers What are the implications of these barriers for your practice?
Maternal self-efficacy	What role does self-efficacy and confidence play in enabling women to breastfeed?	Self-efficacy: belief in ability to succeed What are the implications of this for your practice? -enabling CHL skills: information appraisal, understanding social

| Key Topic Area	Questions	Probes
	What can be done to enhance women's self efficacy?	determinants of health, engaging in self-advocacy
Relationship to food security	In your opinion, does a mom's ability to access or afford healthy food impact her decision to breastfeed/formula feed?	Tell me more... -readily available source of food, affordability, "best for baby", breastfeeding as a barrier to earning an income, long term costs associated with breastfeeding How do you see these things being connected?
	In your experience, is lack of access to healthy food a barrier to breastfeeding?	Why/why not? What are the implications of this for your practice?
	When working with breastfeeding moms, is identifying if they experience food insecurity part of your practice?	Def. of food insecurity: lack of access to food to meet dietary needs and food preferences, often due to financial reasons Why/why not? If yes, how do you do this?
	Does a family's food security status affect how you approach breastfeeding?	Why/why not? How? Probes: added pressure due to financial constraints, stress, judgment/stigma, referrals to other supports in the community
	Are there any barriers you encounter in getting support for moms experiencing food insecurity?	Probes: Inadequate resources/supports in the community, lack of mandate to address food insecurity, mother's pride
Sense of personal self-efficacy in promoting and	How confident are you in your ability to support	Adequate education/training, personal experience with breastfeeding, supporting evidence, strong

Key Topic Area	Questions	Probes
supporting breastfeeding	breastfeeding mothers? Why? What has influenced your level of confidence in supporting breastfeeding?	institutional mandates (i.e., public health) What are the implications of your level of confidence for your practice?
Barriers to promoting, supporting, and protecting breastfeeding	What are some difficulties you encounter in promoting breastfeeding? What are some difficulties you encounter in supporting breastfeeding moms?	time constraints, competing responsibilities, tensions/conflicts, lack of acceptance of advice, avoiding creating feelings of shame/guilt, challenges with physical accessibility in rural areas, cultural differences in rural areas Why do you think this happens? How do you deal with these tensions/conflicts (i.e., unsupportive healthcare environments) in your daily practice?
Perceptions breastfeeding support	What other resources in the community are supporting breastfeeding moms? In your opinion, what would "ideal" breastfeeding support look like? What (if any) role do HPs play in supporting mothers who choose not to breastfeed?	In your opinion, are these supports effective? Why/why not? How is their role different from yours?
Desired changes	What could be changed to make your promotion and support efforts easier or more effective?	In your opinion, are these supports effective? Why/why not? How is their role different from yours?

Key Topic Area	Questions	Probes
Wrap-up	Is there anything else you would like to share about yourself/your practice that may impact your work around promoting breastfeeding? Is there anything that I didn't ask that you wish I did?	Is there anything you want to add or go back to?

Closing Remarks

"Thank you for your participation. I appreciate you sharing your experiences with me. Your comments have been recorded and will be transcribed. Once again, all of the information will remain completely confidential and will only be shared between my thesis committee members and myself. If you have any questions about the research please don't hesitate to contact me. If you indicated your interest, I will be in touch to share summary notes and key quotes with you, as well as the research findings at study completion."

Appendix F – NSHA ethics certificate Phase 3
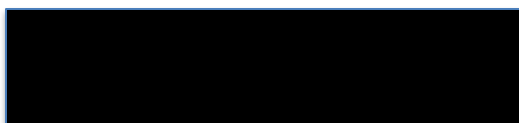
October 23, 2015

Ms. Madeleine Waddington
No District Health Authority Affiliation

Delegated Review
Full Approval Letter
(October 23, 2015 to October 23, 2016)

Dear Ms. Waddington:

RE: Breastfeeding support in Nova Scotia: Exploring the gap between policy, health professionals' work practices and the everyday experience of mothers facing food insecurity.

NSHA REB ROMEO File #: 1020320

Thank you for your response regarding your proposed study.

Document Name	Comments	Version Date
Investigator Response/Revisions	Version 1	2015/10/19
Consent Form	Version 2	2015/10/14
Research Protocol	Version 2	2015/10/14
Supporting Materials	Interview Guide, (no version #, no date)	-
Letter of Support	Letter of Support SI Dept, Signed by Sheila Sears	2015/10/15

I have reviewed these documents on behalf of the Research Ethics Board (REB) and note that all requested changes have been incorporated.

I am now pleased to confirm the Boards full approval for this research study, effective today. This includes approval / favorable opinion for the following study documents:

Document Name	Comments	Version Date
Supporting Materials	Interview Guide, (no version #, no date)	-
Review Comments/Correspondence	Certificate of Ethics Clearance from MSVU REB (File #2014-074)	2015/03/11
Researcher's Commitment Form	SI	2015/09/10
Researcher's Checklist for Submission	-	-
Research Protocol	Version 2	2015/10/14
Letter of Support	Signed and Dated by Dr. Patty Williams	2015/09/09
Letter of Support	Letter of Support SI Dept, Signed by Sheila Sears	2015/10/15

Investigator Response/Revisions	Version 1	2015/10/19
Curriculum Vitae (CV)	PI's abbreviated CV	2015/09/14
Curriculum Vitae (CV)	Supervising Investigator's abbreviated CV	2015/09/10
Consent Form	Version 2	2015/10/14
Certificate of Completion TCPS 2: CORE	Principal Investigator's TCPS Certificate	2014/07/11
Certificate of Completion TCPS 2: CORE	Supervising Investigator's TCPS certificate	2015/07/09

Continuing Review

1. **The Boards approval for this study will expire one year from the date of this letter, October 23, 2016 .** To ensure continuing approval, submit a Request for Annual Approval to the Board 2-4 weeks prior to this date. If approval is <u>not</u> renewed prior to the anniversary date, the Board will close your file and you must cease all study activities immediately. To reactivate a study, you must submit a new Initial Submission (together with the usual fee) to the REB and await notice of re-approval.
2.Please be sure to notify the Board of any:
* Proposed changes to the initial submission (i.e., new or amended study documents or supporting materials),
* Additional information to be provided to study participants,
* Material designed for advertisement or publication with a view to attracting participants,
* Serious unexpected adverse reactions experienced by local participants,
* Unanticipated problems involving risks to participants or others,
* Sponsor-provided safety information,
* Additional compensation available to participants,
* Upcoming audits /inspections by a sponsor or regulatory authority,
* Premature termination / closure of the study (within 90 days of the event).
3. Approved studies may be subject to internal audit. Should your research be selected for audit, the Board will advise you and indicate any other requests at that time.

Important Instructions and Reminders

1. Submit all correspondence to Ethics Coordinator, Pamela Trenholm at the address listed at the top of this letter (do <u>not</u> send your response to the REB Chair or Co-Chair).
2. Login to the Research Portal; click Applications (Submitted - Post Review), browse through files to locate the study in which you wish to make revisions to; click the Events Button and choose the type of revision you wish to make from the table provided; complete the electronic form and attach document under the attachments tab if required and Click on the Submit button.%
3. Be sure to reference the Boards assigned file number, Romeo No. 1020320, on all communications.
4. Highlight all changes on revised documents, and remember to update version numbers and/or dates.

Best wishes for a successful study.

Yours very truly,

Larry Broadfield, BScPharm, MHSc, FCSHP
Co-Chair, Research Ethics Board

This statement is in lieu of Health Canada's Research Ethics Board Attestation:
The Research Ethics Board for the Nova Scotia Health Authority operates in accordance with:

- Food and Drug Regulations, Division 5 "Drugs for Clinical Trials Involving Human Subjects"
- Natural Health Products Regulations, Part 4 "Clinical Trials Involving Human Subjects"
- Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2)
- ICH Good Clinical Practice: Consolidated Guideline (ICH-E6)

cc: Lisa Underwood, Director, Research Services
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Appendix G – Recruitment

Phase 2 – Interviews with Mothers

May, 2015

To Whom It May Concern:

My name is Madeleine Waddington, and I am a graduate student from the Food Action Research Centre, or FoodARC, based at Mount Saint Vincent University. I am completing my Masters in Applied Human Nutrition, and I am inviting you to participate in my thesis research project. The purpose of this research is to gain a better understanding of your breastfeeding experience related to health professionals and the healthcare system. By health professionals, I mean people you would see in a medical or healthcare setting, such as family doctors or hospital nurses, as well as people you see in community settings like public health nurses. I want to know about your interactions with these different health professionals and how they may have helped or hindered your breastfeeding. I am also interested in how breastfeeding relates to you and your family's ability to get enough affordable, healthy, and culturally appropriate food.

I want to hear from mothers who experience challenges affording and accessing food for themselves or their families **and** who have breastfed, or tried to breastfeed, a child **within the last 2 years.** This can include any breastfeeding, from less than a day to more than a year. Participation would involve responding to a questionnaire over the phone, which takes approximately 10-15 minutes to complete. Depending on your responses to this questionnaire, you would then be asked to participate in a face-to-face interview lasting 60-90 minutes, in a location that is convenient for you. Participants will receive a $20 gift card to a local grocery store to make up for any costs associated with participation in interview.

If you are interested in taking part please contact me at ▓▓▓▓▓▓▓▓ or ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓ for more information.

Thanks for your interest in my research,

Madeleine

Figure 3. Phase 2 recruitment poster

Phase 3 - Interviews with PHNs

Script for invitations (written, email or phone):

"My name is Madeleine Waddington, and I am a graduate student from the Food Action Research Centre, or FoodARC, based at Mount Saint Vincent University. I am completing my Master of Science in Applied Human Nutrition, and I am inviting you to participate in my thesis research project. The purpose of this research is to understand the role of health professionals in promoting and supporting breastfeeding among women with experience of food insecurity in Nova Scotia (NS), Canada. I am interested in better understanding the **experiences of health professionals [replace with specific job title] who engage in promoting and supporting breastfeeding on a regular basis in their practice.**

Participation will involve a 60-90 minute, one-on-one interview where I will ask you to reflect on some of your experiences promoting and supporting breastfeeding in your practice. The goal of these interviews is to understand health professionals' everyday interactions with mothers around breastfeeding, as well as their perceived roles in breastfeeding support and any barriers encountered in fulfilling these roles.

If you are interested in taking part please contact me at ███████████ or ████████████████████████████ for more information."