Nurse-Family Partnership and Geography

Understanding the Influence of Geography on the Delivery of the Nurse-Family Partnership Program in British Columbia, Canada

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**LAY ABSTRACT**

Living in social or economic disadvantage is associated with negative health outcomes for Canadian families. Young mothers and their children are one such group at risk for suboptimal health outcomes, creating a significant public health concern. The Nurse-Family Partnership is a targeted public health intervention program designed to improve child and maternal health through nurse home visiting. As this program is evaluated for uptake in Canada, this thesis examines the delivery within the context of Canadian geography. Factors that influence program delivery for public health nurses in Canada are explored.

**ABSTRACT**

Nurse-Family Partnership is a targeted public health intervention program designed to improve child and maternal health through nurse home visiting. Adolescent girls and young women who are pregnant or living in situations of social and economic disadvantage are at increased risk for poor health. Rural living may compound marginalization and create additional challenges for young mothers. In the context of a large-scale process evaluation, I posed the question: “In what ways do Canadian public health nurses explain their experiences with delivering this program across different geographical environments?” This thesis represents a purposeful attempt to examine the experiences of public health nurses as they deliver the Nurse-Family Partnership program across different geographical settings in British Columbia, Canada.

The qualitative methodology of interpretive description guided study decisions and data were collected through focus groups and semi-structured interviews with public health nurses delivering the Nurse-Family Partnership program and their supervisors. Consisting of three studies linked by their focus of evaluating Nurse-Family Partnership in British Columbia, this thesis explores influences on program delivery across the rural-urban continuum, including issues related to nurse recruitment, retention, and turnover. Overall, the findings from these analyses suggest that the nature of clients’ place and their associated social and physical geography emphasizes that geography has a significant impact on program delivery for clients who were living with multiple forms of oppression and it worked to reinforce disadvantage.

In manuscript one, exploration and description of factors that contribute to recruitment, retention, and turnover of public health nurses delivering Nurse-Family Partnership in British Columbia, Canada are presented. Then manuscript two reflects the factors and challenges of providing the NFP program in rural communities. The final manuscript applies an intersectional lens to reveal how the nature of clients’ place and their associated social and physical geography emphasizes inadequacies of organizational and support structures that create health inequities for clients.

The collective work of this thesis emphasises the importance of location as a factor affecting home visitation programs. In rural environments, public health nurses are resourceful and can provide insight into important considerations for program delivery. These may include enhanced use of technology for communicating with supervisors, nurses, or clients through cell phone/videoconferencing or experiencing rugged terrain and extreme weather conditions. Public health nurses practicing in urban areas also have geographical considerations that are location specific, including precariously housed clients whose locations are transient and providing care to clients living in unsafe conditions. Across all environments, time was a valued commodity and effective communication was essential. Supporting nurses as they deliver Nurse-Family Partnership in Canadian communities can help nurse retention in a program with many positive attributes. Working with vulnerable populations, building relationships with clients, regular reflective supervision and team meetings were among the top reasons public health nurses enjoyed being involved in Nurse-Family Partnership. Reasons leading to turnover are also discussed.

**Keywords**

Public health nursing; rural; Nurse-Family Partnership; Interpretive Description; home visitation

**DEDICATION**

I dedicate this thesis to my family – Travis, Tyler, and Aislinn.

It is because of you that I am the mother I have become today.

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**LIST OF ABBREVIATIONS**

PHN(s) public health nurse(s)

NFP Nurse-Family Partnership

BCHCP British Columbia Healthy Connections Project

RCT randomized controlled trial

SUP supervisor

**DECLARATION OF ACADEMIC ACHIEVEMENT**

This sandwich thesis consists of three articles accepted or published in peer-reviewed journals. The student, Karen Campbell, is the primary author on all publications. She held the primary responsibility for the following: generation of research questions, research design, data analysis, interpretation of results, writing of manuscripts, and the incorporation of feedback from her thesis committee co-authors, British Columbia Healthy Connections Project (BCHCP) process evaluation research team members, BCHCP steering committee members, and journal reviewers into the manuscript revisions. This thesis is the culmination of work reviewed by the student’s thesis committee, which consisted of Dr. Susan Jack, Dr. Karen MacKinnon, and Dr. Maureen Dobbins. In addition, members of the BCHCP process evaluation research team (Natasha Van Borek, Dr. Lenora Marcellus, and Dr. Christine Kurtz Landy) were co-authors on two articles/manuscripts.

**CHAPTER ONE**

**Introduction**

The World Health Organization (2016) emphasizes the importance of a positive pregnancy experience, marked by appropriate and consistent antenatal care, for adolescent girls and women to reach optimal health outcomes for themselves and their infants. The days and weeks following birth are a critical time when it is essential that new mothers have access to supports that facilitate safe entry to parenthood (World Health Organization, 2013). Home visiting programs are one method of providing nursing care during the perinatal and early parenting periods. In North America, since the turn of the 20th century, public health nurses (PHNs) have provided nursing care to communities through health promotion, education, and disease and injury prevention (Stamler et al., 2020). Particularly in Canada, PHNs have a well-established role in promoting maternal and child health through the delivery of programs, services, and interventions intended to optimize health outcomes for families (Stamler et al., 2020).

Universal approaches to maternal and infant health often involve telephone calls or home visits from PHNs to mothers in the immediate postpartum period (Glauser et al., 2016). Almost half of all women delivering a baby in Canada consult with a PHN in the first year postpartum (Canadian Institute for Health Information, 2004). The purposes of these interactions are typically to assess clients’ needs, refer to community supports, assist with infant feeding, and answer parenting questions (Glauser et al., 2016). A report from the Canadian Institute for Health (2004) revealed that mothers respect and value nurses’ knowledge, judgement, and skills. In addition, public health agencies often offer diverse services that focus on health equity approaches for populations who may be at increased risk for suboptimal health outcomes (Stamler et al., 2016). Home visiting is a preventive, personalized strategy used to enhance family health within clients’ home environment (National Collaborating Centre for Determinants of Health [NCCDH], 2010).

Evidence suggests that early-intervention home-visiting programs can positively influence short- and long-term health outcomes for mothers and their children (Aston et al., 2016; Howard & Brooks-Gunn, 2009; Kersten-Alvarez et al., 2010; Olds et al., 2014; Peacock et al., 2013; Sadler et al., 2013; SmithBattle et al., 2013; Sweet & Appelbaum, 2004; Vanderburg et al., 2010). There is no evidence to suggest that a universal approach to home visiting is effective (NCCDH, 2010); however, nurse home-visitation interventions in the pre- and post-natal period for clients with low income and low education produce significant benefits (Ciliska et al., 2006). For many parents living in situations of economic or social disadvantage, nurse home-visitation programs have positively influenced physical, social, emotional, relational, and mental health outcomes (Aston et al., 2016; Howard & Brooks-Gunn, 2009; Kersten-Alvarez et al., 2010; Olds et al., 2014; Peacock et al., 2013; Sadler et al., 2013; SmithBattle et al., 2013; Sweet & Appelbaum, 2004; Vanderburg et al., 2010).

Every province and territory in Canada offers some variation of a public health early childhood home visitation program, commonly for families with an identified need (NCCDH, 2009). These programs differ based on the service provider, length of intervention, frequency of visits, structure and goals of the program, and client eligibility criteria (NCCDH, 2009, 2010). In Canada, there remains an inconsistent understanding of which programs should be implemented, who could benefit most from these types of supports, and how programs should be delivered in Canada. The Nurse-Family Partnership® (NFP) program is an example of a public health nursing home visitation intervention for families experiencing disadvantage, which is being tested for efficacy in Canada (Catherine et al., 2016; Jack et al., 2015; Public Health Agency of Canada, 2016). Location is the consistent element across all home visitation programs, specifically that the domain of care is typically outside of the physical environment of a hospital or an institutional structure. The placeof home visiting interventions is a significant feature because the location of visits is often determined by the client and practitioners must be responsive and flexible to adapt their services to the selected location of care. Therefore, geography becomes an important contextualizing factor that influences the delivery of this type of nursing service.

**Purpose**

The purpose of this thesis is to explore the experiences of PHNs, and their supervisors, who were responsible for the implementation and delivery of NFP in British Columbia (BC), Canada between 2013 to 2018. This thesis work was embedded within a larger mixed methods study, the British Columbia Healthy Connections Project (BCHCP) process evaluation, conducted over a five-year period to document how NFP was implemented and delivered across five unique regional health authorities. The description of this overarching project, led by a multidisciplinary research team of which I was a member, is published elsewhere (Jack et al., 2015). My independent thesis work was conducted as part of this overarching study.

The primary objective of this doctoral research project was to determine the influence of rural geography on the delivery of the NFP intervention; a secondary objective was to examine how geography, more broadly understood, influenced NFP delivery from the perspective of PHNs. The BCHCP process evaluation research team recognized the need for a comprehensive understanding of workforce factors; therefore, the final objective was to consider NFP nurse recruitment, retention, and turnover and how these work-related issues are influenced by geography and other factors. This thesis consists of three qualitative manuscripts that include analyses of data from the BCHCP process evaluation, specifically the experiences of PHNs and their supervisors. In this chapter I introduce the NFP program as a targeted home visitation program, discuss my positionality as the primary researcher approaching this analysis, and outline the contents of this thesis.

**Nurse-Family Partnership**

First, in this section I provide an overview of the NFP program elements and a critical synthesis of the evidence documenting the effectiveness of NFP as a public health intervention in influencing a range of maternal and infant health outcomes. Additional details about NFP are also included in Chapters two to four.

In the 1970s, developmental psychologist, Dr. David Olds, developed a parenting intervention inspired by his work in a daycare facility and his interest in infant attachment (Goodman, 2006). Working as a graduate student and mentored by prominent psychologist, Bronfenbrenner, David Olds determined that elements of the intervention would include home visits with first-time parents during pregnancy (Goodman, 2006). Finally, nurses were chosen to deliver the program because of their disciplinary skill in providing care to parents and because they were considered to be a trusted profession (Goodman, 2006; Olds, 2006). Over the next four decades this intervention would be formally evaluated for its effectiveness and eventually became known as the NFP program (Goodman, 2006).

The NFP program has evolved over this time in response to research outcomes but the original model remains at its core (Olds et al., 2003). Specially trained, baccalaureate-prepared registered nurses intensively and regularly visit young, low-income, first-time mothers, beginning in pregnancy and continuing until the child’s second birthday (Dawley et al., 2007; Olds, 2006; Prevention Research Center for Family and Child Health [PRCFCH], 2017). Program goals include: 1) improving pregnancy outcomes by encouraging preventative health practices, such as receiving prenatal care, improving diet, and reducing or eliminating use of cigarettes, alcohol, and illegal substances; 2) improving child health by promoting safe and competent parenting behaviours; and 3) improving maternal life-course through delaying subsequent pregnancies, educational achievement, and attaining employment (PRCFCH, 2017). The program also has secondary goals of enhancing support by linking families to required health and social services and promoting safe and supportive relationships with family and friends (Dawley et al., 2007).

Core model elements, informed by the theoretical and evidentiary foundations of the program, were developed and any agency licenced to deliver NFP must follow them (PRCFCH, 2017). Four of these model elements operationalize the eligibility criteria for the program. First, it is essential to the integrity of the program that individuals voluntarily enrol in NFP (PRCFCH, 2017). The remaining three primary eligibility criteria are that: 1) clients should have had no previous live births, 2) meet socioeconomic disadvantage criteria (age and/or income), and 3) must be enrolled early in pregnancy (prior to end of 28th week of gestation) (Olds, 2006; PRCFCH, 2017). These criteria were chosen for a variety of reasons as the original program developers believed that mothers with no previous live births would be more receptive to nursing services and the effects of the program should enhance parenting of subsequent children (Olds, 2006). Reaching parents early in pregnancy is necessary to achieve prenatal and birth outcomes and allows for the development of nurse-client relationships (Olds, 2006). Finally, research suggests that the problems of low birth weight, child maltreatment and neglect, and limited economic self-sufficiency, which the program aims to address, are concentrated in low-income and young parent populations (Driscoll, 2014; Kurtz Landy et al., 2008; Mollborn & Morningstar, 2009; Olds, 2006; SmithBattle, 2007, 2019; SmithBattle & Freed, 2016).

Nurses delivering the NFP program, and their supervisors, receive education specific to the intervention and its goals (O’Brien, 2005; Olds, 2006; PRCFCH, 2017). While the structure and mode of delivery of the NFP nurse curriculum may differ between or within countries, the core content is consistent. All nurses receive NFP education that is ongoing and focuses on communication, problem-solving, and building relationships to help nurses support clients in complex social or health crises (PRCFCH, 2017). This is achieved by providing a comprehensive orientation to all parts of the NFP including, program history, theoretical and evidentiary foundations, and core model elements (PRCFCH, 2017). Training is also focused on delivering the intervention with fidelity to the program model, while being able to tailor the program to each client and family (PRCFCH, 2017). In addition, NFP education advances nurses’ knowledge and skills related to relevant content areas (e.g. development of therapeutic relationships, assessment of parent-infant attachment, or identification and responses to intimate partner violence) (PRCFCH, 2017). NFP supervisors are also provided with education specific to their role.

The nursing supervisor role is pivotal to the NFP intervention and enhances nurses’ work with families (Andrews, 2016; Beam et al., 2010). As a core element of the NFP model, each nurse and supervisor engage in regular one-to-one sessions that focus on administrative, clinical, and reflective supervision (PRCFCH, 2017). Supervisors also accompany the nurse on a joint home visit approximately every three months. Bi-weekly structured team sessions are scheduled and may include case conferences, team meetings, or education (PRCFCH, 2017). Unlike typical supervision models in nursing, the essence of NFP supervision is based in and specifically tailored to model the communication style, known as the parallel process, which is reflected in how nurses interact with NFP clients (Rowe, 2011). The qualities of respect, humility, reflective listening, and quiet enthusiasm are essential to communicating with parents and are modelled in nurse-supervisor conversations (Tallon et al., 2015). During this time, nurses are supported to address complex client issues and reflect upon their practice (Andrews, 2016). Many practitioners express the positive effects of reflective supervision and indicate that it may reduce job-associated stress (Dawley et al., 2007; Watson et al., 2014); thus, reflective supervision may aid in staff retention.

**Program Context**

The NFP program involves scheduled home-visits that occur over approximately two and a half years, primarily in clients’ homes, on a one-to-one basis within the context of developing therapeutic relationships (PRCFCH, 2017). Nurses conduct comprehensive nursing assessments, respond to clients’ needs and requests, and address program educational topics. NFP offers visit-by-visit guidelines that reflect the different stages of pregnancy and parenting and provide direction to appropriate assessments (Olds, 2006). Nurses use their clinical judgement to apply these guidelines across six domains: personal health; environmental health; life course development; maternal role; family and friends; and health and human services. Nurses can use the guidelines to recommend strategies, provide resources, and deliver activities specific to clients’ needs.

In addition to its intentionality, NFP is also an intensive home-visitation program. Nurses begin delivery of the program early in pregnancy (ideally at 16 weeks gestation) with weekly visits that are often 60 to 90 minutes in length (PRCFCH, 2017). After the first month, visits are scheduled bi-weekly for the remainder of the pregnancy and the weekly schedule resumes for the first six weeks postpartum (PRCFCH, 2017). Visits continue on a bi-weekly schedule until 20 months, with the final four visits on a monthly basis (PRCFCH, 2017). Although this is the recommended schedule, nurses’ judgement and client preference determine the location, length, and frequency of visits based on clients’ needs (Ingoldsby et al., 2013).

**Theoretical Frameworks**

Early intervention and home visitation programs often fail to meet their objectives because they are not based in sound theory or evidence (Olds, 2006; Olds & Kitzman, 1993). NFP is firmly grounded in three theories: human ecology theory (Bronfenbrenner, 1979); self-efficacy theory (Bandura, 1998); and, the theory of human attachment (Bowlby, 1969). Since the inception of NFP, the integration of these theoretical frameworks from disciplines outside of nursing have been used to guide program development and organization. In this section, I provide a review of each theory and its relevance to NFP nursing practice.

***Human Ecology Theory***

Human ecology theory, also known as the ecological systems theory, provides an explanation of how human development is influenced by an individual’s innate qualities, the environment where they live, and are shaped over time (Rothery, 2005). Ecosystem perspectives have existed since the establishment of social work as a discipline (Rothery, 2005); however, in the 1970s, Bronfenbrenner (1979; 2005) formulated a conceptual framework to describe peoples’ embeddedness within their environments (Coady et al., 2016; Rothery, 2005). While human ecology theory can be difficult to apply on a clinical level because it is metaphorical and requires abstract thinking, it is widely accepted as the best available tool to help practitioners to better understand their clients’ situations and decision-making processes (Rothery, 2005).

Bronfenbrenner’s human ecology theory organizes external environments in five layers surrounding an individual (Rothery, 2005). The smallest environment, known as the *microsystem*, is comprised of interpersonal relationships and immediate surroundings (e.g. family, daycare, peers, school, healthcare providers, social media sites, etc.) (Rothery, 2005). How individuals are treated or interact at this level influences how they treat and interact with others (Coady et al., 2016; Rothery, 2005). Supportive and nurturing environments and relationships will foster optimal human development and behaviours (Coady et al., 2016; Rothery, 2005).

At the next layer, *the mesosystem*, involves the interactions and linkages between microsystems (Rothery, 2005). It may include the relationships between family members or the connection that a parent has to a child’s daycare or school. The quality of these relationships between microsystems affects the individual at the core. The *exosystem* includes people or places that indirectly affect the individual (Rothery, 2005). This may include extended family members, parental workplaces, city laws or regulations, for example. The final and largest ring is the *macrosystem*. It represents the cultural patterns and values, political climate, and/or economical systems that influence an individual’s dominant beliefs and ideas (Rothery, 2005). The *chronosystem* recognizes the dimensionality of time; systems may change over time based on fluctuations in the environment or relationships (Coady et al., 2016; Rothery, 2005).

***Self-Efficacy Theory***

Self-efficacy theory, a central concept and subset to Bandura’s social cognitive theory, refers to people’s beliefs about their ability to produce outcomes and influence events in their lives (Bandura, 1998). High levels of self-efficacy foster interest and engagement in activities with a goal of mastery, as well as enhancing personal well-being, successes, and resiliency (Bandura, 1998). Conversely, individuals with low levels of self-efficacy avoid difficult tasks and have weak commitment to their goals (Bandura, 1998). Self-efficacy can change over time and depends upon the experiences and circumstances in which behaviours occur (Maddux, 2002; Snyder et al., 2010).

Success is the most effective method of bolstering self-efficacy (Bandura, 1998). Individuals who persevere through difficulties, emerge stronger from adversity with higher perceived self-efficacy (Bandura, 1998). Other sources of information affecting self-efficacy include vicarious experiences or through social persuasion (Bandura, 1998). If an individual observes competent behaviours and considers themselves similar to that person, it is possible to acquire effective skills, strategies, and knowledge vicariously leading to increased self-efficacy (Bandura, 1998). Social persuasion involves verbal reinforcement of a person’s ability to master a situation, but it most often requires actions that facilitate success and undermining self-efficacy through persuasion is more common (Bandura, 1997; Maddux, 1995, 2002). Finally, reducing stress reactions and enhancing positivity can boost self-efficacy (Bandura, 1998).

Self-efficacy theory has important applications for promoting wellness and health. High self-efficacy beliefs are vital for long-term behaviour changes that are critical for good health (e.g. exercise, diet, smoking cessation, abstaining from drugs or alcohol, stress management, safe sex practices) (Bandura, 1997; Maddux, 1995, 2002). Physiological responses to stress are also influenced by self-efficacy and low self-efficacy beliefs can affect immunology and activate stress responses through the release of neurotransmitters (Bandura, 1997; Maddux, 1995, 2002). This may result in an increased susceptibility to infections or disease progression in individuals with low perceived control in their environment and/or the release of endorphins to manage perceived threats (Maddux, 2002). Bandura’s theory focuses on the positive aspects of psychological functioning and specifically the enabling factors and personal resources that an individual can employ to assert control over their environment and set a successful life course.

***Theory of Human Attachment***

Bowlby’s (1969) theory of attachment posits that infants have a biological and universal need to be in close proximity to their caregiver in situations of stress. Attachment theory is ultimately a spatial theory within an evolutionary context; the infant feels love when the mother is near and fear in the absence of the mother because of threats to the infant’s survival (Holmes, 2014). Of Bowlby’s original tenets of attachment theory, three remain uncontested: 1) attachment occurs through affectional bonds with a specific person and their presence or absence results in emotional responses; 2) the attachment process is complex and it does not necessarily require the birth mother or any prescribed experiences; and, 3) between the ages of six months to four years, brief separation from the primary attachment figure produces distress; longer separation causes a mourning process and will require positive circumstances to achieve new attachment (Mercer, 2011). Although mothers are central to attachment theory, it is possible that another primary caregiver could fill this role (Bretherton, 2010).

Ainsworth is credited with expanding Bowlby’s attachment theory through labelling maternal behaviours that lead to infant attachment (Bretherton, 1992). Although she was initially interested in separation during the infant weaning process, Ainsworth came to study maternal-infant attachment because of the profound and life-long affects she believed it to have on the health and wellbeing of the infant (Bretherton, 1992; Holmes, 2014). Ainsworth’s Strange Situation Procedure is the gold standard in measuring maternal-infant attachment and it involves four patterns of attachment: secure, avoidant, resistant, and disorganized (Benoit, 2004; Bretherton, 1992; Holmes, 2014). Displays of disorganized attachment in infancy or early childhood are associated with serious and life-long maladjustment and psychopathology (Benoit, 2004; Finelli et al., 2019). Infants will develop attachment even in situations of neglect or maltreatment but it is the quality of attachment that can be a predictor of future health, social, and emotional outcomes (Benoit, 2004; Holmes, 2014).

Attachment theory also considers other factors that influence the attachment process. For example, the mother’s own perceptions of how she was parented may influence her attachment behaviours towards the infant (Holmes, 2014; Main & Hesse, 1990). In situations of violence (emotional, physical, or sexual), mothers may display atypical attachment behaviours, thus have infants with disorganized attachment patterns requiring support and evaluation (Benoit, 2004; Zeanah et al., 1999). It is possible for infants to have multiple attachment patterns depending on the caregiver and attachment to fathers may have different but complementary health outcomes to those experienced with mothers (Benoit, 2004; Bretherton, 2010). Responding regularly and affectionately during infancy and early childhood supports secure attachment, reduces the likelihood of attachment disorders, and enhances future physical, mental, and social health outcomes (Benoit, 2004; Finelli et al., 2019; Holmes, 2014).

***Application of Theories***

Evidence of the three guiding NFP theories is noticeable in the program design and clinical application. It is from this orientation that NFP was designed to emphasize a number of client centred principles, which nurses apply in their practice and include: 1) the client is the expert of her life; 2) only a small change is necessary; 3) follow the client’s heart desire; 4) remain solution focused; and, 5) strength-based approaches to build on client strengths (O’Brien, 2005; Olds et al., 2003). NFP nurses can draw upon human ecology theory and its concepts to consider the complex reasons behind clients’ behaviours. This includes clients’ relationships with people and professionals in her life and the communities they live within.

Program elements are intended to build self-efficacy by identifying areas that can be supported by healthy behaviours and determining small achievable goals (Olds, 2006). Across all phases of the program (pregnancy, infancy, and toddler), sensitive parenting behaviours are encouraged and promoted. Some program activities are a culmination of all program theoretical stances. For example, a nurse may engage a client in reflecting on their own history, how they were parented, how that has affected them as an adult, and how they desire to interact with their own infant. Nurses build trusting and empathic relationships with clients, promote sensitive behaviours, and model mature adult relationships.

**The Evidence: United States Randomized Controlled Trials**

To establish the effectiveness of NFP in improving a range of prenatal, infant, and maternal health outcomes, the NFP intervention has been evaluated in three RCTs conducted with three distinct populations in the United States (US). The findings from the US trials provided solid evidence that the NFP program is effective in achieving the primary goals of improving pregnancy outcomes, improving child health and development, and increasing maternal economic self-sufficiency. The first two trials are situated within unique geographical contexts with different client populations. The third trial tested the effectiveness of paraprofessionals, as compared to nurses within the NFP intervention (Olds et al., 2002).

***Elmira, New York***

The first NFP RCT took place in Elmira, New York, a small semi-rural county, from 1977 to 1980 (Olds et al., 1986). The study included a total sample of 400 adolescent and young women who were predominately white, pregnant for the first time, and had one of the following factors: 1) less than 19 years of age; 2) unmarried; or 3) low socioeconomic status (Olds et al., 1986). However, any mother could enroll in the program prior to the 30th week of pregnancy if it was their first child. Participants were randomized into one of four treatment conditions: 1) control with no services provided; 2) provided transportation for regular prenatal and well-child visits through local clinics or physicians’ offices (later combined with group one) ; 3) in addition to transportation, a nurse visited families in their home, bi-weekly during pregnancy (approximately 9 visits lasting an average of 75 minutes); or 4) in addition to group 3 services, nurses continued to visit until the infant was two years of age (approximately 35 visits lasting an average of 75 minutes and more frequently when predetermined crisis conditions existed) (Olds et al., 1986).

Improvements in prenatal health behaviours were measured among nurse home visited women and compared to controls. Mothers in the intervention group, who were visited by a nurse trained in the NFP program, had improved the quality of prenatal diets and smoked 25 percent fewer cigarettes by the 34th week of pregnancy as compared to the control group (Olds et al., 1986). Of the mothers who smoked, those visited by a nurse had 75 percent fewer preterm deliveries than control group participants who smoked (Olds et al., 1986). Fewer kidney infections were noted in the nurse-visited group during pregnancy and infants born to mothers in the intervention group weighed 395 grams more at birth compared to the control group (Olds et al., 1986).

Infants in the intervention group exhibited less irritability at six months of age, which was found to be more concentrated in women who smoked more than ten cigarettes (Olds et al., 1998; Olds et al., 1986). Nurse-visited mothers who were living in poverty and unmarried showed more sensitive and competent caring of their children at 10 and 22 months post-delivery, exhibiting less punitive and restrictive behaviours towards the child and using more appropriate play materials (Olds et al., 1986). At two years into the child’s life, there were 80 percent fewer verified incidences of neglect and abuse in the intervention group (4 percent in the intervention group versus 19 percent in the control) (Olds et al., 1986). Consequently, nurse-visited families had significantly fewer visits to the emergency department for ingestions and injuries, an outcome that lasted for two years after the program ended (Olds et al., 1986).

Follow-up studies to measure key child development and social indicator outcomes were conducted at 4 years (Olds et al., 1988, 1994), at 15 years (Olds et al., 1997), and at 19 years (Eckenrode et al., 2010). Long-term follow-up studies indicated that the greatest effects were observed in women who were poor and unmarried at the time they registered for the NFP program (Karoly et al., 1998; Olds et al., 1997; Olds et al., 1998). At the time of the child’s fourth birthday, low-income and unmarried women assigned to the nurse-visited group, when compared to controls, had longer measured intervals of time between their first and second children. Additionally, this group of women reported longer periods of employment (Olds et al., 1998). At the 15-year follow-up, measured outcomes among a sub-sample of unmarried women with low income identified improvements in key outcomes over time, which were not identified in married mothers with adequate income (Olds et al., 1997). These benefits included fewer pregnancies and births, less time on welfare or food stamps, fewer arrests, and less behavioural problems related to substance use (Olds et al., 1997). The economic evaluation conducted to estimate the cost savings of the NFP program over 15 years revealed that benefits were substantiated significantly for the unmarried, low-income participants and indicated a savings of four times the cost of the program for this group only (Karoly et al., 1998). Long-term benefits to the child also only existed for children born to nurse-visited, unmarried, low-income mothers (Olds et al., 1997). Findings from the Elmira trial were most significant for mothers who were experiencing low socioeconomic status. The lack of racial diversity was notable, and this finding was used to inform the Memphis trial.

***Memphis, Tennessee***

To establish the reproducibility of the results from the Elmira trial, a second trial was planned to evaluate the intervention in a larger urban context with a different population of mothers and infants (Olds, 2006). In 1990, this second trial was initiated in Memphis, Tennessee with a population that was predominantly African American (92% of the 1139 participants) (Kitzman et al., 1997). Comparable though to the sample in Elmira, women were less than 29 weeks’ gestation, had no previous live births, and had at least two of the following sociodemographic factors: unmarried, less than 12 years of education, or unemployed (Kitzman et al., 1997). The intervention involved nurses visiting participants during pregnancy (average of 7 home visits) with continued visits until the child’s second birthday (average of 26 home visits) and women were randomized into one of four groups, which involved the same conditions as the Elmira trial (Kitzman et al., 1997).

Findings of this trial suggested that nurse home visits were beneficial for low-income mothers with no previous live births (Kitzman et al., 1997; Olds, 2006). Women who were visited by nurses had a lower incidence of pregnancy-induced hypertension (13% versus 20%; P=0.009) and were less likely to have subsequent pregnancies in the first four years after the delivery of their first child (36% versus 47%; P=0.006) when compared to the control group. Children born to nurse-visited mothers had fewer health care encounters or hospitalizations for accidental ingestions or injuries. This trial showed no differences on preterm delivery, low birth weight, immunization rates, mental development, behavioural problems, maternal education, or employment (Kitzman et al., 1997).

***Denver, Colorado***

The Denver trial recruited 1178 participants between 1990 and 1992, primarily Hispanic and living in a low-income urban area. Like the other trials, women were eligible if they had no previous live births. However, women could enroll in the trial any time before birth if they qualified for Medicare or did not have private insurance. The researchers did not have access to the women’s or children’s medical records, which was a significant difference from Elmira and Memphis, and consequently limited the number of health outcomes measured in this study (Olds, 2006). The most significant difference in this trial was the inclusion of paraprofessionals as an alternative to nurses (Olds et al., 2002). Participants were randomized into one of three intervention arms: 1) provided developmental screening and referrals at predetermined times; 2) group one services plus visited in home by a trained paraprofessional during pregnancy and up to the child’s second birthday; or, 3) group one services plus nurse home visits during pregnancy and up to the child’s second birthday (Olds et al., 2002).

The Denver trial replicated program benefits for the mothers in the nurse-visited group. These participants had reductions in smoking, fewer subsequent births with longer pregnancy intervals, and were more employed than women in the control group. Children born to this group of mothers also showed benefits related to emotional, language, and mental development. There was no significant effect for use of prenatal services, education achievement, use of welfare, child temperament, or child behaviour problems. There were few clinical or statistically significant effects measured among women who received home visits from paraprofessionals (Olds et al., 2002). Any significant outcomes that were measured among women visited by the paraprofessionals were typically half the size of those produced by nurses (Olds et al., 2002).

**Adaptation and Evaluation of NFP Outside the US**

Once the effectiveness of the intervention was established in the US, the NFP National Service Office (Denver, Colorado) was established as a separate non-profit entity focused on coordinating NFP scale-up and implementation. Currently, NFP is offered by a range of implementing agencies in 42 US states and the US Virgin Islands (NFP, 2018). Given the robust outcomes achieved through this program of home visitation, and the recognition of NFP as an intervention with high quality evidence to prevent child abuse and neglect (MacMillan et al., 2009), several countries outside of the US expressed interest in adopting NFP. However, the potential of replicating NFP outcomes may differ due to social, political, and geographical contexts in other countries. Therefore, implementation of the NFP program outside of the US requires a robust four-phase model that includes the following stages: 1) adapting the program; 2) determining the feasibility within the country; 3) conducting an RCT; and 4) NFP refinement, and, where appropriate, launching national expansion (PRCFCH, n.d.). Two countries, England and the Netherlands, have now completed and published the results of their trials evaluating NFP within their individual contexts.

***VoorZorg: Dutch trial***

The Netherlands was the first country outside of the US to adapt NFP and implement their translated version of the program referred to as VoorZorg (Mejdoubi et al., 2011, 2014). The VoorZorg program followed the tenets of NFP and specially trained nurses visited mothers approximately 10 times during pregnancy and 40 times between the child’s birth and second birthday (Mejdoubi et al., 2011). In addition to home visits, nurses communicated with their clients via text messaging, social media, and telephone (Mejdoubi et al., 2015). The aim of the trial was to determine the effectiveness of VoorZorg in affecting the following outcomes: smoking cessation, birth outcomes, child development, child abuse, and intimate partner violence (Mejdoubi et al., 2011). Outcome indicators were measured several times during pregnancy and until the family exited the program (Mejdoubi et al., 2011).

Between 2006 to 2009, 460 pregnant women were randomized into either usual care services or VoorZorg (Mejdoubi et al., 2011). The intervention group received the VoorZorg program in addition to usual care services (Mejdoubi et al., 2011). Women were eligible to participate in the trial if they were younger than 26 years old, less than 28 weeks gestation with their first child, had a low education level (less than secondary school), and understood some Dutch (Mejdoubi et al., 2011). Furthermore, women were interviewed and deemed appropriate for the study if they had at least one of the following risk factors: 1) little to no social support; 2) history of, or currently in, a situation of violence, abuse, or neglect; 3) psychological problems; 4) financial difficulties; 5) unemployment; 6) precarious housing; 7) using alcohol, drugs, or smoking during pregnancy; or, 8) had a non-realistic approach to mothering (Mejdoubi et al., 2011).

Findings of the Dutch trial suggest that the intervention was effective across a variety of health outcomes. These included lower smoking rates pre- and postnatally for the intervention group (Mejdoubi et al., 2014). Women in the intervention group who continued to smoke, did not do so in the presence of their infant. The intervention was also successful in increasing breastfeeding duration rates at six months post-birth (Mejdoubi et al., 2014). There were no significant differences in any of the pregnancy outcome measures, specifically gestation at birth or neonatal birth weight (Mejdoubi et al., 2014).

The VoorZorg trial also reported positive results for the primary outcomes of reducing child abuse and intimate partner violence, and the secondary outcome of enhancing child behaviour (Mejdoubi et al., 2013, 2015). Reports of child abuse to child protection service agencies were lower in VoorZorg nurse-visited families when compared to the control group at three years after the child’s birth (Mejdoubi et al., 2015). During pregnancy and the two years following birth, VoorZorg participants self-reported fewer incidences of intimate partner violence, including psychological aggression, physical and sexual assaults, sexual coercion, and injuries (Mejdoubi et al., 2013). Child internalizing behaviours (e.g. anxiety, loneliness) at 24 months were improved for children whose mothers were nurse-visited; however, externalized behaviours (e.g. conduct disorders, attention deficit disorders) were not different between VoorZorg and control groups (Mejdoubi et al., 2015). Evidence from the VoorZorg trial indicates that the intervention was feasible, culturally appropriate, and successful in the Netherlands.

***Building Blocks: England trial***

Building Blocks was the name of the trial conducted in England between 2009 and 2014 to determine the effectiveness of the Family Nurse Partnership (FNP) program (adapted name of NFP in the United Kingdom) (Owen-Jones et al., 2013; Robling et al., 2016). Primary outcome indicators for this trial included tobacco use in pregnancy, neonatal birthweight, subsequent pregnancy, and emergency or hospital admissions for the child (Robling et al., 2016). All participants were recruited prior to 25 weeks gestation, were 19 years old or younger, and were pregnant with their first child (Robling et al., 2016). In comparison to the trials evaluating the NFP intervention in the Netherlands or the US, there were no requirements in the Building Blocks study that participants demonstrate socio-demographic or economic disadvantage.

A total of 1645 participants were randomized to the FNP intervention group or usual care (Owen-Jones et al., 2013; Robling et al., 2016). Aspects of FNP were similar to NFP, specifically that the program involved approximately 64 home visits during pregnancy and until 24 months after birth with a specially trained nurse (Owen-Jones et al., 2013; Robling et al., 2016). Mothers assigned to the intervention accessed usual care services in addition to FNP (Robling et al., 2016). Participants in the control group received usual care maternity services including postnatal midwifery care, care from existing local child health services, and an allocated health visitor (Owen-Jones et al., 2013). Both groups had access to other local supports available to young mothers (Robling et al., 2016).

Based on primary outcomes of this study, there was no evidence of any short-term benefits of FNP when compared to usual care (Robling et al., 2016). The main findings of this trial revealed no effect in reducing smoking rates during pregnancy, no reduction in the incidence of low-weight or premature infants, no reduction in subsequent pregnancies within two years of giving birth, and no reduction in hospital or emergency admissions for children (Robling et al., 2016). Children in the FNP group showed enhanced language skills at age two (Robling et al., 2016). In addition to these findings, Robling and colleagues also noted that FNP was more expensive to deliver than usual care services.

Pending the outcome of follow-up studies, the authors concluded that implementation of FNP was not justified based on the results from the Building Blocks trial (Robling et al., 2016). It is important to note that this was a well-conducted trial with acceptable rates of assessments completed and adherence to the statistical plan (Olds, 2016). Results of the Building Blocks study emphasized the importance of context when implementing novel interventions because outcomes may differ in countries where health and social services vary.

**Canadian Evaluation of NFP**

In 2008, through a partnership between McMaster University and Hamilton Public Health Services, a decision was made to introduce and pilot NFP in a Canadian context for the first time. A mixed methods pilot study was conducted to determine the: 1) feasibility of delivering the intervention through public health services by PHNs; and, 2) the acceptability of this intervention to a range of stakeholders including program recipients (Jack et al., 2012). Between 2008 and 2012, 108 low-income, first-time mothers who were 21 years of age or younger and less than 28 weeks gestation were enrolled in the pilot study and received the NFP intervention. Interviews were conducted with NFP clients, their families, PHNs and their managers, as well as professionals who either referred women to the program or provided additional health and social care services (Jack et al., 2012; Kurtz Landy et al., 2012).

Pilot study results determined that the NFP intervention was feasible for a public health unit to deliver and an acceptable intervention to PHNs and supervisors, NFP clients and their families, and referral sources (e.g. primary care physicians, midwives). During the pilot study, the NFP PHNs provided feedback and recommendations for adapting the program visit-to-visit guidelines and home visitation materials to a Canadian context. One notable adaptation made, in comparison to the US model, was that in consideration of differences in working conditions (e.g. work hours, vacation days) and distances to travel between home visits, a recommendation was made for a public health nurse to carry a maximum caseload of 20 clients (compared to 25 in the US) (Jack et al., 2012). The positive findings from the pilot study, as well as the development of the NFP program materials for use in Canada, provided a foundation upon which future evaluations could be established.

Once feasibility and acceptability of the NFP program in Canada was established, the next requirement was to conduct a trial to establish the effectiveness of the intervention within the Canadian context (Jack et al., 2012; NFP Canada, n.d.). A collaboration between the BC Ministry of Health, Ministry of Children and Family Development, the Children’s Health Policy Centre at Simon Fraser University, with consultation with the NFP pilot research team at McMaster University and Dr. David Olds, initiated a plan to evaluate NFP in BC (NFP Canada, n.d.). Senior representatives from BC regional health authorities and relevant agencies came together as a provincial advisory committee to develop provincial consensus on a large-scale NFP evaluation (NFP Canada, n.d.).

***British Columbia Healthy Connections Project***

The BCHCP launched in 2012 with a province wide RCT aimed to reduce childhood injuries and enhance child cognition and behaviours before the age of two year, reduce nicotine and alcohol use in pregnancy, and reduce subsequent pregnancies within the 24 months after birth (Catherine et al., 2016; NFP Canada, n.d.). Other factors such as maternal mental health and self-efficacy, exposure to intimate partner violence, and use of health and social services are being assessed (Catherine et al., 2016). Data are being collected at multiple predetermined points prenatally and until the child’s second birthday (Catherine et al., 2016). PHNs received NFP training with the expectation that the NFP program would be implemented with fidelity to the adapted model elements.

Between 2013 and 2016, 739 eligible participants were enrolled into the BCHCP trial. Mothers were eligible if they were less than 28 weeks gestation, a first-time parent, 24 years old or younger, and experiencing socioeconomic disadvantage (Catherine et al., 2019). Women between ages 20 to 24 years were required to meet two of the following indicators of disadvantage: 1) low income, receiving income assistance, experiencing homelessness, or unable to afford food or rent on current household income; 2) less than high school education; or, 3) not married or not living common-law (Catherine et al., 2019). A comprehensive description of client inclusion and exclusion criteria is available in Table 1 (Catherine et al., 2016). While trial results are not yet available, baseline data suggest high levels of disadvantage for some mothers enrolled in the trial, placing them and their children at risk for an array of health and social problems (Catherine et al., 2019).

**Table 1***BCHCP Participant Inclusion/Exclusion Criteria*

|  |
| --- |
| Eligible to participate if women meet all inclusion criteria at time of baseline interviews  1. First birth  2. Pregnant and less than 28 weeks gestation  3. Competent to provide informed consent, including conversational competence in English  4. Experiencing socioeconomic disadvantage 5. Age 24 years or younger  • *Age 19 or younger*  *• Age 20–24* *meets 2 of 3 indicators: lone parent; less than grade 12; low income\**  \*low income requires one or more of:   * Receiving Medical Services Plan Premium Assistance, disability assistance or other income assistance * Finding it very difficult to live on total household income with respect to food or rent * Homeless, defined as living on the streets, living in a place not meant as a long-term dwelling (e.g., car or tent), staying in a shelter, or staying somewhere temporarily with no permanent address (e.g. couch surfing)   Ineligible to participate if they meet any exclusion criteria at time of baseline interviews  1. Planning to have the child adopted  2. Planning to leave the BCHCP catchment area (designated Local Health Areas) for three months or longer during the trial. |

The BCHCP supports two adjunctive studies: 1) the Healthy Foundations Study (Gonzalez et al., 2018), which is examining biological markers of stress in a sub-sample of RCT children, led by Andrea Gonzalez (McMaster University) and funded by the Canadian Institutes of Health Research; and, 2) a process evaluation (Jack et al., 2015), which examined how NFP was implemented and delivered in BC across five health authorities, led by Susan Jack (McMaster University) and funded by the Public Health Agency of Canada.

***Healthy Foundations Study***

Healthy Foundations is the first RCT to evaluate the impact of a preventative intervention on infants using biological markers (Gonzalez et al., 2018). This adjunctive study of the BCHCP followed 357 mother-infant dyads to examine multiple biological outcomes and determine the impact of NFP (Gonzalez et al., 2018). Through the collection of hair and saliva samples at predetermined time points, Gonzalez and colleagues will assess infant biological function through immune and inflammatory markers, maternal prenatal cortisol levels, and infant cortisol levels. Observation of parenting behaviours will also be examined to assess in relation to biological markers (Gonzalez et al., 2018). Study findings will provide a greater understanding of NFP to inform practice and future research.

***BCHCP Process Evaluation***

A convergent parallel mixed methods process evaluation was conducted between 2013 and 2018 to comprehensively describe and explore how NFP was implemented within five BC health authorities and then how the program was uniquely delivered within those contexts (Jack et al., 2015). By documenting and analyzing the experiences of PHNs, supervisors, and senior decision makers responsible for NFP, findings from the process evaluation are intended to help explain outcomes of the trial and variances in the intervention across different contexts (Jack et al., 2015). The overarching objectives of the process evaluation included: 1) determination of the extent of program fidelity to the Canadian model elements; 2) measurement of client dose, participation (through pregnancy, infancy, and toddlerhood), recruitment, and retention; 3) exploration of NFP acceptability to stakeholders (i.e. nurses, supervisors, senior decision makers); 4) description of experiences of NFP education and needed knowledge or skills; 5) exploration of reflective supervision, coaching, and mentoring in NFP; 6) identification of contextual factors that influence, including organization adoption and implementation, utilization of visit-to-visit guidelines, caseload, client engagement, sustainability of NFP, and community advisory boards; 7) exploration of the needs nurses and supervisors delivering NFP in smaller suburban, rural, and remote communities; and 8) identification and description of nurses experiences of delivering the NFP to clients exposed to mental health problems, substance misuse, intimate partner violence, or engagement with child welfare (Jack et al., 2015).

**Setting*.*** The BC Ministry of Health and five regional health authorities collaborated to ensure delivery of health services across the province (Auditor General of British Columbia, n.d.; Ministry of Health, n.d.). BCHCP studies were embedded within this existing public health model and supported by the BC Ministry of Health. Regional health authorities agreed to be responsible for delivery of NFP within their own geographical region (Catherine et al., 2016; Gonzalez et al., 2018; Jack et al., 2015). At the start of the process evaluation, these five health authorities included: Fraser, Interior, Island, Northern, and Vancouver Coastal. (Ministry of Health, n.d.). Health authorities vastly differ in size, population density, and geographical attributes, which present unique challenges for implementing pubic health services (Auditor General of British Columbia, n.d.; Green et al., 2014).

As Canada’s most western province, BC has a diverse and complex physical geography. BC’s landscape includes mountain ranges, isolated coastal islands, rich forests, wetlands, grasslands, glaciers, and freshwater, as outlined in Figure 1 (Green et al., 2014). There are more than 40,000 islands throughout the province and along the coast of the Pacific Ocean (British Columbia, n.d.; Green et al., 2014). Vancouver Island is often considered to be its own region (Green et al., 2014). Other major geographical features include the Rocky Mountains, Coast Mountains, and plateaus (Green et al., 2014). From the topical map of BC (Figure 2), the diversity of the landscape is visible, and it illuminates the isolation of many island communities and the difficulties with traveling through mountain ranges, forests, and waterways. The province covers a substantial area: 1,200 kilometres between the northern and southern borders, and 1,050 kilometres from east to west (British Columbia, n.d.).

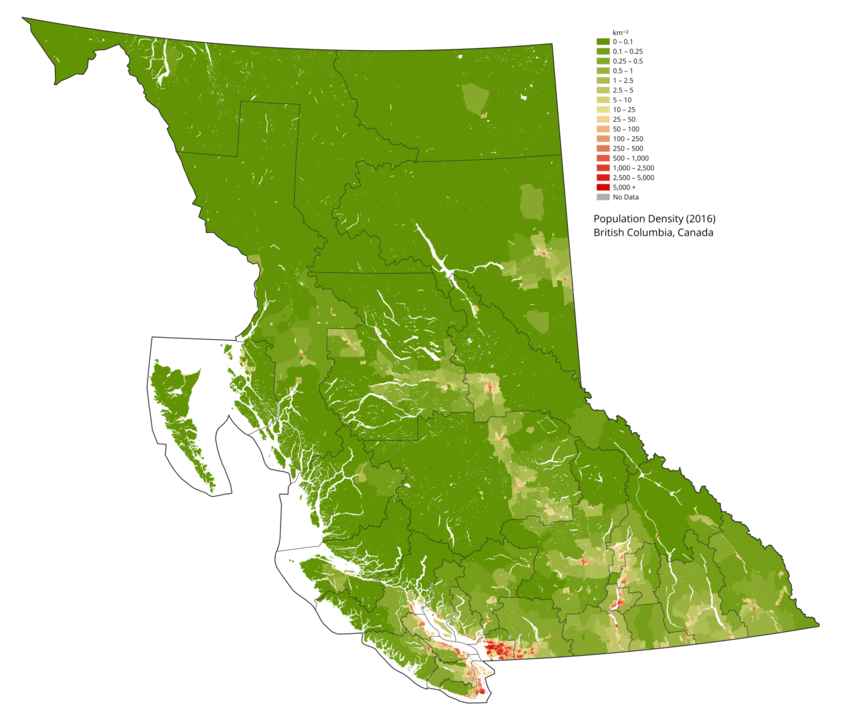
*Figure 1.* Types of Geography in British Columbia as a Percentage of Total Land Area  
Adapted from Green et al., 2014



*Figure 2.* Topical Map of British Columbia, Canada

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The majority of the population (almost half) live in the southern part of the province where large urban and surrounding communities are primarily located, observable on the population density map in Figure 3 (British Columbia, n.d.; Green et al., 2014). Consequently, four of the regional health authorities are situated in south BC (Ministry of Health, n.d.). The most northernly regional health authority covers the largest geographical area, has fewer towns and roads, and is primarily rugged terrain (British Columbia, n.d.; Ministry of Health, n.d.). This can create difficult conditions for delivering health services to northern populations. However, challenges caused by geography are not exclusive to the north but are also noted in the Interior, Coastal, and Lower Mainland areas (Green et al., 2014).



*Figure 3*. Population Density (2016) Map of British Columbia, Canada

CC0 By awmcphee (https://commons.wikimedia.org/w/index.php?curid=80450685)

Several geographical features can cause circumstances that interfere with the ability to travel, which create difficulties for nurses delivering health services within the community. Weather can be extreme and polarized: cold temperatures in the mountains create snow, and warm, moisture along the coast promotes significant rainfall (Green et al., 2014). The wet climate results in prolific forests, while seasonal droughts (and increasing climate temperatures) result in severe forest fires that initiate evacuations and closures of affected communities and surrounding areas (Green et al., 2014). BC is also positioned along fault lines, experiences earthquakes, and has potential for tsunamis given its proximity to the ocean (Green et al., 2014). These environmental hazards are affected by BC’s diverse geographies and influence the delivery of health care services.

Understanding the effects of geography on the NFP is the focus of my thesis and my unique contribution to the BCHCP process evaluation. The BCHCP process evaluation offered an opportunity to enhance knowledge regarding geographical influences on the delivery of the NFP program and nurses’ experiences of delivering NFP across different geographies. As a member of the BCHCP process evaluation research team, my primary responsibilities as the rural lead were to develop components of the study to address the research objective of adaptations required for rural delivery. In addition, my role included a broader examination of geography and NFP program delivery, including workforce issues.

**Data Sources and Data Collection*.*** Qualitative and quantitative data were collected over the course of this mixed methods study. PHNs delivering NFP in urban and surrounding areas were invited to participate in focus group conversations every six months (Jack et al., 2015). Nurses who could not attend focus groups were offered an individual interview. A small group of nurses (n=34) who worked in small or rural communities participated in one-to-one interviews every six months because it was not feasible to travel to focus groups (Jack et al., 2015). Individual interviews were conducted every six months with NFP supervisors and annually with senior decisions makers who were responsible for NFP (Jack et al., 2015). Summaries of topics discussed as NFP teams and during supervision activities were also documented qualitatively (Jack et al., 2015). Quantitative data was collected, which detailed team meetings, supervision activities, and other indicators of program fidelity (Jack et al., 2015).

The content and foci of each interview phase were unique (Jack et al., 2015). In-depth interview guides were drafted by individual members of the BCHCP process evaluation team and accepted through group feedback and consensus. Participants could access the guides prior to their interview to allow time for reflection and potentially enriching responses (Jack et al., 20105). Individual interviews and focus groups were conducted by the principal investigator or the process evaluation research coordinator (Jack et al., 2015). All focus groups were conducted at individual health authorities and aimed to include approximately 5 to 10 participants (Jack et al., 2015). Interviews were primarily conducted by phone, in a private space at the participant’s workplace, and lasted approximately 60 minutes (Jack et al., 2015). Telephone interviews were more feasible than face to face contacts given the frequency of interviews and the geographical distance between participants. Telephone interviews have been known to relax participants and foster comfort in disclosing sensitive information (Novick, 2008). The data sets used in this thesis were selectively collected, based on relevance, from the qualitative data gathered from PHNs and their supervisors through the BCHCP process evaluation. Information about sample sizes, timeframes, and data sources are unique to each analysis and are reported in publications found in the following chapters.

**Method: Interpretive Description*.*** Interpretive description guided all aspects of the qualitative arm of the BCHCP process evaluation (Jack et al., 2015; Thorne, 2016). As a method, interpretive description is informed by the naturalistic inquiry paradigm of Lincoln and Guba and more pointedly, it explores issues from a disciplinary perspective, which is very practical for applied researchers (Luciani et al., 2019; Thorne, 2014, 2016). The purpose is to expand on existing knowledge of a phenomenon, improve clinicians’ understanding of practical challenges, and create clinically relevant findings that are meaningful to practice, policy, and future research (Thorne, 2016). It is an applied research method; therefore, the goal is not to philosophize, but rather to add to disciplinary wisdom (Thorne, 2016).

Interpretive description utilizes multiple strategies to best address the research question (Thorne, 2016). In the BCHCP process evaluation, this can be observed in the multiple data sources and time points of data collection. Similarly, the process of analysis may take different forms but must be methodologically congruent (Thorne, 2016). Consistent elements of data analysis in interpretive description include: 1) conceptualizing the process; 2) moving beyond the evident; 3) engaging mechanisms of interpretation; and, 4) envisioning the end product (Thorne, 2016). Finally, outcomes should be morally defensible, have disciplinary relevance, and pass the *thoughtful clinician test* (Thorne, 1997, 2016; Thorne et al., 2004). Rigorous and credible findings pass the thoughtful clinical test by being plausible and verifiable by experts who have experience with the phenomenon, and findings also illuminate new understandings of the issue.

Unlike other research conventions (i.e. grounded theory, phenomenology, ethnography), interpretive description liberates researchers from the underpinnings of theoretical baggage (Thorne, 2011). However, it allows for borrowing techniques from other traditions (e.g. constant comparison) and to effectively use these strategies researchers must have sound understanding of qualitative methods (Thorne, 2016). This pragmatic approach may result in the abdication of generalizations and less theory confusion in studies that are specific to applied disciplines. In interpretive description the goal is not to build theory. Indeed, supercilious use of a pre-determined theoretical model could detract from the inductive nature of interpretive description (Thorne, 2016). However, theory is encouraged as a reflexive and analytical tool when it is used judiciously (Thorne, 2016). Moreover, understanding the theoretical stance of the researcher is a necessary beginning step in interpretive description research, known as the theoretical scaffolding, and reflected in the researcher’s reflexive account.

**Personal Statement of Theoretical Scaffolding for BCHCP Process Evaluation.**As a member of the BCHCP process evaluation team, I was interested in learning more about the influence of rural geography on the delivery of NFP in British Columbia. My master’s thesis was a qualitative narrative inquiry into adolescent mothers’ experiences of living in rural communities (Campbell & Hart, 2019). I was inspired by my nursing practice in public health and supporting young women who were becoming mothers. Then I moved to a small community, surrounded by farmland and removed from urban influences. It was here that I recognized that not only are health services more difficult to access, but small-town culture is unique. People, and their stories, are well-known to in their communities, including professionals, neighbours, friends, or family. From the young women who shared their personal accounts of motherhood while living in rurality, I learned that they fear judgement and of being exposed in their communities as a *bad* mother. The decisions they made about parenting were influenced by how others would perceive them, including remaining in unhealthy relationships to maintain the façade of a stable family and avoiding healthcare services even when they are warranted. A deeper understanding of young motherhood within the geographical context of a rural community led to identifying important implications for public health nursing, specifically how nursing practice should be adapted to meet the needs of this unique population of mothers (Campbell & Hart, 2019). The idea of evaluating a health equity-oriented nursing intervention within the context of rural geography was what initially drew me into the BCHCP process evaluation.

Developing the research proposal for this doctoral thesis was highly influenced by almost 20 years of practice as a public health nurse focused on reproductive and child health, as well as becoming deeply acquainted with the extant, but limited, body of literature. I did not collect study data due to security requirements from the funding body and to adhere to ethical agreements. However, I was responsible for the development of research questions and interview guides that explored the experience of delivering NFP in rural communities as the rural lead on the BCHCP process evaluation. This required that I have a clear understanding of potential rural issues in public health nursing, and a strong vision that could be communicated to the research coordinator and principal investigator who would be conducting interviews. Additionally, the larger group of academics and researchers who came together to address the objectives for the process evaluation and form the BCHCP process evaluation research team, provided feedback and support to each other through aspects of the research projects. Ultimately, I was responsible for all aspects of the research process as it related to rural content in the BCHCP process evaluation.

In addition to my past research and clinical nursing experiences, understanding my own theoretical underpinnings, worldview, and existing beliefs facilitated a realization of my location within the BCHCP process evaluation. First, it is important to recognize that I identify as a well-educated, professional, feminist woman, and mother of two children. A feminist philosophy towards the development of nursing knowledge presents an equitable and inclusive approach to science (Rodgers, 2005). A researcher’s gender and social status can influence how research is conducted and the outcomes are founded (Routledge, 2007). Postmodern feminism is situated within radical feminist traditions and often favours qualitative methods (Routledge, 2007). This is because language is important and stories help to determine the commonalities and differences in people’s experiences (Routledge, 2007). Radical feminists also focus on oppressions from a gender perspective, recognizing that gender crosses all socioeconomic statuses (Bunting & Campbell, 1990). Embracing my feminist standpoint was essential as it facilitated my critical approach to all aspects of the research study and encouraged findings that recognize the existing inequities for young women becoming mothers and works towards equality.

Thorne (2016) encourages applied researchers using interpretive description to also engage in identifying their disciplinary orientation. Nursing scholars have a longstanding history of reflecting on the epistemology of nursing knowledge (Hall, 2005; Risjord, 2010). Given my experience as a public health nurse, I sought out a theoretical framework that was consistent with my experience and aligned with my philosophical position as a public health nurse. As a reflexive exercise, considering the cohesion between my own professional orientation and that of the participants and the program involved in the BCHCP process evaluation ultimately shaped how I came to investigate the phenomenon, understand the experiences of the nurses, and analyze the data. The mid-range nursing theory, Critical Caring, is a practice-based framework for public health nursing that resonated with me and reflected my practice as a home visiting nurse (Falk-Rafael, 2005; Falk-Rafael & Betker, 2012).

Critical Caring is grounded in feminist critical theories and expands on Watson’s Caring Science by illuminating nursing from a public health viewpoint (Falk-Raphael, 2005; Falk-Rafael & Betker, 2012). Watson (2015) developed the theory of human caring in the late 1970s, which at that time focused on the *carative* functions of nursing, in contrast to the dominant *curative* medical model. Watson continued to evolve her work into a grand theory (or perhaps a philosophy) that focuses on the *caritas processes* of spiritual dimensionality and overt love and respect for self and others. The essence of Watson’s theory is in caring for humans to encourage recovery from illness and suffering, while promoting peace (Watson, 2015). Falk-Rafael and Betker modified this grand theory to focus on carative health-promoting practices, which make it a middle range theory very relevant to public health nursing practice. Key concepts of health, holism, caring, and interconnectedness are at the core of each process within the Critical Caring theoretical model (Falk-Raphael, 2005; Falk-Rafael & Betker, 2012).

This nursing model recognizes the expertise inherent in each client and emphasizes the nurse’s place in supporting and not imposing change on clients’ lives (Falk-Raphael, 2005). Other concepts include promoting healthy behaviours and maintaining therapeutic relationships (Falk-Raphael, 2005). When nurses build relationship with clients, families, groups, or communities that are helpful and trustworthy, they can integrate aspects of social justice into their practice (Falk-Rafael, 2005). Falk-Rafael and Betker advocate for skilled nursing assessments to be conducted in partnership with clients, encouraging a systematic and reflexive approach.

Other carative health-promoting processes that reflect my past practice experiences include presenting health information in a non-didactic manner that promotes a collaborative plan and dialogic communication (Falk-Rafael, 2005); understanding the interconnectedness between clients and their environments and then contributing to the development of social, political, and economically supportive and sustainable environments (Falk-Rafael, 2005); building capacity of individuals, families, and communities by meeting basic and social needs, caring for the vulnerable, and promoting growth and development (Falk-Rafael, 2005); and finally, being open to the spiritual needs and beliefs of communities and their members (Falk-Rafael, 2005).

Acknowledging Critical Caring Theory as a disciplinary orientation early in the research process was critical to understanding the experiences of PHNs from a holistic perspective. I began reading transcripts from the first phase of BCHCP process evaluation interviews and recognized the ways in which NFP PHNs enacted and embodied this theoretical framework. As a rudimentary activity in reflexivity and practice for data analysis, I began synthesizing the findings from 12 interviews with PHNs who were delivering the NFP program in rural communities and participants in the BCHCP process evaluation. It was a practical expectation of me as a doctoral student to code transcripts and it provided a rudimentary answer to the research question. However, I found that the analysis lacked a holistic view of the participants and their experiences when I considered it from the position of Critical Caring Theory. I knew from my experiences that the work of home visiting is simultaneously emotionally draining and exhilarating. I wanted to gain a holistic picture of participants’ experiences.

Through found poetry, I was able to recognize the complex, emotional, and meaningful practices of NFP nurses. Found poetry is a technique in qualitative data analysis whereby researchers use narrative text to make sense of the data (Janesick, 2016). Any narrative data collected can be used, including reflexive journals, policies, documents, and/or participant interview transcripts (Janesick, 2016). Because I was so moved by the richness of the participant interviews, I exclusively focused on their direct quotes in the development of this found poetry. The poem, *Her Strength: From a Home-Visiting Nurse,* is a result of my reflexive experience as I attempted to consolidate my experience as a home visiting nurse with what I was hearing from the NFP nurses’ narratives.

**Her Strength: From a Home-Visiting Nurse**

There’s a lot of responsibility as a nurse,

It’s a bit of an art – a bit of a dance.

It’s all about power; making them feel like they’re in control.

They’re feeling like I don’t know what I’m doing

Try out the hook – draw them into the program

I try not to let things go; where are her strengths?

Try not to overwhelm her; something valuable can come of it.

It looks crazy

Mental health issues make it even more challenging.

There are a lot of girls who have learned to be submissive to men

A number are dealing with intimate partner violence

His anger would probably be let out on her.

Why is this baby crying every time I’m there?

Life is throwing them curveballs.

She was in 33 foster homes by the time she was 15; now she has attachment issues.

Both of them have IQs around 70

It was really sad.

She was 18, broke up with her boyfriend; got pregnant by someone else

The baby’s father killed himself

It was really sad.

She has a great sense of humor; she’s on probation

Her probation officer would call me, she was picked up for a DUI

It was really sad.

First Nations, they’re super-mobile and just complicated

I was concerned about postpartum depression

It was really sad.

I feel sad about it or I feel frustrated

I would love extra support

She could really benefit from this

She’ll dominate the situation

She is totally multitasking

She says, I feel like people are judging me

She’s just dealing with the crisis du jour.

We mesh well

I want to help her be successful and have a healthy baby

To be able to make sure my client felt safe

I bent over backwards to help her; to protect her

It’s hard to keep them engaged

I was sad to see her go

They don’t have a use for you anymore

Once the trust is gone.

The poem presented provides insight into the intensity of home visiting nurses’ experiences and the complexity associated with their clients’ lives. The poetic narrative exposes the approaches that the NFP PHNs in BC used to encourage engagement with their clients. Their words expressed their commitment to dealing with complex nursing problems without hesitation. The client stories compelled empathy and the repetition of words revealed the distress associated with this type of nursing care. Finally, these nurses’ words demonstrated their belief in their clients, in the home-visiting program, and in their own nursing practice.

This process encouraged my creativity within the scientific realm in order to present more conceptual, rigorous research findings. The art of finding quality in qualitative data analysis is that the creativity must be grounded in evidence. I found the flexibility and rigour offered by Thorne’s (2016) interpretive description methodological approach to be very enticing. Pragmatically, it allowed for a deep exploration of a variety of strategies in order to discover new knowledge and provide a rich interpretation of the data, while offering very practical and flexible guidance through this process. I have learned the importance of attempting different strategies, particularly not fearing artistic expressions of storytelling in qualitative research because they can bring a richer meaning to the dataset.

**Summary of the Thesis Chapters**

This thesis consists of two published articles and one prepared manuscript, linked through their focus on the BCHCP process evaluation, specifically the experiences of PHNs and their supervisors. In the final chapter, I integrate findings, discuss implications, and provide recommendations for future research.

**Chapter Two: “The Hardest Job You Will Ever Love”: Nurse Recruitment, Retention, and Turnover in the Nurse-Family Partnership Program in British Columbia, Canada**

Manuscript one, in chapter two, provides a robust exploration of the factors that NFP PHNs perceived influenced recruitment, retention, and turnover of NFP staff working in the BC health authorities that participated in the BCHCP process evaluation. Guided by the principles of interpretive description (Thorne, 2016), 28 individual interviews were conducted with PHNs who worked in, and then exited, the NFP program. Results from this analysis provide important information to support the recruitment and retention of NFP nurses. NFP requires specially trained nurses to deliver the program and this study identifies important considerations for maintaining staff. This manuscript was accepted by the peer-reviewed journal PLOS One.

**Chapter Three: Weathering the rural reality: Delivery of the Nurse-Family Partnership home visitation program in rural British Columbia, Canada**

Manuscript two, in chapter three, presents a qualitative study using interpretive description methodology (Thorne, 2016) to explore and understand the influence of rural geography on the delivery of the NFP program in British Columbia, Canada. A strength of this study is that it includes the experiences of both PHNs delivering NFP in rural areas and their supervisors. The perspectives of two unique data sources provided a comprehensive picture of rural NFP delivery and allowed for the development of clinically relevant recommendations. This study was published in *BMC Nursing*. The full citation for this study is:

Campbell, K. A., MacKinnon, K., Dobbins, M., Van Borek, N., & Jack, S. M. (2019). Weathering the rural reality: Delivery of the Nurse-Family Partnership home visitation program in rural British Columbia, Canada. *BMC Nursing, 18*(1), 17. https://doi.org/10.1186/s12912-019-0341-3

**Chapter Four: Nurse-Family Partnership and Geography: An Intersectional Perspective**

Manuscript three, in chapter four, offers new insights on how geography influences the delivery of NFP in diverse conditions. In this article, I used intersectionality as a theoretical tool to guide the analysis and interpretation of data collected through focus groups with NFP PHNs. NFP nurses who worked across a variety of communities from urban to rural spoke about how geography influenced their abilities to deliver the NFP intervention. However, geography was found to be an additional intersection of disadvantage for NFP clients who were already living with multiple forms of oppression. This approach to analysis reinforced the importance of NFP and as well as the importance of considering geography from a practice and organizational level. This study was published in *Global Qualitative Nursing Research*. The full citation for this study is:

Campbell, K. A., MacKinnon, K., Dobbins, M., & Jack, S. M. (2020). Nurse-Family Partnership and geography: An intersectional perspective. *Global Qualitative Nursing Research*. https://doi.org/10.1177/2333393619900888

**Importance**

This thesis contains the first studies emerging from the BCHCP process evaluation, which examined the experiences of NFP PHNs and their supervisors in BC, Canada. The overarching objective of this work was to present evidence of how nurses work within the NFP program in Canada. Having considered multiple viewpoints, this thesis provides clinically relevant recommendations for nurse recruitment and retention in NFP, as well as important considerations for program delivery within different geographical contexts.

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**CHAPTER TWO**

**Submitted Manuscript 1**

**TITLE:** “The hardest job you will ever love”: Nurse recruitment, retention, and turnover in the Nurse Family Partnership program in British Columbia, Canada

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**Abstract**

**Background:** Nurse turnover is a significant issue and complex challenge for all healthcare sectors and is exacerbated by a global nursing shortage. Nurse-Family Partnership is a community health program for first-time pregnant and parenting girls and young women living in situations of social and economic disadvantage. In Canada, this program is delivered exclusively by public health nurses and only within a research context. The aim of this article is to explore and describe factors that contribute to recruitment, retention, and turnover of public health nurses delivering Nurse-Family Partnership in British Columbia, Canada between 2013 and 2018.

**Methods:** Interpretive description was used to guide sampling, data collection and analytic decisions in this qualitative component drawn from the British Columbia Healthy Connections Project mixed methods process evaluation. Semi-structured, individual interviews were conducted with 28 public health nurses who practiced in and then exited Nurse-Family Partnership.

**Results:** Nurses were motivated to join this program because they wanted to deliver an evidence-based program for vulnerable young mothers that fit with their personal and professional philosophies and offered nurse autonomy. Access to program resources attracted nursing staff, while delivering a program that prioritizes maintaining relationships and emphasizes client successes was a positive work experience. Opportunities for ongoing professional development/ education, strong team connections, and working at full-scope of nursing practice were significant reasons for nurses to remain in Nurse-Family Partnership. Personal circumstances (retirement, family/health needs, relocation, career advancement) were the most frequently cited reasons leading to turnover. Other factors included: involuntary reasons, organizational and program factors, and geographical factors.

**Conclusions:** Public health organizations that deliver Nurse-Family Partnership may find aspects of job embeddedness theory useful for developing strategies for supporting recruitment and retention and reducing nurse turnover. Hiring nurses who are the right fit for this type of program may be a useful approach to increasing nurse retention. Fostering a culture of connectivity through team development along with supportive and communicative supervision are important factors associated with retention and may decrease turnover. Many involuntary/external factors were specific to being in a study environment. Program, organizational, and geographical factors affecting nurse turnover are modifiable.

**Keywords:** Retention; recruitment; turnover; public health nursing; Nurse-Family Partnership; home-visitation program; job embeddedness

**Background**

Nurse turnover is a significant issue and complex challenge for all healthcare sectors and is exacerbated by a global nursing shortage (1–3). In Canada, nurses comprise one third of the health care workforce and are the largest body of regulated health professionals (4,5). Yet the Canadian Nurses Association suggests that healthcare needs are not being met by the current workforce and new policies need to be implemented to address the anticipated shortage of almost 60,000 registered nurses by 2022 (6). Furthermore, the Canadian Institute for Health Information reports that the annual growth rate of employed regulated nurses in 2017 was the lowest in the previous decade (7). Given the existing and increasing nursing shortage, policy makers and managers will need to address issues associated with retention and recruitment of registered nurses.

Solutions to the nursing shortage include improving recruitment, reducing turnover and retaining nurses (6). It is estimated that nurse turnover costs Canadian employers 1.2-1.3 times the annual salaries of registered nurses (8). Beyond the cost and negative effects on budgets, nurse turnover is also a significant problem for human resources planning (7). While there is extensive research on nurse retention, most focuses on hospital settings (9,10). With only three percent of the 300,000 Canadian registered nurses employed in community-based public health positions, there has been a lack of corresponding attention to public health nursing retention research (7). The need to recruit and retain nurses is also of considerable importance to this sector of the health system (11). The aim of this study was to explore and describe nurses’ perceptions about factors that contribute to the recruitment, retention, and turnover of public health nurses delivering a nurse-home visitation program, Nurse-Family Partnership® (NFP), in British Columbia, Canada.

**Nurse turnover and retention**

The definitions of nurse turnover and retention are inconsistent in research and reviews; turnover and attrition are often used interchangeably, making comparisons difficult (9,12). For the purposes of our analysis, we have operationally defined *turnover* as nurses voluntarily or involuntarily leaving their position (3,8,12). We acknowledge that turnover occurs for voluntary reasons, such as personal or professional decisions to leave or change a position, but also for involuntary reasons, including program closures, retirements, or termination of employment (12). Conversely, the focus of nurse *retention* is to prevent nurse turnover and is defined as the intent to continue employment in a nurse’s current role (10,13). In many research articles, including ours, these concepts are studied together.

Retention and turnover of nurses is a complex human resource phenomenon influenced by multiple intersecting individual and contextual factors. An individual’s sense of job satisfaction has been identified as a key factor in nurse retention and turnover (1,14). Studies have also suggested that personal (personality, burnout), job (perceived empowerment, career advancement, remuneration), and organizational characteristics (management style, cultures of stress) are associated with nurse turnover (1,14–17). A recent meta-analysis identified that a lack of supportive and communicative leadership, strong workplace connections, and organizational commitment are the strongest predictors of voluntary turnover (17). These findings are reinforced by similar conclusions from studies of nurse retention, and many systematic reviews concluded that supportive relationships with co-workers and leadership, pay parity, and quality workplace environments are the most effective strategies and contextual conditions favourable to retaining nurses (9,18–23).

Although there is ample literature related to the human resources issues of turnover and retention in acute and long-term care health settings, little is known about these issues within community-based public health departments, including those that offer nurse home visitation programs (10,15). Given increased demand for such nurses in the current and planned shifts to population health and primary health care and the ongoing context of nursing shortages, retention and turnover issues will become increasingly challenging for leadership and public health managers (11). Public health nurses in Canada are baccalaureate degree prepared and vital in promoting, protecting, and preserving health for individuals, families, communities, and populations (2,24,25). Issues of social justice, client advocacy, and health equity are paramount in public health nursing and require a high level of nursing skill and knowledge (24). Yet public health nursing is not typical of traditional point of care nursing, adding to recruitment difficulties among new nurse graduates who have had limited exposure to community care environments during their undergraduate nursing education programs (26,27). Jones and Gates (13) have called for more research on turnover and retention from different areas of nursing, such as public health, to highlight and minimize the costs and benefits of turnover.

Of the few studies focused specifically on public health nursing, many are from an American perspective. Yeager and Wisniewski (11) conducted a cross-sectional study in the United States (US) to examine nurses’ decisions to work in public health. They found that nurses were more likely to remain in public health positions when their values aligned with the organization’s mission, they were able to be innovative in a flexible environment and had access to continuing education opportunities. Findings from two studies conducted by Leider and colleagues (28,29) suggest that American public health workers enjoyed their roles but did not feel adequately compensated. Despite the differences between Canadian and American health systems, wages were also found to be an issue for public health nurses in two Canadian studies (10,30). If new graduates are to fill employment demands, agencies must address the loss of institutional knowledge as turnover occurs and identify a means to retain new public health practitioners (28).

Existing Canadian studies found that public health nurses were most satisfied when they provided direct client care, received positive client feedback, and when they perceived that their work made a difference (30,31). Henderson, Betkus, and MacLeod (10) surveyed public health nurses in British Columbia and learned that intent to leave was associated with factors of remuneration, retirement, and family needs more than job satisfaction. However, this cohort included only nurses delivering services in rural and small towns; a sector of the workforce known to have unique experiences specific to their geographical context (32). In 2005, a comprehensive examination of Canadian community-based nurses uncovered that all sectors of community nursing (i.e., home care, public health, and community care access centres) were concerned with inadequate staffing, client complexity, providing nursing care to vulnerable families with multiple health issues, and “difficult clients” (25, p. 184). Issues specific to public health nurses affecting retention included constant change and uncertainty associated with programs being offered (25). However, it is unknown whether these concerns reflect nurses’ experiences in the current climate of Canadian public health nursing.

NFP is a community health program for first-time pregnant and parenting adolescent girls and young women coping with socio-economic disadvantage (33). Within the Canadian context, since 2008, the program has been delivered within multiple research contexts in order to adapt then evaluate the program in this context (34,36). Baccalaureate-prepared public health nurses regularly visit families starting early in pregnancy (<28 weeks gestation) and with visits continuing until the child’s second birthday (33,35). Canadian public health nurses have historically been trusted to care for mothers and their infants (37,38) and have a range of knowledge and skills to address the complex health and social needs of families experiencing multiple challenges (24,37). NFP supports building strong therapeutic relationships between nurses and clients to improve pregnancy outcomes, reduce child maltreatment, improve child mental health and development, and improve mothers’ life circumstances (33,35). In British Columbia, with support from the Ministry of Health, through the British Columbia Healthy Connections Project, regional health authorities are implementing and delivering NFP with fidelity to the program’s core model elements (35) — as part of the first randomized controlled trial evaluating NFP’s effectiveness in Canada (36).

NFP has been extensively evaluated in the US and has demonstrated effectiveness in positively influencing a significant number of reproductive, child and maternal health outcomes (39). In addition to establishing the evidentiary foundations to support the efficacy of this program in improving health outcomes among young first-time mothers and their children, research has also been conducted to develop and evaluate innovations to improve program delivery. Significant attention has been paid to understanding and then addressing issues that influence client retention in the program (40,41). Through this work, it has been established that client retention in the NFP program is optimized by ensuring one consistent nurse home visitor throughout the length of the program; as a consequence nurse turnover is strongly associated with client attrition or lack of engagement in the program (42–45). Therefore, nurse retention is vital to NFP success.

Our understanding of the contextual and program factors that influence NFP nurse home visitor retention and turnover is limited to a few studies conducted in the US and Canada. Zeanah and colleagues (45) conducted focus groups to study NFP nurses’ provision of mental health care to clients in Louisiana, US. They noted that retaining experienced NFP nurses who were able to form and maintain client relationships was crucial to program impact. They suggested that a loss of nurses from the program may increase organizational costs related to the subsequent training of new staff. Zeanah et al. recommended finding opportunities for nurses to formally and informally process the emotional work of NFP to potentially help with nurse retention (45). In another qualitative study, Lewis (46) found that nurses were drawn to the NFP program because of a desire to work with pregnant/parenting young women and their children who were experiencing socio-economic disadvantage — as well as having greater role autonomy, job flexibility, and opportunities to develop relationships with clients (45,46). The emotional toll, high caseloads, insufficient resources, and inadequate salaries were some of the challenges associated with NFP nursing in these two studies from the US (45,46). Similarly, in Canada, a qualitative secondary analysis of data from an NFP pilot study in Ontario, augmented by additional interviews with nurses, found that workload and workplace factors increased their stress (47). However, nurses were highly satisfied by their ability to develop strong client relationships and observe their clients’ successes (47). This study identified program structure (including a model of reflective supervision), a shift in nursing philosophy, and the support of NFP colleagues as factors supporting nurse retention. Understanding the emotional labour involved in delivering NFP, Dmytryshyn and colleagues (47) recognized that turnover can be associated with burnout, fatigue, and vicarious trauma and acknowledged the need for strategies to better support nurses.

Currently, we lack an in-depth understanding of the organizational, team, and individual factors that influence the capacity of the NFP program to recruit, retain, and reduce the turnover of public health nurses employed within this targeted nursing intervention. Identification and exploration of these factors is a first and essential step in the process of developing human resource strategies to ensure that implementing public health agencies maintain their capacity to successfully deliver NFP. This analysis draws from a sub-set of qualitative data from the larger mixed-methods process evaluation conducted in the context of an ongoing trial to examine effectiveness. The focus of this analysis is to identify and describe NFP public health nurses’ perceptions of contextual, organizational and individual factors that influence the workforce cycle. We also documented their recommendations for how NFP implementing agencies can focus their efforts on nurse recruitment, retention and limiting turnover.

**Evaluation of the NFP in British Columbia, Canada**

Evidence of NFP effectiveness in Canada will support national extension of this service and therefore the employment of more public health nurses. Understanding the factors influencing nurse recruitment, retention, and turnover in this program is vital to sustainable establishment of NFP in Canada. In Canada, NFP was adapted and piloted for acceptability and feasibility between 2008-2012 in Hamilton, Ontario (34). While NFP has been extensively evaluated in the US and has demonstrated effectiveness in positively influencing a significant number of reproductive, child and maternal health outcomes (39), the effectiveness of this early intervention program is unknown within the context of Canada’s universal healthcare system. As such, the British Columbia Healthy Connections project (BCHCP) was launched in 2012 and comprises a randomized controlled trial (RCT) (36) evaluating NFP’s effectiveness in a sample of 739 families from four participating regional health authorities. The BCHCP also involves an adjunctive process evaluation to document how NFP is implemented and delivered by five unique health authorities (35). This paper reports on findings drawn from data collected from public health nurses who participated in the process evaluation. The specific research questions addressed by this analysis are:

1. What factors influence decisions to apply to, remain in, and leave NFP roles for public health nurses who exited the NFP program?
2. What recommendations do public health nurses have related to developing and sustaining a high quality NFP public health nurse workforce?

**Methods**

**Study context**

Public health services in British Columbia are delivered through five regional health authorities and are guided by mandates from the provincial Ministry of Health (48,49). Each of these health authorities participated in the process evaluation and assigned PHNs and supervisors to complete the NFP education program and deliver the program to girls and young women who met the RCT eligibility criteria (35,36).

**Design**

Qualitative data were drawn from the BCHCP mixed methods process evaluation (35). An interpretive descriptive approach was employed to guide all methodological decisions related to data collection and analysis because of its utility and practicality in qualitative health research (50,51). Interpretive description draws on the disciplinary knowledge of the researchers to generate research findings that are clinically relevant and meaningful to applied practice (50,52). The core research team for this analysis included four registered nurses with significant expertise related to public health nursing and home visitation programs including NFP (KC, LM, CKL, SJ) and a research coordinator with a graduate degree in public health (NV). The tenets of interpretive description do not restrict researchers to ill-suited theoretical frameworks but encourage the use of methods or theories that support the development of practical and applicable research outcomes (50,53).

**Participants**

The entire population of public health nurses delivering NFP in British Columbia were invited to participate in the process evaluation. Study eligibility criteria included: 1) completed or completing the NFP education; 2) delivering the NFP intervention to participants in the BCHCP; and 3) English-speaking (35). From this population of nurses, the sub-sample for this analysis consists of public health nurses who subsequently left their NFP positions during the period of February 2015-May 2018. Changes in a nurse’s status was communicated by the NFP supervisor to the research coordinator for the BCHCP process evaluation, who then contacted and invited the nurse to participate in an exit interview prior to their last day in the role.

**Data Collection**

The purpose of the exit interview was to explore nurses’ experiences and perceptions of their position in the NFP program, including motivation for applying to NFP and reasons for leaving, as well as to gather their recommendations for strategies to promote nurse retention within the program. Participants were interviewed via telephone at a private space in their workplace by the research coordinator. Telephone interviews can create challenges in qualitative research, particularly through the loss of nonverbal cues (e.g. anxious behaviours), inability to contextualize data (e.g. environment or participant characteristics), and difficulties building rapport (54). To mitigate these potential risks, two authors (NV, SJ) visited work sites and had previously interviewed study participants, thus developing interviewer-participant relationships. Despite potential limitations, some research suggests that participants may have enhanced comfort via phone (54). In addition, telephone interviews were cost-effective and convenient to rapidly schedule for participants who were leaving their positions. The interview guide was developed and edited by members of the BCHCP Process Evaluation team, which included an International NFP Consultant who provided content expertise. The guides were reviewed regularly for any potential changes (see S1 File). Interviews ranged in length from 33 to 85 minutes, were digitally recorded, and transcribed verbatim with all identifying information removed. Participants completed a short demographic form at the time of the interview.

**Analysis**

Using the principles of interpretive description (50), initial analyses were conducted by two members of the research team (NV, LM) which included multiple readings of the transcripts and discussions between the researchers to make meaning of the data. The coding process began inductively through a process of open coding and categorizing. A codebook was developed and used to compare coding decisions and facilitate dialogue about emerging patterns. Individual codes were then collapsed into higher level categories to identify the main themes across all interviews. Each transcript was then revisited and narratives of experiences relating to recruitment, retention and attrition were extracted. Other analytical strategies used to bring meaning and abstraction to the data included journaling, building matrices, and diagramming.

Key narratives and quotations were extracted from the transcribed interviews and reviewed by all authors for consistency and consensus in analytical meaning. All members of the research team have significant experience in qualitative research and were involved in determining relationships and patterns in the data used to conceptualize the findings in a way that is meaningful for public health nurses and illuminates the factors associated with NFP nurse turnover, recruitment, and retention issues. Findings were substantiated through the thoughtful clinician test, which included a variety of public health nurses and other individuals familiar with NFP reviewing outcomes and recommendations for clinical relevance (50).

**Ethics**

The BCHCP mixed methods process evaluation received research ethics board approvals from ten institutions: the five participating health authorities, four universities where BCHCP researchers are affiliated, and the Public Health Agency of Canada. All study participants provided written and verbal consent prior to the interview and were informed that their participation in the study was voluntary. Public health nurses did not receive compensation for their participation in the study and completed the interview during assigned work hours.

**Results**

Overall, a total of 82 public health nurses participated in the BCHCP process evaluation (2013-2018). Between February 2015 and May 2018, when data for this analysis were collected, 38 nurses across 5 health authorities left their NFP positions and exit interviews were conducted with 28 of these nurses (73.6%). Of the 10 nurses not participating in an exit interview reasons included: unable to set up interview before NFP exit date (n=9); and, nurse did not respond to invitation (n=1). Participant characteristics are summarized in Table 1.

**Table 1. Public health nurse characteristics.**

|  |  |
| --- | --- |
| Characteristics | % (n) |
| Highest level of education  Baccalaureate degree  Master’s degree | 89.3% (25)  10.7% (3) |
| Average nursing experience (in years) | 14 (range 2-40) |
| Average home visiting experience (in years) | 8 (range 0-27) |
| Average public health experience (in years) | 9 (range 0.5-28) |

Through the accounts of 28 public health nurses, we observed that these nurses were enthusiastic about the opportunity to deliver NFP. However, despite their satisfaction with NFP, multiple voluntary and involuntary/external factors challenged their capacity to remain in the program. An in-depth examination and analysis revealed three key stages that emphasize the workforce cycle for NFP public health nurses: joining the NFP team, developing relationships and new skills and deciding to leave. Stages represent the processes of recruitment, retention, and turnover and key findings are summarized and presented in Table 2.

**Table 2.** **Key factors for NFP nurse recruitment, retention, and turnover.**

|  |
| --- |
| **Recruitment: Joining the NFP Team**   * Fulfills professional goal of working with populations experiencing vulnerability which provides professional fulfillment * Creates an opportunity to work within, and deliver an evidence-based nursing program * Provides opportunities to develop and refine nursing knowledge and skills through completion of NFP core education * Have access to large number of program resources (visit-to-visit guidelines, facilitators) to use to tailor home visit content to meet identified family needs * Support for nurse autonomy with respect to planning and delivering care for families and to practice self-care * Fits with personal and professional philosophies of nursing care |
| **Retention: Developing Relationships**   * Program structure and model elements emphasize and prioritize the importance of developing and maintaining relationships with families * Delivery of an intensive, client-focused home visitation program through regular home visits allows nurses to witness the attainment of positive health outcomes among highly vulnerable families * Being part of a strong, cohesive team of nurses which allows for regular debriefing, consulting about challenging clinical situations, and receipt of support from individuals who “understand” program demands   **Retention: Developing New Skills**   * NFP program model and focus on multifaceted aspects of promoting maternal, child and family health creates a context where public health nurses are working at the full scope of practice * Opportunities for ongoing- and regular professional development to address nurse-identified educational needs * Engaging in regular reflective supervision can provide nurses with a supportive environment to practice reflection and evaluate nursing care |
| **Turnover: Deciding to Leave**   * Experiencing symptoms of compassion fatigue, burnout, vicarious trauma, or moral distress * Difficulty balancing competing priorities within limited time allowances (i.e. for documentation or travel) * Personal reasons (e.g. moving from service delivery area, retirement) * Organizational factors (e.g. changes in program or staff movement, unhealthy work environments) |

**Recruitment: Joining the NFP Team**

Participants emphasized that the opportunity to deliver an “evidence-based program” and potentially **have a long-term impact on families’ lives motivated them to join the NFP team. Throughout the interviews, nurses referred to NFP as an “evidence-based program,” even though the effectiveness of the program in British Columbia has not yet been established. An experienced, end-of-career nurse described what motivated her in this role,**

**I really felt like I wanted to do something in my career that I felt would really be able to make a difference and I felt a real connection with just core values and then the NFP client-centered principles, and just the social impact that NFP had not only for the client's family but even then through generations.**

**This perception of NFP being a program that “makes a difference” for families is underpinned in the NFP core education where NFP nurses in British Columbia are introduced to the positive outcomes measured in the US trials. Nurses expressed fulfillment in working in the area of maternal-child health and with high-priority populations, such as adolescent girls and young women experiencing complex, chronic health and social issues. A nurse explained the connection she had to the clientele in NFP as a draw to this type of work,**

I love young moms and the connection I was making with some of the vulnerable ones … Knowing that that was basically my clientele was a huge draw for me. Providing evidence-based nursing care to young mothers was a motivating factor for nurses who applied to work in NFP.

**Previous experience working in public health parenting programs without adequate time, clear guidelines, and resources to address complex client needs piqued nurses’ interest to apply to work in the NFP program. An experienced public health nurse shared her discontentment with prior practices,**

One [reason for applying to NFP] was maybe the dissatisfaction of my ability to work with vulnerable populations in general public health. I just found that it was getting more challenging to find the time to be available to the families that needed us most because we were spread so thin with other duties. And also, there was no template for which to work with these families, so everybody did their own thing and I just felt that there was a better way but just didn't know what that better way was.

In contrast to having limited guidelines to structure their home visiting practices in general provincial home visiting programs, some nurses expressed frustration about previous experiences that did not allow for them to consistently apply their nursing skills, judgement, or work at their full scope of practice. The lack of autonomy within their previous nursing practice and its increase in scripted responses and “checklist nursing” was described in this quotation:

I had done the other jobs in public health for a long time and it was getting more narrow and narrow all the time. We were told what to do and when to do it. A lot of it was like phones and scripts. So, it wasn't a very interesting job.

Participants hoped NFP would provide them with the opportunity to complete a robust program of nurse education, improve their knowledge and skills, and have access to visit-to-visit guidelines, tools, and resources to integrate into home visits.

Nurses found the potential to become home visiting experts and e**xperience a sense of personal and professional fulfillment in providing a program informed by theory, based in evidence, and guided by focused client-centred principles appealing. Furthermore, they valued the education and support offered by the NFP program model. Participants, even those with significant maternal-child expertise, viewed NFP as an opportunity to increase their skill set working with high priority populations, “I was very interested in the program because it was an opportunity to learn new skills and to become a bit of an expert in this area.” Nurses appreciated the advanced education they received. Even more significant, nurses highly valued that the program model allowed for, even encouraged and provided support, time, and flexibility, for nurses to do whatever was required to establish, build and maintain a strong, consistent therapeutic relationship with the client. Nurses new to public health practice were also drawn to NFP for similar reasons:**

**There's a lot of support and backing from supervisors and management to get education to broaden ourselves, and also to do self-care. You don't see any of those things in the hospital really. So that was what I was lacking and what I needed and so it totally fit the need for me in NFP.**

Nurses exiting the program provided insights into recruitment strategies and stressed the importance of job fit. They perceived that the personal qualities necessary to be successful in the NFP role included being flexible with how they implemented program elements and exhibiting openness and self-awareness. The necessity of job fit was explained:

If [a nurse] doesn’t fundamentally have the right attitude - if they're not open, if they're not able to roll with the punches, if they're not able to really critically look at themselves, their boundaries, their reaction to things, if they don't have that insight or aren't willing to develop it, they won't get, or last in, the program.

Additionally, there was a set of past professional nursing experiences that participants identified as critical considerations when NFP teams or nurse supervisors were advertising and recruiting for new nurses to join the team, including: 1) practice with populations experiencing adversity or marginalization; 2) confidence and competence in home visiting; 3) demonstrated abilities to establish professional boundaries with clients; 4) understanding of system level facilitators and barriers to meeting multiple client health and social needs; and 5) the ability to frame and deliver care and services from a strengths-based, rather than a deficit-focused, approach.

**Retention: Developing Relationships**

**The nurses were all asked to reflect on their time delivering NFP to pregnant/parenting girls and young women and their experiences working with other NFP team members, and then to identify the key factors that they perceived, influence nurses in general, to want to remain working in the program. There was broad consensus that the two primary reasons public health nurses are motivated to continue to work in this program are the opportunities to develop genuine therapeutic relationships with families as well as to work at their full scope of nursing practice. As one nurse concluded: “I loved the fact that it was a long-term relationship that you’d be building and that there were so many educational opportunities that came with NFP.” Within these two conditions, nurses expressed a deep commitment to making a difference in the lives of their clients and were encouraged by the opportunity to have a greater impact through their work in the NFP program.**

**Nurses identified that the nature and depth of the nurse-client relationship established within the context of this program contributed to their overall job satisfaction. NFP nurses valued building trusting relationships with clients and recognized the importance of establishing foundations for a therapeutic relationship: “I'd say the relationships and getting close to people that are usually very guarded and don't trust a lot of people. That they trust you and then they work with you.” In addition to relationship building, nurses were highly satisfied when they were able to witness positive client outcomes: “When you have success with your clients, it’s brilliant ... When you have those moments where your clients do something amazing and maybe I had a part in that. Look at this - I’ve made a difference!” Observing mothers becoming more confident in their parenting skills, infants meeting their developmental milestones, and families breaking inter-generational cycles of poverty or trauma were valued by nurses. These factors were identified by nurses as retention factors (for the time they remained in the program).**

Participants also pointed out the importance of contextualizing the concept of success in the NFP program. One nurse shared how NFP changed her nursing practice: “It’s liberating as a nurse to be able to do that [strength-based work] because [in comparison to other programs] … I always felt the emphasis as a nurse [was] you're always looking for problems.” At the individual client level, participants reported successes including positive parent/child attachments, leaving abusive partners/negative influences/toxic relationships, quitting or reducing their use of substances (i.e. alcohol, tobacco), attending/completing school, acquiring employment, and receiving mental health support. **For one public health nurse, the connection that she had to her client and the ability to focus on, and celebrate, her strengths were evident:**

Just watching my girls succeed and it looked different for each one of them. I mean one of my girls, the baby was apprehended multiple times and I think permanently after the [NFP] program, but her baby was born with an intact brain and that's something she [the client] wasn't given. She avoided drugs and alcohol throughout her entire pregnancy. And her baby got a normal brain, and this is a mom that was born with FAS [fetal alcohol syndrome]. So even though she didn't successfully parent maybe in the way we look at, I saw her breaking the cycle and it was so neat to see those little changes and how that will impact not only her daughter but her daughter's children too.

**The repetition of the term “my girls” in this participant narrative reflects the commitment and connection that the nurse felt towards her clients. Despite a child apprehension, the nurse was able to identify client strengths that she attributed to NFP exposure.** Client success in NFP was not an all or nothing binary outcome. Because NFP is client-focused and strength-based, public health nurses could celebrate all successes.

Positive working relationships with the NFP team and supervisor were generally experienced as supportive and encouraged participants to remain in their position. Required weekly reflective supervision was consistently mentioned as a benefit to being in NFP: “Some of the things that are very helpful to retaining nurses, I think, are supportive supervision and regular reflective [supervision].” Engagement in reflective supervision provided dedicated time to critically reflect on situations and receive essential support from supervisors to advance nursing practice. One nurse shared why reflective supervision and a supportive environment was so important: “NFP is a program where, as the practitioner, you need a ton of support because it's heavy work.” The notion of team cohesion and positive working relationships as a means to deal with the challenging work of NFP was echoed: “I think the team meetings and the reflective practice are huge for retention and, well, decreasing burnout. But also, for growth as well, the case conferences that we do are really engaging, and I actually miss them.” Regularly reflecting, discussing, and debriefing with supportive colleagues and an assigned NFP supervisor who understand the nature and stresses of the program allowed nurses to feel connected and supported in their work.

**Retention: Developing New Skills**

Participants recognized that professional development, such as the completion of NFP core education and the availability of ongoing learning opportunities, supported them to advance their professional nursing knowledge and skills. Nurses attributed their clinical successes to the intensive educational opportunities provided and suggested that it may be a factor for ongoing retention of NFP nurses: “I really enjoyed the ongoing learning and education that was part of the NFP; that was a real retention piece for me.” Opportunities to gain and apply knowledge were found to enhance professional growth for public health nurses: “Using that research base and developing knowledge and skills more intensely in a way of applying theory and research … to develop as a professional.” Being in a role that supported professional growth and development was important to nurses.

With advanced knowledge and in a supportive environment, nurses were able to work at their full scope of nursing practice. This milieu allowed for regular, in-depth nursing assessment, planning, intervention, and evaluation: “I felt like I was using all my nursing muscles instead of just a few of them.” The ability to learn new assessment techniques used in NFP and apply them in their public health nursing practice was professionally stimulating. Another nurse reflected on her time in NFP: “It's been a really interesting role that I will definitely take a lot from.” Many nurses noted that NFP was the most challenging nursing position they had experienced: “[During training] I was like, ‘oh it can't be that hard’. It can't be any harder than what I've already had to deal with as a nurse. And, no … I've lived that.” Providing complex nursing care to NFP clients using an array of new resources, skills, and knowledge was meaningful to nurses.

**Turnover: Deciding to Leave**

Participants identified a variety of voluntary and involuntary/external factors (**Table 3.**) that contributed to their decision to leave the NFP program. Contributing factors are presented and described in this section.

**Table 3. Circumstances that Contributed to PHNs Leaving an NFP Position**

|  |  |
| --- | --- |
| **Involuntary/External Decision to Leave NFP Team** | |
| Organizational | Health authority restructuring  Reallocation of nurse resources to other health unit program Position terminated with no known rationale  Union grievance resulting in staff movement |
| **Voluntary Decision to Leave NFP Team** | |
| Organizational | Lack of job security  Filling a temporary position  Uncertainty regarding sustainability of NFP position post-BCHCP RCT  Misunderstanding of RCT study timeline  Negative work environment |
| Personal | Retirement  Family needs  Health issue  Moving out of health authority area  Another employment opportunity |
| Program | Perceived lack of adequate supervisory support  Lack of time to meet program demands (e.g. increased caseload, travel time, preparation for visits, locating clients, documentation)  Lack of fit between PHN preferred assignment and demands of NFP program (e.g., working exclusively with families with multiple complex needs)  Caseload management (particularly when assigned only part-time to NFP)  Experienced isolation due to geographical factors  Too much driving/covering broad geographic area |
| Unknown | No reason given |

*\*Some participants described more than one reason for leaving their position.*

**Involuntary/External circumstances**

Nine out of the 28 nurses interviewed identified at least one involuntary or external factor as the primary reason they were no longer assigned to an NFP role. Involuntary or external reasons for job turnover, as described by the nurses, included: 1) health authority restructuring; 2) reallocation to another program; 3) union grievance; and 4) position terminated for no known reason. For one health authority, the NFP program was discontinued as the health authority restructured programs: “My health authority has decided that, with their switch to a new model of delivering public health services, that [NFP] does not fit with their new model, and so they've deleted my position in the program.” Under these circumstances, some nurses did not want to exit NFP: “I'm not leaving my position, I'm being displaced.” How leadership communicated decisions about who would exit the NFP role mattered to how the nurse experienced it (i.e. collaborative decision making versus no control). Regardless of the reason for the involuntary turnover, supportive communication about program changes and opportunities to process them influenced how changes were received and experienced by participants.

Institutionally, union regulations, system reorganization, and reallocation of nursing resources were structural barriers that imposed constraints and resulted in involuntary turnover. Participants perceived that interference from the nurses’ union may have caused hiring practices that could be responsible for increased turnover. Specifically, some nurses explained their perception that the union mandated that seniority ranked over personal and professional attributes when hiring into NFP positions and existing positions were grieved. A concerned nurse stated: “[It’s] almost like [the union] is treating [hiring] like a nurse is a nurse is a nurse. And I don't believe that's true.” The importance of hiring for job fit during recruitment was reinforced when participants discussed turnover. In one instance, the reason for being asked to leave NFP was unknown to the participant.

**Organizational factors**

In BC, NFP was implemented by four regional health authorities as part of the BCHCP RCT evaluation of the program’s effectiveness; meanwhile (since 2017), four health authorities are continuing to implement NFP as part of enhanced public health services while awaiting RCT final outcomes. At the front-line practice level, however, limited communication about the long-term delivery of NFP within local offices increased frustrations for some NFP teams. While participants recognized that the Ministry of Health and the BCHCP research team may have conveyed information about long-term NFP planning possibilities to health authority leadership, nurses disclosed that they did not consistently receive clear messaging at the frontline. Participants perceived the demands on busy supervisors could have led to a lack of information-sharing and shared how team members responded: “We had this joke … that we were mushrooms; we were kept in the dark.” Participants feared the unknown and were challenged when they were in environments that lacked transparency, particularly when higher-level decisions might have the potential to impact the roles and positions that they work within.

The transition from delivering NFP as part of a research study to direct delivery of NFP as an integrated public health program was also handled differently amongst health authorities, which led to a range of positive and negative participant experiences, as it related to involuntary turnover. For sites where there was a reduction in NFP nurses, when nurses were included in the decisions about who would leave NFP, through respectful dialogue, the experience was considered positive:

We were all approached. It was very respectfully done … [the supervisor] explained what was happening. And so, I thought well for me, getting close to the end of my nursing career, that it would make sense that I would be the one who would step aside.

Communicating program changes and resource allocation, with clarity and transparency, allowed for a more positive experience for exiting NFP nurses.

**Geographical factors**

For participants working in smaller communities, isolation was a factor influencing participants’ decisions to leave. While the majority of NFP nurses reported not being co-located at the same office as their supervisor, a few were also the only NFP nurse located within an office and expressed feelings of isolation. Nurses at these lone sites were concerned that they were at a greater risk of burnout if they stayed in their positions. In addition to lacking an NFP supportive team physically co-located with them, these nurses often lacked adequate coverage during illnesses or vacations. One participant shared the following suggestion:

[Make] sure there's no lone nurses. I mean, I think, that it's really scary. And I actually have said that to my colleague that's taking over. ‘You're going to be really tired you know. There are going to be days where you're going to be like, I don't feel great and normally would've been like stay home but I got to see so and so and I know she's not in a great place and so I got to be on my game’.

The pressure to be present for clients without readily available and in-office NFP team support was identified by nurses as one factor that contributed to turnover for participants working as the sole NFP nurse in their area.

**Personal factors**

Personal reasons were cited at times for choosing to leave the NFP program. These included family needs, retirement, taking another position for career development, and relocating outside of the office catchment area. Other nurses shared that the working environment was stressful or unsupportive and within the context of their own health or a family member’s health, the decision to leave was necessary. Some retiring participants stayed connected to the program through ongoing employment in casual relief positions: “I'm not leaving because I don't like my job, I'm leaving because of my age … But I've agreed to go back as a casual a little bit.” Many of the participants noted that NFP was a good nursing position: “I would say that the program is everything you've ever dreamed of for your nursing practice.” Despite their reasons for leaving, many nurses enjoyed the experience and urged implementing organizations to address issues associated with turnover.

**Program factors**

At the clinical level, the ongoing challenges of engaging “hard-to-reach clients” while managing a complex caseload and dealing with the time constraints associated with traveling to clients’ homes and completing the subsequent documentation influenced nurses’ decisions to leave:

I was done with the role, feeling burned out … expected to do a lot of driving and not being supported with having different worksites. And just feeling unable to properly get my charting done and properly have time to prep for visits.

Many nurses who voluntarily left the program shared concerns about being overburdened by the work of NFP. Where reflective supervision was not being provided adequately for nurses this became a contributing factor for attrition. Supervisor turnover for some nurses also contributed to lack of adequate support. Where supervisors had no prior understanding of NFP, reflective supervision was less than optimal.

In some contexts, during periods of carrying smaller caseloads nurses were returned in a part-time capacity to non-NFP public health nursing. These participants expressed feeling less confident in the multiple roles assigned due to limited exposure, “I felt so scattered. I didn't have my foot in regular public health any more … And maintain the connection with public health and be able to also try and learn the NFP when your brain wasn't functioning anymore.” This was also the experience of some nurses who were regularly working in a dual role of both NFP nurse and generalist public health nurse. During busy public health times, such as school or flu immunizations, NFP nurses were expected to designate specific workdays to each role. NFP nurses who also had other non-NFP assignments experienced frustration and job dissatisfaction:

It was very clearly told to me at the beginning that - when I'm NFP, I'm NFP and when I'm [communicable diseases] I do [communicable diseases] and it does not cross. And, that's a challenge because the realistic part of it is if a family, an NFP family, calls me in crisis - I answer my phone. I can't really say, ‘well I'm sorry but I can't help you with this until Friday. I know it's only Tuesday but you're going to have to just figure it out.’ And, similarly I can't just not answer my phone or respond to [communicable diseases] things … It's kind of you know unethical or a pull between the two jobs.

NFP nurses who had multiple assignments often experienced concomitant negative consequences (i.e. stress, and physical and mental strain), which contributed to their leaving NFP.

The stress associated with supporting young mothers navigating a range of complex crises also created the potential for nurses to experience vicarious trauma. Because of the frequency and intensity of home visits, and the strong relationships formed with clients, nurses found it difficult when clients experienced challenges: “You feel like you're making so much headway with the client and … then they go off the rails. And it's like everything they've been working towards falls apart … and that's pretty hard to witness.” Participants described experiencing a great deal of stress and worry over client and child safety, and feelings of moral distress when clients disclosed information around perceived risks that they had no ability to change. As one nurse characterized her work in the NFP program: “The hardest job you’ll ever love … really tough work emotionally.”

**Discussion**

Our findings highlight the factors associated with recruitment, retention, and turnover from the perspectives of Canadian public health nurses who were employed in, and then left, the NFP program. Furthermore, we **build on and extend previous research on the** experiences of NFP nurses and influences on intent to remain in or leave the NFP program (45–47). As part of a process to adapt, pilot and evaluate the NFP intervention in British Columbia, Canada, health authorities are investing significant resources to educate and support public health nurses to deliver this public health program. While comparable Canadian figures are not available, in the US the first-year education costs alone are estimated at over $5000 for each NFP nurse and over $6000 for supervisors (USD) (55). Therefore, it is important for implementing organizations to be aware of factors that attract nurses with the *right fit* for the program and those that nurses perceive as influencing retention and turnover in the program.

**Job embeddedness is a concept arising from organizational, sociology, and psychology literature that is relevant to this analysis. Initially, turnover research emerged with the development of factory labour and introduced job satisfaction and organizational commitment as elements maximizing employee productivity and reducing financial burden for employers** (56,57)**.** As a more recent development, job embeddedness assesses a broad set of influences on employee retention and explains variances beyond those associated with turnover, acknowledging that influences on leaving and staying are not always polar opposites (56). Mitchell and colleagues (58) recognize three critical aspects of job embeddedness as predictive of voluntary turnover: 1) fit - individuals’ perceptions of their suitability for the position; 2) links - the extent to which employees have connections to other people or activities; and, 3) sacrifice - what employees would give up if they leave the job. Findings from our analysis reinforce, and add to, this narrative.

*Fit,* an aspect of job embeddedness,was reflected in our study findings and associated with recruitment, retention, and turnover. From our analysis, considering fit when recruiting for NFP could help identify nurses that understand public health, home-visitation, and working with families living in complex situations of disadvantage. Recruitment research in healthcare primarily focuses on broad strategies to encourage practitioners into the field to address shortages (11,26,59–61). Less is known about recruiting for *fit* within nursing. A recent review of value-based recruitment evidence suggested that hiring based on personality, quality, and compassion may be costly upfront, but the benefits may be noted in lower turnover rates (62). Studies exploring recruitment of new graduate nurses suggest adopting mentorship from more experienced nurses, consistent support, and debriefing opportunities as strategies to encourage entry into positions with positive outcome results and lower turnover (63,64). Considering these strategies for hiring within NFP may be appropriate given the supports inherently built into the program structure. For example, it may be appropriate to recruit new graduate nurses if they are able to receive guidance from experienced NFP team members and have access to a consistent supervisor. However, we recognize that this may not be possible in organizations where collective bargaining agreements determine seniority over job fit and drive hiring decisions.

Similar to the job embeddedness research (58), our findings suggest that connections made in the NFP team were drivers of retention. Nurses who developed strong connections with their NFP supervisors, team, and clients expressed greater sense of job satisfaction and acknowledged it as a factor related to retention. Another large Canadian study also found that public health nurses are more successful with supportive organizational culture and strong leadership (57). Conversely, lone NFP nurses, practicing without the immediate face-to-face support of an NFP team, lacked team connection and this consequently influenced nurses’ intent to leave the program. Other research has also found that NFP nurses who work in lone offices experience isolation and recommend strategies to increase connectivity, particularly in rural environments (32). Decreasing the incidence of lone-office or isolated NFP nurses may help decrease turnover. In rural environments or communities with low client enrollment in NFP, implementing agencies may need to explore opportunities to reduce isolation and increase connection to other NFP team members as described by Campbell et al. (32). Mechanisms, such as tele-health delivery, are currently being evaluated as measures to reduce isolation and travel costs time for NFP nurses. Future studies could examine the effectiveness of a shared-care nursing model in NFP.

Our results indicate that filling NFP positions with public health nurses who identify that their interests, nursing philosophy, and career aspirations align with the work of NFP may facilitate retention. This could be done by posting clearly defined job descriptions and through structured job interviews. In findings similar to ours, Underwood and colleagues (57) suggested that public health nurses prosper with a shared organizational vision, which may increase job satisfaction. Leider et al. (28,29) studied job satisfaction and expected turnover among public health practitioners at local, state, and federal levels and determined that significant turnover can be expected in public health due to factors such as pay and organizational satisfaction. Although remuneration was noted in a previous study from British Columbia, Canada as a factor influencing turnover (10) and mixed findings regarding rate of pay were reported in another Canadian study (57), NFP nurse remuneration did not emerge as an issue in our analysis. This may be because of participants’ structured, unionized environments, as other studies have found nurses working under a collective bargaining agreement have higher satisfaction with their wages (65).

The third aspect of job embeddedness, *sacrifice*, considers what nurses would give up if they leave their positions (58). Our results suggest that burnout and stress were factors negatively influencing retention. Nurses described sacrificing their own health and wellness if they remained in the NFP. Plendry (66) reported that these symptoms (burnout, stress, etc.) may be indicative of moral distress and can hinder autonomy and reduce nurse retention thus increasing turnover. Recognizing that moral distress is not burnout or stress, we draw on the work of Varcoe et al. (67) and define moral distress as a relational concept, experienced by individuals but shaped by intra and interpersonal factors, as well as broader socio-political and cultural contexts. Nurse autonomy was an important factor in attracting nurses to NFP in our study, therefore, strategies that could facilitate autonomy and reduce moral distress should be explored and encouraged. Moral distress in nursing is “layered and complex”, can be long lasting if not attended to (67, p. 57) and should be addressed as a multi-pronged approach at both organizational and individual levels (68). More research focused on structural strategies to address moral distress may support nurse retention and reduce turnover in NFP.

For approximately one third of the nurses in our study, leaving NFP was an involuntary or external decision. Our study was situated within the context of a large RCT. This is an important consideration because it affected nurses’ experiences and some organizational decisions ultimately reduced available positions. Although turnover is typically conceptualized as a dysfunctional workforce event (1,8), our findings primarily illuminated what nurses gained by engaging in the NFP program. Even highly experienced public health nurses left the NFP with increased nursing knowledge and skills as a result of their position. This finding suggests that skills may be transferable and could benefit client outcomes in future situations outside NFP. Exiting nurses will be well-situated to inform leadership and policy makers about the NFP program, its benefits and challenges, and advocate for structural changes and resources that support program operation.

We recognize that this analysis is based on the experiences of public health nurses who left their positions after delivering the NFP program in British Columbia. As such, these findings are not intended to be extrapolated to all situations. Instead, we intended to illuminate the experiences of a specific group of nurses who worked in, and then left, the NFP program in a Canadian context. Including nurses who left for voluntary as well as involuntary/external reasons was a strength of this paper. Involuntary and external reasons for turnover are often lacking in turnover research studies. It is a limitation that the process evaluation was conducted within the context of an RCT because this may have influenced nurses’ experiences of delivering NFP independent of their intent to retain or leave the NFP program. This analysis only considered public health nurses’ experiences. Understanding the perspectives of nurses who remained in NFP, supervisors, and senior decision makers may help triangulate findings. As well, understanding motivations for supervisors who decide to leave the NFP program may be an important area for further research.

**Conclusions**

The findings from this analysis have significant workforce development implications for public health agencies implementing the NFP program in Canadian settings. They may also inform future broader health human resource planning as health systems shift to population health and primary health care approaches. Public health nurses benefit from a supportive organizational culture and strong nursing leadership. Because NFP program model elements include structured reflection with supervisors and debriefing opportunities with NFP team members, recruiting nurses new to public health may be appropriate. However, attention should be paid to the balance of NFP team experience and all staff should be monitored for factors that can lead to stress and burnout due to the complexity of this type of nursing.

Future research should examine the capacity of NFP supervisors and nurses to prevent and effectively manage moral distress. More research is needed to understand how public health agencies can support public health nurses who work in NFP, and in similar programs, to ensure appropriate support for nurses working with clients dealing with complex health issues. Understanding the nature of unionized environments and their influence on hiring practices in public health nursing could be of interest to NFP implementing agencies as hiring nurses who are a good fit for this work may help prevent turnover. In future analyses, we will explore the influence of delivering NFP in the context of an RCT to determine its impact on nurses’ experiences. Finally, it is important to note that not all turnover is negative and that public health nurses leaving the NFP team take with them an expanded knowledge base and high capacity to provide skilled, complex public health nursing care to other populations experiencing disadvantage.

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**Supporting information**

**S1 File. Interview Guide**

**NFP Public Health Nurse Exit Interview Guide**

The questions in this exit interview are divided into two categories and will explore your experiences and perceptions about: 1) Your Position with NFP/BCHCP; and 2) Recommendations for Public Health Nurse Retention.

In the Nurse-Family Partnership (NFP) model, the public health nurses that deliver the NFP intervention and the Supervisors that support the NFP nurses, are integral parts of NFP and affect the overall effectiveness of the intervention itself. It is also recognized that there are circumstances in which nurses will leave their positions with the NFP/BCHCP for a variety of reasons. It is our hope today that we can learn from you how you came to be involved with the NFP/BCHCP and what circumstances, should you be comfortable sharing these with us, have presented themselves that have resulted in you leaving your position with the NFP/BCHCP.

I would like to first ask you how did you learn about the posting for your position/assignment and the opportunity to become involved in the NFP/BCHCP? *[Probe for environment in which came into position, whether was unionized, etc.]*

What motivated you to apply for the position/posting?

What were your professional goals at the time that you accepted the position with the NFP/BCHCP?

What were your expectations for your role as an NFP public health nurse?

How were your goals and expectations a match with your role in delivering the NFP intervention?

How were your goals and expectations not a match with your role in delivering the NFP intervention?

How did your skills, knowledge, and previous experience, prepare you for your NFP/BCHCP position? [What additional skills and/or knowledge, did they feel were missing at the time of hiring, etc.]

What things were provided to you to prepare you for your role delivering the NFP intervention? *[Probe for education, reflective supervision, team meetings, program resources etc.]*

If you were able to speak directly with your replacement, what would you say to them regarding the position that they are coming into? *[Probe for most rewarding aspects of position, most challenging aspects of position, what was in place to address these, unanticipated aspects of position that most surprised them, etc.]*

**FOR PART-TIME NFP PUBLIC HEALTH NURSES ONLY**

In terms of your workload, can you please provide your experience in this role of balancing NFP related work and public health nursing work? *[Probe for challenges, successes, loss of non-NFP skillset, work environment, recommendations, etc]*

If you feel comfortable sharing, what circumstances have presented themselves that have resulted in you leaving your position with NFP/BCHCP? *[Probe for job satisfaction, support provided or not from management, another employment opportunity presented, person was covering returning from maternity leave, medical leave, move out of province, relocation due to other circumstances, etc.]*

Following your work in the NFP program, can you please share with me what your new role and assignment will be? *[Probe for whether continuing to provide public health services to similar populations of socially disadvantaged women, description, etc.]*

One of the overall objectives of today’s interview is to understand from your own perspective as a former NFP nurse your own recommendations for retention of public health nurses moving forward.

In reflecting about your experiences working as a public health nurse with the NFP/BCHCP, what strategies currently exist that you are aware of, if any, to contribute to retention of nurses? *[Probe for if any of these strategies were utilized to retain participant]*

In reflecting about your experiences working as a public health nurse with the NFP/BCHCP, what additional strategies would you recommend be integrated into the BCHCP in order to contribute to increased retention of public health nurses? *[Probe for whether including these new strategies might have affected participants’ own retention in the BCHCP]*

What factors should be considered when recruiting new NFP nurses? *[Probe for factors related to skillset, training, and education]*

As we wrap our conversation today, are there any additional comments that you would like to share with the research team about:

a) Your position with NFP/BCHCP

b) Recommendations for public health nurses

c) Other comments

**CHAPTER THREE**

**ARTICLE ONE**

**TITLE:** Weathering the Rural Reality: Delivery of the Nurse-Family Partnership Home Visitation Program in Rural British Columbia, Canada

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**Abstract**

**Background**: Pregnant girls/young women and new mothers living in situations of social and economic disadvantage are at increased risk for poor health. Rural living may compound marginalization and create additional challenges for young mothers. Public health nurses (PHNs) delivering the Nurse-Family Partnership (NFP) to mothers living in rural communities may help to improve maternal and child health outcomes. The purpose of this analysis, grounded in data collected as part of a broader process evaluation, was to explore and understand the influence of rural geography on the delivery of NFP in British Columbia, Canada.

**Methods**: For the analysis of this qualitative data, principles of inductive reasoning based on the methodology of interpretive description were applied. A total of 10 PHNs and 11 supervisors providing the NFP program in rural communities were interviewed.

**Results**: The results of this analysis reflect the factors and challenges of providing the NFP program in rural communities. PHNs noted the importance of NFP in the lives of their rural clients, especially in the face of extreme financial and social disparity. Remaining flexible in their approach to rural nursing and protecting time to complete NFP work supported nurses practicing in rural environments. Rural PHNs were often the sole NFP nurse in their office and struggled to remain connected to their supervisors and other NFP colleagues. Challenges were compounded by the realities of rural geography, such as poor weather, reduced accessibility, and long travel distances; however, these were considered normal occurrences of rural practice by nurses.

**Conclusions**: PHNs and NFP supervisors are well-positioned to identify the modifications that are required to support the delivery of NFP in rural geography. NFP nurses need to articulate what classifies as rural in order to effectively determine how to best provide services to these populations. Environmental conditions must be considered when offering NFP in rural communities, particularly if they impact the time required to deliver the program and additional services offered to young mothers. Regular NFP meetings and education opportunities address common problems associated with rural nursing but could be enhanced by better use of technology.

**Keywords**: Public health nursing; rural; Nurse-Family Partnership; interpretive description; home visitation

**Background**

Mothers of young maternal age who are living in poverty and/or social deprivation are at increased risk for poor health outcomes across the lifespan of the mother and her children [1]. Nurse-Family Partnership® (NFP) is an early intervention program shown to improve child and maternal health through nurse home visiting with young, first-time mothers experiencing social and economic disadvantage [2]. This population is considered to be particularly vulnerable when they have also experienced poverty in childhood, low education attainment, underemployment, and violence across the lifespan [1]. Given the widening gap in health and social inequalities that occurs when there is a perpetuation of disadvantage, it is imperative that supports are made available to this population of young mothers [1]. Rural living may potentially compound marginalization and create additional challenges for young mothers and their children. Rural residents have poorer health status, fewer available health resources, and greater difficulty accessing health services despite their significant need for primary health care [3, 4, 5, 6].

In Canada, the provision of home visiting services by public health nurses (PHNs) is a strategy used to enhance access to health promotion and injury prevention services, particularly to improve reproductive and child health outcomes [7]. NFP is a specific nurse home visitation program that was developed and extensively evaluated in the United States. The NFP intervention starts early in pregnancy with intensive and purposeful home visits that continue until the child’s second birthday. There are specific program elements outlined for nurses, supervisors, and organizations involved in implementation of NFP. This includes guidance and requirements for client enrollment criteria, intervention delivery, home visit content, nurse/supervisor education, supervision and team activities (See Table 1) [8, 9]. An extensive process evaluation is currently being conducted in British Columbia, Canada to document how NFP is implemented and delivered within this context [8]. The process evaluation is adjunctive to the British Columbia Healthy Connections Project (BCHCP), the first Canadian randomized controlled trial (RCT) evaluating the effectiveness of NFP [10]. If the intervention is shown effective, the findings from the process evaluation will be used to inform adaptations necessary to ensure that this program meets the needs of Canadian mothers, reflects PHN competencies, and is feasible to deliver across a range of geographic contexts [8, 11]. The purpose of this analysis, grounded in data collected as part of the broader process evaluation, was to explore and understand the influence of rural geography on the delivery of the NFP program in British Columbia, Canada.

While there are few studies that have focused on the practices of rural PHNs in Canada and the United States, those that are available provide some insight into the nature of nurses’ experiences. Rural PHNs often practice as generalists and are cross-trained to provide a wide array of services [12, 13]. When providing maternity services, rural PHNs conduct newborn, maternal, and family assessments, provide breastfeeding support, and answer questions related to maternal health and infant care [13].

Rural PHNs are strategic in their client and community relations, allowing themselves to be known in the community to build and establish trust within the community [14, 15]. PHNs tend to take on leadership roles in community development and form strong collaborative relationships with community members and organizations to ensure that rural clients’ needs are met [13, 16]. Rural nurses often feel a responsibility to their communities to ensure that healthcare services are available and accessible [13, 15, 17]. Where rural nurses are also a community member, strong ties to their neighbourhoods can create complicated relationships with clients who they may encounter outside of work or have additional knowledge of the family beyond what is shared in their nursing assessment [13, 15, 17, 18]. The lack of anonymity associated with living in rural communities is a concern for young mothers who may be hesitant to reveal their true situations for fear of breached confidentiality and rural nurses need to be mindful of not inadvertently exposing information [19].

Home visiting is an evidence-based public health strategy that has been shown to increase maternal well-being, improve child health outcomes, and reduce child maltreatment among mothers experiencing social and economic disadvantage [2, 20, 21, 22, 23, 24, 25, 26]. Most notably in the United States, evaluations of NFP, conducted across three RCTs, demonstrated consistent and enduring effects related to immediate and long-term health and well-being outcomes for mothers and their children [2]. For mothers participating in NFP, immediate benefits included: 1) positive changes in prenatal behaviours, such as improved diet; 2) lowered use of cigarettes; 3) increased formal and informal support networks; and 4) improved breastfeeding initiation [2]. Child benefits included: 1) an increase in infant birth weight; 2) reduction of child injuries and ingestions that may have been associated with child abuse and neglect; and, 3) improved emotional, cognitive, and language development [2, 24, 27, 28]. The long-term benefits for mothers and infants are also documented as fewer sexual partners, fewer arrests, and lower violations of probation for adolescent children of NFP-visited mothers; improved life-course of mothers, specifically related to reduction and spacing of subsequent pregnancies, less role impairment due to drugs or alcohol, increased participation in the work-force, experiencing less domestic violence, and not being dependent on social welfare; and reduced all-cause mortality in mothers and preventable-cause mortality in children [2, 24, 27, 28].

Trials of NFP conducted outside of the United States showed varied outcomes [29, 30]. Results from the Netherlands indicated many positive health and social outcomes for new mothers and their infants, including reduction in prenatal smoking, increased breastfeeding, reduced child protection reports, and reduced exposure to intimate-partner violence [31, 32, 33]. In contrast, findings from the England trial indicated no additional benefits to mothers in NFP [34]. NFP trials are a prerequisite for any international expansion of the program because context is essential for guiding policy and practice [35].

While trials in both the Netherlands and England included rural areas neither reported the influence of geography on NFP delivery or outcomes. With the exception of the initial NFP trial in Elmira, NY, evaluations in the United States largely occurred in urban settings. Only one study focused on the implementation of NFP home visiting in rural communities [36]. Rubin and colleagues conducted a large retrospective cohort study with 3,844 NFP clients (urban n=3,296; rural n=548) matched to 10,938 control subjects to determine the influence of NFP on the reduction of subsequent pregnancies across different geographical locations. While the findings revealed a reduction in second pregnancy rates among all NFP clients, they were twice as strong in younger mothers from rural locations (hazard ratio = 0.40; 95% confidence interval, 0.22-0.73). Though this study provides important information into the effectiveness of NFP in rural communities, examination of the practices of NFP nurses could provide a better understanding of how the program is adapted or modified in rural settings. Given the importance of context, there is added value in attending to geographical considerations.

Understanding how rural PHNs adapt, implement, and deliver home-visiting to clients in rural communities is necessary for program success, but limited evidence exists to support rural nursing practice. One study suggested that generic training provided to PHNs for home-visiting programs may not adequately address the demands or needs of families living in rural communities [37]. From an organisational perspective, rural nurses have greater difficulty receiving training opportunities and lack consistent supervision, thereby missing opportunities for the shared-decision making that may occur in metropolitan centres [37]. Addressing rural nursing issues and concerns may help contextualize home-visiting programs and promote geographically-appropriate interventions for rural communities.

The literature reviewed here has provided an overview of the evidence that exists to support and inform the practices of PHNs working in rural communities. Rural nurses have relationships within their communities and have a commitment to maintaining health services in their rural communities. However, little is known about how nurses’ practices are influenced by their geographical location.

**Methods**

**Rural Definitions**

The body of literature defining the term rural is broad and there is no consensus on a standard definition. Rural has been defined by researchers using a variety of classifications, including community characteristics, geographical location, and availability or accessibility of health and technological resources [38]. For the purposes of this study, the rural context is being conceptualized as a continuum that encompasses a wide variety of geographic factors that range from small towns to farmland to isolated communities and/or any cultural variables. Using a broad definition allowed for participants’ voices to guide the conceptualization of rural geography used for the analysis that follows.

**Ethics**

The BCHCP process evaluation received research ethics board approvals from 10 institutions, including: five participating regional British Columbia health authorities; four universities where researchers held their faculty appointments or affiliations; and the Public Health Agency of Canada. All study participants provided informed consent to the research coordinator (NV) who explained the study objectives and their involvement in the study was voluntary. Both written and verbal consent was obtained. The nurses’ consent form included information about their role in delivering the NFP program that was not found on the supervisor consent; otherwise, all information was consistent for all participant consent forms. Participants were advised that reflecting on experiences during the interview may cause emotional distress, and as such, were given the opportunity to take a break or stop interviews at any time. All data remained confidential, with identifying information removed from transcripts and attention to ensuring that individual nurses and supervisors could not be identified in any outcome reports.

**Design**

For the analysis of this qualitative study, principles of inductive reasoning based on the methodology of interpretive description were applied [39]. This approach was particularly appropriate for this study because its purpose is to generate knowledge to improve clinicians’ understanding of healthcare challenges and provide clinically relevant applications to practice [39, 40]. As an applied qualitative approach, interpretive description draws on the knowledge generated from the discipline engaging in the research project [39]. In this study, the epistemology of nursing served as the theoretical scaffolding rather than arbitrarily applying a framework ill-suited to understand the specific disciplinary knowledge and complex context of rural PHNs in the NFP program [39]. This method requires that the researcher designs a study for the purpose of answering a clinically-relevant research question and identifies a sample that is best able to identify an array of insights into a complex phenomenon [39].

**Sample**

Sampling in interpretive description can include a variety of approaches including purposive and theoretical [39]. For this process evaluation purposive sampling was used to identify participants who were capable of providing deep insight into the phenomenon of rural nursing within NFP delivery. NFP was implemented in five regional health authorities across one province, British Columbia, and delivered by PHNs employed at the health authority and assigned to deliver NFP. NFP core model elements require that each NFP PHN has a supervisor specific to NFP, with a ratio of no more than eight PHNs allocated to one NFP supervisor [11]. For the process evaluation, data were collected from PHNs delivering the NFP program. To provide further insights into the experiences of rural delivery of NFP, the immediate supervisors of NFP PHNs were also invited to participate. All PHNs who were delivering the NFP intervention to participants enrolled in the BCHCP process evaluation were eligible to participate in the study. The total population of supervisors within the NFP program was invited via email to participate in one-to-one interviews.

**Data Collection**

Data for this analysis were collected during in-depth, semi-structured one-to-one interviews with PHNs who were delivering the NFP to clients enrolled in the BCHCP process evaluation, and NFP supervisors. Participants were interviewed either in person or via telephone, at their workplace by the research coordinator for the BCHCP process evaluation (NV) between October and November of 2014, in the second of eight waves of process evaluation interviews. A demographic questionnaire was completed at the time of the initial interview and field notes were collected by the researcher coordinator (NV). Interviews were an average length of 73 minutes (range 44-118 minutes). These interviews had multiple foci; however, for the purpose of this analysis, any content directly relevant to rural delivery of NFP was examined. Supplementary file 1 summarizes the pertinent questions about rural practice explored in this wave of interviews. Each participant was provided with interview questions prior to the meeting. However, these questions served only as a guide and participants were free to answer in any way that was meaningful to them. This approach to data collection is congruent with the method of interpretive description, which aims to develop a comprehensive understanding of the phenomenon under investigation [39]. Interviews were audio recorded, transcribed verbatim with all identifying information removed by a professional transcriptionist, and not shared with the participants.

**Data analysis**

Data analysis in the interpretive description tradition involves deep engagement with the data and encourages the employment of multiple strategies to test, confirm, explore, and expand on developing theories and conceptualizations, as well as to develop practical clinical applications [39]. Interpretive description encourages the researcher to begin with what is known, remain open to new ways of understanding the phenomenon, and expand the disciplinary knowledge base related to the topic [39]. An iterative, recursive, and non-linear process of thematic analysis was adopted and is congruent with data analysis in interpretive description [39]. Although qualitative thematic analysis was primarily employed, other analytical techniques included memoing, selective coding, and creating diagrams. All techniques were utilized to encourage conceptual leaps; specifically, data were considered as individual pieces but then moved to patterns, relationships, and finally as a conceptual whole. This type of analysis allowed for the research team to illuminate the challenges and strengths of delivering the NFP in rural communities. Although multiple coders (KC, NV) participated in coding the data, it was through deep engagement with the data whereby the development of themes began to emerge in a way that provided disciplinary relevance, true to data analysis in interpretive description [39]. Themes were identified through multiple readings of each interview until the first author gained a high level of familiarity with the data and insights about the participant’s experiences were determined. To enhance credibility, thematic analysis was reviewed by multiple researchers on the BCHCP team and discussed for congruence (KC, NV, SJ, KM). Data were organized and managed using NVivo Pro 11 and participant quotes were used to bring meaning to the complexity of their practice. Finally, within the interpretive description tradition, the final analysis should be theoretically sound and credible from the viewpoint of those in the discipline, known as the thoughtful clinician test [39]. Therefore, the researchers (KC, KM, SJ) applied their disciplinarily knowledge, vast experience as public health nurses, rural nurses, and as an NFP educator to determine if the findings resonated with nursing experiences. In addition, the BCHCP scientific team included a national NFP coordinator, nurses, and other NFP experts who reviewed and confirmed validity of the results.

**Results**

This focused analysis of data from the BCHCP process evaluation included the total population of PHNs practicing primarily outside of urban centres (n=10) and NFP supervisors who were employed to deliver the program at the time of data collection (n=11). All eligible professionals (n=21) consented to participate in semi-structured interviews with a 100% response rate. At the time of their first BCHCP interview, PHNs averaged 17.8 years of nursing experience (range 3-37 years). Supervisors averaged 27.3 years of nursing experience (range 13-37 years).

After describing how the participants defined rural communities, the six interconnected themes that developed from this phase of analysis are presented. These themes include: 1) Being the Sole NFP Nurse; 2) Weathering Realities; 3) Guarding Time; 4) Staying Connected; 5) Remaining Flexible; and, 6) Providing Essential Services.

**Defining Rural: The Context for Public Health Nursing Work**

The participants in this study self-identified their geographical environment as rural. A variety of descriptors were used to classify the geography as a non-urban setting. Many participants considered the limited accessibility to services a factor in determining its place on the rural/urban continuum. Communities that lacked or had limited transportation infrastructure were considered non-urban and referred to as rural. This included locations only accessed by boat or airplane, and those with limited road access, as described by this PHN:

Our community is accessible only by air and water, so we cannot access the rest of our province by road. So, we are surrounded by ocean primarily, and mountains. And so, anybody who wants to leave our community or come into our community has to do that either by air or on a ferry. We're a relatively small community and we're very isolated. (PHN 6)

The geographical structure of the area including farmlands, areas constricted between ocean and mountains, and proximity to large population centres helped to determine rural status. Additionally, some nurses referred to the population of their assigned small town (less than 17,000) as rural and is consistent with Statistics Canada’s [41] definition of a small population centre, which includes populations less than 30,000. Finally, there was recognition that the classification of geography is on a continuum or non-binary. This range of understanding was reflected in participants’ narratives including, “Well we're rural. We're not quite as rural as some places” (PHN 3), and “The bigger centres would say we're rural … when I hear that we're rural and remote, those words just don't sit well with me” (PHN 4). In these discussions, participants revealed that communities often ranged from small towns to farmlands, surrounded by outlying areas that nurses considered to be more (or less) rural.

**Being the Sole NFP Nurse**

Nurse participants reflected on the experience of being the sole NFP nurse in their location and recounted the difficulties associated with delivering NFP in rural areas while being isolated. Nurses who supervised isolated rural NFP nurses also noted the challenges that isolation brought to the role. Being the sole NFP provider in rural areas was particularly stressful for nurses who worked part-time as an NFP PHN and where the remainder of their worktime included assignment to a generalist PHN role. Those working as a generalist PHN also continued to provide other public health services to the community, which may have included flu clinics or other public health nursing roles. This dual role required time management and skillfully seeking out supports.

PHNs in rural offices primarily practiced as both an NFP nurse and a public health generalist. When working within this duality, there was a significant need to balance the requirements of both roles by vigilantly allotting time to complete tasks. However, the demands of the generalist PHN role required nurses to participate in other activities, especially during peak times, as one nurse explained:

Oftentimes things that are offered for the NFP nurses are offered at times when for me I am doing the other portion of my job, which means I may not be available to take advantage of those opportunities ... For example, yesterday … there was an NFP education session being offered and it's flu season here and as a public health nurse flu season is all hands-on-deck. (PHN 9)

Other nurses reported being careful to not schedule generalist PHN nursing work on days when NFP meetings were planned. In rural offices, where nurses often balanced multiple roles, attention to time management was a key consideration for work balance.

Connecting with other nurses or supervisors in the NFP program was the most significant communication concern affected by geography. Nurses were discouraged with rurality creating an inability to have in-person contact with their NFP supervisors. Supervisors were geographically in a different office location than NFP nurses, creating challenges and reflected in this quote, “There's no supervisor [in my office] ... So that has made it challenging from my perspective with always doing everything by telephone” (PHN 9). Nurses continued to meet despite the challenges of not having face-to-face interactions, primarily by telephone.

Nurses who were the only PHN delivering the NFP program in their office struggled with the associated isolation and lack of connection with other NFP peers.  Rural nurses needed to have in-person communication and access to nearby colleagues knowledgeable in the NFP program, so they could share experiences. Despite having a few in-person meetings annually, rural nurses lacked connection with other NFP nurses within their health authority and coveted the ability of others who were able to easily connect and communicate with other NFP nurses, as explained by one participant:

I've had a number of clients who have a lot of crises going on right now and just that, sort of ability to debrief with a colleague who understands the work, is doing the frontline work, would be so valuable if they were, you know, on-site with me. (PHN 3)

This sense of isolation was evident in the narratives, as was the need for face-to-face, dialectic communication with other frontline nurses to cope with the complex health and social concerns of clients. This theme of being the sole nurse crossed over into other findings from this analysis and is recognizable within other themes.

**Weathering Realities**

PHNs delivering the NFP program in rural communities acknowledged the realities associated with rural nursing practice. Place-based realities, such as limited access to services, extreme weather conditions, and long travel times/distance, were normalized in rural communities for the PHNs and NFP supervisors. Furthermore, the combination of these factors added complexity to already difficult situations, such as needing to travel long distances in bad weather. Nurses experienced the rural reality of practicing in communities that had limited access to health and social services. This influenced their ability to refer to other agencies, creating greater client reliance on the nurse. Lack of accessible transportation was also a reality for clients and required nurses to identify strategies to help support rural clients. PHNs made comments, such as, “I just do a lot of driving” (PHN 1) and others referred to commuting as “not a big deal” (PHN 7), reflecting the normalcy of rural commuting.

Weather conditions influenced the delivery of NFP in rural communities because it was often more extreme than in urban centres. As one PHN explained:

Because we work in a town that does get harsher winters than, than the city … where this is part of our job is just the daily life. We have to change our tires, we take those yack-track things [grips placed over shoes for better traction] with us if we need to get out in an icy place or if it's snowy or something. So that's the way that we've always been (PHN 8).

This participant quote reflects the reality of nurses who require vehicles in good repair and other equipment to manage weather-related conditions and was supported by other PHNs in the study. In addition, it highlights how rural PHNs may not consider this an unusual experience because it is a normal occurrence within their geographical setting. Access to weather-related equipment was essential for rural nurses to deliver the NFP program in their communities, particularly when road conditions were challenging.

Traveling from a rural community was done for two specific purposes: attending required NFP team functions (education, team meetings, and case conferences) and providing client visits. Supervisors accepted extra travel time as a necessity for rural nurses to participate in NFP activities because they were held in urban centres. Normalizing lengthy travel time and distance was noted throughout interviews and evidenced by one supervisor who commented, “… some (rural nurses) just have to travel” (Supervisor [SUP] 7). The travel realities for rural nurses became a consideration for how supervisors planned and scheduled the required NFP team meetings. One supervisor commented, “She needs to leave sooner from meetings, so I say the meetings need to end at such a time. And people who live very close to meetings want the meeting to go longer” (SUP 11). Beyond being aware of the travel needs of rural nurses, supervisors were required to attend to any NFP team tensions by acknowledging that meetings would need to end early to accommodate travel. Establishing team meetings that could fit into the rural nurses’ work schedules was one supportive measure taken by supervisors to ensure inclusion of rural nurses on NFP teams while responding to travel realities.

Although traveling to larger cities for NFP education and training sessions was unavoidable and time-intensive, PHNs perceived driving in their communities to be less stressful than urban commuting. PHNs noted the density of the town’s core area where their clients often lived and usually traveled short distances with minimal traffic, reducing the time they spent traveling for NFP client-based work. PHNs reflected on time-consuming travel for distant home visits, “Throwing [far away town] in there eats up my time” (PHN 3). In regions where the geographical boundaries were vast, PHNs reported that they could potentially have a travel time of up to eight hours if they had clients in distant parts of the catchment areas. However, none of the nurses in this study experienced that extreme distance between clients. When caseloads included clients distant from the nurse’s office, arrangements were made to see those clients on the same day. Effective use of travel time was essential for rural delivery of the NFP program.

Mitigating factors, such as organizational policies or financial burdens that place restrictions on travel, were another consideration for supervisors managing rural PHNs. One supervisor commented, “The geography is a huge issue. And in our health authority we've had challenges with travel restrictions, and so for the first year that I was in the program we could only meet by telephone” (SUP 4). Although PHNs and supervisors preferred face-to-face team meetings, some organizations had financial restrictions that prevented rural nurses from traveling long distances to attend NFP required events, such as team meetings and education sessions. In other instances, labour laws and collective bargaining agreements were considerations for traveling PHNs because of the extended work day resulting from travel for face-to-face team activities. Supervisors worked with PHNs to identify strategies and solutions that would achieve compliance with existing policies, such as overnight accommodation or attending by telephone.

**Guarding Time**

The concept of time as it influenced the delivery of NFP in rural communities was a vital consideration for PHNs and supervisors and apparent throughout all of the interviews with PHNs. Guarding time was necessary in order for rural PHNs to meet the requirements of the NFP program and balance their organizational obligations. The NFP supervisors also acknowledged their need to protect PHN time.

Careful allocation of time was important to ensure that rural nurses could meet the demands of their PHN role. Within the NFP role, these nursing tasks included education sessions, case conferences and team meetings, supervision, and home visits. PHNs were frustrated and challenged by the time needed to complete NFP obligations:

I know for awhile there I was kind of getting resentful of our team meetings and my one-on-one supervised meetings, that they had to be weekly. Because all of this just eats into my time and my time just gets to be quite precious when you think about having to prep and chart and plan for the next [home visit] and, and make sure you get back to [the office] to put all your stuff away at the end of the day, and still be finished on time. (PHN 7)

In addition to increased travel time, PHNs were still expected to find time to meet the full range of required elements of the program, including meetings, reflections, charting, among others. Protecting time for rural nurses was one aspect of delivering the NFP that became a significant part of their nursing role.

Supervisors were also cognizant of time constraints for rural NFP PHNs. Understanding the demands on rural PHNs was an important and supportive consideration from NFP supervisors. Some supervisors who were familiar with the demands of rural nurses provided comfort and support to rural PHNs:

She [the supervisor] understands the geographic isolation that we have and the amount of travel time. So, I think her understanding has really helped with the fidelity of NFP because during our reflection she's able to totally talk about those issues and understand what that's like versus me having a manager that lives in a bigger centre that wouldn't understand. (PHN 10)

Many supervisors appeared to be very aware of the time challenges of rural practice, and the difficulty in protecting and supporting PHNs and their use of time, “I really guard her time, but it is a bit of you know a constant push and pull” (SUP 11). For nurses working in a dual NFP and generalist role, there was potential for inconsistency between two supervisors who may not share a common vision for nurses’ use of time. Collaborative supervision requires a clear and consistent organizational direction for rural nurses who need to carefully allot their time.

Even though nurses acknowledged their appreciation for both nursing roles, tensions existed around finding time to complete all of their work. PHNs experienced frustrations with the imbalance of time allotted and time required to effectively manage their role in the NFP program. Rural PHNs discussed times where they were unable to finish nursing tasks within their workday and would miss breaks, skip lunch, or work late to complete them. PHNs described feelings of frustration related to their lack of time and inability to successfully balance both roles as emphasized by this nurse:

I feel that the amount of work that I have, because I do public health nursing as well as NFP work, that I'm finding the amount of time NFP work is taking is higher than the amount of time I have allocated for NFP, and so I feel that that is an imbalance and it's really hard to logistically sort of keep up to date with my generalist role and all the other things I do as a public health nurse and the NFP work at the same time. (PHN 10)

The quote above describes the time associated with the NFP program and the logistics of the generalist role, reflecting a desire to provide competent care while highlighting her need for more time and was repeated through many interviews. This imbalance of time was discouraging for nurses who wanted to perform well in all roles while they became more proficient within the NFP role.

**Staying Connected**

PHNs visiting clients and meeting face-to-face, preferably in their home environments, is fundamental to the NFP program and requires regular communication between nurse and client, nurses on the NFP team, and nurse and NFP supervisor. Communication is particularly important given the complex nature of clients and the specificity of the NFP intervention. NFP PHNs often communicate with clients to confirm appointments and follow up with nursing care in between home visits. Connecting with other NFP nurses and their supervisors helped PHNs to feel supported in their nursing practice, contemplate difficult situations, and inform clinical actions. However, concerns with the ability to freely communicate as a rural PHN in NFP were noted.

Communication difficulties appeared to cause barriers to visiting the client in her home environment. Not being able to reach rural clients interfered with the ability to provide nursing care and had a negative impact on practice as described in this participant quote, “A lot of our clients don't have ongoing telephone. Like, you just can't always get a hold of them. Their phones don't have minutes [unable to make or receive telephone calls] on them or have been disconnected” (PHN 9). Nurses shared communication strategies to connect with clients, including knocking on clients’ apartment windows, contacting a family member, texting, or emailing. Overall, the most difficult communication barrier was when clients lacked a working cell phone and it made simple tasks (e.g. scheduling appointment, reminders, etc.) more complex and laborious:

Within a drug life of owing money to people, the simple   
things like trying to contact them [NFP clients] on a phone to make a

next appointment, well they just pawned their phone off in order to

pay for the immediate concerns. (PHN 2)

PHNs had empathy for their NFP clients, understanding that they experienced frequent financial crises and rarely had consistent means of communication. However, the inability to easily connect with rural clients interfered with the delivery of NFP required elements, such as home visits and field supervision.

PHNs and supervisors navigated the lack of connection and communication associated with being the lone NFP nurse in their jurisdiction by devising innovative strategies to support NFP practices. Rural geography influenced regularly scheduled NFP team meetings and education, as suggested in this quote from a PHN, “Well one of the challenges for rural and remote is not being able to come in all the time for face-to-face education. I think that that can be more challenging” (PHN 4). Face-to-face connection was also valued by supervisors, “Getting to hear others' experiences was probably one of the more valuable things. Actually having a face-to-face for the core education and hearing other nurses' concerns, talking about ours, and sharing what's worked was really valuable” (SUP 9). Some attempts from supervisors to support rural NFP nurses involved having rural nurses meet independently with each other, connect via videoconferencing, to spend a few hours with each rural nurse, and to advocate for more travel funding so urban teams could meet the rural nurse. Addressing the lack of connection and the needs of nurses practicing as the sole NFP nurse at their office location was an important consideration for supporting rural nursing.

Supportive supervisors who understood the demands and barriers associated with rural nursing were essential to the success of developing innovative solutions to support NFP delivery in rural communities. One supervisor (SUP 2) described the need for “teleconference etiquette” for urban nurses who often forgot about the rural nurse not physically present but attending meetings virtually:

The remote nurses and the rural nurses are pretty used to teleconferencing. But the team that meets in-person [in the city], they weren't as used to it. So, that took some time for them to get the etiquette around teleconferencing. For getting that whole team building, you need to be able to teleconference well. That was definitely challenging. But that has come over time and setting down some ground rules for etiquette.

The development of these group rules helped support the inclusion of the rural nurses on the NFP team, who were often not well known to the urban NFP nurses. Navigating lack of connection through the use of supportive strategies to facilitate effective communication between the NFP team helped to maintain program delivery despite geographical distance.

**Remaining Flexible**

Beyond balancing the demands of their nursing roles, PHNs working part-time in an NFP capacity struggled to remain flexible and client-centred to meet client needs in a timely manner. One nurse reflected on the difficulty of having a limited visiting schedule when working with busy clients, “Well just balancing work. If they [clients] do get a job, trying to work around fitting in seeing me. The fact that I only work part-time visiting, trying to get the time in within my working day” (PHN 8). Working in a part-time capacity further compounded the need to be flexible given the time limitations.

NFP nurses remained flexible to meet the challenge of their clients’ busy schedules, given the nurses’ limited availability for home visiting due to their dual role or part-time position in a rural office. At times this required rural nurses to become creative with their approaches to finding mutually agreeable times for home visits. Nurses attempted to visit primarily in home but remained flexible in meeting clients where they were at to optimize the time of both rural nurse and client, as evidenced in this quote:

Ideally, we want to be meeting in the home but if that's the deal breaker then meet where they're going to want to meet. Right? Whether it's a coffee shop or a park or whatever. So, I do have to be flexible. (PHN 3)

Remaining flexible to the meeting space, even though program requirements recommend primarily meeting in the home, helped rural nurses to provide NFP services to their clients.

In addition to the client-focused elements of the NFP program, rural nurses and their supervisors acquired flexible approaches to meet the supervisory components of NFP. Supervisors provided support to PHNs by participating in a variety of role-specific activities, including weekly reflection, team meetings, case conferences, and field supervision. On an annual basis, it is recommended that each PHN and NFP supervisor dyad participate in at least three joint home visits with an NFP client. Scheduling and completing these joint home visits was another concern exacerbated by rural geography. NFP clients living in rural communities were often unpredictable and clients could cancel without notice. If a supervisor was traveling from an urban centre, there was limited means to connect prior to the scheduled visit as compared to nurses working within the same physical space as their supervisor. Most supervisors traveled extensive distances to reach rural nurses so cancelled home visits resulted in additional lost time and resources. Some nurses perceived this to be a significant challenge as suggested in the following quote:

It's harder for my team leader and I to get together for joint home visits or if she makes the trip all the way over here… and I have a couple of visits but for that day, you know, people might change or cancel or rebook or not show, and so it's harder versus if we were in the same office I'd be able to quickly say even within 15 minutes, I'm heading out to this home visit, everything's a go, do you want to come with me? So, the joint home visits are more of a challenge to be able to book and get in for the fidelity requirements for NFP. (PHN 4)

This participant quote also reflects the respect that the rural nurse had for the supervisor’s travel time and the need to efficiently manage time. Across all narratives, PHNs and supervisors were flexible, considerate, and committed to finding meaningful methods of responding to client needs, while meeting the requirements of the NFP program. Solution-focused, flexible approaches allowed the required elements of the NFP program to be delivered despite the constraints placed upon nurses and supervisors because of rural geography.

Being part of the NFP program helped clients to address short and long-term goals. At times, remaining flexible meant that immediate crises were dealt with regardless of the planned NFP activity. For example, clients’ needs for food or safety were prioritized. Supervisors noticed the flexibility required when providing nursing care in the NFP program as indicated in the following quote:

I know one of the nurses before a joint visit I did with her just last week, she had talked about the client we were going to see and walked through how she'd like to approach that specific topic and area of concern. And then when we were there together, she went through her plan [with the mother] and then just [adjusted it]. It was really great to be able to see her carry out that plan and be flexible and change it up as she needed to (SUP 1).

Despite the gravity of any presenting problem, NFP nurses directed clients to focus on solutions and continue working towards meeting program goals and future achievements.

**Providing complex and essential services**

Overall, rural nurses noted that the combination of working with clients who were experiencing complex challenges in their lives and living in environments with limited available services meant that NFP was a vital and essential resource. Nurses reflected on the circumstances of clients, which revealed a wide array of health and social concerns, as is common with clients enrolled in NFP. The multiple, chronic, and complex nature of her client’s life and situation was shared by this PHN:

[The client has an] IQ of about 70 or 75 and she was born super premature, she was 26 weeks I think, and had all kinds of physical issues when she was an infant. She was in 33 foster homes by the time she was 15 and has some severe attachment issues. It was really sad. But anyway, her baby was apprehended ... But just complicated, holy cow. (PHN 5)

Other client concerns and health challenges mentioned by participants included: mental health disorders, substance use and addictions, violence, child apprehension, attachment disorders, extreme poverty, family members (parents/grandparents) with health and social problems, intellectual and learning disabilities, young maternal age, and infants with health concerns. This is not an exhaustive list but begins to outline the diverse and difficult situations experienced by clients in the NFP program and occurs in rural communities where other services are limited.

Nurses noted the importance of NFP in the lives of their rural clients, especially in the face of extreme financial and social disparity. NFP nurses working in rural communities were keenly aware of the lack of services available for their clients. Limited availability of health and social care providers, specialist services, accessible transit, difficulty reaching food banks, and other social services were mentioned as barriers to clients’ well-being. For these reasons, rural clients were greatly in need of, and receptive to, the NFP program:

It’s a small, rural town so people don't have access to huge amounts [of services]. I mean in [the city] there are programs about every single thing possible. There's much less to offer here. I think when people are given the opportunity to do a program like this they want to do it because there's so little else in the town. (PHN 8)

Supervisors also acknowledged the limited available services but recognised the ease and connection between service providers, “You have a smaller number of service providers and they already know each other often anyway” (SUP 6). Given the limited rural resources available and accessible, along with the complexities of clients in the NFP program, NFP was perceived by participants as an essential service within their rural communities.

**Discussion**

The narrative derived from this analysis reflects both structural (weathering realities) and adaptive (being the sole NFP nurse, guarding time, staying connected, and remaining flexible) themes, and outlines the experience of providing a complex and essential service in rural British Columbia communities. The factors and challenges of providing a nursing intervention in rural settings, within the context of home-visiting with economically and socially disadvantaged young mothers, were presented. While the disadvantage experienced by NFP clients in rural communities is not exclusive to their geography [42], participants’ descriptions of their clients illustrated the complexity of existing situations within rural settings. PHNs and NFP supervisors are well-positioned to identify the modifications that are required to support the delivery of NFP in rural communities.

Because of the challenges associated with delivering nursing care to clients in rural settings, it is important to be able to identify rural communities where these services are required. NFP nurses need to articulate what classifies as rural in order to effectively determine how to best provide services to these populations. Definitions of rural included geographical and cultural considerations and a population size that is consistent with that used by Statistics Canada [41]. Nurses characterized rural similarly to the United States Census Bureau: that which is not urban is rural [43]. More importantly, participants’ recognition of a rural-urban continuum rather than a dichotomous, fixed definition is frequently used in research, supported in rural literature, and may be useful in determining rural health priorities, outcomes, or initiatives [6, 38, 44, 45, 46]. The use of a continuum is inclusive of, and sensitive to, the complexities associated with health geography including concepts such as rural-urban interface, ruralized urban, old rural, and new rural [45, 47, 48, 49]. The use of a rural-urban continuum will aid decision makers and rural practitioners in identifying what resonates as rural for their communities when implementing and delivering public health services. This is important so that all geographical areas are considered when delivering NFP, or any health intervention, rather than focusing specifically on urban or farmlands or remote communities; instead, a broad definition allows for consideration of small towns, country areas, or any area that doesn’t fall into a dichotomized definition.

In this analysis, time was valued and guarded as a resource constrained by rural practice and efficient communication was considered a cornerstone of effective delivery of NFP in rural communities. Challenges associated with rural practice included the place-based realities of extreme weather conditions, traveling far distances, and limited access to community services for clients and have been previously reported as rural practice issues [50, 51, 52, 53]. These findings stress the importance of NFP in rural communities that often lack health and social services for this population yet still have clients with complex health and social concerns. Because rural communities lack many health and social services [4, 6, 54, 55], enhanced PHN services are vital for reaching vulnerable populations of girls and young women and their infants. Previous research has identified that rural health care providers have been neglected in research and there is a void of policies that address extreme weather for rural practitioners [53]. The implications arising from this analysis also call for health research and policy that support the realities of nurses working in rural communities.

           Although rural-practicing nurses accept the nature of their geography as a normal occurrence, these environmental conditions must be considered when offering NFP in rural communities. Extreme weather and relative difficulty accessing roadways in some areas are issues that require some examination for senior decision makers. Existing studies have also reported complexities associated with rural public health nursing, including weathering difficult geographical terrain, travelling extensive distances, and working with limited available services [13, 15].

Addressing issues of isolation for PHNs who are not co-located in the same office as other NFP peers or their NFP supervisor could help support decision-making and offer opportunities for peer debriefing that may more naturally occur in urban centres. The use of videoconferencing opportunities could address, at least in part, some of the issues of isolation faced by rural NFP nurses. Where possible nurses may be encouraged to attend face-to-face meetings. However, when teleconferencing must occur, supervisors could focus their attention to ensuring that group norms are such that they include the rural nurses not attending in-person.

Another study found that although rural nurses working as the lone PHN in an office enjoyed their autonomy and close community ties, they also felt disconnected from the main nursing offices [12]. Using technology to create connections for rural nurses could both enhance rural nursing practice as it relates to NFP and respond to fiscal restrictions. The development of clear meeting guidelines when rural nurses join in-person meetings via teleconferencing/videoconferencing may help rural nurses’ engagement and inclusion in group activities. Being able to actively participate in meetings via telephone or video will ensure all NFP nurses can discuss their work within a team setting, and to receive the support and guidance of their colleagues.

Rural NFP PHNs recognized that they are often required to travel long distances and were more concerned with time than distance. This may be because adequate time is necessary for providing good care to NFP clients. Previous research has noted the importance of rural supervisors in order to deal with demands of rural nursing practice including isolation, limited connection to other professionals, and opportunities to debrief with peers [18, 56, 57] and are consistent with the findings of this analysis. In addition, this study adds the advocacy role of supervisors to ensure that rural nurses have sufficient time for nursing practice. Using secure video-conferencing to provide nurse supervision during home-visiting with families may be one method that could address distance as a barrier to field supervision. Technology could be used to facilitate program supervision requirements and address issues of distance, time, and the unpredictable nature of home-visiting.

The need to guard time was particularly important for nurses who had dual roles at their health authority, practicing both as a generalist and an NFP nurse. Rural nursing practice can be challenging due to the multi-faceted skill set and nursing tasks required of the NFP nurse working in a dual role. Although not preferable, NFP nurses may be required to hold a dual role due to limited available staff, smaller populations, and the required cross-training of rural nurses, as reflected in previous literature [17]. Supervisors who are supportive and aware of rural nursing practice issues are well-situated to assist part-time or dual-role NFP PHNs in scheduling their time and advocating for their needs.

NFP may enhance nursing practice by addressing some long-standing concerns and issues constraining rural nurses. Multiple studies have found that rural nurses lack the necessary mentoring to feel competent in their nursing practice [18, 58, 59]. Other studies have considered the lack of consistent and regular educational opportunities as a barrier to rural nursing practice [58, 59]. Because the NFP program is structured to provide regular education, supervision, and team support, rural nurses have access to consistent interactions that could bolster their rural nursing practice and add to the contextual knowledge they already have about their rural communities.

**Strengths and Limitations**

This study focused on the experiences of PHNs and supervisors providing the NFP program to select rural communities in British Columbia, Canada and has both strengths and limitations. First, this study only captured one group of nurses at a specific point in the early stages of implementing the NFP program and did not consider the experiences of urban-situated nurses who also delivered NFP to some rural communities. This was not a comparison study, so it is unknown how geography affected nurses practicing in urban and suburban areas. Future evaluations will incorporate their experiences to broaden what is known about delivery of NFP in rural communities. Also, the experiences of rural clients were not considered; however, the focus of this analysis was specific to nursing practice and so the voices of nurses were fundamental in understanding how NFP is delivered in rural communities in British Columbia, Canada.

Strengths of the study include using a qualitative design that is specific to applied health sciences and allowed the nurses’ and supervisors’ experiences, through interviews, analysis, and interpretation, to guide the development of clinically-relevant implications for rural nurses, supervisors, and health policy decision makers. Additionally, because this study is embedded within a large process evaluation, there are opportunities for team discussion and exploration of rural issues, as well as longer-term follow up with the participants that will help to strengthen our growing understanding of nurses’ and supervisors’ experiences delivering NFP in rural British Columbia and Canadian communities with future analyses.

**Conclusions**

This study contributes to the larger BCHCP process evaluation by being the first paper to explore the practices of PHNs delivering the NFP program in rural British Columbia. This research will help inform the modifications and adaptations required to the theory and intervention components of the NFP program within a rural context, for successful implementation and delivery in Canada, if the NFP is shown to be effective. The findings of this study constitute the basis for the development of a rural NFP model by providing an initial understanding of NFP nurse and supervisor experiences and identifies the program’s limitations within the rural British Columbia geographical context. On an international scale, study conclusions may provide guidance to other countries implementing NFP in similar geographic areas.

Exploring the experiences of NFP PHNs and their supervisors is necessary to determine how NFP can be successfully delivered in rural communities. Gaining a greater understanding of how NFP can support rural communities is vitally important given the strong evidentiary base behind NFP as an effective strategy to improve the health and well-being of socially and economically disadvantaged young girls and women, combined with the health disparities associated with rural-living. Future research will examine the experiences of all NFP nurses providing care to rural-dwelling clients to help inform the development of strategies that build success in program delivery. Because supervision was critical to rural NFP delivery, future research focusing on supervisors’ perspectives of meeting program supervision elements will enhance the development of a rural NFP model. Finally, the perspectives of senior decision-makers who guide organizational policies and funding models for NFP will be incorporated in the development of a Canadian model for rural NFP delivery, if the program is effective within a Canadian context.

**Declarations**

**Ethics Approval and Consent to Participate**

The following Research Ethics Boards reviewed and approved the BCHCP process evaluation: Fraser Health Authority Research Ethics Board, British Columbia; Interior Health Authority Research Ethics Board, British Columbia; Northern Health Authority Research Ethics Board, British Columbia; Vancouver Coastal Health Research Institute Research Ethics Board, British Columbia; Island Health Authority Research Ethics Board, British Columbia; Hamilton Integrated Research Ethics Board, Ontario; Simon Fraser University Research Ethics Board, British Columbia; University of British Columbia Research Ethics Board, British Columbia; University of Victoria Research Ethics Board, British Columbia; Health Canada and Public Health Agency of Canada Research Ethics Board, Ontario. All study participants provided informed consent and their involvement in the study was voluntary. Both written and verbal consent was obtained. One consent form was used for all participants, specific to their role (either nurse or supervisor).

**Consent for Publication**

Not applicable.

**Availability of Data and Materials**

The data are not publicly available due to ethical restrictions; the qualitative nature of the data could compromise research participant privacy/consent.

**Competing Interests**

SJ has held contracts with the Prevention Research Center for Family and Child Health, University of Colorado at Denver, to consult on the development, piloting, or evaluation of novel NFP program and education innovations. All other authors declare that they have no competing interests.

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**Authors’ Contributions**

KC, SJ, KM, MD contributed to the conception and design for this manuscript. NV collected study data. Thematic analysis was reviewed by KC, NV, SJ, KM and discussed for congruence. KC drafted the manuscript. All authors read, provided input, and approved the final manuscript.

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**Tables**

Table 1. NFP Program Model Elements for British Columbia

|  |  |
| --- | --- |
| Interventionist | * PHNs and nurse supervisors are Registered Nurses with a minimum of a baccalaureate degree in Nursing * PHNs and nurse supervisors complete educational sessions to develop core NFP competencies, and participate in ongoing learning activities * NFP PHNs use professional judgement, skill, and knowledge to individualize care based on family strengths and risks and across six domains of the program * Nurse supervisors provide clinical supervision with regular (weekly) reflection, demonstrate integration of the theories, and facilitate professional development essential to the PHN home visitor role * Specific supervisory activities include one-to-one clinical supervision, case conferences, team meetings, and field supervision |
| Client eligibility | * Clients participate voluntarily, are a first-time mother, meet socio-economic disadvantage criteria at intake, is enrolled no later than week 28 of pregnancy * Clients are 24 years of age or younger at time of enrollment |
| Dose | * Client is visited one-to-one, one PHN to one first-time mother or family * Client is visited in her home or occasionally in another setting that is mutually determined between the PHN and the client * Full-time PHNs have no more than 20 active clients * A full-time supervisor is responsible for a team with a maximum of 8 NFP PHNs |
| Visit Schedule | * General guidance is provided about a visit schedule (see below); however, there is flexibility to alter the schedule to meet maternal needs, availability, and priorities. * Upon enrollment, four weekly visits then bi-weekly until delivery * Post-partum, six weekly visits then bi-weekly until infant is 21 months * Monthly visits from 21 to 24 months |
| Program Domains (Home visit content) | * Within each home visit, a PHN will review and discuss content from six domains: 1) personal health; 2) environmental health; 3) life course development; 4) maternal role; 5) friends and family; and, 6) health and human services |

Adapted from Jack et al [8] and Prevention Research Center for Family and Child Health [9].

**Additional File**

Supplementary File 1

Title: Interview Guide

Description: Supplementary file 1 is the interview guide used during the interview process, specific to geography as a contextual influencing factor.

**Interview Guide**

Hello, my name is (name) and I am the (position) on the BC Healthy Connections Project (BCHCP) Process Evaluation Research Team. As part of this study, you have given consent for me to interview you approximately every six months about your experiences with the Nurse-Family Partnership program as it is being delivered within the (BCHCP). You completed the first interview on (date of first interview) and today I would like to continue our conversation about your experiences with the Nurse-Family Partnership program. The interview today will last approximately 60 minutes.

Again, the overall purpose of this component of the scientific evaluation is to understand how the Nurse-Family Partnership (NFP) intervention is implemented and integrated into public health nursing practice and what changes occur over time. We are most interested in learning about your personal experiences working in the program, including the successes and challenges you have encountered throughout this process. There are no right or wrong answers.

Your participation is completely voluntary and we can stop the interview at anytime. You may also choose not to answer any questions that you do not feel comfortable answering. The information you share about your work in the NFP program will also remain confidential and will not be shared with anyone on your team or your supervisor. The data from all of the interviews will be synthesized and general broad themes will be summarized and shared back to all of the NFP teams and BCHCP stakeholders.

There are many different external factors that will influence the successful uptake of a new intervention. These factors may be related to characteristics of the nurse, the client, the Health Authority or the NFP intervention itself. Broader social, cultural, geographical or political factors can also influence the process of how the NFP is introduced and delivered in each Health Authority.

1.1 Describe the physical geography of the community from where you deliver the NFP and some of the attributes of the client groups you commonly work with.

a. How does the geography of your community influence your ability to deliver the NFP?

b. What challenges do you experience in maintaining fidelity to the model?

c. What innovative practice strategies have been developed within your team to understand and respond to these influences?

1.2 Describe the organizational context in which you deliver the NFP.

a. What organizational attributes have facilitated your ability to implement the NFP? Why?

b. What organizational attributes have made it challenging for you to deliver the NFP? Why?

As we wrap our conversation today, are there any additional comments that you would like to share with the research team about issues that influence how the NFP is being delivered within your Health Authority?

**CHAPTER FOUR**

**ARTICLE 2**

**TITLE**: Nurse-Family Partnership and Geography: An Intersectional Perspective

**AUTHORS**: Karen Campbell, Karen MacKinnon, Maureen Dobbins, & Susan Jack for the British Columbia Healthy Connections Project Process Evaluation Research Team

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**Abstract**

Nurse-Family Partnership is a targeted public health intervention program designed to improve child and maternal health through nurse home visiting. In the context of a process evaluation, we posed the question: “In what ways do Canadian public health nurses explain their experiences with delivering this program across different geographical environments?” The qualitative methodology of interpretive description guided study decisions and data were collected through ten focus groups with 50 nurses conducted over two years. We applied an intersectionality lens to explore the influence of all types of geography on the delivery of Nurse-Family Partnership. The findings from our analysis suggest that the nature of clients’ place and their associated social and physical geography emphasizes inadequacies of organizational and support structures that create health inequities for clients. Geography had a significant impact on program delivery for clients who were living with multiple forms of oppression and it worked to reinforce disadvantage.

**Keywords**: Nurse-Family Partnership, intersectionality, public health nursing, health geography

Kendra was 16 years old when she learned she was pregnant. She has lived with her grandmother since she was a toddler when her mother first started treatment for drug and alcohol addiction. Kendra will have to move out of her grandmother’s home when the baby arrives because there is not enough room for all of them. She has no place to go. She hopes to find an affordable apartment with her boyfriend, however, she is feeling hesitant about this decision. Recently his controlling behaviour has escalated to include physical violence, and he does not allow her to go out with friends, and limits her ability to make it to school. They have no consistent source of income and are looking for affordable housing in a large city experiencing a housing crisis. She worries if this stress will hurt her baby. Kendra herself was born extremely premature, around 30 weeks gestation. Shortly after birth she was diagnosed with Fetal Alcohol Syndrome and lives with developmental delays. Sometimes this makes her impulsive and she has difficulty retaining information. She hopes that she is going to make the best decisions for her baby and recently met for the first time with her public health nurse. She has lots of questions about pregnancy and parenting, and has agreed to have a nurse visit her. Kendra’s story is a composite, which reflects the experiences of many of the girls and young women who are enrolled in the Nurse-Family Partnership® (NFP) Program. While providing comprehensive nursing care to clients who are preparing to parent and experiencing multiple challenges, public health nurses are committed to tailoring their services in a way that meets clients’ needs. This often requires that nurses adapt their nursing care to address the structural and organizational constructs that affect their clients, including their locations.

**What is NFP?**

NFP is a targeted public health intervention program designed to improve child and maternal health through nurse home visiting (Dawley, Loch, & Bindrich, 2007; Olds, 2006). This home visitation program supports pregnant girls and young women by utilizing the skills of baccalaureate prepared registered nurses who receive specialized NFP education to increase their knowledge about the program model, its underlying theories of practice, and develop skills to establish therapeutic relationships with pregnant and parenting women in order to influence the adoption of healthy behaviours (Olds, 2006). In Canada, this early intervention program is delivered exclusively by specially trained public health nurses (Jack et al., 2012). The goals of NFP include: 1) improving pregnancy outcomes by promoting healthy behaviours in the prenatal period; 2) improving child health, development, and safety by promoting competent and sensitive parenting behaviours; and, 3) changing mothers’ life courses by promoting financial stability and delaying subsequent pregnancies (Dawley et al., 2007; Jack et al., 2012; Olds, 2006; Olds, Sadler, & Kitzman, 2007).

The NFP program has been rigorously evaluated in the United States through three randomized controlled trials (RCTs) that have consistently demonstrated improvements in prenatal health, birth outcomes, and child mental health and development for families enrolled in the program (Olds et al., 2014; Olds, Sadler, & Kitzman, 2007). More recently, findings from trials evaluating the effectiveness of NFP in the Netherlands and England have been published, which have demonstrated variability in the program’s capacity to influence a range of maternal and child health outcomes (Mejdoubi et al., 2015; Robling et al., 2016). The Dutch trial reported that NFP was an effective strategy for preventing child maltreatment and reducing intimate partner violence, among other health outcomes (Mejdoubi et al., 2015, 2013). However, in the British trial, no short-term benefits with respect to the primary outcomes (i.e. prenatal smoking, birthweight, child visits and admissions to emergency, and subsequent pregnancies) were measured (Robling et al., 2016). Unlike other implementations of NFP, the trial in England did not include an eligibility requirement of economic disadvantage; primary eligibility was aged 19 or under, first viable pregnancy, and no more than 24 weeks gestation at recruitment (Owen-Jones et al., 2013). These outcomes highlight the importance of conducting context-specific evaluations prior to large-scale implementation.

Currently in British Columbia (BC), Canada, the British Columbia Healthy Connections Project (BCHCP) scientific team is conducting an RCT to measure the effectiveness of NFP, compared to existing services, to improve multiple child and maternal health outcomes (Catherine et al., 2016). This trial is being conducted to establish the effectiveness of this intervention within the Canadian context. An adjunctive process evaluation was conducted between 2013 and 2018 to explore how NFP is implemented and delivered across five unique health authority regions (Jack et al., 2015). If NFP is found to be effective, the process evaluation findings will inform country-specific program adaptations that meet the needs of Canadian mothers and reflect the scope of practice among Canadian public health nurses (Jack et al., 2015; Jack et al. 2012).

NFP implementing agencies are required to deliver the intervention with fidelity to the program’s core model elements (Jack et al., 2012). In Canada, first-time pregnant women and young girls who meet socioeconomic disadvantage criteria at the time of enrollment are eligible for NFP (Catherine et al., 2016). Profiles of girls and young women enrolled in the BCHCP RCT indicate that at baseline, these individuals experienced multiple social and economic disadvantages (Catherine et al., 2019). Participants are of young maternal age, with almost half (49%) between 14-19 years old; consequently many had not completed high school (53%), and almost all (94%) were living below the British Columbia poverty threshold (Catherine et al., 2019). While more than half (57%) of the participants identified as “white,” more than a quarter (27%) identified as “Indigenous” (Catherine et al., 2019, p. 11). In accordance with study ethical approval, all Indigenous participants were living in a place that was not part of a designated indigenous reserve.

Many participants reported pre-existing long-term health conditions (74%), mental health issues (47%), and experience with homelessness (47%) (Catherine et al., 2019). Catherine and colleagues also reported that more than half of study participants experienced moderate to severe childhood abuse (56%) and, within the previous year, half of participants reported intimate partner violence. The data reported reveal “pockets of deep socio-economic disadvantage for this group of BC girls and young women who were pregnant and preparing to parent for the first time” (Catherine et al., 2019, p 5).

**Intersectionality**

Considering the layers of disadvantages experienced by the girls and young women enrolled in the BCHCP RCT, intersectionality was drawn upon to consider the complexities associated with their location in society. While intersectionality was popularized by black scholars in the 1990s, it has been proposed as an important theoretical framework in population health research and it is increasingly being applied with attention to equity issues for people living with marginalities (Bowleg, 2012; Hankivsky et al., 2010; Kelly, 2011; McCollum et al., 2019; Rogers & Kelly, 2011; Scheim & Bauer, 2019). Recognizing that many definitions exist to explain the concept of intersectionality (Collins, 2015), we use the following description:

Intersectionality is a way of understanding and analyzing the complexity in the world, in people, and in human experience. The events and conditions of social and political life and the self can seldom be understood as shaped by one factor. They are generally shaped by many factors in diverse and mutually influencing ways. When it comes to social inequality, people’s lives and the organization of power in a given society are better understood as being shaped not by a single axis of social division, be it race or gender or class, but by many axes that work together and influence each other. Intersectionality as an analytic tool gives people better access to the complexity of the work and of themselves. (Hill Collins & Bilge, 2016, p. 2).

It may be more important to consider how intersectionality is *used* rather than how it is *defined*. Specifically, understanding domains of power (i.e. interpersonal, disciplinary, cultural, and structural) and how they relate to each other to advantage or disadvantage people’s lives needs to consistently be applied as an analytic framework for social justice (Hancock, 2016; Hill Collins & Bilge, 2016; Hopkins, 2019). Intersectionality allows us to consider how rules are implemented in society and recognizes that inequities do not fall equally on individuals (Hill Collins & Bilge, 2016). From this perspective, we understand that micro factors (e.g. gender, race, ethnicity, and economic status) and existing macro factors (e.g. sexism, classism, and racism) can have a cumulative effect of oppression in society (Bowleg, 2012). Also, concurrent and compounding systems of oppression can negatively affect health outcomes and obstruct access to health services (Hankivsky et al., 2010; Kelly, 2011).

The application of an intersectionality lens to public health research findings is particularly relevant because it helps to understand the complex array of contextual factors experienced by individuals, exposes power differentials, and attends to forces of oppression (Bowleg, 2012; Hancock, 2016; Hill Collins & Bilge, 2016). This approach to health research recognizes that marginalized groups are underrepresented in research and that systems of oppression create multiplicative effects on health disparity (Rogers & Kelly, 2011). Intersectionality in healthcare seeks to identify and act on social inequalities (Rogers & Kelly, 2011). Pauly, MacKinnon, and Varcoe (2009) identified the importance for nurses to apply critical perspectives, such as intersectionality, to social justice as a means to address existing health inequities for populations. In this analysis, the application of intersectionality to understanding the delivery of NFP involved: 1) considering how geography impacts public health nurses’ ability to provide home-visitation to girls and young women experiencing social and economic disadvantage; 2) examining how nurses experience challenges in accessing and supporting NFP clients within the context of geography and place; and, 3) understanding how these factors interact together to create healthcare or service delivery challenges in the Canadian NFP program.

The influence of geography on the delivery of the NFP program was one specific focus of the BCHCP process evaluation. In the context of the larger process evaluation, we posed the question: “In what ways do public health nurses explain their experiences with delivering the NFP program across different geographical environments?” The purpose of this article is to therefore describe and explain how different types of disadvantage experienced by young pregnant and parenting girls and young women enrolled in this home visitation program intersect with geographical contexts, and then how this confluence of factors impacts how public health nurses deliver the NFP program in BC, Canada.

**Methods**

The primary objective of the five-year BCHCP process evaluation (2013-2018) was to explore how NFP was implemented and delivered across five BC health authorities. A secondary objective was to identify how nurses experience NFP when delivering the program in small town and rural communities (Jack et al., 2015). Within this process evaluation, the qualitative component was guided by the methodological principles of interpretive description (Thorne, 2016). This qualitative approach was selected because of its relevance for addressing clinical problems and using disciplinary logic to generate knowledge as a way of understanding healthcare challenges (Thorne, 2016; Thorne, Kirkham, & O’Flynn-Magee, 2004). As a methodology, interpretive description pulls from techniques used in social science research in a manner that is most suitable for studying practice-based problems in applied clinical areas (Thorne, 2014, 2016). We applied an intersectionality lens to explore the influence of all types of geography on the delivery of the NFP program in BC and integrated a nursing perspective by applying our nursing knowledge.

Ethics approval was received from ten institutions: four where research team members held university appointments, at the five health authorities participating in BCHCP process evaluation, and from the Public Health Agency of Canada. Data sources from the process evaluations included NFP nurses, supervisors, and senior administrators; this analysis draws on data collected from the NFP public health nurses. The entire population of nurses delivering NFP in BC were invited to participate in the study and were recruited through their workplaces. All study participants provided written and verbal informed consent and their participation in the study was voluntary. For this analysis, participants included public health nurses (n=50) from four health authorities that deliver the NFP across different geographical regions of BC. Because one health authority had nurses who only delivered NFP in a small urban area plus the surrounding rural areas, those nurses were interviewed individually to better understand the uniqueness of rural program delivery and the findings specific to rural NFP public health nurse experiences are reported elsewhere (Campbell, MacKinnon, Dobbins, Van Borek, & Jack, 2019).

This analysis includes data that were collected through ten focus groups. Data were collected every six months for the BCHCP process evaluation; this analysis includes those data collected in May-June 2015 and April-May 2017. Focus groups ranged in duration from approximately one and a half to three hours; participants ranged from 5 to 10 per group. Semi-structured interview questions guided the focus groups and are presented in Supplementary file 1. The first set of data collected in 2015 helped inform the development of the question guide for the 2017 interviews. Each focus group was conducted by one of two researchers who had graduate degrees in health fields and significant expertise and experience in conducting focus groups. Focus groups were audio-recorded, and all data were transcribed with any identifying information removed.

During the focus groups, nurses were encouraged to describe the types of geography in which clients lived. They were also asked to explain where the program, including home visits, was delivered in a way that helped to explain their experiences. Most frequently, they used community names, which have been removed to maintain confidentiality. We used Statistics Canada’s *Population Centre and Rural Area Classification 2016* to organize and present the findings (Government of Canada, 2017). The Statistics Canada conceptual model reflects the existence of a rural-urban continuum and divides areas into three centres based on population size. These constructs include large population centres, medium population centres, and small population centres/rural. While we recognize that community descriptors should not be reduced to population alone, this model was used to present findings useful for other researchers and knowledge users.

The pragmatic and flexible approach of the interpretive description methodology allowed for the application of a variety of strategies to bring rich interpretation and rigour to the data analysis (Thorne, 2016). We primarily employed the *Sort and Sift, Think and Shift* approach, which encouraged continuous movement between engaging with the data and stepping back to reflect on and review emerging findings (Maietta, 2006). The core elements of this approach include: 1) becoming familiar with the data; 2) memo writing; 3) categorizing data; 4) producing reflective diagrams; 5) bridging the data; and, 6) presenting the whole data set (Fryer et al., 2016; Maietta, 2006).

While we reflected on the analysis of these data and observed the oppression of clients, we used intersectionality to provide a more critical examination of how geography impacts the delivery of NFP for the nurses in this study. Following the tenets of interpretive description, the goal of this analysis was not to represent the whole population but rather to critically identify clinically relevant findings that are meaningful and credible to those who are interested in this topic (Thorne, 2016). Finally, drawing on intersectionality as an analytical tool provided a framework that helped us to consider how geography became an additional intersect compounding marginality for the clients that public health nurses visited when delivering the NFP program.

While applying an intersectionality lens to this analysis, we used Núñez’s (2014) multilevel intersectionality framework to acknowledge the multiple constructs of disadvantage experienced by clients enrolled in NFP and to reflect the complexities associated with delivering the NFP program within the Canadian context. Micro-level or social categories of gender, age, class, and disability are typically represented in models of intersectionality (Hancock, 2016; Hill Collins & Bilge, 2016). Our results suggest that geography is an additional consideration that must be taken into account because of how it intersects with other positionalities. Guided by Núñez’s framework, and outlined in Figure 1, we acknowledge the multiple positionalities that create health inequities for NFP clients from the perspectives of their public health nurses. The constructs of age, gender, class, and geography were experienced as a significant disadvantage for all women enrolled in NFP. Some NFP clients also experienced other forms of inequity through disability (physical or mental health) and ethnicity (most commonly Indigenous). We move beyond the micro-level (individual factors) and present the meso- (experiential) and macro- (system) level factors that interact with geography and impact the delivery of the NFP program.

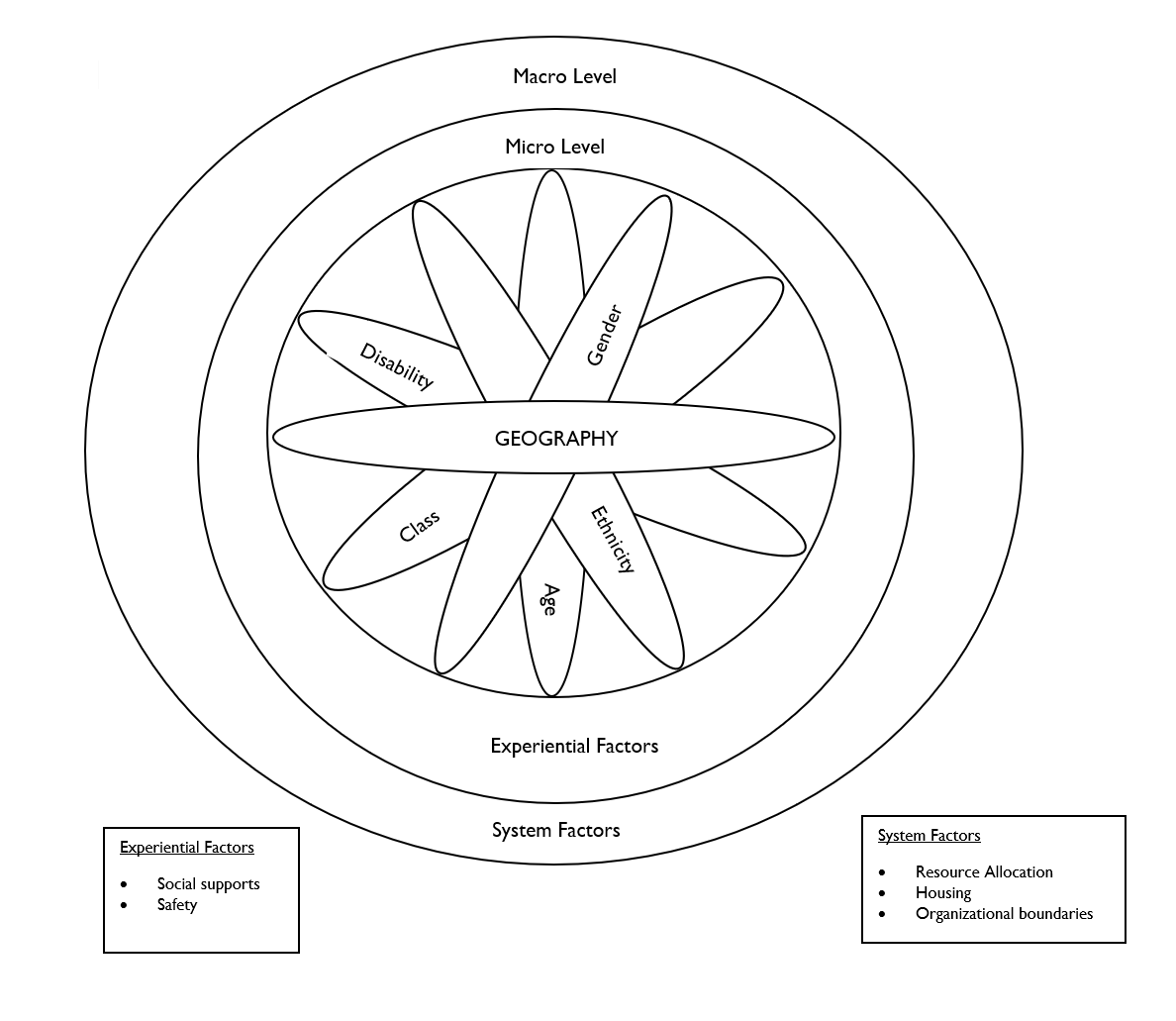


Figure 1. *Multilevel model of intersectionality applied to NFP*

**Findings**

The results of this analysis represent the experiences of 50 public health nurses in BC who took part in focus groups conducted over two years. Responses were overwhelmingly consistent over time and similar issues were raised. We learned from study participants that delivering client-centred care was a priority, which overcame any frustrations brought about by geography. Their accounts highlight the challenges and successes of delivering NFP across diverse geographical settings, regardless of the nurses’ primary work or home location. Geography ranged from urban centres to rural and small communities.

**Experiential Factors**

The following section includes experiential factors of safety and social support and presents participant observations of their intersections with geography. These factors involve intersections between geography and gender, class, age, and disability.

**Geography and safety.**

Consistently across all focus groups over both years and all geographical settings, nurses expressed concerns about safety issues for their clients and themselves. The nature of NFP work was such that many clients lived in situations where their physical or emotional safety was depleted, as acknowledged by one nurse: “But it's just [pause] I know their lives aren't safe.” This was succinctly described by another nurse: “Safety is a challenge for almost all [clients] whether it's personal safety in their relationships with either boyfriends or parents or housemates. Or big, general safety, like the neighbourhood they live in.” Nurses disclosed that almost all their NFP clients have a history of family violence or were currently living in situations where they were exposed to multiple forms of interpersonal or community-level violence.

Dimensions of NFP client safety extended to include neighbourhood crime and social cohesion. Nurses reported how neighbourhoods would transform in the evenings with an increasing safety risk. A public health nurse practicing in a large population centre said: “And the community seems to change after about five o’clock. It's almost like you could see it visibly happening.” Nurses were concerned for their clients’ safety but also for themselves and their property (i.e. their cars).

While NFP public health nurses were aware of the risks associated with their places of work, it was not a deterrent to delivering the program but an element of practice that required some additional planning:

It's the community that we work in. Well, it has, I would say, a higher crime rate and there's lots of homeless people. You kind of need to watch yourself so we tend not to want to do evening visits because of that.

They also adjusted their plans when needed because of police activity in neighbourhoods:

One particular neighbourhood I was in, often there were police incidents. And so, having to adjust my plans of where I was going to park, where I was going to visit, like was I actually going to walk into that building circled by police officers and police cars? You know, so adjust your plans based on the incidents happening that day.

Effective planning helped NFP nurses to deliver the program in times and places where safety concerns were noted.

Completing sensitive nursing assessments during home visits, such as asking about intimate partner violence, while other family members were present and not allowing for privacy required nursing skill and awareness of safety issues for nurses and clients. Nurses disclosed that almost all of their NFP clients have a history of family violence or are currently living in situations of violence. The inherent difficulty of creating a connection and a relationship with the NFP client when she may not feel comfortable with the nurse in the home guided public health nurses to find alternative settings until the home environment was safe for visits. Settings such as walking trails or parks had the benefit of reducing client anxiety and increasing physical activity, but parks, and even coffee shops, became distracting and difficult to manage with active toddlers present. Nurses were also aware of client safety issues and concerned for clients who worried about being gone from the home, even to sites such as a library, for a longer period when a boyfriend did not want her to be involved in the program. However, libraries were also considered to be “a very calm, safe place” to conduct an NFP visit.

**Geography and social support.**

Limited social capital in small population and rural centres further disadvantaged NFP clients, particularly when the NFP client was not well-connected to the community. This was a significant issue for NFP nurses whose clients shared their need for social connection, “I had one client who said, ‘that’s my heart's desire -- a best friend’.” Another added, “A best friend. Yeah, I've heard that before.” The high incidence of mental health challenges for NFP clients complicated issues of isolation:

And really, I think many of our clients face isolation, social isolation. And that could be compounded if you have some anxiety around speaking to people or seeing people that could further [affect] your isolation, so in a smaller community that can [be hard].

Other public health nurses experienced similar difficulties supporting NFP clients who desired connection but encountered anxiety during social opportunities, such as new mother groups. As NFP public health nurses attempted to be client-centred and focused on clients’ goals, small community-level constraints challenged their success.

**System Factors**

In this section we present the intersections of geography with 1) resource allocation, 2) housing, and 3) organizational boundaries. Systems of oppression inherent to these findings include class, gender, age, and ability.

**Geography and resource allocation.**

Referring clients to appropriate health and social services was a frequent activity initiated and completed by NFP public health nurses. Clients were commonly referred to such community-based services such as: education programs, financial support services, primary health care practitioners, housing, mental health, and child health services, among others. Predictably, when participants discussed the availability of resources complementary to NFP in large population centres, there was an abundance. In comparison, nurses providing the program in small population or rural areas reflected on the limited number of available or accessible resources:

In our smaller community we have less services available for clients and so that is definitely challenging. When perhaps you're doing assessments and clients having concerns and then there's not a lot of services to be able to support that client. And so that can be a disadvantage as well in being a smaller community.

In medium population centres, services were accessible with minimal travel time and many communities had suitable transit systems. Public health nurses seemed to have limited difficulties in supporting NFP clients who needed additional services and were living in medium-sized population centres.

Where geography intersects with limited accessible health and social services in small and rural communities, participants discussed how community practitioners were keenly aware of all available services and appropriately referred clients. The familiarity and collegiality between service providers was evident, “Sometimes smaller [communities] can be way simpler because you get to know the players.” However, this became an issue if a client or a practitioner were to “burn bridges” with a community service, rendering the service no longer available to that individual (or their clients in some cases) with no other accessible options and inadequate or non-existent transit systems. The burden to fill this gap was placed on the NFP nurse: “We are not all things to all people. Not the addiction counsellor. Not the psychologist. Yet for many clients, *we are* *it* as their primary provider or there's not resources in the community.” While some frustration is noted in this narrative, NFP nurses practiced to the fullest extent of their scope to meet clients’ needs.

Large urban centres offered a different challenge for NFP public health nurses. Although there was an abundance of available resources, NFP clients encountered difficulty in accessing some of these services for a variety of reasons. In some instances, service locations were difficult to find or changes in funding caused an unexpected move in location. In addition to not knowing where services exist, many NFP public health nurses shared that in some cases they were unaware of the range of services available to their clients. This problem also existed for other services professionals who in turn may not know to refer their clients into the NFP program, “We are just one of 50 other places that they can refer their client to.” The myriad of possible resources in large population centres created difficulties for NFP nurses to provide, or receive, referrals from other sources.

As a result of numerous available services in these urban areas, public health nurses recognized that their clients were often burdened by many services. For example, one nurse commented, “Yeah, my client had five appointments yesterday and she canceled two. She said she prioritized. And she kept me. I was one of the top three.” This was a concern for NFP public health nurses who have pre-arranged scheduled visits and yet, clients become overwhelmed with the number of services provided to them:

A number of clients that I have are involved with a lot of other people. So, it might be like groups that are mandated by the ministry [responsible for social services] or medical appointments or just like a lot of those sorts of things. They have a lot of appointments and I'm one more appointment for them to keep.

NFP public health nurses revealed how their clients encounter difficulties in large population centres despite the availability of services and readily available transit.

**Geography and housing.**

The housing affordability problem in the province was identified by nurses as the instigating factor contributing high levels of client mobility. Clients moved frequently to find affordable housing, often into unsafe environments, which resulted in further subsequent movement. Public health nurses indicated that almost all of their clients had moved at least once during their time in the program, with many relocating multiple times.

Nurses discussed the changing rural-urban interface, where previously rural areas and farmlands were developing housing infrastructure and enticing clients to move away from familiar communities. NFP clients’ decisions to move, from the perspective of their nurses, were primarily to secure affordable housing. During a focus group conversation, public health nurses discussed how the geography of the province was developing, landscapes were changing, and their NFP clients were moving to a specific newly-constructed area. The following dialogue reflects two different experiences of NFP nurses, how they understood client decisions, the outcome of client mobility, and its impact on client safety:

City 1 public health nurse: I have clients in [City 1] and now in [Town 2]. [Town 2] used to all be rolling farmland and there's been a huge, explosive development of all these areas for new housing [in Town 2] … Often my clients sign up in [City 1] but they move to [Town 2] because that's where the affordable housing is. There's a lot of new housing with basement suites going in all over the [Town 2] geography.   
<General agreement from other focus group participants>   
Town 2 public health nurse: It's interesting because you guys are saying people are moving into [Town 2]. But all of my clients [in Town 2] want to move out because they don't feel safe there. Because where they can afford to live is in certain rougher areas.

The housing problem created the need for frequent movement, which in turn led to unsafe environments for NFP clients, and ultimately to further movement for clients, despite newly developing areas.

**Geography and organizational boundaries.**

Catchment areas established by health authorities determined how clients were assigned to NFP public health nurses. However, client mobility interfered with the premise of having a primary nurse inherent to the NFP program. Nurses explained that clients are transferred to another nurse if they move to a different health authority area. In some cases, this hyper-mobility led to NFP clients bouncing between nurses: “She [the client] was transferred to another health authority and then was transferred back when she moved here again, yeah.” It took commitment from the nurse to follow NFP clients when they moved because they were often in transit:

And then they [clients] move and so they, they transition a lot, right? Some of them don't want to change nurses. So, then you make the choice and commitment to follow them wherever they go to. So, then that could really broaden your [geographical] horizon.

The ideal of maintaining a relationship with a primary nurse appeared to be important for both public health nurses and clients in the NFP program.

Nurses attempted to meet client needs and maintain consistency wherever possible. For example, one set of two nurses worked together to provide care by Nurse A in one city while the client was pregnant and working, transferred to Nurse B when she moved after the birth of the baby, and reassigned to the initial Nurse A when she returned to work in the city. NFP public health nurses discussed other strategies that allowed them to remain involved without transferring clients, such as, meeting a client outside of her home on the nurse’s side of the catchment boundary or making appointment times at the beginning or end of the day to maximize the efficiency of the nurse’s driving time. Each strategy was client-focused, but also intended to reduce unnecessary travel especially across broad geographical regions.

The importance of client retention and the desire to follow mobile clients was abundantly clear across all focus groups and from each NFP public health nurse. Nurses understood that following NFP clients when they moved was difficult as indicated by this public health nurse, “The geography part [pause] that is going to be difficult if we are still following [the client] but yes we want to follow our clients. And I totally believe in that for client retention.” Another nurse noted that disrupting relationships with fragile and marginalized clients can change future interactions with other caregivers as shared in this quotation:

The [client] that I do the supervised [by family services] visits with has had a multitude of people [service providers] involved with her in the past before she had her baby and it appears that she has broken off relationships with different professionals over the time and I don't sense that she [pause] I think it will take a long time [for her] to develop that trust again.

The outcome of breaking trust for clients with past traumas or health conditions was that clients lose faith in the system when they lose service providers. Nurses recognized the difficulties of maintaining care of clients with multiple health and social disadvantages and questioned services that did not ease transitions for clients:

I think for a lot of people [clients], and especially if they've had multiple issues all the time, they're used to people [service providers]. Or they move and they've lost another social worker and they don't really care. You know they're used to that a little bit … It's like wow, they've got mental health issues. How come they can’t [continue in a program/service]?

Other nurses shared similar insights into the challenges of delivering NFP to clients who moved across geographical and institutional (health authority) boundaries and its impact on clients’ service providers:

She [the client] said ‘I think you're the only one that's going to be coming with me when I move.’ Because she was saying her social worker, her family education support worker, like everybody except for me [was not following the client post-move]. And so that was a big [pause] that was a big deal for her.

Public health nurses were ultimately motivated by client needs to provide consistency of care and to maintain involvement in the lives of their clients despite their home location.

A rural-urban interface was created by hyper-mobile NFP clients where public health nurses worked across boundaries to deliver the NFP program across a variety of communities despite their home office location. In addition, public health nurses working in large population centres discussed how they would be assigned to clients in small population or rural centres when rural public health nurses were at caseload capacity. Hence, NFP public health nurses were delivering the program despite their lack of familiarity with the community or its resources. In rural communities where homeless shelters or other services were unavailable, mobile clients often moved into other people’s homes for housing:

Yeah, they [rural NFP clients] tend to move around like as you've all discussed [about clients living in large and medium population centres]. So here in [rural area], people will move to different parts of the [area]. [Clients move in with] lots of extended family as well. [Clients] living with roommates or other folks because of the cost of housing. And that does impact the nature of home visiting as well when you talk about one-to-one [home visits]. Yes, there's one visitor and one client; however, the context is often a lot more people. So, I think that is partially related to geography in the sense of housing costs and [living in] rural.

At times, geography could affect the place where home visits occurred when homeowners were not amenable to having an NFP nurse in the home. When providing home visits for clients, NFP public health nurses delivered care across geographical settings, institutional borders and unsafe housing environments not limited by the location of their home office or catchment area.

**Discussion**

The results of our analysis suggest that the nature of clients’ place and their associated social and physical geography emphasizes inadequacies of organizational and support structures that create health inequities for clients enrolled in the NFP program. Geography had a significant impact on NFP program delivery for clients who were living with multiple forms of oppression and worked to reinforce disadvantage. Specifically, we address issues that are prevalent for public health nurses in BC who are delivering NFP to pregnant or parenting girls and young women who are living in situations of social and economic disadvantage. We learned that geographical contexts intersect with other positionalities in clients’ lives, thus impacting program delivery. NFP clients have multiple social, health, and economic disadvantages stemming from issues of poverty, disability, racism, sexism, and classism. Public health nurses delivering the program in varied geographical settings recognized how systems are inconsistently meeting clients’ needs or further marginalizing this population. Geography was an additional intersection of disadvantage for NFP clients. Although geography impacted program delivery, public health nurses were able to identify the benefits of NFP program for their clients and understood the need to address issues for clients based on their location.

The results of this analysis, and the conclusions drawn, can assist health practitioners, clinicians, and policy makers who are interested in understanding more about geography when working with clients experiencing multiple forms of disadvantage. This analysis does not produce any definitive claims as that is beyond this form of inquiry but attends to patterns and difference (Thorne, 2016). We also recognize that these experiences are specific to the group of public health nurses who attended our focus groups and not representative of every possible scenario. We had no representation from remote communities, and it will be important to understand how the challenges of living in a remote community will impact girls’ and young women’s experiences if NFP was to be expanded into such communities. However, these findings provide important insights into place, disadvantage, and the delivery of NFP in BC.

It is a significant limitation of this research that race was notably missing from the findings. When using intersectionality, it is important to consider how race – along with other forces of oppressions – factor into the results (Hancock, 2016; Hill Collins & Bilge, 2016). This may have occurred because intersectionality was used as an analytic tool and the interviewers did not specifically ask about client ethnicity or how it impacted program delivery. It may also have been useful to consider the ethnic backgrounds of the nurses as some may not have a heightened awareness of, or understand, race as an oppression. Given that just under half of the RCT participants identified as an ethnicity other than “white” (Catherine et al., 2019), it is likely that many NFP clients experienced oppression based on race. Intersectionality as a theory indicates that people of colour or indigeneity experience compounding marginalities (Hancock, 2016; Hill Collins & Bilge, 2016). Therefore, it is important for future NFP studies to consider how race intersects with geography.

Clients often lived in neighbourhoods that were unsafe, perhaps attributed to poverty - but clients’ lives were unsafe overall. This finding was consistent across the rural-urban continuum and nurses adjusted their home-visiting plans when needed to ensure the mutual safety of themselves and clients. Specifically, this form of safety refers to violence and neighbourhood crime. It does contrast with findings from a cross-sectional survey conducted in Ontario, which described the differences in occupational hazards across geography for home care nurses (Wong, Saari, Patterson, Puts, & Tourangeau, 2017). They found that nurses in rural areas practiced in safer environments than their urban counterparts. Wong and colleagues indicated that visits to unsafe neighbours in towns, suburban, or urban areas occurred 2.7 to 3.6 times that of rural areas. Our analysis indicated that NFP clients living in urbanized areas were commonly in unsafe neighbourhoods, but rural clients were also living in riskier areas. This difference could be attributed to the multiple sources of oppression experienced by NFP clients compared to the diversity of economic and social positions (including those of privilege) of the families visited by home care nurses (Wong et al., 2017).

We learned from our study participants that clients’ lives are unsafe overall, and this is confirmed by the NFP RCT data, which indicated that many clients who were eligible for the NFP were living in situations of violence (Catherine et al., 2019). Internationally, urbanization is considered a key indicator of crime (Dijk, Kesteren, & Smit, 2007). However, Canadian crime rates are not reported based on rural or urban boundaries; instead, information is provided from within or outside of metropolitan areas, with less known about rural violence (Ruddell & Lithopoulos, 2016). Northcott (2015) reported that Canadian domestic violence rates are higher in rural versus urban areas. Given the variances in literature, we suggest that attention to safety is necessary for home-visiting nurses regardless of the geography and should be reflected in program planning, nurse education, and policy development. This is particularly important for populations living in situations of violence. We also learned from nurses in our study that safety risks involved in delivering client care were not a deterrent to service delivery but rather something that required planning.

The mobility of clients had a significant impact on how nurses were able to deliver the NFP program. Beyond scheduling concerns, clients’ frequent moves out of catchment areas impacted the NFP primary nurse model. It is important to note that NFP nurse recommendations include to continue to provide a primary nurse wherever possible, even when travel time will be extended, and to work with a secondary nurse when the client’s living arrangement is temporary. Other literature has also noted the importance of continuity of care for client satisfaction in maternity care, increasing client health outcomes, and the benefit of shared care models (Homer, 2016; Lewis, Hauck, Ronchi, Crichton, & Waller, 2016; Russell, Rosati, Rosenfeld, & Marren, 2011). This study adds to the current understanding of continuity of care by highlighting that economically disadvantaged and precariously housed clients are disadvantaged by policies that discharge clients based on geographical boundaries.

Our study indicates that, in addition to clients’ preferences to maintain continuity of care with a single nurse, nurses were also more satisfied when they were able to follow mobile clients. This finding may have implications for both client and nurse retention in home visiting programs. Other researchers have evaluated issues of client retention and attrition in NFP through mixed methods studies and indicated that consistency in nursing care is positively associated with client retention (Ingoldsby et al., 2013; O’Brien et al., 2012). Balancing nurse and clients’ preference for the primary nurse over possible demands of extended travel is essential for maintaining client involvement in NFP. Where this is not possible, we stress the importance of collaboration between providers to support clients’ needs and facilitate change. This is particularly important for primary care programs where trust and engagement are necessary to achieve desired client outcomes.

A recent review exploring scheduling home health care nurses recognized the heterogeneity that exists in home visiting and nurses are faced with multiple constraints including, but not limited to, scheduled breaks, client preference, and nurse workload (Fikar & Hirsch, 2017). To further this list of constraining factors, our analysis adds the barrier of delivering a program that is based on client need, for a group that regularly experience crises. Therefore, it is often difficult to cluster visits based on clients’ geographical location. This difficulty is further compromised by the mobile nature of NFP clients. Indeed, this finding is relevant to program managers and nurses who are considering the impact of geography on determining appropriate workload levels.

Public health nurses who participated in this study recognized the need to follow clients across different geographical landscapes. It is noteworthy that NFP nurses were one of the few, and often the only, health or social service providers who would follow clients when they moved across the rural-urban interface. Nurses cited that clients most often moved because of economic hardship and lack of access to safe and affordable housing. This is similar to the findings of (Janczewski, Mersky, & Brondino, 2019) who examined patterns of client attrition in long-term home visiting. They concluded that client mobility may be associated with lower socioeconomic stability. However, the impact of client attrition due to moving out of service is largely missing in home visiting research. It may be that institutionally defined service boundaries further marginalize a disadvantaged group by removing access to health and social services based on geography. This may also cause harm to children by interrupting child protection services when clients move to low-resourced areas. For women who are living without a safe home and those living with physical or mental disabilities, the effects of service disruption may be more pronounced and negatively impactful.

From the NFP rural-urban interface, nurses had a unique vantage point to observe the geographical differences in available and accessible client services. Resources in rural areas were scarce but nurses and providers were well-connected and therefore able to promote and support client services. Though the under-servicing of rural clients is concerning, it is already well-documented in the literature (Grzybowski, Stoll, & Kornelsen, 2011; Kornelsen & Grzybowski, 2005, 2006; Sutherns & Bourgeault, 2008). The connection that exists in rural communities is also recognized in a large body of literature as a small town and rural community strength (Campbell et al., 2019; MacKinnon, 2008; 2012; MacLeod et al., 2008; Moules, MacLeod, Thirsk, & Hanlon, 2010; Munro, Kornelsen, & Grzybowski, 2013). Our study highlights the necessity of public health nursing programs for disadvantaged clients who may have few other available options and supports health equity.

Clients in large population centres were at times over-scheduled and consequently missed appointments for some services. This suggests that although services are available, the appropriate dose, mix and coordination of programs may not be delivered to clients. In addition, clients may experience feelings of heightened surveillance and attempt to evade services. These findings are of great concern and require further exploration and investigation into collaboration between programs serving similar populations. This unique finding of burdening clients with services should be urgently addressed so as to more efficiently utilize resources for a group that experiences consistent and multiple forms of disadvantage. Further disadvantaging clients by over-scheduling may inflate negative program outcomes.

The results of this study suggest the need for a more nuanced understanding of the nature of geography and how it can intersect with other sources of disadvantage to contribute to health inequity. Within the context of nurse home-visitation programs, geography is a consideration for program delivery that requires the same attention as other aspects of nursing care. Further investigation is required to determine the effectiveness of programs like NFP for clients living in small town or rural communities. It will be important to learn about how compounding disadvantages interfere with health outcomes for small population or rural-dwelling populations. Analyzing data using an intersectionality lens allowed for a critical exploration of geography and service-delivery boundaries as one way that disadvantage impacts for girls and young women in the NFP program and to a lesser extent for the nurses who provide complex nursing care for them.

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**CHAPTER FIVE**

In this chapter, I extrapolate on the findings presented in the previous chapters as they relate to the experiences of public health nurses (PHNs) delivering the Nurse-Family Partnership (NFP) program in Canada. I begin by integrating and summarizing the findings from the three manuscripts in this thesis. Then I discuss how these results support the practices of NFP PHNs across the geographic continuum and add to the body of nursing knowledge, specifically about how nurses experience geography as they deliver a health equity, home-visitation intervention to young women who are pregnant or parenting. Strengths and limitations of each paper are included in chapters two to four, but here I consider how they relate to the whole thesis. Finally, I discuss the implications of these findings for NFP and nursing, as well as provide recommendations for nursing practice, policy, and future research.

**Summary of Findings**

The purpose of this interpretive description study was to develop disciplinary clinically relevant findings that are meaningful to NFP nurses and to public health agencies that are, or are considering, implementing the NFP program within the Canadian context. Evidence supporting the practices of PHNs from a Canadian perspective is limited in the existing literature base. More explicitly, there is a significant lack of research regarding the influence of geography on home visitation programs for new mothers in Canada. As NFP is being tested for efficacy in Canada, the British Columbia Health Connections Project (BCHCP) process evaluation offered the ideal opportunity to explore how PHNs experience geography while delivering the NFP program in British Columbia, Canada. The collective findings from this thesis support delivery of NFP across the rural-urban continuum.

First, the findings from chapter two reflect modifiable program, organizational, and geographical factors that affect nurse recruitment, retention, and turnover in NFP. The current nursing shortage in Canada illuminates the need to maintain skilled and trained nurses in all areas of health care. This has been a longstanding issue in rural communities where recruitment and retention of health care workers are substantial issues for health human resources. Understanding workforce issues from the perspectives of nurses who had worked in yet exited their positions with NFP in Canada provides an overview of confounding factors that led to nursing turnover.

Job embeddedness was identified as a concept that may support organizational practices to recruit the *right* nurses for the NFP program and help with retention once they are oriented to the position. From this perspective, attending to nurses’ perceptions of their *fit* for NFP could help promote recruitment of nurses who are more likely to remain in the program for the long term. Next, fostering *links* and *connections* to people or activities can enhance retention. In NFP, agencies can facilitate relationships between NFP team members, particularly those who work in isolation, by supporting in person meetings or using videoconferencing. Reinforcing the importance of regular reflective supervision with an empathetic and knowledgeable supervisor can help build nurse-supervisor relationships, and positively affect successful relationships with clients. The final aspect of job embeddedness that may reduce turnover attends to the elements of the job that a nurse would *sacrifice* if they were to resign. Nurses in this study, including many who exited their positions, reflected on the positive facets of NFP nursing practice. Among these, working to their full scope of practice, extensive and appropriate program-specific tools and education, and regular reflective supervision, were aspects of NFP that made the decision to leave difficult. Promoting these opportunities may encourage job embeddedness and nurse retention.

In chapter three, I focus on the rural experience of NFP from the perspective of nurses and their supervisors. Results from this published article highlight the challenges of delivering NFP in rural areas, but also illuminate the importance of a comprehensive program, like NFP, in communities where other services for young mothers may be inaccessible. Common challenges for rural nurses that influenced their ability to deliver NFP included extreme weather conditions and traveling long distances. Traveling was necessary to attend team meetings but also for client visits. To address these barriers, NFP nurses remained flexible about how, when, and where they meet for program related activities and were attentive to organization of their time.

Often rural nurses in the BCHCP process evaluation held dual roles as generalist PHNs (assuming a variety of public health nursing functions from administering vaccinations to conducting well-baby visits) and as NFP nurses. Again, time was a valuable commodity and nurses could potentially miss NFP opportunities (e.g. team meetings or case conferences) because they were scheduled at a time where the nurse was active in their other role. Conversely, regular NFP team meetings took precious time away from other nursing responsibilities, which may be hard for non-NFP colleagues to understand. Tensions were exacerbated when nurses in a dual role had two individual supervisors who were at a disconnect about the nurse’s priorities. Flexible supervisors who understood the realities of rural nurse experiences helped to mitigate potential problems and can act to reduce friction between NFP and non-NFP team members.

PHNs who were isolated in their NFP work, most often the sole NFP nurse at their location, lacked connection with peers and with their NFP supervisor. To cultivate connection and maximize the effectiveness of reflective supervision, supervisors should make face-to-face introductions early in the relationship. Dialectic, relational, and meaningful team meetings that promote program-specific skill development, problem-solving abilities, and team connection could support isolated nurses, in-person or through telecommunication (i.e. videoconferencing). Building opportunities for nurses who are the sole NFP nurse in their office or community to connect with others experiencing geographic isolation could enhance clinical practice and job satisfaction. These nurses can act as peer support and will be able to understand both the NFP aspects of this work as well as elements of rural nursing practice.

Communicating with NFP clients was also important to reduce the potential for missed appointments and unnecessary travel. When joint home visits occurred, this was particularly important due to the extended travel often required by the supervisor. Nurses who had a regular practice in a more rural community were often well-known in their communities and creative in communicating with clients. Because other health and social service providers, such as social workers, also offer services to this population, nurses could connect with those who may also be in contact with the client, particularly for those without another means of communication (e.g. phone or text messaging services).

The published article in chapter four presents a novel examination of NFP and geography through an intersectionality lens. This study extends the unique factors of rural NFP delivery by also including the perspectives of nurses who deliver in non-rural areas. Some of these nurses were working in urban, at the urban/rural interface, in farming communities, or other areas that were in close approximation to large urban centres. From the findings of this study, I identified that NFP clients commonly have multiple sources of marginality and geography can present as an additional intersect that creates situations of disadvantage. As such, NFP nurses recognised that many of their clients live in situations of violence and this safety risk often extended into their physical location. Client mobility may have been intensified by clients attempting to find housing in a safe environment and moving out of urban environments. However, unsafe places were noted in both urban and rural contexts and influenced when and how nurses could visit their clients.

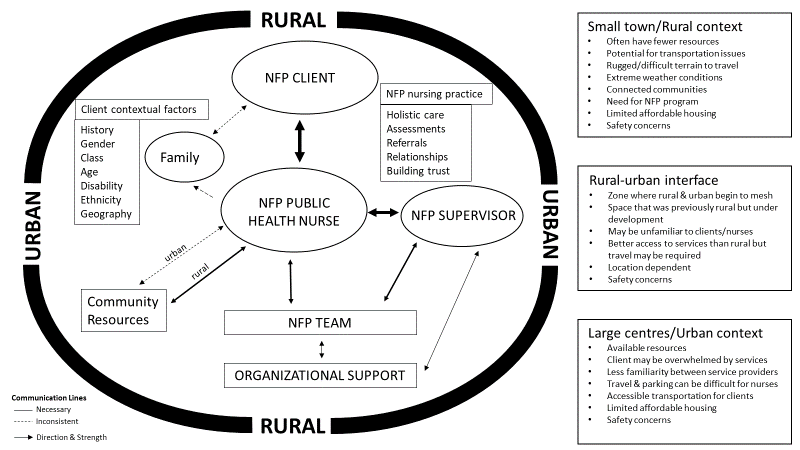
The continued movement of clients was challenging for NFP nurses and could potentially add additional travel time, but PHNs were highly committed to continuing to provide NFP as the primary nurse. Organizational boundaries, for NFP and other health and social service providers, created breaks in services available to clients and often clients’ primary provider would change with a geographical move by clients. This strengthened the resolve of nurses to follow clients who needed to change location, if possible. At times, NFP nurses from different locations worked together to provide continuous program delivery and instill confidence in young clients so that they could continue to trust the NFP nurses. Nurses recognized the difficulty for clients who lost primary service providers because of client mobility and geographical boundaries for health and social services.

Working with other providers for referrals, into or out of NFP, was challenging across the rural-urban continuum. In rural environments, there were fewer resources available or accessible to clients. However, there was collegiality and awareness of programs and services between providers that made referrals effective and efficient. Nurses not familiar with these environments (i.e. those whose primary work location was outside of the rural community) relied on the knowledge of rural nurses to access appropriate or available client resources when their clients moved to a smaller community. This illuminates the need for NFP nurses who regularly practice in smaller communities to share their wisdom with the broader team. Enhancing rural resources to the entire NFP team may benefit mobile clients moving out of urban areas and continuing care with their primary nurses.

Larger communities, specifically urban areas, offered greater access to many services for young mothers and their children, which presented unique challenges. An environment with many health-related programs meant that service providers may not be aware of NFP, and thus less likely to refer eligible clients to the program. PHNs were also unaware of many smaller agencies, who may frequently change location due to funding constraints, making it more difficult to refer their clients for additional supportive services. Nurses identified that many clients had a plethora of voluntary and mandated services to help them address their multiple health and social issues. This sometimes resulted in overscheduled clients who cancelled appointments with other providers and consequently may not have received full benefits of the programs they were involved in. Despite any challenge presented by geography, PHNs reinforced the importance of NFP as a consistent and meaningful aspect of their clients’ lives.

**Discussion and Implications**

The findings from the BCHCP process evaluation in this body of work reflect the influence of geography on NFP delivery from the perspectives of both NFP PHNs and their NFP supervisors. Indeed, geography is an important factor in the provision of NFP home-visitation services. These factors extend across the geographical continuum and involve both client and organizational considerations. Nurses practicing in rural or small communities and those practicing in large or urban centres were both influenced, in unique ways, by their locations. Understanding the distinctive practice patterns and needs of nurses in these environments may lead to a more sustainable and effective home-visitation program for young mothers who may greatly benefit from NFP. In all instances NFP occurs within a geographical setting and its context will affect program delivery, as outlined in **Figure 1**. When healthcare moves out of the physical confines of an organization building and into the community and clients’ homes, the effects of geography intensify and should also be considered for program planning and delivery, practice, and policy development.

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*Figure 1.* NFP delivery within the context of geography in British Columbia, Canada

**Defining Geographies**

Defining geographical contexts is a complex task and a contentious issue in policy research with a longstanding history (Cloke, 1985; Dewey, 1960; Hart et al., 2005; Hartley, 2004; Kulig & Williams, 2012; Rothwell & Statistics Canada, 2010). The current thesis adds to the limited body of nursing research that specifically explores geography from the perspective of PHNs. Despite some who may appreciate a common definition to ease comparison of datasets, there remains as many definitions as reasons to conduct geographical research. Common federal definitions in Canada and the United States often refer to population density in urban areas, then consider any areas outside of those as rural (Statistics Canada, 2018; Warren & Smalley, 2014). Consequently, many randomized controlled trials and experimental intervention studies use a dichotomous urban-rural variable to study geography, without any attention to the dimensionality of participants’ locations (Hartley, 2005).

Williams and Cutchin (2002) provide a view of rurality for health professionals that is holistic, place-specific and recognizes socio-cultural factors, demographic and descriptive features, as well as residents’ understandings of their communities. Kulig and colleagues (2008) described rurality from the perspectives of registered nurses and concluded that the meaning should be based on multiple factors but primarily reflect residents’ experiences. I add to the understanding of rural definitions in chapter three (Campbell et al., 2019) by examining how PHNs describe their practice environments in rural geography. Similarly, PHNs offer a meaningful and holistic description of rural communities based on multiple factors that are reflective of geography, access to transportation and services, but also client characteristics and nursing practice considerations. PHNs define rurality differently than conventions used frequently in research (e.g. Stats Canada) but this may more accurately reflect the practice implications for nurses and should be considered when planning public health nursing interventions that involve home visiting in rural communities.

Geographical taxonomies and definitions that stereotype locations and their residents can interfere with policy development and resource allocation (Hart et al., 2005). This can be concerning for rural communities that often have many strengths, as outlined in chapter three (Campbell et al., 2019). This has important implications for rural health policies because NFP could be considered a comprehensive and essential service that fills a void in health and social services for young mothers. In chapter 4 (Campbell et al., 2020), NFP PHNs revealed that urban or large population centres also have challenges that are unique to their geographical context. Taken together, these findings reveal that it is important not to assume that barriers to delivering NFP are exclusive to one type of geography. Specifically, challenges in rural locations are not necessarily resolved in urban settings; also, large population or urban centres can have barriers even though services and transportation are more readily available and accessible.

**Using an Intersectional Lens**

Intersectionality provides a framework to consider how NFP clients, who may be affected by systems of oppression or living with multiple marginalities, interact with their geographical location. It also leads to a better understanding of how nurses deliver NFP to their clients in different types of geography. This reflects the deep influence of clients’ situations and the importance of a holistic program that attends to micro, meso, and macro level influences when providing nursing care. Other researchers have also investigated the impact of poverty and consider it as an encompassing factor that leads to health disparities (Mollborn & Morningstar, 2009; SmithBattle, 2000, 2007). This thesis has added to this body of nursing knowledge by revealing that intersections of gender, disability, ethnicity, class, age, *and geography*, affect how young mothers can participate in the NFP program. This has specific implications for all NFP PHNs who may need to reflect on the communities where they deliver the NFP program and consider how clients are impacted by constraints associated with intersectionality, including geography as an intersect.

**Travel and Time**

Time was another valuable commodity that was consistent across all types of geography. In both chapters three and four (Campbell et al., 2019, 2020), PHNs revealed that the constraints of time extended to all types of geography in distinctive ways, but the implications related to both urban and rural nurses. This thesis adds to existing nursing knowledge about home visiting by recognizing the challenges of the time it takes for NFP nurses practicing in urban or large population centres to travel to clients. Urban PHNs were primarily constrained by heavy traffic, difficulty parking, and continuous road construction. In contrast, rural NFP nurses travelled longer distances and potentially through rugged BC terrain and extreme weather conditions. PHNs also revealed that grouping client visits by location is not always practical given the structure of the program model. This finding has implications for determining caseload capacity, which may be helpful to implementing agencies and NFP supervisors. Caseload planning should be done regularly through communicating with nurses about a variety of factors and not based solely on distance from the office. NFP nurses in the BCHCP process evaluation were experienced PHNs with the practical knowledge needed to determine feasible caseloads and could be adapted through participatory research methodologies.

The notion of extensive travel is not new in rural nursing or health services research conducted to understand implications of service delivery within this unique context. However, the majority of rural travel in Canadian maternity care research focuses on the consequences for women traveling to obtain hospital or physician services (Grzybowski et al., 2009, 2011; Kornelsen et al., 2009, 2011; Sutherns & Bourgeault, 2008). Much of the focus on reducing or eliminating health practitioners’ travel time is through telecommunication or other technological advances (Kulig & Williams, 2012; Rabinowitz et al., 2010; Sabesan et al., 2012; Watanabe et al., 2013). Findings from this thesis have implications for organizations who can develop policies that can support travel by providing or ensuring the use of vehicles in good repair (including seasonal provisions, such as winter tires), promoting alternative types of transportation where appropriate (e.g. subway, bus, or cycling), and allowing work to be done at satellite or home offices where that could alleviate time spent traveling.

**Isolation**

The findings in this thesis offer specific implications for NFP practice in rural communities. The phenomenon of isolation in rural nursing reappears repeatedly in rural research (Bushy, 2002; Conger & Plager, 2008; Roberge, 2009; Stewart & Carpenter, 2009), including in chapters two and three of this thesis (Campbell et al., 2019). An integrative review by Williams (2012) found that rural nurses experience geographic, social, and ideological professional isolation, which negatively affects job experiences. Other research supports that reducing professional isolation is one method for retaining health professionals to address turnover in the rural workforce (Brown et al., 2010; Mbemba et al., 2013; Moran et al., 2014; Williams, 2012), which supports the findings from the current thesis. Dealing with isolation could help reduce turnover, and possibly enhance clinical practice, for nurses delivering NFP in small or rural locations. Future studies may explore nurse isolation and potential strategies to address it within the context of NFP.

Findings from this thesis suggest that nurses delivering the NFP in rural or small communities experience isolation and that influences their decision to leave the program, thus increasing turnover. NFP program core model elements, such as team meetings, case conferences, or reflective supervision, require regular connections between nurses and the NFP team (nurses and supervisors) and could be enhanced for nurses in rural environments (Prevention Research Center for Family and Child Health, 2017). Enhancements could consider the use of technology, such as videoconferencing. Moran and colleagues (2014) recommend that online or electronic events for rural practitioners should have a human element. This is similar to the finding in chapter three that suggests that nurses and supervisors should initially have an in-person meeting before any reflective supervision (Campbell et al., 2019). Therefore, future situations that require electronic forms of communication for NFP nurses should incorporate in-person elements.

An interpretive phenomenology study of advanced practice nurses in rural Arizona, United States concluded that providing opportunities for support networks promoted feelings of connectedness to counter experiences of isolation (Conger & Plager, 2008). Conger and Plager also suggested that nurses connect with urban practitioners and local community members. NFP nurses in the BCHCP process evaluation did have strong connections in rural communities. NFP team meetings, case conferences, and education sessions already linked nurses working across different geographies. However, to support clinical practice for nurses delivering NFP in rural or small communities, encouraging and organizing connections with NFP nurses in other rural jurisdictions may enhance clinical practice. Allowing NFP nurses to share strategies and ideas with nurses who are both familiar with rural nursing and the elements of the NFP program could support practice and promote nurse retention.

**Job Embeddedness**

Job embeddedness is an important theoretical consideration that could help retain nurses in NFP programs across all types of geography. *Job fit* is a critical element of job embeddedness and may be useful for organizations hiring into the NFP program (Mitchell et al., 2001). Guiding nurses to reflect on how well their values and goals align with the theory and practice of NFP may be helpful in recruiting ideal candidates. NFP implementing agencies are required to provide training and education specific to the program, which can be costly. Recruiting the right nurses into these positions, particularly as they relate to geographical settings, can help reduce turnover. Future research should investigate the attributes of PHNs who best fit within the NFP program to help organizations recruit the most appropriate nurses for this challenging but rewarding career. Future research could investigate the attributes, values, and beliefs of nurses that thrive in NFP nursing and help organizations to recognize and create the optimal environment to support these nurses.

An attractive feature of NFP, noted throughout this thesis, is that PHNs work to their full scope of practice to provide comprehensive services to young mothers. The experiences of PHNs revealed that when nurses were provided with appropriate clinical tools, supervision, and educational environments, it facilitated their full clinical capacity and re-ignited their passion to do this difficult work. It is important to note that this is different than the phenomenon of complexity compression. Complexity compression occurs when nurses are expected to simultaneously attend to multiple, critical responsibilities within a condensed time frame (Jones & Treiber, 2012; Krichbaum et al., 2007). NFP PHNs’ experiences were different in that they expressed that the NFP program liberated nurses to provide nursing care within and to the limit of their nursing scope. Program elements also support nurses to have adequate time to work with clients to meet their goals.

**Communication**

Effective communication is essential for NFP practice and occurs within the context of geography, as outlined in Figure 1. The NFP program hinges on the nurses’ abilities to develop trust and build relationships (Barnes et al., n.d.; Beam et al., 2010; Boris et al., 2006; Dawley et al., 2007; Kurtz Landy et al., 2012; Olds, 2006). Across all geographies, nurses interviewed for this thesis reflected multiple types of relationships: client-nurse, nurse-nurse, nurse-team, nurse-supervisor, nurse-community, nurse-organization. Primarily, the emphasis focused on the nurse-client relationship and all other relationships existed to support the nurse and client in reaching program goals. However, at the organizational level, communication extends to making nurses aware of future program directions that could impact job security and reduce unnecessary turnover, as indicated in chapter two. Future NFP research should focus on the role of communication at all levels and across all geographies, including the use of mobile and technology, to consider how it influences the success of NFP.

**Strengths and Limitations**

The strengths and limitations of each individual article are presented in chapters two to four. However, as a complete thesis, there are specific strengths to this body of work. First, this is the first study to consider the influence of geography on NFP delivery from a Canadian perspective. It adds to the very limited research that focuses on geography and NFP delivery. Participants interviewed through the BCHCP process evaluation were asked to self-identify the type of geography in which they deliver NFP and given the opportunity to describe their physical locations. This allowed for a more nuanced exploration of geography as it related to PHNs’ nursing practice. While understanding the rural experiences were very important, this body of work also examined NFP in urban or medium-sized communities, allowing for comparing and contrasting across geography based on the perspectives of PHNs who deliver the same nursing program. Data in the BCHCP process evaluation was taken from multiple sources (i.e. nurses and supervisors) and over a prolonged time frame. The varied time points of data collection helped to identify changes and similarities in participants’ responses over time and with increasing comfort in program delivery.

There are also limitations to this body of work. Given the comprehensiveness of the BCHCP process evaluation, the project had multiple objectives; therefore, geography was not consistently examined in each phase of data collection. Using consistent interviewers likely increased comfortability for participants; however, the interviewers were less familiar with geography and this may have influenced how questions were asked or follow up probes were given. Also, I used intersectionality as an analytic tool, but it was not used during the early stages of the research process. As a result, marginalities of the nurses or their clients were not directly assessed. Knowing the background of the study participants or their clients could have enhanced findings by better understanding their positionality when analyzing responses. Finally, the BCHCP process evaluation occurred throughout one Canadian province. The breadth of the province is significant but as mentioned in chapter one, this province has a unique geography, which may not be the same in other areas of Canada.

**Recommendations**

From the findings of this thesis, several recommendations are presented for NFP practice in Canada, policy development, and future research. These include:

**For NFP Practice and Education**

1. The foundation of the NFP program model is currently underpinned by theories from non-nursing disciplines. While they have effectively driven the design of the NFP program and grounded practitioners in understanding clients’ experiences, it may be valuable to consider nursing theory as a guiding theory to the NFP program. This may assist nurses in articulating their practice and advocating for program funding in times of austerity and fiscal restraints.
2. Rural nurses have unique challenges that may not be shared by non-rural practicing colleagues on their NFP team or by rural nurses working in generalist PHN roles. Therefore, it is recommended that rural NFP nurses have a community of practice that exists for peer support and may include members from outside of the nurses’ jurisdictions. Given the complexities of both rural nursing and NFP practice, providing this additional support may help with nurse retention, thus cost-effective for NFP implementing agencies. Where possible nurses may have face-to-face meetings, such as at educational events that are specifically for rural NFP practice. The use of videoconferencing or social media platforms may help facilitate connection where in person meetings are not possible. However, this requires further exploration to determine effectiveness.
3. Understanding geography from an intersectionality lens may help nurses consider how location can further disadvantage clients. This may help nurses to advocate for programs based on the specific limitations of urban/rural geographies for clients who have confounding marginalities.

**For Policy**

1. Job embeddedness theory has implications for how organizations attract and maintain staff. Organizations implementing NFP can apply job embeddedness theory to enhance retention of nurses and nursing supervisors. Fostering a supportive work environment and providing career counselling would help potential applicants understand the demands, challenges, and rewards of NFP, as well as the theory and values of the program.
2. Evidence of NFP effectiveness will support the extension of this program across Canada as a national strategy for poverty reduction and health equity for young mothers living with socioeconomic disadvantage. Scale-up must consider elements of Canadian geography in implementation plans. Implementing agencies, particularly those with outlying rural areas in Canada, may need to reflect on the importance of NFP in rural communities where the intervention is delivered directly to the mother in her space. Rural PHNs can provide important information about the context of rural communities before the NFP program is implemented. NFP is a service that may address some of the difficulties of rural health planning.

**For Future Research**

1. It is important to understand the experiences of rural-dwelling mothers in the NFP program, given that rural health research in Canada is limited. The voice of young mothers living in rural communities will provide a fuller exploration of NFP in rural Canada.
2. Applying constructs from job embeddedness theory, future research could examine how to create supportive environments for nurses who identify interest in NFP. It may be beneficial to identify the attributes of nurses who thrive in the NFP. Hiring those who feel theoretically and morally aligned with the program may reduce nurse turnover and support retention.
3. Communication is foundational in NFP practice. There is a body of disciplinary research and theory that focuses on the centrality of relational inquiry for nursing practice. This kind of research should be supported to understand facilitators of communication. For example, research could consider nurse-client communication and how it can be facilitated using mobile technology in the NFP program. Where mobile communication is occurring, the function of nurse-client communication through text or other electronic means needs to be better understood so that organizational policies, professional governance, and privacy legislation can align with practices in a way that supports both nurses and clients. Other elements of NFP programing, such as team meetings or reflective supervision, could be enabled through technology (i.e. videoconferencing). Research could examine if videoconferencing provides enough human connection to mitigate the negative effects of professional isolation and symptoms of burnout by increasing connectedness for nurses, particularly those in rural areas.

**Conclusion**

This thesis, which summarizes the findings of several unique analyses guided by the principles of interpretive description, significantly contributes to the field of nursing by exploring the experiences of PHNs and their supervisors delivering the NFP program in British Columbia, Canada. The collective articles in this thesis represent a beginning understanding of how geography influences program delivery, which has effectively been missing from public health nursing literature. This work adds to the evolving knowledge of NFP internationally and highlights the important work that nurses are doing to address issues of health equity for young mothers and their families. It is exciting that through interpretive description, this study was able to use intersectionality as an analytic tool and findings illuminated the place of geography as an intersection of disadvantage in delivering NFP. This is particularly important for PHNs who primarily practice outside of the confines of their organizations’ buildings and in the community, where clients are situated. The findings of this study reinforce that NFP is always delivered within the context of the rural-urban continuum and it will influence program delivery. Finally, recommendations will support future NFP implementation and research to support PHNs in their home-visitation practices.

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