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# Chronic Disease Management in a Nurse Practitioner Led Clinic: An Interpretive Description Study

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## Abstract

**Statement of research problem:** Nurse practitioner led clinics (NPLC) in Ontario (ON) represent a model of care that is potentially well-situated to improve primary healthcare delivery. There is currently limited knowledge about this model of cares impact on patients with chronic disease. This study explored current chronic disease management practices implemented by Nurse Practitioners (NP) within NPLCs across ON.

**Methods:** Using a qualitative interpretive description methodology, eleven in-depth semi-structured interviews were conducted with nurse practitioners practicing within NPLCs in Ontario.

**Results:** Results indicate NPLCs successfully support patients with chronic disease through provision of on-site interprofessional care, continuity in service provision and increased access to primary healthcare services.

**Conclusions:** Findings suggest that NPLCs are beneficial in supporting patients to manage chronic disease. This paper provides insights into the NP-led primary healthcare model and how it can facilitate access to services, foster patient self-management and provide a successful alternative model of care.



**Keywords:** nurse practitioner, nurse practitioner led, advanced practice nurse, chronic disease, chronic illness, interdisciplinary, multidisciplinary, interprofessional, primary healthcare

## Summary for Lay Audience

There is an increased demand for primary healthcare services in Ontario due to continued prevalence of chronic disease. The nurse practitioner role within Canada has continued to expand since its initial creation in the 1960s to include positions within primary healthcare settings. A new model of primary healthcare began operation in Ontario in 2007 called the nurse practitioner led clinic (NPLC), which included nurse practitioners as primary healthcare providers within a team of multiple health care professionals. There is currently limited knowledge about this model of care and its impact on patients with chronic disease. Therefore, it is important to understand this model of care further to explore its potential effectiveness at providing high quality primary healthcare services to Canadians.

In this study eleven nurse practitioners currently practicing in eight different NPLCs in Ontario were interviewed. Study findings indicate that this model of care can successfully support patients in managing chronic disease. Researchers realized the social determinants of health including housing, food security, medication coverage and access to basic needs directly impacted an individual's ability to manage their own health. The experiences of nurse practitioner providers are presented and analyzed in this thesis. The findings provide policy makers, educators, and nurse leaders with insights about the primary healthcare practices implemented by nurse practitioners within NPLCs in Ontario.

## Co-Authorship Statement

Natalie Floriancic conducted this research for her master's thesis under the supervision of Anna Garnett and Dr. Lori Donelle who will be co-authors of the publication resulting from the manuscript.

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## Chapter One: Introduction

For the majority of the twentieth century primary healthcare in Canada was largely delivered by physicians working in solo practice or small physician groups with a focus on basic medical services (Marchildon & Hutchinson, 2016). Delivery of illness prevention and health promotion were limited, and involvement of other health professions were constrained due to absence of models of care that would provide positions and compensation (Heale, Dahrouge et al., 2018; Marchildon & Hutchinson, 2016). Canada has historically performed below other developed countries in areas such as timely access to care, primary healthcare infrastructure, interprofessional teams and clinical information systems (Aggarwal & Williams, 2019; Marchildon & Hutchinson, 2016). Previous research findings indicate it is important for health policy to prioritize chronic care systems as primary healthcare approaches are proactive and countries with strong primary healthcare systems have more cost-effective better health outcomes (Lukewich et al., 2014; Reynolds et al., 2018).

In 2003, advances in primary healthcare delivery became a focus in Canada through targeted federal funding and provincial initiatives (Aggarwal & Williams, 2019). While each province utilized funding differently, common approaches included physicians moving from solo fee-for service practices to group practices which included multiple healthcare professionals and interprofessional teams, incentives and targets for chronic disease management and introduction and/or greater utilization of the role of nurse practitioners (DiCenso et al., 2010; Heale, Dahrouge et al., 2018; Russell et al., 2009). Primary healthcare organizations are well situated to oversee the management of chronic conditions through providing continuity in care, care coordination, and comprehensive service delivery and these changes should result in

improvements in primary healthcare outcomes for the population (Black et al., 2020; Reynolds et al., 2018). The province of Ontario has made advancements in primary healthcare reform by initiating several new primary healthcare models aimed at increasing access and improving the quality of primary healthcare services available to its citizens (Black et al., 2020; Cote et al., 2019; Heale et al., 2018; Keith & Askin, 2008; Marchildon & Hutchinson, 2016; O'Rourke & Higuchi, 2016).

There are currently three such models of care operating in Ontario including family health teams, community health centers and nurse practitioner led clinics. Family health teams (FHT) are physician-led organizations that support an interprofessional team approach through government funded positions for a variety of health care professions (Heale, Dahrouge et al., 2018). Community health centers (CHC) deliver health, social and community services through an interprofessional team structure (Dahrouge et al., 2014). This model of care is physician-led and characterized by physicians and nurse practitioners sharing patients with consultation between providers (Dahrouge et al., 2014). The nurse practitioner led clinic (NPLC) model of care provides primary healthcare services to patients and is characterized by physicians being present in a consulting role with patients directly registered to the nurse practitioner (DiCenso et al., 2010; Heale et al., 2018).

Clinicians providing primary healthcare are accountable for addressing personal health care needs, developing partnerships with patients, and practicing within contexts of family and community (Lukewich et al., 2018; Mian et al., 2012; Muldoon et al., 2006). Nurse practitioners are specifically trained to think holistically, promote team building, provide health education and patient encouragement (Heale, Dahrouge et al., 2018; Watts et al., 2009). Predecessors to primary health care nurse practitioners began to practice in northern Canada more than one

hundred years ago most known at that time as outpost nurses who were brought in to improve primary healthcare services for marginalized populations (Donald et al., 2010). In the early 1970s there was limited access to family physicians that continues today, and the first group of primary health care nurse practitioners were introduced in southern Canada to fill this gap (Donald et al., 2010). The development of this role included definitions and legislation to support the scope of practice, development of educational standards and evaluation of role effectiveness (Donald et al., 2010).

Each province and territory in Canada now have legislation to authorize primary health care nurse practitioners to implement their advanced nurse roles which are defined by a graduate degree and in-depth nursing knowledge and expertise to meet the needs of individuals, families, and communities (Donald et al., 2010). Use of nurse practitioners in primary healthcare was shown to increase access to high quality care at a lower cost (Kasaalainen et al., 2010). In 2010, there were 2,486 nurse practitioners practicing in Canada, up from 1,129 in 2006, and in 2017, there were over 5,000 nurse practitioners across the country (Marceau et al., 2020). There continue to be several obstacles that challenge the sustainability of the nurse practitioner role in Canada including an absence of funding, a lack of role awareness by patients, providers, and policymakers: marginalized role by corporations, physician associations and government organizations and a lack of standardization of the role (Canadian Nursing Association, 2018; Cote et al., 2019).

The Canadian health care system continues to be challenged by limited access to primary healthcare physicians, increased prevalence of chronic disease presentations and limited resource availability (Curnew & Lukewich, 2018; Lukewich et al., 2018). There continue to be a consistent supply of new primary healthcare physicians graduating and practicing in the

province, however, research has shown that they are not practicing in rural areas or accepting complex marginalized populations equal to the number of individuals requiring care (Wang et al., 2019). A strong primary healthcare system is recognized as the cornerstone of health systems and leads to better health outcomes, improved patient experience and lower costs (Haj-Ali et al., 2021). Situating nurse practitioners in autonomous practices such as NPLCs has received limited evaluation. Removing some of the constraints and power imbalances of physician-led practices to allow nurse practitioners to become the most responsible provider (MRP) for a group of patients with an interprofessional team model has the potential to be an effective and innovative model to manage complex chronic disease.

## Background and Significance

In this section, I briefly present background related to chronic disease management within primary healthcare in Canada. There will also be a brief discussion of the nurse practitioner role within the NPLC model of care in Canada.

### Chronic Disease

The World Health Organization (WHO) defines chronic disease as having one or more of the following characteristics: permanence, residual disability, causation is a non-reversible pathological alteration, require special patient training for rehabilitation or is expected to require a continual period of supervision, observation, or care (Reynolds et al., 2018; Zwar et al., 2006). The leading cause of preventable death and disability as well as increased health care costs worldwide are chronic diseases (Heale et al., 2018; Lukewich et al., 2014; Russell et al., 2009).

Advancements in science and health care practices have led to increased lifespans amongst Canadians and an accumulation of chronic diseases for many individuals (Makovski et al., 2019). Patients with multiple chronic conditions present a challenge to primary healthcare

providers who must consider disease-disease interactions, drug interactions and therapeutic competition for medication if one disease destabilizes another (Forman et al., 2018). A systematic review completed looking at the rate of multimorbidity in Canada determined the prevalence within the general population over 60 years of age varied between 55% and 98% (Makovski et al., 2019). High health care costs, poor quality of life, inappropriate use of emergency departments and urgent care facilities, functional decline and disability are all major consequences of multimorbidity (Lukewich et al., 2018; Makovski et al., 2019). The current knowledge about the issue of multimorbidity is insufficient in younger people or vulnerable populations including those with mental health conditions, learning disabilities, substance use disorders and recent immigrants (Mair & Gallacher, 2017).

In 2009 it was predicted that in the next decade there would be a calculated loss of nine billion dollars from premature deaths caused by heart disease, stroke, and diabetes (Russell et al., 2009). The management of chronic diseases comprises 40-70% of total healthcare costs in Canada (Lukewich et al., 2014). Health care practitioners must take a collaborative approach with patients, caregivers, and professionals as partners to determine on an individual basis the best health outcome for a patient in the context of multimorbidity (Mair & Gallacher, 2017). In recent years the incidence of chronic disease continues to increase thereby placing further pressure on the Canadian health care system (Government of Canada, 2018).

**Chronic disease management within primary healthcare**

Primary healthcare within Canada is defined as the first point of access to comprehensive and patient centered care that is often delivered by a single health care team over a long period of time (Heale et al., 2018; Lukewich et al., 2014; Muldoon, et al., 2006). In the Canadian healthcare system family physicians and nurse practitioners are an entry point for patients to

access primary healthcare and act as a connection to specialized services (Laberge et al., 2017; Marceau et al., 2020). Several physician-led models of care are comprised of fee-for-service funding structures that complicate care for patients with complex medical and social requirements that are not amenable to the one problem-one visit fee structure (DiCenso et al., 2010).

Accessing primary healthcare across Canada including having a regular primary healthcare provider has become increasingly difficult (Keith & Askin, 2008). According to Laurant et al. (2014) as developed countries life expectancies have increased there remain unmet demands for primary healthcare services. There is a broad spectrum of services provided within primary healthcare including disease prevention, health promotion, population health and community development which target social determinants of health such as income, housing, education, and environment (Katz et al., 2018; Lukewich et al., 2014). In Ontario there continue to be health care practitioner shortages, increasing health care costs and budgetary restraints for healthcare funding (Keith & Askin, 2008; Poghosyan et al., 2017). A survey completed in 2010 reported that Canadian adults presented to the emergency department for care that should have been accessible through a primary healthcare setting (Di Censo et al., 2010).

Often Ontarians who are not able to find a primary healthcare provider are referred to as ‘unattached’ patients (Heale, 2012). With the increasing prevalence and costs associated with chronic disease in Canada an emphasis has been placed on increasing the quality of primary health care services delivered to patients with chronic conditions (Cote et al., 2019; Heale et al., 2018; Russell et al., 2009). Within the Canadian health care system there has been a shift from being reactive with a focus on acute care to being proactive in support of the prevention and

management of chronic disease (Aggarwal & Williams, 2019; Katz et al., 2018; Zwar et al., 2006).

There are several provinces within Canada currently in the process of evaluating their primary healthcare systems with the purpose of improving access to chronic disease care (Cote et al., 2019; DiCenso et al., 2010; Russell et al., 2009). Ontario research suggests that access to a regular source of primary healthcare for vulnerable populations including immigrants through physician-led models of care such as CHCs and FHTs is challenging (Batista et al., 2019). A national survey completed in 2018 reported that 89% of Canadians with chronic disease stated they had consulted a physician for their condition, but only 11% reported access to an interprofessional health care team (Canadian Medical Association, 2018).

**Nurse Practitioners**

Nurse practitioners have historically been introduced when patients access to care was limited beginning in the late 1960s in northern Canada and in the 1970s within primary healthcare settings in urban areas (DiCenso et al., 2010; Donald et al., 2010). The title of nurse practitioner was legislated in the province of Ontario in August 2007 (Mian et al., 2012). Legislation and roll out of nurse practitioner positions in Ontario was fragmented and met with several obstacles including restrictions in their scope of practice and varying levels of understanding what their roles were within primary healthcare (Cote et al., 2019; Heale, 2012).

Nurse practitioner positions in primary healthcare are currently funded by the Ministry of Health and Long-Term Care who collect quarterly and annual reports related to the services provided by practitioners (Ministry of Health and Long-Term Care, 2019). The Canadian health care system employs nurse practitioners across all health care settings. Implementation of nurse practitioner roles in hospitals were intended to address continuity of care for the seriously ill due

to the increasing complexity in acute care (Kilpatrick et al., 2010). The primary health care nurse practitioner role in Canada focuses on episodic illness, health promotion, disease prevention and chronic disease management (Mian et al., 2012; O'Rourke & Higuchi, 2016). Nurse practitioners in Ontario work within all primary healthcare settings including FHTs, CHCs, and NPLCs (Heale, Dahrouge et al., 2018). The current scope of practice of nurse practitioners in Ontario is the broadest in the country of Canada allowing providers to assess and communicate diagnoses, order diagnostic testing, complete specialist referrals, and prescribe medications including narcotics and controlled substances when indicated (College of Nurses of Ontario, 2021).

Within primary healthcare the role of a nurse practitioner should be autonomous allowing them to provide the first level of contact within the healthcare system for individuals of all ages (Mian et al., 2012). According to Heale et al. (2018) nurse practitioner autonomy within primary healthcare provider roles resulted in comprehensive care and optimized scope of practice. Particularly, for patients living with chronic disease or multimorbidity who face challenges accessing primary healthcare and present complexities for health care providers the nurse practitioner role can reduce health inequities (Heale, Dahrouge et al., 2018). Empirical demonstration of the competence of the nurse practitioner position and their ability to deliver high quality patient care has been evidenced in Canada, the United States of America, Australia, and the United Kingdom (Heale et al., 2018; Keith & Askin, 2008; Poghoysan et al., 2017).

A 2012 study by Heale demonstrated that lack of understanding of the nurse practitioner scope of practice and lack of education about interprofessional practice led to underutilization of nurse practitioner roles. Gaps in patient access to primary healthcare, high prevalence of chronic disease and complexity of patient needs can be addressed through increased access to primary

health care nurse practitioners and interprofessional collaboration with other health care professionals (Black et al., 2020; Katz et al., 2018; Mian et al., 2012).

**Nurse Practitioner Led Clinic**

In line with Canadian health care reform internationally Canada's increased implementation of team-based primary healthcare organizations has been lauded for its impact on access to health care services (Haj-Ali et al., 2021). However, the Canadian primary health care system has also ranked lower than many high-income countries on measures including timely access to care, patient engagement and interprofessional teamwork (Russell et al., 2009). There are ongoing efforts to optimize primary health care delivery to increase population access while maintaining cost effectiveness and the quality of primary healthcare services which has led to increased interest in the nurse practitioner role (Dahrouge et al., 2014; Katz et al., 2018; O'Rourke & Higuchi, 2016).

Most primary health care nurse practitioners in Ontario practice within the physician-led interprofessional primary health care team model called the FHT (Heale, Dahrouge et al., 2018). FHTs are funded by the Ministry of Health and Long-Term Care through a blended salary model that provides compensation to physicians based on the number of enrolled patients (Health Force Ontario, 2019). CHCs are funded by the Ministry of Health and Long-Term Care through salaried compensation provided to physicians and interprofessional team members (Health Force Ontario, 2019). Traditional physician practices have shorter appointment times while nurse practitioners have relied on longer periods of intervention. The nurse practitioner focus on health promotion and preventative care in managing chronic conditions may be hindered by decreased length of appointments Mian et al (2012) and Russell et al (2009) suggested the improved chronic disease management in CHCs by nurse practitioners may be due to longer duration of

appointments. The NPLC salaried model for nurse practitioners and consulting physicians and smaller patient enrolment numbers allows for longer appointment times to address complex patient presentations (DiCenso et al., 2010).

Positional power within physician-led models of care were found to influence scope of practice with nurse practitioners noting increased restrictions compared to nurse practitioner-led interprofessional teams (MacNaughton et al., 2013; O'Rourke & Higuchi, 2016). Research suggests lack of family physician familiarity with the nurse practitioner scope of practice has led to underutilization of their unique skill set in primary healthcare settings (Keith & Askin, 2008; MacNaughton et al., 2013). Interprofessional health care teams can be involved in patient education, effective mobilization of health care resources and patient navigation (Aggarwal & Williams, 2019; O'Rourke & Higuchi, 2016). The NPLC model of care was developed to allow the nurse practitioner to work in full scope of practice and utilize skills of interprofessional team members to their full advantage (DiCenso et al., 2010; Heale, 2012). Within NPLCs nurse practitioners are the primary healthcare providers with a panel of patients registered to them who also have access to an interprofessional team to provide comprehensive care (Heale et al., 2018; O'Rourke & Higuchi, 2016).

Combining the knowledge and expertise of multiple health care professionals such as nurse practitioners, registered nurses, social workers, health promoters and pharmacists facilitates a comprehensive patient centered model of care (Aggarwal & Williams, 2019). Members of the interprofessional team can include registered nurses, registered practical nurses, dieticians, social workers, health promoters, pharmacists, physiotherapists, and diabetes educators. Canadians with a regular health care provider in 2017 indicated that only 9.5% were aware of health professionals other than physicians and nurses such as dieticians worked in the

same office where they obtained their regular care (Canadian Medical Association, 2018). These findings suggest a need for increased awareness throughout the medical community, greater availability of this model of care in Ontario and further research into its effectiveness.

The primary health care system is positioned to have an important impact on outcomes of care for patients with chronic conditions (Black et al., 2020; Russell et al., 2009). NPLCs were established in areas that contained large numbers of people without access to primary health care services (DiCenso et al., 2010; Heale et al., 2018; Katz et al., 2018). Nurse practitioners continue to demonstrate their unique contributions to patient care within this setting and display role optimization in the delivery of chronic disease management (Lukewich et al., 2018; Marceau et al., 2020). While recent literature suggests there are benefits to the integration of the nurse practitioner role in primary healthcare, there is a gap in knowledge pertaining to nurse practitioner experiences and perceptions about the ability of the NPLC model of care to provide chronic disease management within community settings.

**Statement of Purpose and Research Question**

The purpose of this interpretive description study was to explore the nurse practitioner experience in providing chronic disease management within the NPLC model of care to gain a better understanding of the ability of this model to meet the needs of patients with chronic disease. Guided by the research question, objectives and participant interviews we focused on understanding the subjective experience of nurse practitioners practicing within this model of care, explored the current practices of nurse practitioners specific to chronic disease management, and examined current policy and practice factors that impact quality of care. Therefore, the overarching research question that guided this study was: What is the experience

of nurse practitioners in providing chronic disease management care to patients in the context of Nurse Practitioner Led Clinics in Ontario?

## Declaration of Self

According to Thorne (2016) in interpretive description the researcher is recognized as playing a meaningful role in shaping the outcome of the inquiry and must account for this influence. In line with this methodological approach acknowledging this influence will help minimize unintended impacts on the final research product (Thorne, 2016). As a researcher I possess personal and professional experience that has the potential to influence my perspective throughout study design, data collection and analysis. This has been taken into consideration throughout the study process with recognition that these experiences will help shape my understanding of the research findings.

My interest in researching the NPLC model of care began with my own experience working as a registered nurse within primary healthcare. I have had the opportunity to work with patients across the lifespan who are living with the impacts of poverty, lack of education, language barriers, food insecurity, homelessness, substance use disorders, mental health conditions and chronic disease. I have observed the increased prevalence of chronic diseases including diabetes, chronic obstructive pulmonary disease, heart failure, hypertension, chronic kidney disease, obesity, and arthritis in my own practice. I have participated in the development of care plans and witnessed the obstacles that patients can face in their capacity to self-manage chronic conditions.

As an adult in Ontario, I have also accessed primary healthcare services and noted the benefits and limitations to the primary healthcare system as I have experienced it in relation to my own health. This study aims to explore the current practices of nurse practitioners providing

chronic disease management within NPLCs across the province. I believe that primary healthcare is the foundation of health and wellness for individuals of all ages and nurse practitioners within primary healthcare are optimally positioned to advocate for change in social supports and promote self-management of chronic disease.

# Chapter Two: Literature Review

This chapter presents a comprehensive review of literature pertaining to the nurse practitioner role in chronic disease management within primary healthcare. The purpose of this literature review is to determine currently available knowledge related to the nurse practitioner role within primary healthcare, current evidence of nurse practitioner role implementation to address chronic disease and characteristics of nurse practitioner practice within an autonomous model of interprofessional care.

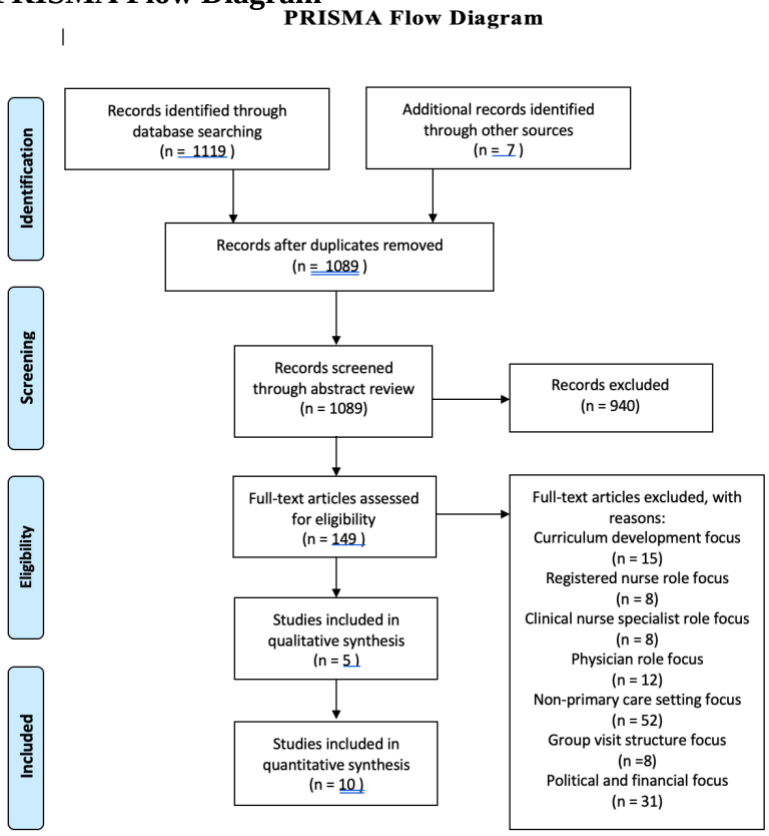
## Literature Review

Databases used to complete a comprehensive literature review included CINHAL, ProQuest, Pubmed, SCOPUS and EMBASE. The search focused on articles meeting the following inclusion criteria: (a) written in English; (b) peer reviewed; (c) authors analyzed the nurse practitioner role within primary healthcare (d) published between 1960 and 2019. These inclusion criteria were chosen to determine relevant research findings associated with the nurse practitioner role in primary healthcare related to chronic disease management and the nurse practitioner role within nurse practitioner led clinics. Articles were excluded if they were not written in English, if they did not focus on the nurse practitioner role, if they discussed the nurse practitioner role outside of primary healthcare settings, if they focused on nurse practitioner funding structures or focused on nurse practitioner curriculum. Keywords used to identify qualified articles included: ‘nurse practitioner’, ‘nurse practitioner led’, ‘advanced practice nurse’, ‘chronic disease’, ‘chronic illness’, ‘interdisciplinary’, ‘multidisciplinary’, ‘interprofessional’ and ‘primary care’. The selected key terms were combined during the search using AND and OR to ensure access to relevant articles. Reference lists were also searched to retrieve additional articles and grey literature.

From each of the databases searched there were 1119 studies initially identified. There were three phases used to determine the final number of relevant articles. Completed searches through multiple databases resulted in several duplicate citations that reported the same findings. A total of 15 articles met the inclusion criteria: four qualitative, eight quantitative, one mixed method and two grey literature sources (refer to Appendix A). Resulting themes obtained through thematic synthesis of study findings include factors affecting nurse practitioner roles within primary healthcare, nurse practitioner role in chronic disease management and collaborative practice.

**Figure 1**

**PRISMA Flow Diagram**




*Note.* Literature Review Search Process

**Factors affecting nurse practitioner roles within primary healthcare**

Chronic diseases are currently the leading cause of preventable death and disability worldwide and the prevalence and costs associated with chronic conditions are increasing globally (DiCenso et al., 2010; Hyer, 2019; Lukewich et al., 2014). Across Canada timely access to primary health care continues to be increasingly difficult (Curnew & Lukewich, 2018; DiCenso et al., 2010; Keith and Askin, 2008). As a result, Canadian provinces and territories have launched various team based primary healthcare initiatives designed to improve access and continuity of care (DiCenso et al., 2010; Heale et al., 2018; Lukewich et al., 2014).

In total nine articles published between 2009-2019 that were reviewed discussed factors affecting nurse practitioner roles within primary healthcare. Four studies were completed within Ontario (Heale, Dahrouge et al., 2018; Lukewich et al., 2014; Lukewich et al., 2018; Russell et al., 2009), three studies were completed in other provinces across Canada (Curnew & Lukewich, 2018; DiCenso et al., 2010; Keith & Askin, 2008) and two studies were completed in the United States of America (Hyer, 2019; Poghosyan et al., 2017). Review of the literature demonstrated multiple factors affecting nurse practitioner roles within primary healthcare including scope of practice, funding restraints, primary healthcare reform, role clarification and awareness of nurse practitioner led care.

Policymakers in Canada have become increasingly focused on the potential of primary healthcare to help ease the burden of chronic disease management on the health care system (Curnew & Lukewich, 2018; DiCenso et al., 2010; Russell et al., 2009). As a result, in 2000 the Health Care Transition Fund was created to support costs associated with introducing new approaches to primary healthcare utilizing interprofessional teams (Keith & Askin, 2008). There was an increase in newly funded positions that allowed more primary health care nurse practitioners in Ontario to become members of interprofessional teams in a variety of health care

models particularly in underserved areas (Curnew & Lukewich, 2018; Heale, 2012). Several articles refer to the continuing issue of funding allocation within the NPLC model of care. Previous research results indicated increased funding would not lead to improved care, but rather more appropriate allocation of current funds could positively impact patient health outcomes (Heale et al., 2018; Keith & Askin, 2008).

The current budgets provided to NPLCs through the Ontario Ministry of Health and Long-Term Care do not allow for flexibility or community development funding (Heale et al., 2018). This is viewed as directly associated with nurse practitioners' inability to address patient's socioeconomic concerns that would allow them to appropriately focus on their chronic medical conditions (Heale et al., 2018). According to Heale et al. (2018) organizational processes influence the quality of care for patients with multimorbidity within NPLCs. Study participants highlighted patient barriers to care stating, "a lot of them don't have access to transportation just cause we don't have a public bus system, or taxi service in the area so they either rely on family, friends, when they can…it impacts what I can do as a provider or what I can recommend" (Heale et al., 2018). Several additional studies indicated changes in policy development are needed to support better integration of health with social supports (Heale, Dahrouge et al., 2018; Lukewich et al., 2014; Keith & Askin, 2008).

Review of currently available literature demonstrated the history of the nurse practitioner role in Canada has been met with challenges to integration. Years of lobbying by the Nurse Practitioners' Association of Ontario, the College of Nurses of Ontario and individual nurse practitioners resulted in the removal of practice restrictions that were in place prior to 2011 which limited their capacity to contribute to primary healthcare service delivery (Heale, Dahrouge et al., 2018; Lukewich et al., 2014). For example, research results indicated a decrease

in unnecessary referrals to physicians related to medication prescriptions when limitations of working within a drug list were removed (Heale, Dahrouge et al., 2018). In the last decade there have been several legislative changes regarding the nurse practitioner scope of practice in Ontario which have expanded to support increased autonomy within primary healthcare settings including FHTs, CHCs and NPLCs (Heale, Dahrouge et al., 2018; Lukewich et al., 2014). However, autonomy is still a challenge for nurse practitioners working with physicians in many provinces in Canada (e.g. Quebec, Alberta, British Columbia, etc) where legislation has not been enacted to support independent practice and authority (Heale, 2012; Keith and Askin, 2008; Lukewich et al., 2018). Outside of Canada the nurse practitioner role in the United States also has variation in legislation to support autonomous practice without supervisory relationships with physicians (Hyer, 2019; Poghosyan et al., 2017). While in CHCs and family FHTs there are larger numbers of physicians versus nurse practitioners, within NPLCs the ratio of physician to nurse practitioner is lower and the physician functions in a consulting role rather than primary provider (Curnew & Lukewich, 2018; DiCenso et al., 2010; Heale et al., 2018).

The need for NPLCs in local areas was determined by the proportion of unattached patients, the prevalence of chronic disease, the number of full-time family physicians in the area per ten thousand people and the number of existing FHTs and CHCs (DiCenso et al., 2010). This mandate has resulted in patients who are registered to NPLCs often have high needs involving social determinants of health and complex medical co-morbid conditions. In 2018, Heale et al suggested that evaluation of the complexity of patients in NPLCs in combination with environmental scans of available resources should be completed to determine appropriate funding for clinics who provide services to vulnerable populations.

Throughout the literature authors also discussed the need for increased awareness of the nurse practitioner role and the NPLC model of care. There is a call for nurse practitioner leaders to bring more exposure to their role, expertise and unique knowledge base through academic publications and conference presentations for the medical community (Heale, Dahrouge et al., 2018; Keith & Askin, 2008). Several studies indicated that primary healthcare settings that had clearly defined nurse practitioner roles led to improved quality of patients care (DiCenso et al., 2010; Heale, Dahrouge et al., 2018; Lukewich et al., 2014). Given the increasing prevalence and cost of chronic conditions it is essential that primary healthcare practices implement appropriate strategies to ensure that patients are receiving high quality care (Heale et al., 2018; Lukewich et al., 2014).

As team based primary healthcare structures are becoming more prominent in Ontario it is important to understand the nurse practitioner contribution to chronic disease management in primary healthcare and evaluate the quality of care in new models particularly for patients with complex health concerns (Heale et al., 2018; Lukewich et al., 2014). There is currently limited literature specific to the NPLC model of care within Ontario. In Canada employers and family physicians lack of understanding of nurse practitioner scope of practice and lack of education about interprofessional practice have led to underutilization of nurse practitioners (Heale, Dahrouge et al., 2018; Keith & Askin, 2008).

**Nurse practitioner role in chronic disease management**

A healthcare system that was originally created to manage acute illness and injury is now unprepared to manage the increasingly complex and chronic nature of illnesses seen today (Curnew & Lukewich, 2018; Heale, Dahrouge et al., 2018; Keith & Askin, 2008; Lukewich et al., 2014). To improve health outcomes and conserve available healthcare dollars researchers

suggest a shift in focus to health promotion and illness prevention in Canada (Heale et al., 2018; Keith & Askin, 2008; Lukewich et al., 2014; Mian et al., 2012). In total eleven articles published between 2009-2019 were reviewed discussed nurse practitioner roles within primary healthcare related to chronic disease management. Six studies were completed within Ontario (Dahrouge et al., 2014; Heale et al., 2018; Heale, Dahrouge et al., 2018; Lukewich et al., 2018; Mian et al., 2012; Russell et al., 2009), four studies were completed in other provinces across Canada (Curnew & Lukewich, 2018; DiCenso et al., 2010; Keith & Askin, 2008; Mythbusters, 2011) and one study was completed in the United States of America (Poghosyan et al., 2017). Review of the literature suggests that the nurse practitioner role within primary healthcare focuses on health promotion, health education and vulnerable patients with complex presentations of chronic conditions.

A key feature of the nurse practitioner role in Canada is 'the intake of vulnerable patients that say they are dealing with a chronic condition' as per primary healthcare organization mandates (Heale et al., 2018). As a result, several studies reported that nurse practitioners were often assigned complex patients with multiple chronic conditions (Dahrouge et al., 2014; DiCenso et al., 2010; Heale, Dahrouge et al., 2018; Poghosyan et al., 2017). Multimorbidity has been recognized as a complex and challenging situation for both the patient and their healthcare providers within primary healthcare settings (Heale et al., 2018; Lukewich et al., 2018). Nurse practitioners are trained and educated to conduct health assessments, perform a variety of medical procedures, prescribe medications, diagnose, and manage common illnesses, chronic disease and injuries through ordering and interpreting diagnostic tests (Curnew & Lukewich, 2018; Dahrouge et al., 2014; Heale et al., 2018; Poghosyan et al., 2017). Systematic reviews of

international evidence have consistently demonstrated that nurse practitioners can deliver high quality chronic disease management (DiCenso et al., 2010; Poghosyan et al., 2017).

Within primary healthcare delivery of high-quality care to patients with chronic disease is pivotal to the health and well-being of the population and is an integral component of the Canadian health care system (Curnew & Lukewich, 2018; Heale, Dahrouge et al., 2018; Lukewich et al., 2014). One study found that high quality chronic care delivery was more likely with the presence of nurse practitioners as part of the healthcare team (Russell et al., 2009). NPLC focus on chronic disease management and disease prevention activities, which include a funding structure that allows for increased appointment times for complex patient presentations (DiCenso et al., 2010; Heale et al., 2018). Within the literature there was consensus amongst clinicians across several studies that longer appointment times may translate into better care for chronically ill patients (DiCenso et al., 2010; Heale et al., 2018; Russell et al., 2009). According to Heale et al. (2018) Canadians expressed high satisfaction with nurse practitioner care and greater than three out of four would be comfortable seeing a nurse practitioner instead of a family physician (Heale et al., 2018).

The nurse practitioner role in Ontario allows providers to incorporate health promotion and disease prevention into care while providing comprehensive chronic disease management, which makes them a valuable addition to any healthcare team (DiCenso et al., 2010; Heale, Dahrouge et al., 2018; Keith & Askin, 2008; Lukewich et al., 2014; Mian et al., 2012).Several studies found that better utilization of nurse practitioners within primary healthcare is a strategy used to increase the overall capacity of primary healthcare systems (Lukewich et al., 2014; Poghosyan et al., 2017). As of 2011 twenty-eight randomized control trials had been completed in the United States of America, United Kingdom and Canada that demonstrated nurse

practitioners are effective safe practitioners who can positively influence patient, provider, and health system outcomes (Mythbusters, 2011). Nurse practitioner roles have been recognized as an important aspect of chronic disease management as they are well positioned to enhance the planning and delivery of healthcare resources in primary healthcare (Lukewich et al., 2014; Mian et al., 2012).

**Collaborative Practice**

The Canadian health care system has long been criticized for poor accessibility, inefficiency, and cost (Keith & Askin, 2008). As a result, there has been increasing emphasis placed on the management of patients with chronic disease in primary healthcare settings along with strategies to enhance the coordination and comprehensiveness of healthcare delivery (Lukewich et al., 2014). Primary health care has a mandate to provide services delivered by a collaborative team of professionals while emphasizing the quality of care and health status of patients (MacNaughton et al., 2013). In total, thirteen articles published between 2009-2019 identified in the literature review discussed nurse practitioner roles in collaborative practice. Six studies were completed within Ontario (Dahrouge et al., 2014; Heale et al., 2018; Heale, Dahrouge et al., 2018; Lukewich et al., 2018; Mian et al., 2012; Russell et al., 2009), four studies were completed in other provinces across Canada (Curnew & Lukewich, 2018; DiCenso et al., 2010; Keith & Askin, 2008; MacNaughton et al., 2013), two studies were completed in the United States of America (Hyer, 2019; Poghosyan et al., 2017) and one systematic review was completed with international data sources (Laurant et al., 2014). Review of the literature demonstrated the impact of role clarity on collaborative practice, differences in interprofessional practice noted in varying models of care and the ongoing negotiation between nurse practitioner and physician roles in primary healthcare.

Collaboration is a complex and multifaceted concept that requires responsibility, accountability, coordination, communication, cooperation, assertiveness, autonomy, mutual trust, and respect (Keith & Askin, 2008). Health care professions have been noted to cultivate unique knowledge systems to maintain their exclusive property and spheres of influence (MacNaughton et al., 2013). Strong collaborative relationships are needed to successfully negotiate shared areas of practice yet formal training and facilitation of interprofessional education are currently lacking in the medical community (Heale, Dahrouge et al., 2018). There is also limited literature on how to optimize the role and functions of care providers in interprofessional healthcare teams to ensure that each practitioner is utilized to their full potential (Lukewich et al., 2014).

Several studies in this literature review focused on evaluation and comparison between FHTs, CHCs and solo physician practices regarding chronic disease management and collaborative practice (Hyer, 2019; Mian et al., 2012; Poghosyan et al., 2017; Russell et al., 2009). One such study looked at 44 849 patients who received care from 53 family physicians and 41 nurse practitioners and results indicated that 29% of the patients saw nurse practitioners more than 70% of the time (Heale, Dahrouge et al., 2018). Although there has been considerable progress made in integration of primary health care nurse practitioners into the Ontario health care system some issues such as financial incentives for family physicians providing preventative care and screening practices and a long tradition of hierarchical relationship between doctors and nurses hinder nurse practitioner participation in interprofessional care as equal partners (Heale, 2012). Several studies reported that this hierarchal relationship tends to hinder collaboration between health care professionals (DiCenso et al., 2010; Heale, Dahrouge et al., 2018; MacNaughton et al., 2013).

One area of focus for several articles included discussion about the relationship between nurse practitioners and physicians within primary healthcare settings. Family physician trust and understanding of the nurse practitioner scope of practice were reported as important elements in successful integration of the nurse practitioner role (DiCenso et al., 2010; Heale, Dahrouge et al., 2018). It is important to improve the knowledge of the nurse practitioner role amongst physicians to ensure they understand that these roles are intended to be complementary rather than competitive to their roles to foster effective collaborative relationships (Keith & Askin, 2008; Lukewich et al., 2018). A major challenge facing interprofessional practice is how professional territories are carved out and distributed within a complex team-based system (MacNaughton et al., 2013).

Establishing NPLCs require substantial media coverage to increase community and government sector awareness about the nurse practitioner role and potential benefits of this model of care (DiCenso et al., 2010). One study found that there has been a history of resistance from the Ontario Medical Association since some physicians do not support NPLCs as they view them as functioning independently without considering the collaborative team-based approach (DiCenso et al., 2010; Laurent et al., 2014; Mian et al., 2012). This model of care is known for challenging the traditional physician nurse hierarchy within primary healthcare teams (DiCenso et al., 2010; Heale et al., 2018). Researchers defined the collaborative and consultative relationships within the reviewed literature. Collaborative relationships were when physicians had a formal ongoing relationship with the patients registered at the clinic and care was shared between the physician and nurse practitioner, but in consultative relationship physicians were not formally linked to the patient and served primarily as consultants to nurse practitioners (Heale, Dahrouge et al., 2018).

Within NPLCs there are interprofessional teams that utilize a variety of allied health professionals for primary healthcare delivery. According to Heale et al. (2018) interprofessional team functioning was noted with a study participant stating, “definitely having the multidisciplinary team that we have access to. The dietician, pharmacist and even times a social worker is a benefit if we have an older frail individual in the community that needs support etc”. Additional literature reported that empowering team members to develop autonomy can enhance collaborative interactions by ensuring that all providers have an appropriate level of autonomy that will allow health professionals the respect of their profession and their knowledge within the team (MacNaughton et al., 2013).

Contributions of the growing workforce of nurse practitioners in Canada will be limited if organizations employing them do not utilize them to their fullest capacity as primary healthcare providers (Curnew & Lukewichm 2018; DiCenso et al., 2010; Heale et al., 2018; Keith & Askin, 2008; Poghosyan et al., 2017). Throughout the literature it has been noted that collaboration is the key to optimizing the nurse practitioner role to improve the delivery of primary health care (Heale, Dahrouge et al., 2018; Keith & Askin, 2008; Lukewich et al., 2014; Mian et al., 2012). As the prevalence of chronic disease continues to increase the adoption of an interprofessional, collaborative, patient-centered practice is believed by many to be fundamental to sustaining the health professional workforce in Canada (DiCenso et al., 2010; Heale et al., 2018; Keith & Askin, 2008; Mian et al., 2012).

## Literature Review Summary

As indicated in the literature review, the nurse practitioner role within primary healthcare is impacted by government, financial and sociopolitical factors (Curnew & Lukewich, 2018). The studies identified in this review highlighted the ability of nurse practitioners to provide high

quality chronic disease management through diagnostic testing, medication prescription and health care monitoring. Reports in the literature also revealed ongoing barriers to implementation of the nurse practitioner role in primary healthcare including role confusion, restrictive legislative barriers, underutilization of scope of practice and lack of funding. There has been little research to date completed that explores chronic disease management when nurse practitioners are enabled to utilize a maximum scope of practice such as they are able to in the NPLC model of care. The mandate of the NPLC to provide care for patients in high need and medically underserviced areas, the presence of an interprofessional team as well as the autonomous role of the nurse practitioner in NPLCs in Ontario make these an ideal practice setting to explore the unique contribution of nurse practitioner in chronic disease management. Insights into the experience of nurse practitioners providing primary healthcare services can be used to inform high quality chronic disease management and future practices and policies in primary healthcare.

# Chapter Three: Research Methodology and Methods

This chapter explains the interpretive description methodological approach used in this study to address the research question. Information related to research participants, data collection and analysis methods are also provided with ethical considerations.

## Statement of Purpose

The purpose of this interpretive description study was to explore the nurse practitioner experience in providing chronic disease management within the NPLC model of care to gain a better understanding of the ability of this model to meet the needs of patients with chronic disease. Guided by the research question, objectives and participant interviews we focused on understanding the subjective experience of nurse practitioners practicing within this model of care, explored the current practices of nurse practitioners specific to chronic disease management, and examined current policy and practice factors that impact quality of care. By subjective experience we are referring to how these nurse practitioners enact their roles relative to the contexts in which they practice. We identified how nurse practitioners and their understanding of the current primary healthcare system may inspire systemic change related to meeting the needs of patients with chronic disease.

## Research Question

What is the experience of nurse practitioners in providing chronic disease management care to patients in the context of Nurse Practitioner Led Clinics in Ontario?

## Aims and Objectives

1. Investigate current chronic disease management practice implemented by nurse practitioners within nurse practitioner-led clinics in Ontario

2. Examine the subjective experience of providing chronic disease care through nurse practitioner perspectives to inform primary healthcare system reform
3. Produce findings that will inform clinical practice decisions related to chronic disease management and add to current available knowledge specific to the nurse practitioner led clinic model of care

## Methodology

The purpose of this qualitative interpretive study was to explore the nurse practitioner experience of providing chronic disease management which supports a qualitative interpretive description approach. The interpretive description approach was developed to answer research questions about health and illness experiences from holistic, interpretive, and relational perspectives (Burdine et al., 2020). An interpretive description framework is used to guide researchers in maintaining pragmatism when determining research results.

Interpretive description has a philosophical alignment with interpretive naturalistic orientations which acknowledges the contextual nature of human experience and allows for the existence of shared realities (Thorne, 2004). Philosophical underpinnings provided by naturalistic inquiry include (1) there are multiple constructed realities that can be studied only holistically meaning reality is complex, contextual, constructed and ultimately subjective (2) the inquirer and the "object" of inquiry interact to influence one another; indeed, the knower and known are inseparable (3) no a priori theory could possibly encompass the multiple realities that are likely to be encountered; rather, theory must emerge or be grounded in the data (Thorne, 2004). Interpretive description is an appropriate approach to answer research questions related to health and illness due to its ability to align with the unique philosophical foundations and disciplinary objectives of the nursing profession (Thorne, 1997). Development of nursing

knowledge must reflect the pragmatic philosophy of nursing science that embraces scientific and practical interests and values (Reed, 2020). Interpretive description supports nursing practitioners as "situated knowers" who can contribute to solving nursing problems and fulfill their social mandate to promote health and well-being (Reed, 2020; Thorne, 2016).

## Methods

### Setting

This study was conducted through telephone interviews from nurse practitioners throughout the province of Ontario. Multiple NPLCs were chosen to increase the likelihood of obtaining an adequate sample size. Each of the NPLCs included in this study provide primary healthcare services to patients in their individual communities. Clinic locations included London, Shanty Bay, Waterloo, Kitchener, Ingersoll, Lancaster, Oshawa, Barrie, and Smith Falls. At the time of study data collection, the COVID-19 pandemic had a direct impact on primary healthcare service delivery. Public Health guidelines required primary healthcare organizations to schedule in person appointments for health concerns requiring physical assessment only and alternative appointment types including telephone and virtual appointments to ensure appropriate safety standards were met.

### Sampling Strategy

A purposive sample was used to obtain in-depth descriptions of nurse practitioner's experience providing primary healthcare services to patients with chronic diseases. Members of the research team used their knowledge of NPLC operations to identify clinics who could provide potential study participants. This study used purposive sampling to ensure data was collected from individuals who could offer insight into the research topic (Burdine et al., 2020).

Thorne states that if the background literature suggests that a phenomenon occurs within clinical practices and an in-depth exploration of the subjective nature is required a small number of individuals will produce findings that are worth noting (Thorne, 2016). The prevalence of chronic disease continues to increase and providing primary healthcare services to complex patients is the subjective experience explored in this study. Interpretive description studies determine sample size based on the level of richness obtained during data collection (Thorne, 2016). The research team aimed to continue interviewing participants until further data collection would not yield new emerging themes, but ultimately the number of individuals volunteering to participate dictated when study recruitment was completed. Eleven nurse practitioners total volunteered to participate and during the last interviews there were significant concept replication suggesting that there was a sufficient sample obtained. Through data analysis the research team determined this number was sufficient to address the study purpose.

Eligibility criteria for participation in this study included being a currently practicing nurse practitioner within an NPLC in Ontario, able to speak and read English and be willing to discuss their experience providing primary healthcare services to patients diagnosed with chronic diseases. Nurse practitioners not currently practicing within an NPLC were not eligible to participate.

**Recruitment**

Initial recruitment of potential study participants followed approval from the Health Sciences Research Ethics Board (HSREB) at Western University. There are currently twenty-five NPLCs operating in Ontario with publicly accessible websites that include administrative email addresses available for contacting clinic administrative staff. Emails were sent to publicly accessible NPLC websites currently operating in Ontario. Within each email there was a

prepared script used to inform potential participants about the study purpose and provided contact information to address questions or to complete enrolment (Appendix A). Within the emails that were sent to potential study participants there was also an attached letter of information and consent information (Appendix B).

When contacted by potential study participants the researchers answered any questions they had and reviewed their eligibility. Individuals who chose to participate were provided with a mutually agreed upon date and time for completion of a semi-structured telephone interview. During the telephone interview in accordance with Western ethics participants were asked if they had reviewed the provided letter of information and verbal agreement to participate in the interview implied that consent was obtained (Appendix B). Participants were informed that the interview and subsequent audio recording could be stopped at any time. The final sample size of eleven was determined by available voluntary participants and the research team's judgement of the ability of the data to address the study purpose (Burdine et al., 2020).

**Data Collection**

The primary data collection was completed through telephone interviews with participants. These interviews were completed through using semi-structured interviews supported by an interview guide (Appendix C). The chronic care model was used to inform interview guide development because of its usefulness as an organizational approach to caring for patients with chronic disease in primary healthcare settings (refer to figure 2). This framework looks at the impacts of the community, self-management supports, delivery system designs, decision supports and clinical information systems on chronic disease care and therefore was well-situated to inform the development of the interview guide (Improving Chronic Illness Care, 2021). The research team used this framework to develop the research guide specific to the

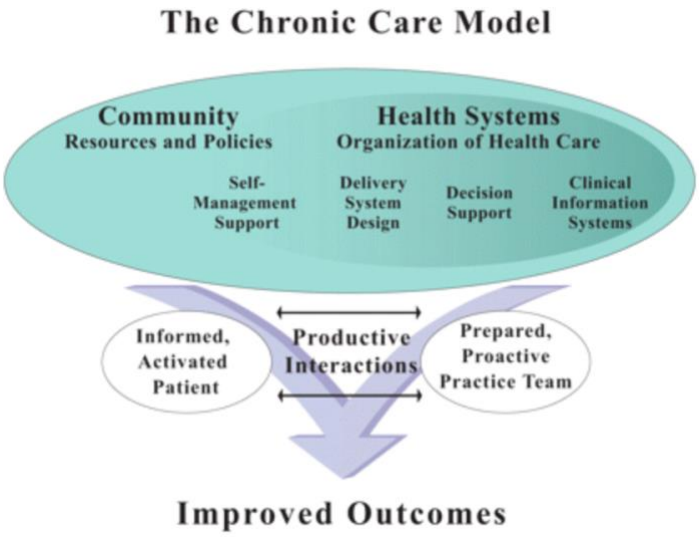
nurse practitioner role and the nurse practitioner led clinic model of care. Community questions were chosen to gain insight into nurse practitioner mobilization of community resources to meet the needs of their patients, self-management questions were chosen to discuss nurse practitioner experience preparing patients to manage their chronic conditions, delivery system design questions were chosen to discuss collaborative practice within the healthcare team to explore its impact on providing efficient care services, health system questions were chosen to discuss nurse practitioner role in organizational safety and quality care delivery, decision support questions were chosen to explore the nurse practitioner experience in providing evidence based chronic disease management care with consideration to patient preference and clinic information system questions were chosen to discuss delivery of virtual care appointments and the use of technology within this primary care setting (Improving Chronic Illness Care, 2021). The interview guide addressed both the research question and study objectives. The first two participant interviews completed were reviewed with the research supervisor to ensure appropriate use of the interview guide and alignment of interviews with study objectives. As a result, subsequent adjustments to the interview guide prior to continuation of further participant interviews was completed. This approach provided participants with the ability to share their experiences of providing primary healthcare services to patients with chronic disease. The use of open-ended questions was appropriate for researchers to capture an in-depth understanding of the participants' perceptions, feelings and understanding as practitioners within the NPLC model of care. The interviews were conducted over the telephone as a conversation with use of prompts when appropriate to gain further understanding of specific aspects of the participants' experience. A demographic questionnaire was completed prior to the start of the telephone interviews to describe the study sample (Appendix D). The interviews were digitally audio-recorded with verbal consent from

each participant. Each of the digital recordings were anonymized and uploaded into a password protected computer to ensure confidentiality.

All study correspondence were written or provided verbally in English. Each interview was completed in English and the audio-recorded interviews were transcribed verbatim in English upon their completion by the researcher. Each of the interviews were between 35-60 minutes in length. The completion of each study interview was accompanied by field notes from the researcher to capture their initial thoughts and impressions, and to adjust the interview guide based on observations when necessary. After completion of two telephone interviews the research team reviewed completed transcripts and made interview guide revisions.

**Figure 2**

**Chronic Care Model**




*Note.* Framework referenced for interview guide development

**Data Analysis**

Data analysis occurred concurrently with data collection. The purpose of data analysis in interpretive description studies is to produce findings that are clinically significant (Thorne, 2016). Each of the telephone interviews were transcribed verbatim in English and uploaded to a

secure computer by the research team for data analysis. Audiotapes were listened to numerous times in their entirety while simultaneously reading each transcript to ensure accuracy.

Data was managed and conceptual themes were derived inductively with use of NVivo 12 qualitative software (Nowell et al., 2017). Initial coding was completed through analysis of each transcript with highlighting and constant comparison of key words, phrases, and concept development (Nowell et al., 2017). The initial codes were then grouped into common categories and subcategories. The supervising researchers were involved in theme development throughout analysis. These categories were grouped together after comparison of category characteristics and conditions to generate final themes. Direct quotes from participants were used to demonstrate each theme and link them to individual experiences. The final developed themes revealed nurse practitioners' lived experiences providing primary healthcare services to patients with chronic disease (Nowell et al., 2017).

**Criteria for Trustworthiness**

Researchers took several steps to ensure qualitative rigor was maintained throughout the study process. During study development, data collection and analysis the research team referenced literature that demonstrated several criteria for trustworthiness. Thorne (2016) suggests the use of Lincoln and Guba's (1985) criteria for trustworthiness can be applied to interpretive description studies including credibility, transferability, dependability, and confirmability. Credibility refers to the fit between the participants views and the researcher's representation of them (Nowell et al., 2017). Analyst triangulation was used throughout the data analysis process to test credibility with review of completed transcripts, initial coding, and iterative comparison of findings amongst the research team. Transferability within qualitative research refers to the researcher's ability to provide thick description of the research process for

future application by researchers based on appropriate fit for the study setting (Nowell et al., 2017). This research study process was sufficiently described for stakeholders, researchers, or nurse practitioners to determine its future transferability to similar health care settings. Dependability in qualitative research is accomplished when the research process is presented as logical, traceable, and clearly documented (Nowell et al., 2017). Dependability was addressed by the research team through collection of an audit trail which included electronically recorded methodological decisions and rationale throughout study design, data collection and analysis. Field notes were also completed throughout the study process to record personal reflections of values, interests, and insights from the research team. Confirmability is determined based on the ability of the research study to satisfy the first three trustworthiness criteria (Nowell et al., 2017).

According to Thorne (2016) a sound critique of qualitative research beyond the surface level includes consideration of moral defensibility, disciplinary relevance, and pragmatic obligation. Moral defensibility refers to the requirement of applied science researchers to provide rationale that will link findings to a potential benefit for those we serve (Thorne, 2016). Researchers designed this study to address the research question with consideration for why this knowledge was necessary to extract from study participants and the potential impacts of such knowledge once it was obtained. Data collection from nurse practitioners within NPLCs was deemed necessary by the research team due to the prevalence of chronic disease amongst Canadians and after review of current literature a gap in practice was identified specific to the nurse practitioner role in this context. This knowledge can be used within society to inform primary healthcare practice and primary healthcare system reform. Disciplinary relevance addresses the issue of whether the research findings will contribute to the development of the disciplinary science (Thorne, 2016). Disciplinary relevance was fulfilled through the relationship

between the research question of nurse practitioner led chronic disease management within NPLCs in Ontario and the aim of advancing nursing specific knowledge within this model of care. The nursing discipline has the potential to benefit from the knowledge produced in this study through clinical practice and policy development. Pragmatic obligation requires researchers to acknowledge that a discipline may apply findings in practice prior to them being scientifically proven due to the coexisting realities present in practical sciences (Thorne, 2016). This criterion was considered by the research team as this study explored current nurse practitioner practice already implemented in several NPLCs with the understanding that results may impact future clinical practice considerations.

## Ethics

Ethical approval for this study was obtained from Western University Health Sciences Research Ethics Board (Appendix E). Study participation was voluntary and participant rights were protected by allowing them the opportunity to refuse to participate or withdraw from the study at any time, without penalty or impact on their professional practice. Participants were informed that they did not have to answer any questions they did not want to or could request that audio recording be stopped at any time throughout the telephone interview. A letter of information including study details, benefits, goals, and risks was provided to all participants. Prior to starting telephone interviews verbal consent for participation and audio-recording was received.

Confidentiality and privacy were maintained through storage of all audio-taped recordings in a locked filing cabinet in the researchers at home office and all electronic data including verbal consents were saved on a password-protected computer. Anonymity of participants was maintained through use of numerical identifiers instead of participant names and

any information that participants provided was password protected and encrypted in a computer file. Each typed transcript will not be disclosed in any publication findings and participant identifiers were stored separately from interview audio tapes. Audiotapes were deleted once transcription and analysis was completed. Each of the study transcripts will be kept on file for seven years in accordance with the Western University Health Sciences Research Ethics Board policy and they will then be deleted to ensure confidentiality. There were no anticipated risks to participants of this study.

# Chapter IV – Findings

## Results

The findings of this research address the three main study objectives: (1) to investigate current chronic disease management practice implemented by nurse practitioners within nurse practitioner-led clinics in Ontario, (2) to understand the subjective experience of providing chronic disease care through nurse practitioner perspectives to inform primary healthcare reform, and (3) to produce findings that will inform clinical practice decisions related to chronic disease management and add to current available knowledge specific to the nurse practitioner-led clinic model of care. To illustrate the themes direct quotes were used from nurse practitioner (NP) interviews.

### Participants

The eleven participants' ages ranged from 31 to older than 61 years. Nine participants identified as female, and two participants identified as male. Study participants were practicing in eight different NPLC locations out of the currently twenty-five operating in Ontario. Years of experience amongst nurse practitioners varied from three years to more than sixteen. The demographic characteristics of participants are included in Table 1.

**Table 1**
***Characteristics of Nurse Practitioners***

| **Table** | **n (%)** |
|---|---|
| **Age (years)** | |
| **31-40** | 5 (45.4) |
| **41-50** | 3 (27.4) |
| **51-60** | 1 (9.0) |
| **61 or older** | 2 (18.2) |
| **Sex** | |
| **Female** | 9 (81.8) |
| **Male** | 2 (18.2) |
| **Years of Practice** | |

| | |
|---|---|
| **3-5** | 6 (54.6) |
| **6-10** | 2 (18.2) |
| **11-15** | 1 (9.0) |
| **16 or more** | 2 (18.2) |

## Themes

Data collection from eight of the currently twenty-five operating NPLCs in Ontario was completed during January 2021 to May 2021. This study explored nurse practitioner experiences of providing chronic disease management to patients with complex presentations within an NPLC setting. All eleven provider participants described challenges in supporting older adults' chronic disease management as many were also experiencing challenges relating to the social determinants of health. The patients attending the NPLC clinics struggled to access basic needs including food, housing, and medications.

Four main themes with applicable subthemes emerged from interviews about the experience of providing primary healthcare through an NPLC and will be discussed. These themes were: bridging access to patients who fall between the cracks, interprofessional care, meeting a patient where they are at, and addressing health care system burden.

### Theme 1: Bridging access to patients who fall between the cracks – "*what shapes patients health experience is their social situation*" (NP05)

All eleven study participants discussed how the social determinants of health impacted their patient's health and well-being. This refers to the complex factors that impact an individual's health status such as education, income, housing, food security, language, culture, gender, sexual orientation, and health care system constraints including funding and limited provider availability.

Patient demographics provided by participants included individuals who were homeless, impoverished, newly immigrated to Canada, older adults who did not have access to primary

healthcare for several years, patients who regularly used walk-in clinics and emergency departments for chronic disease management and a prevalence of low health literacy:

> We have a lot of patients with low education, low understanding of the healthcare system…low education turns into low housing, to low income to then poor health and as you know just kind of trickles right down. (NP04)

Study participants discussed the challenges in gaining access to resources for patients to support their health. Working within a health care system that has limited accessible supports through government organizations providers are often left with few options for coverage of medications, rehabilitative services, dental care, and counselling services. Nurse practitioners worked with community partners to maximize available resources and funding to better support patient needs. For example, study participants discussed partnering with Canadian Mental Health Association locations for counselling and mental health services, local refugee centers to support newcomers with access to primary healthcare and translation services when required, community food banks and diaper banks to provide patients with basic needs when possible, and local rapid access clinics to support patients with substance use disorders. A study participant stated:

> We do have a lot of clienteles that we call the working poor because they may not have benefits with their job or may not have sick benefits, may not have drug plans. Or we have a lot of people on Ontario Works and Ontario Disability Support Program so some medications will be covered but not all of them. So, these social determinants there's lots of risk of homelessness, people in precarious living situations where they can't afford all their bills and rent so they'll pay rent but then have food insecurity. (NP07)

Study participants discussed the importance of their role in advocating for systemic change to address the ongoing disparity their patients. Local, provincial, and federal

governments have been lobbied regarding the need for additional supports in housing, access to food, supports for newcomers facing deportation, medication coverage and supports for patients living with disabilities. As the primary healthcare provider this advocacy role was taken on by nurse practitioners to promote patient-centered care. Within the NPLC model of care there is a prevalence of patients with challenging social situations:

> Often people don't have homes, they don't have regular lifestyles or money to afford good food. It's hard for them to get to appointments so you need to be flexible in terms of somebody walks in with a need you gotta be prepared to squeeze them in or address it. Making access to resources shapes the chronic disease management here. (NP05)

Nurse practitioners worked to increase access to resources for their patients through use of compassionate care programs and partnerships with pharmaceutical companies who were willing to provide medication samples to those without the ability to afford them. Local members of provincial parliament were regularly contacted regarding the need for increased social supports and nurse practitioners invited them to visit their clinic sites to demonstrate the gaps in resource access. Study participants also discussed the strategies they currently apply in practice to promote self-management of chronic disease amongst their patients. Particularly, within the NPLC model of care providers discussed the benefits of working with the individual social circumstances as they present to support patients in managing their own health:

> A lot of folks have never had that expectation between a primary healthcare provider and themselves to say I can manage this you know I just need a hand I can do this. And so that's a big 360 for people and I think for the most part it works. I think people want to be well and they want to be supported I think it's just getting that to the next level on their

> journey where they are self-supporting themselves as well because they can best manage their health. (NP10)

Study participants also discussed the impacts of the COVID-19 pandemic to their practice relating to safety requirements and public health guidelines that often led to reduction in physical clinic visits and an increased use of technology. For example, public health guidelines specified that primary healthcare clinics were to only see patients in person for immunizations or physical assessments that could not appropriately be completed through telephone or virtual appointments starting in March 2020. While some practitioners were initially reluctant to use technology applications to implement virtual and telephone appointments many also described the perceived benefits for patients in relation to their care. Several study participants noted the increased access provided to patients who normally may face obstacles attending clinic appointments:

> There are patients who may be COVID anxious or have social anxiety where virtual care is really good…they feel better or people with mobility issues who can't sit in a waiting room you know virtual care is perfect for them. (NP05)

Study participants discussed the balance of this approach emphasizing the need for nurse practitioner discretion in using technology while ensuring the best health outcome for patients. For example, if a patient has been determined to have risk factors due to living alone and having limited resources for basic needs a nurse practitioner may decide that an in-person appointment for diabetes management is appropriate to ensure no physical concerns including foot care are being missed:

> I think you just have to balance [technology use] with missing something, but I think that falls back on the relationship that you have with your clients in this model they tend to

> tell you more than they need to as opposed to less…and it's a balancing act but I think they're definitely going to be some kind of virtual mode in the future. (NP03)

Study participants demonstrated the importance of understanding each patient's personal circumstances as their role often requires more than medical management alone. Nurse practitioners provide holistic assessment and tailor their care approaches to ensure the impacts of social determinants of health are considered, for example:

> I think there's lots of places for the virtual care but I think there's lots of limitations too…you also need to see where they live you can just get this insight into their lives, you know when their house is immaculately decorated behind you in the video camera you know they're doing okay usually right in terms of like finances and how that affects their life versus you know the person that you can see piles and piled up laundry behind them because they can't afford the laundry mat so very double edged sword. (NP04)

Study participants commented on their experience with patients learning to use technology and the potential challenges they have faced since transitioning to include virtual and telephone appointments in their daily practice. Nurse practitioners evaluated each patient presentation to ensure appropriate in person assessments were completed when required. Patients were provided with multiple options for technology-based appointments through use of telephone or video calling applications. Medical concerns that would benefit from physical assessment such as dermatology presentations were facilitated through patients sending photographs for nurse practitioner review. For example:

> We do have a really significant portion of elderly patients and I've had a number that have really struggled with that like they don't have speaker phone or they don't have a cell phone or they don't have an email so we can't do a virtual video. I do find that it has

> been a struggle sometimes with some patients because of what they do and don't have at home. (NP02)

In contrast some participants detailed successes they have experienced with technology use. Nurse practitioners had to adapt their practices to ensure that standards of practice were still being met when appointments with patients were completed over the telephone or through a virtual care visit. One study participant described use of technology for health education stating:

> I've used virtual a lot in clinic, you'd be surprised by how many people have adopted it including older clients. Teaching people how to use their puffers I've done it on virtual it's been fabulous educating people about their pills it's great they just hold up their pill bottle and we talk about it. And same with the puffer it's fabulous I think there's a place for it, especially for elderly frail people if they can get the technology under their belt. (NP03)

Within the NPLC model of care many patients are often negatively impacted by the social determinants of health and innovative care approaches are required to be able to provide them with chronic disease management. For example, patients who regularly experience housing and food insecurity are less likely to engage with primary healthcare services if it requires additional transportation for routine follow up as the costs for public transportation may not be feasible:

> COVID has opened the door for us to realize that…virtual care is safe and for chronic disease management for certain aspects and certain types of assessments there are great advantages to virtual care and the greatest would be simply the patient's access. (NP08)

Prior to COVID-19 safety restrictions, primary healthcare providers had limited telephone and virtual care appointments available to patients as it was not a care approach that

had been sufficiently evaluated and there were uncertainties related to practice standards when completing these alternative appointments. Study participants discussed the impact of being directed to use technology by public health in their daily practice and as a result there was a change in perspective on its applications within primary healthcare. Several participants expressed the benefits of virtual and telephone-based care as it allows for increased flexibility to provide care when appropriate outside of the clinic setting.

**Theme 2: Interprofessional Care**

Within primary healthcare in Canada there has been an increased implementation of team-based models of care with the aim of increasing access to health care providers and reducing health care system burden from chronic disease. Two subthemes will be used to demonstrate the varying ways nurse practitioners experienced working as a member of an interprofessional team: (1) underappreciation of nurse practitioner knowledge depth and skill level (2) symbiotic collaboration.

***Underappreciation of nurse practitioner knowledge depth and skill level***

The NPLC model of care has existed in Ontario since 2007 yet study participants spoke about the lack of awareness of the nurse practitioner role within primary healthcare amongst patients in their practice and other practitioners in the healthcare community. Study participants discussed how patients often misunderstood the scope of practice of nurse practitioner-led care. Acute care facilities, specialists and physicians also continue to experience confusion related to the nurse practitioner scope of practice and role within primary healthcare, “We could do more in terms of advertising ourselves…does anybody know our value outside of the locale of the nurse practitioner led clinic? I don’t think so, I think we need to focus on that”. (NP03)

Several participants discussed their experience in explaining the purpose of the NPLC model of care to patients to ensure they understood their role and the resources they have access to through the interprofessional team with one participant sharing, “not everybody knows what a nurse practitioner does I think that they are shocked when they find out exactly what we do” (NP03). Misperceptions about the nurse practitioner role were also discussed:

> A lot of people think when they’re coming to a nurse practitioner led clinic that we’re a temporary stop to hold them over until they find a doctor…I think we still have a long way to go to promote our profession in the public eye. (NP04)

There were several accounts from study participants about the complexity of patients in their care and the nurse practitioners’ ability to provide comprehensive management for chronic disease presentations:

> I think one thing that is under appreciated is the depth of knowledge and the high level of skill the nurse practitioners in this setting need to have. I don’t think we in the NPLCs acknowledge it and I think people should be given credit for the just fabulous work that they do with a very challenging population on the whole. Some NPLCs are seeing relatively healthy people but the majority are not. (NP05)

Similarly, another participant discussed the lack of recognition from the medical community and government sectors related to the complex health presentations they regularly manage in their practice, “it is pretty common knowledge that we take patients that other models reject because of their complexity so I think there’s some recognition of it, but not great recognition” (NP07). Study participants discussed their role and scope of practice in relation to providing chronic disease services to their patients. Several participants stated the nurse practitioner role within primary healthcare is ideally suited for chronic disease management:

> The nurse practitioner in my humble opinion is ideally positioned to provide chronic disease health services based on common elements of their vision, mission and professional values…nurse practitioners approach their scope of practice and their role with the intent to utilize their role and their personal attributes to support the provision of innovative and high-quality care for their clients. (NP09)

Study participants discussed the need to adapt care plans based on patients' access to medications, rehabilitation services and basic needs. Within the interprofessional team nurse practitioners acted as leaders and as they discussed their role in seeking out resources and skills from allied health professionals to help support patient needs. For example, patients who were unable to independently attend required appointments in clinic or the community would be assigned caseworkers who become a part of the care team in supporting their health needs or nurse practitioners will make home visits to ensure primary healthcare remains accessible.

***Symbiotic Collaboration***

Examples of how the interprofessional team works to provide comprehensive care to patients with complex presentations in the NPLC include, patients who present with multimorbidity and chronic disease such as diabetes, COPD, hypertension, coronary artery disease, mental health conditions and substance use disorders. All eleven study participants discussed the benefits of a team-based approach to ensure patients are supported and can build the skill set required for self-management of chronic conditions:

> If we're struggling with things getting advice from the social workers in terms of maybe why a patient is acting the way they are if they're having a trauma response that I don't fully understand I can ask them questions. (NP01)

There is recognition and understanding within the team that care can be both optimized and efficient through collaboration particularly when managing older adults who present with increasingly complex health conditions:

> Having a team is really beneficial because as the population ages and we're seeing more and more chronic disease I think having a team and having each person in that team work to their scope is really important. Because it makes for a much more efficient system ensuring that patients are getting seen and ensuring that they are being managed properly and it's a really great use of each provider's time. (NP02)

Study participants noted the benefits of having access to an interprofessional team on site to support patient needs. Particularly, within the NPLC model of care patients often presented to appointments with multiple concerns requiring follow up or further assessment:

> Our social workers provide counselling for patients in our clinic but they also do walk in as well as crisis management. So having a resource like that helps us to direct our patients to the appropriate services in the community to maximize everybody's scope so that patients are seeing the right person at the right time for the right thing. (NP02)

Within the interprofessional team study participants discussed their perspective on role hierarchy and development of patient care plans. Patients with complex chronic disease presentations often required medical and social issues be addressed during clinic appointments:

> In an NPLC with the full team the hierarchy is not there as much as in a traditional physician-based practice where whatever the physician says is what goes. Whereas in the NPLC if any of the allied team members give me a suggestion, I don't feel that we have that hierarchy where they can't come to us with that or change the plan because they have different or better ideas. (NP04)

Study participants discussed the benefits of working with nurse practitioner colleagues with unique skill sets that contribute to care. Participants felt the NPLC model supports continuous collaboration between providers and due to the education and training requirements of nurse practitioners they often bring a variety of experiences to their practice:

> With nurse practitioners we all come to each other for certain things. Everybody has their strengths and their interests in their own practice we have some nurse practitioners that have more of a cardiac background, some that have more of a home care background. I'm mental health and other things, so we really just kind of support each other and ask questions and bouncing back and forth it's pretty symbiotic really. (NP03)

Specific to complex patient presentations, many study participants highlighted the importance of collaboration in comprehensive care delivery with one participant stating:

> I think the model of care of the nursing background team-based care the way we collaborate really work together to help our clients is some of the key aspects of the model that are beneficial to being able to manage complexity. (NP06)

Within the NPLC model of care a consulting physician is a part of the health care team and is available to practitioners for consultation if required. Nurse practitioner providers can reach out to their consulting physicians for specific patients if they require signatures for computed tomography or magnetic resonance imaging requisitions, for medication review or care plan discussion based on their discretion. All eleven participants expressed gratitude and described the benefits of having a consulting physician as a part of the interprofessional team:

> We do have a great collaborative physician we would be able to go to the collaborative physician and have a conversation so our patients wouldn't have any less access to care because they see a nurse practitioner. (NP02)

Study participants discussed their use of consulting physician roles in their organizations highlighting the impact of increased experience in practice, “If I’m trying to figure out a complex client we definitely use him [consulting physician], he’s definitely needed, but as we grow in our practice I feel like that’s less and less”. NP03 The NPLC model of care allows for provider autonomy and promotes complete use of the nurse practitioner scope of practice:

> Specific to chronic disease management I would say I haven’t really had much interaction with either of our MDs because it has been more acute episodic or potentially time limited illness that I need somebody with a higher level of experience. (NP08)

Collaborative practice allows for comprehensive care to be provided within the constraints of time and financial resources allocated to primary healthcare organizations. As described by participants, registered practical nurses, registered nurses, dieticians, pharmacists, physiotherapists, social workers, and community outreach workers all contribute to important aspects of chronic disease management monitoring and support continuity of care for patients. The study participant perspectives of the NPLC model of care included a high level of team collaboration that is used to accomplish comprehensive care and positive health outcomes.

**Theme 3: Meeting a patient where they are at**

Each of the study participants discussed the importance of individualized care and emphasized the increased access and ability to form therapeutic relationships with patients through the NPLC model of care, “Patient centered care is one of our key priorities. It includes making decisions from a client’s perspective, co-creating a care plan, recognizing the self-direction and encouraging empowerment”. (NP09)

The NPLC model of care allows for flexibility in appointment lengths if needed. Several participants discussed the impacts of flexible appointment lengths on providing care to patients with complex presentations:

> The relationship with our clients and the time we can spend with them because we're salaried that takes 10 minute and 15-minute visits out of the equation…there's a lot of trust in us with clients. We can tell by the relationships that we form because they really appreciate the care they trust us. That moves mountains in terms of moving someone on to owning their disease process and managing them. (NP03)

Study participants also discussed their implementation of patient-centered care:

> Patient centered care basically is a partnership between the clients and I to determine what they want done. It's getting their input, making sure they participate because we're not of the traditional model where they say you're the doctor you know best tell me what to do…I want to make sure they're involved in their care. You need to be able to tell me what is feasible for you outside in your home. (NP07)

The partnerships with patients that participants discussed were directly related to the management of patient health and well-being. Due to the increased prevalence of social challenges amongst their patient's nurse practitioners recognized that guidelines and standards of care would not always provide best care in practice, "We very much have to meet the patient where they are at and when they're ready we encourage them to come in". (NP04) Study participants noted that although they regularly provide care to complex patients, they continue to encourage self-management, increased health literacy, and capacity building:

> Working with patients maybe somebody doesn't have a drug plan, so although another drug would be a better option it's not within the budget of the patient. Or being aware

> that this patient works all night shifts so that needs to be taken into consideration with certain medications, or they are a caregiver to another family member so being aware of what the patient situation is and tailoring their care to try and facilitate compliance but also to eliminate barriers. (NP02)

Study participants discussed the benefits of open communication related to care plan recommendations to ensure that patients feel they have the capacity to make healthy choices. As described by study participants their role in chronic disease management was to support patients in building their capacity to manage their own chronic conditions.

**Theme 4: Addressing health care system burden**

The NPLC model of care is one of four different primary healthcare models currently operating in Ontario and participants felt the model worked well: "We need more of this type of care where we can spend time with patients so that they don't end up in emerge the patients who didn't get proper primary healthcare that's why they are there. (NP08) The study participants discussed the benefits of interprofessional teams within primary healthcare to address these optimizing healthcare resources:

> I think working to your scope of practice is really important because that way you're able to provide full spectrum care for your patients and limit the amount of specialist referrals that are set therefore reducing the amount of burden on the system, reducing the amount of wait times before the patient is able to get that appointment and make modifications to their care…I would say we manage them at a high level reducing the burden on the system. (NP02)

Study participants discussed the common perception that individuals with complex health care needs are considered time consuming and therefore less desirable to physicians practicing

within a predominately medical model of care who rely on fee-for-service funding. Several participants stated they often accept patients with complex presentations who are unable to find primary healthcare providers due to their health history and current needs. As a result, the NPLC model of care has the potential to help fill in these gaps in access to primary healthcare services:

> Our mandate is we only take people that are not rostered to anybody else. We won't see clients from other providers but also create the opening for people that they have no provider, no doctor, no nurse practitioner and that's important. (NP07)

Additionally, participants discussed the challenges associated with ensuring representation for NPLCs within the health care system:

> Ontario Health Teams include nurse practitioner led clinics, but there's inconsistent participation at the leadership level across the province…we do provide chronic disease management and services that are very valuable and effective but may or may not have a voice at those tables. (NP09)

Throughout this study participants shared the various benefits and challenges associated with the NPLC model of care. Many of the issues were related to systems level constraints such as funding and resource allocation. Each of the identified themes highlighted the potential applications for this model of care to provide effective chronic disease management.

# Chapter V – Discussion and Implications

## Discussion

There is increased implementation of the nurse practitioner role within primary healthcare in Canada with few studies exploring this role specific to chronic disease management. The present study addressed this gap in knowledge and explored how nurse practitioners provide chronic disease management within NPLCs in Ontario. In this final chapter insights into the phenomena of chronic disease management within NPLCs are discussed. Study objectives included: (1) investigate current chronic disease management practice implemented by nurse practitioners within nurse practitioner-led clinics in Ontario (2) examine the subjective experience of providing chronic disease care through nurse practitioner perspectives to inform primary healthcare system reform (3) produce findings that will inform clinical practice decisions related to chronic disease management and add to current available knowledge specific to the nurse practitioner led clinic model of care. Implications for nursing education, clinical practice, research, and policy are provided as well as concluding thoughts about the overall research findings.

Data analysis of study participant interviews addressed our study objectives through the emergence of three themes: addressing health care system burden, meeting a patient where they are at and bridging access to patients who fall between the cracks. In the following section each theme will be discussed in relation to existing literature.

### Addressing Health Care System Burden

Within the Canadian health care system access to primary healthcare services remains challenging due to limited provider availability (Heale et al., 2018; Marceau et al., 2020). Our findings confirm NPLCs focus on providing primary healthcare services to individuals with

limited access to primary healthcare including older adults, new immigrants, pregnant women, and individuals with complex chronic disease presentations. Study participants described the NPLC mandate includes only taking on patients without current primary healthcare providers to increase access to marginalized populations. These findings contribute to existing evidence from a review of other nurse led models of care within Canada and the United States of America which identified similar mandates which resulted in improved access to primary healthcare services, reduced inequalities, and improved care coordination (Gordon et al., 2019).

Individuals living with chronic disease need ongoing support from health care professionals to ensure they can appropriately manage their own health (Lukewich et al., 2014). Our findings suggest that nurse practitioners within NPLCs prioritize self-management and capacity building amongst patients with chronic conditions as they were able to accommodate longer appointments for complex presentations where more than one issue needed to be addressed. For example, nurse practitioners were able to offer thirty-to-sixty-minute appointments to patients with less stable chronic disease adequately providing assessment, treatment recommendations and health education during that time. These results are consistent with previous evidence that indicated nurse-led models of care were found to reinforce health promotion strategies and lifestyle education that enabled participants to better self-manage their conditions at home (Gordon et al., 2019; Pelletier et al., 2019; Young et al., 2016).

Often individuals with chronic disease will rely on their primary healthcare provider to manage their medications, order diagnostic tests related to the disease process and seek consultation from medical specialists when indicated (Cote et al., 2019). Our findings suggest that nurse practitioners can adequately provide chronic disease management for patients with a variety of chronic conditions including diabetes, chronic obstructive pulmonary disease,

hypertension, hyperlipidemia, fatty liver disease, and obesity. For example, one participant described how patients with diabetes can receive diagnosis, health education, medication prescriptions, foot care, physical assessment and specialist referrals if indicated through the nurse practitioner. Our findings add to existing evidence that nurse-led models of care can be effective in discovering the root cause of clinical presentations and appropriately manage chronic conditions (Gordon et al., 2019).

The nurse practitioner role within primary healthcare in Canada continues to be integrated inconsistently (Heale et al., 2018; Lukewich et al., 2018). Our findings suggest that expanded scope of practice and autonomy allowed nurse practitioners to provide comprehensive chronic disease management for their patients. Ontario legislation has expanded the nurse practitioner scope of practice to be able to provide diagnosis and treatment for patients with chronic disease (Heale, Dahrouge et al., 2018; Mian et al., 2012). For example, nurse practitioners are able provide patients with a diagnosis of diabetes, hypertension or COPD and initiate appropriate treatment as indicated. Nurse practitioner autonomy within NPLCs leads to increased efficiencies related to care provision. These results suggest legislative limits in diagnoses and treatment for medically complex patients are unwarranted and provinces such as Quebec unnecessarily limit nurse practitioner practice (Pelletier et al., 2019).

The Canadian health care system has increased implementation of interprofessional teams within primary healthcare with the aim of increasing access to health care services (Heale et al., 2018). Our findings suggest that interprofessional team-based approaches within NPLCs can provide comprehensive care to complex patients with chronic disease. Study participants discussed the benefits of having multiple health professionals as a part of the health care team who could provide expertise outside of their scope of practice. Several clinics used internal

referrals to allow nurse practitioners to refer to social workers, registered nurses, pharmacists, community outreach workers and dieticians within their teams to support patient needs related to their chronic conditions. Specific to the NPLC model of care study participants discussed the positive impacts of working with diverse nursing professionals who were readily available for consultation and collaborative care planning development. These findings expand on previously existing knowledge about the chronic disease management delivery approach of nurse-led models of care that were found to facilitate work between and across health care professions (Gordon et al., 2019).

The NPLC model of care was originally developed to promote nurse practitioner autonomy within primary healthcare (Aggarwal & Williams, 2019; DiCenso et al., 2010). This study illustrates how nurse practitioners work within NPLCs as the most responsible provider (MRP) to care for their own registered patient caseloads. Study participants discussed the continued evolution of their roles related to chronic disease management in this primary healthcare setting. In our study, nurse practitioners with more experience articulated greater confidence and autonomy related to years of practice and experience providing assessment, diagnosis, treatment, and specialist referrals for common chronic diseases. Recent research findings from Quebec indicated that primary health care nurse practitioners are limited in their contributions to chronic disease management due to the requirement of physicians to agree for specific patients to be on their caseload (Pelletier et al., 2019). In the Ontario model, and in particular in NPLCs, the removal of legislative restrictions such as unnecessary confirmatory consultations, medication lists and medical procedures facilitates care rather than delaying it as seen in more restrictive jurisdictions (Pelletier et al., 2019).

**Meeting a Patient Where They Are At**

Health care resources that are available to primary healthcare providers within Canada continue to be constrained by organizational funding and nurse practitioners are often limited in their ability access these resources for their patients (Heale et al., 2018; Young et al., 2016). Study participants expressed the need to always consider a patient's social circumstance prior to developing a care plan due to concerns related to the feasibility of their recommendations. For example, nurse practitioners noted the limitations they faced when prescribing certain medications regardless of the clinical indication if they knew a patient did not have adequate coverage through benefits or social assistance to purchase them. These findings extend our current knowledge about barriers to accessing health care treatments and the challenges experienced by nurse practitioners providing primary healthcare. Our findings are comparable to recent research which found that nurse practitioners routinely applied patient-oriented rather than disease-oriented approaches in consideration of the entire clinical picture including social context to successfully manage patient needs (Gordon et al., 2019; Pelletier et al., 2019).

Access to primary healthcare providers in Ontario continues to be a challenge for many individuals (DiCenso et al., 2010; Heale et al., 2018; Lukewich et al., 2014; Marceau et al., 2020). Several study participants discussed the local demand for the NPLC model of care. Our findings suggest that NPLCs had lengthy waiting lists to apply to become patients in their clinics with study participants noting the continuous process of patient intakes since opening their doors. Three out of eight NPLCs in this study provided care to new immigrants and refugees and all eight clinics provided care to patients with housing and food insecurity, mental health conditions and substance use disorders. These results expand our knowledge related to the potential challenges newcomers face when accessing primary healthcare as they are registered within a model of care that only accepts patients without current providers. Our findings support existing

evidence that indicated new immigrants to Canada face additional barriers to accessing primary healthcare due to insufficient financial, human, information resources and inadequate geographic provider availability (Wang et al., 2019).

The NPLC model of care provides nurse practitioners with a position that is well situated to deliver care to patients with complex chronic conditions. Study participants noted the benefits of appointment length flexibility to address multiple concerns in one visit when indicated. For example, patients with chronic disease often also presented with social concerns that required additional support from providers. This evidence is supported by recent research that indicated health care system goals to increase access to care required shorter appointment lengths for patients, but also recognized that improvement of chronic disease outcomes often required longer appointment lengths to address complex social needs, promote self-management and facilitate systems navigation (Martin-Misener et al., 2016).

The ability to support patients in managing their own health is directly linked to their capacity to understand health education that is provided to them through the health care team. Our research findings highlight the impacts of health literacy on chronic disease management. Study participants noted the presence of low health literacy due to low education levels, cognitive decline, or language barriers in daily practice. Our findings suggest nurse practitioners within primary healthcare are well positioned to support health literacy in chronic disease management. Study participants employed innovative approaches to support health literacy using technology through youtube videos, chronic disease association websites, translation services and resources tailored for individual literacy levels when providing patient education. These findings add to existing knowledge that indicated increasing health literacy is crucial for patients to better manage their chronic diseases and improve their quality of life (Young et al., 2016).

**Bridging Access to Patient Who Fall Between the Cracks**

Health care funding in Canada transitioned to focus on health promotion, prevention, and primary healthcare delivery due to increased prevalence of chronic disease and associated health system burden (DiCenso et al., 2010; Heale et al., 2018; Katz et al., 2018; Lukewich et al., 2018). NPLC specific funding and nurse practitioner position availability remain limited in Ontario. There are currently twenty-five operating NPLCs in Ontario with no new clinics opening in the last six years. Study participants expressed concern that this model of care was not gaining recognition as a valued and effective option for further implementation despite evidence of the comprehensive care being provided to marginalized populations. In addition to stagnant funding status study participants discussed the Ministry of Health requirements related to nurse practitioner patient panel numbers regardless of patient acuity levels. For example, one participant shared their organization's struggle to obtain funding for additional nurse practitioner positions stating, "The ministry requires each nurse practitioner to have 800 patients prior to us submitting a proposal for another nurse practitioner position".NP02 Our findings suggest there is lack of internal mechanisms in place to accurately capture patient acuity levels within nurse practitioner led clinics. In contrast, nurse practitioners working in community health centers or family health teams have reduced patient panels depending on the complexity of chronic health and social conditions they present with demonstrating an adjustment of patient panel sized based on acuity (Martin-Misener et al., 2016).

Study participants discussed the challenges related to lobbying governments for increased funding when there is limited pullable data to represent chronic disease management services being provided by the interprofessional team. Each NPLC used an electronic medical record system that had limited availability of coding that could be used to represent chronic disease

management services. These research findings are consistent with existing evidence that indicated the challenges of capturing nurse practitioner activities due to being paid through salaries and lacking the ability to bill for the services they provide as physicians do (Martin-Misener et al., 2016).

The study findings suggest a lack of nurse practitioner presence at government sanctioned meetings related to health care funding and emphasized the need for increased advocacy. Within the Canadian health care system funding is determined at the federal, provincial, and municipal levels. Recently, the development of Ontario health teams aimed to increase health care system efficiencies and help optimize health provider roles. Nurse practitioners currently working within primary healthcare have identified the need for government stakeholders to increase their knowledge of the nurse practitioner role and change policies that directly impact role integration into the healthcare system.

Study participants also discussed the limited awareness of the NPLC model of care and nurse practitioner role as primary healthcare provider. Our findings suggest there is a need for increased political involvement from nurse practitioners through lobbying government officials and participating in research studies aimed at increasing understanding of their impact in primary healthcare settings. This evidence expands currently existing knowledge that identified the importance of stakeholder's knowledge regarding nurse practitioner roles, their competencies, capabilities, and scope of practice as well as the need for political leadership amongst nurse practitioners to guide the profession in gaining input related to health care resources (Lowe et al., 2018; Sangster-Gormley et al., 2011). We also found similarities in Australian research that indicated the nurse practitioner role has been impacted by their local, state, and federal

governments often leading policy makers to make short sighted decisions that agree with the status quo and restrict available funding (Lowe et al., 2018).

The nurse practitioner role within Canada was originally introduced in the 1960s and there has been inconsistent integration within the primary healthcare system since then. Our study findings indicate that nurse practitioners' experiences with role integration varied based on the organization and province they practiced in. Currently, Ontario has an increased number of nurse practitioners practicing in primary healthcare settings compared to other provinces and territories across Canada. Our findings suggest that there is a need for clarification of the nurse practitioner role to increase integration and promote optimal use within primary healthcare. Study participants expressed concerns related to the sustainability of the NPLC model of care due to limited funding and decreased stakeholder awareness. These findings are consistent with evidence from a scoping review that identified a lack of nurse practitioner role awareness by patients, providers and policymakers may threaten its sustainability in Canada (Marceau et al., 2020).

**Implications for Nursing Education**

This study highlighted the need for increased awareness of the nurse practitioner role and their ability to provide comprehensive primary healthcare services. There continues to be encouragement within the nursing profession for nurses to pursue graduate level education and advanced practice nursing certifications such as community health nursing, gerontology, and psychiatric mental health certificates (Canadian Nurses Association, 2021). Within academic settings there should be adequate training and development opportunities for students to gain leadership skills that can be implemented as nurse practitioners and advanced practice nurses. The NPLC model of care and nurse practitioner roles within primary healthcare in particular

need increased political involvement to promote their sustainability. Increased leadership within nursing will encourage engagement within politics at municipal, provincial and federal levels.

**Implications for Nursing Practice**

The knowledge gained from this study prompts us to reflect on current primary healthcare practices and to consider the potential effectiveness of chronic disease management services provided through the NPLC model of care. Study participants discussed their roles in providing comprehensive primary healthcare services safely and effectively to patients with complex chronic disease. Patients with diabetes, chronic obstructive pulmonary disease, hypertension, hyperlipidemia, chronic kidney disease, fatty liver disease, hepatitis C and other chronic conditions were regularly seen in clinic for diagnosis and treatment by nurse practitioners. Several studies have demonstrated how the nurse practitioner role within primary healthcare is potentially well suited to provide patients with safe, quality care to manage chronic conditions (Gordon et al., 2019; Heale, Dahrouge et al., 2018).

Throughout the literature nurse practitioner commitment to the practice value of enhancing holistic care is evidenced (Gordon et al., 2019). It is important to note that within this study nurse practitioners effectively sought out community partners to better provide holistic care to patients. For example, study three participants discussed their current partnerships with local refugee centers that allowed them to provide access to primary healthcare services to newly immigrated individuals and in turn they were offered translation services during health-related appointments to promote capacity building and patient centered care. Additionally, partnerships with local Canadian Mental Health Association locations and rapid access clinics allowed nurse practitioners to work with community organizations in support of patients with mental health and substance use disorders. Although there has been significant evidence presented in the literature

regarding the impact of funding on health care services this approach demonstrates innovation in maximizing financial resources that are already allocated to organizations throughout the community.

Study participants also discussed their approaches in building capacity in colleagues as well as patients to ensure optimal health outcomes. For example, registered nurses were provided with specific training and education to optimize their scope of practice to facilitate ongoing chronic disease follow up and patient education appointments that allowed nurse practitioners to see more complex presentations. This model of care represents a potential approach to interprofessional collaboration within primary healthcare. Throughout the interviews study participants discussed their appreciation for working with multiple different health professionals and spoke to the positive impact this access had on patient care. Nurse practitioners spoke about their role as leaders within their teams applying their education and skill sets to promote effective patient care.

This study also highlighted the potential use of technology in primary healthcare. It appears that implementation of virtual and telephone appointments amongst participating clinics produced a decreased no show rate and increased access for patients with mobility issues such as older adults and young families. Specific to chronic disease management participants indicated that technology-based appointments can safely and effectively allow nurse practitioners to assess stable presentations, as well as determine when in-person follow up is required.

Primary healthcare roles require nurse practitioners to have an abundance of knowledge and procedural skills to address a variety of health presentations. Nurse practitioners are knowledgeable and possess a unique skill set to provide health promotion and chronic disease management services. However, nurse practitioners in Canada are currently limited in their

practice depending on the provincial legislation, regulatory authority as well as organizational restrictions and model of care they work within. It is important to improve the information provided to governments and healthcare professionals related to nurse practitioner autonomy and development of their role. Nurse practitioners who are allowed to practice autonomously can practice to their level of advance education and practice in collaboration with other health professionals to help decrease health disparities (Peacock et al., 2020).

**Implications for Policy Makers**

Since the introduction of the nurse practitioner role in Canada their implementation has fluctuated and been dependent on managing political agendas shaping the health care system (DiCenso & Bryant-Lukosius, 2010). These study findings suggest a need for increased utilization of the nurse practitioner role within primary healthcare settings in Canada and increased consideration for the development of more NPLCs. The federal and provincial governments currently play a major role in developing and supporting primary health care services. Policy makers should stimulate and support the implementation of effective measures for the prevention and management of chronic disease. Increased implementation of NPLCs in Ontario and perhaps Canada will require successful proposal submissions from nursing leadership to the government and approval of increased funding for additional nurse practitioner positions, allied health positions and infrastructure expenses associated with opening new clinics. Our findings suggest that another limiting factor to NPLC growth is a lack of understanding of the nurse practitioner role within primary healthcare and a lack of standardization of the nurse practitioner scope of practice across Canada. Policy makers should address legislation differences between provinces and territories to evaluate the current scope of practice guiding nurse practitioners and their ability to contribute to chronic disease management.

Our study findings also suggest that the social determinants of health have direct impact on chronic disease management for both patients and providers. Participants discussed the impacts of housing, food insecurity, rehabilitation services, dental care, optometry, medication prescriptions and navigating disability support services for their patients. Nurse practitioners within the nurse practitioner led clinic model of care continue to lobby government officials to advocate for increased access to social supports and primary health care organizations that can appropriately care for vulnerable populations. Study participants discussed the value of this model of care being able to effectively care for patients across the lifespan including older adults with multimorbidity and complex presentations within their current budgetary constraints. For example, nurse practitioners optimize the role of each member of the interprofessional team to ensure during clinic hours of operation that time is used efficiently.

**Implications for Future Research**

Study participants confirmed that the nurse practitioner role within primary healthcare can be utilized to provide comprehensive, high-quality chronic disease management to patients. This study offers unique insights into the only model of care in Canada to currently allow for nurse practitioners to be the most responsible providers for patients with physicians in a consultation role. Nurse practitioners discussed the application of their expanded roles enabling them to appropriately diagnosis, prescribe medications, order diagnostic testing and complete specialist referrals when indicated. With evidence of the potential effectiveness of the nurse practitioner role for chronic disease management further research is required to contribute to this evidence.

Research should be conducted to explore barriers and facilitators to nurse practitioner role expansion and implementation of their role in chronic disease management. For example, a

comparative case study between the four different currently operating models within primary healthcare to identify and explore differences in nurse practitioner scope of practice and their roles in chronic disease management.

Research exploring the experience of nurse practitioner providers and interprofessional team members within NPLCs throughout Canada is needed to gain a better understanding of primary healthcare services offered in different geographic locations as primary healthcare services may differ between urban and rural settings. Additional knowledge related to the NPLC model of care can guide and inform providers and policy makers to address the challenges of managing chronic disease. Future research should continue to focus on the NPLC model of care to evaluate its effectiveness in providing primary healthcare to Canadians, the cost effectiveness of this model of care and the role of nurse practitioners as most responsible providers.

## Strengths and Limitations

This qualitative study is the first one, to our knowledge, to explore the experience of nurse practitioner providers caring for patients within NPLCs throughout Ontario with a focus on chronic disease management. An interpretive description study design allowed for in-depth understanding of the nurse practitioner perspective through semi-structured interviews. The study findings can help guide areas of primary healthcare where team-based approaches are used to effectively care for patients with chronic disease. These research findings are not generalizable but could be used to inform future quantitative survey studies completed on a larger scale. This study sample was limited to eleven nurse practitioners currently practicing in eight nurse practitioner led clinics in Ontario, which is not representative of most nurse practitioners working within primary healthcare settings.

## Conclusion

The government of Canada is currently focused on ensuring primary healthcare services are accessible, efficient, and high quality while also considering the most cost-saving approaches. The role of the nurse practitioner within primary healthcare has the potential to help with these requirements. Prior to this study there was limited knowledge available related to the nurse practitioner role in chronic disease management within the NPLC model of care in Canada.

The prevalence of chronic disease continues to increase across Canada presenting complexities for primary health care providers. Participants of this study provided insights into the current primary healthcare practices of nurse practitioners within this alternative model. Nurse practitioners discussed the benefits of interprofessional approaches to chronic disease management. Collaborating with members of multiple different health professions led to increased access, optimized scope of practice and comprehensive chronic disease related service provision. Nurse practitioner autonomy and unique skill set contributions were discussed by study participants and further demonstrated their ability to provide competent, safe, and effective care to patients with chronic conditions.

These study findings suggest the importance of increased access to primary healthcare services for Ontarians and highlighted the need for increased awareness of the NPLC model of care and nurse practitioner role in primary healthcare as it impacts chronic disease management. Increased integration of the nurse practitioner role within the Canadian health care system has the potential to positively impact patient outcomes and drive health care reform.

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# Appendix A

| Reference | Purpose of Study/Type/Methods | Sample Size | Results | Strengths/Limitations |
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| Heale, R., James, S., Wenghofer, E., Garceau M., 2018<br><br>Ontario specific | Evaluate organizational processes that influence quality of care for patients with multimorbidity at Nurse Practitioner Led Clinics<br><br>Interpretive description qualitative approach<br><br>Study participants completed semi structured interviews | 8 nurse practitioners | Recruitment and retention of nurse practitioners was identified as a challenge that impacted interprofessional team functioning<br><br>Benefit of NPLC model of care is increased access of patients to comprehensive primary healthcare services<br><br>Key feature of the nurse practitioner role in Canada has been 'the intake of vulnerable patients that say they are dealing with a chronic condition'<br><br>There is a lack of mechanism for nurse practitioners to address patients' socioeconomic concerns | Limited sample size selected from four NPLCs |
| Dahrouge, S., Muldoon, L., Ward, N., Hogg, W., Russell, G., & Taylor-Sussex, R., 2014<br><br>Ontario specific | Describe and examine the roles of nurse practitioners and family physicians within community health centers<br><br>Cross sectional study<br><br>Use of organizational survey | 53 full time family physicians<br><br>41 full time nurse practitioners<br><br>44849 patients | Family physician care model was represented by 53% of patient encounters<br><br>Nurse practitioner care model was represented by 29% of patient encounters<br><br>Shared care model was represented by 18% of patient encounters<br><br>Nurse practitioners saw more clients in vulnerable groups and more routine care on women and children | Data was collected in 2008 the NP role has evolved since then including increased scope of practice<br><br>Findings transferable to similar contexts within CHC<br><br>Not NPLC specific |

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| | Administrative data on patient sociodemographic | | Nurse practitioners had longer appointments due to salaried income rather that fee-for-service model of care<br><br>Nurse practitioners can provide primary care autonomously | |
| Heale, R., Dahrouge, S., Johnston, S., Tranmer, J., 2018<br><br>Ontario specific | Describe the characteristics of nurse practitioner practice in family health teams<br><br>Relationships between nurse practitioners and family physicians within the family health team model<br><br>NPAR data analyzed through cross sectional descriptive approach | 34 family health teams | Nurse practitioners saw clients of all ages for 1-5+ concerns per encounter<br><br>Nurse practitioners saw clients for acute, episodic, and chronic disease management issues<br><br>Patients with chronic conditions had more encounters with physicians<br><br>Nurse practitioners' full scope of practice should be allowed through policy changes | Only 2.9% of all primary health care NPs in Ontario from 2014-2015 were accessed through the limited number of family health teams |
| Russell, G., Dahrouge, S., Hogg, W., Geneau, R., Muldoon, L., & Tuna, M., 2009<br><br>Ontario specific | Assessed whether chronic disease management differed among four different models of primary health care delivery<br><br>Identify which practice organizational | 137 randomly selected primary care practices from four delivery models in Ontario | Chronic disease management was superior in CHCs<br><br>High quality chronic disease management was associated with the presence of a nurse practitioner<br><br>Quality care was associated with low patient-physician ratios and practices that had four or fewer full time equivalent physicians | Does not include nurse practitioner led clinic model of care |

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| | factors were independently | | | |
| | associated with high quality care<br><br>Cross sectional survey | | Organization and makeup of the primary care team influences the delivery of care quality | |
| Lukewich, J., Edge, D., VanDenKerkof, E., Williamson, T. & Tanmer, J., 2018<br><br>Ontario specific | Describe the distribution of health care providers within practices<br><br>The roles of nurses in each regulatory designation<br><br>Availability of various services<br><br>Availability of systematic patient management for various chronic conditions<br><br>Cross sectional survey | 13 sites in total<br><br>9 Family Health Teams<br><br>3 Community Health Centers<br><br>1 Nurse Practitioner Led Clinic | Nurse practitioners and registered nurses play important roles in delivering primary health care services related to chronic disease management<br><br>Majority of practices reported a process for systematic management and follow up for chronic diseases including hypertension, depression, heart failure, chronic pain, dementia, epilepsy, and osteoarthritis<br><br>All practices identified assisting patients with setting self-management goals<br><br>96% of practices identified having the tools to assist with lifestyle counseling and health education | Only one NPLC setting responded and data was excluded from final results to maintain anonymity<br><br>Extent of chronic disease management activity application was not captured in this study |
| Curnew, D., & Lukewich, J., 2018<br><br>Newfoundland and Labrador, New Brunswick, Nova Scotia, Prince Edward Island specific | Examine and synthesize existing evidence related to nursing roles and resources in primary care settings across Atlantic Canada<br><br>Scoping review | Twenty articles met inclusion criteria | Primary care settings with nurses had positive clinical outcomes, improved access to services and high patient satisfaction<br><br>Primary care practice environments have continued to evolve and promote nurse autonomy and nurse-led models of care | Much of the literature consisted of position papers and reports that did not clearly outline the sources and methods from which information was gathered |

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| | | | Interprofessional collaboration between physicians and nurse practitioners was evident in the literature<br><br>Clients received more education from nurse-led care interactions<br><br>Nurse practitioner roles within primary care focused on chronic disease management including diabetes, pulmonary disease, kidney disease, mental illness, and cardiovascular disease | Small sample sizes<br><br>Prince Edwards Island underrepresented |
| Keith, K., & Askin, D., 2008<br><br>Canadian specific | Examine the benefits of effective collaboration within healthcare teams, the role of the nurse practitioner within those teams and challenges of achieving collaboration<br><br>Grey Literature | | Full integration of the nurse practitioner role into the primary healthcare team is limited by role confusion, lack of title protection and variations in scope of practice<br><br>Nurse Practitioner roles within primary care can incorporate health promotion and disease prevention<br><br>Focus on health promotion and illness prevention will be required to improve health outcomes and conserve valuable healthcare dollars | |
| MacNaughton, K., Chreim, S., & Bourgeault, L., 2013<br><br>Canadian specific | Explores how roles are constructed within interprofessional health care teams<br><br>Comparative case study | 1 Family Health Team<br><br>1 Nurse Practitioner Led Clinic | Empowering team members to develop autonomy can enhance collaborative interactions<br><br>Interchangeable roles can lessen workloads, but also increase potential for power struggles | Limited generalizability<br><br>Findings are considered transferable to similar contexts |

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| | Interviews and non-participant observation of team meetings | | Each of the practices had nurse practitioners, registered nurses, registered practical nurses, dieticians, social workers, and pharmacists<br><br>Physicians and nurse practitioners were identified as the top of the healthcare hierarchy in each team | |
| Mian, O., Koren, I., & Rukholm, E., 2012<br><br>Ontario specific | Examine referrals of nurse practitioners providing primary healthcare to better understand how nurse practitioners collaborate with other healthcare professionals and contribute to interprofessional care<br><br>Data analysis of survey completed in 2008 | 378 primary care nurse practitioners | 69% of nurse practitioners made referrals to family physicians<br><br>67% of nurse practitioners received referrals from family physicians<br><br>89% of nurse practitioners made referrals to specialist physicians<br><br>Collaborative relationships were indicated through bidirectional referrals<br><br>Increased understanding and acceptance of nurse practitioner role in primary care | |
| Poghosyan, L., Liu, J., Norful, A., 2017<br><br>United States of America specific | Investigate the nurse practitioner role in care delivery within primary care with their own patient panels<br><br>Cross sectional Survey | 314 Nurse practitioners | 45% of nurse practitioners reported having their own patient panels<br><br>Community health centers had the highest rate of nurse practitioner led patient panels<br><br>Nurse practitioner roles within primary care vary with different models of care | Limits in generalizability |

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| | | | Evidence supports nurse practitioner ability to provide comprehensive primary care services<br><br>If nurse practitioners are not allowed to provide primary care services autonomously it is an underutilization of their role and limits the overall capacity of the primary care system | |
| Lukewich, J., & Edge, D., 2014<br><br>Ontario specific | Determine the roles of nurses working in primary care setting in Ontario<br><br>Which chronic disease management strategies have been implemented<br><br>Cross sectional survey | 359 total participants<br><br>73 NPs<br><br>218 RNs<br><br>58 RPNs | Chronic disease management strategy implementation was not uniform across health care practice settings<br><br>Nurse practitioners regularly participated in chronic disease management activities<br><br>Patients with chronic diseases place burdens on the Canadian healthcare system it becomes important to define the roles and functions of health care professionals to ensure that each category of care provider is being utilize to full potential<br><br>Chronic disease presentations continue to be addressed at emergency rooms highlighting the need for increased primary care access | Limits in generalizability due to low response rates<br><br>Only 3 responses from NPLC specific model of care |
| Laurant, Reeves, Hermens, Braspenning, Grol & Sibbald, 2014 | Evaluate the impact of doctor-nurse substitution in primary care on patient outcomes, process of care and | 25 articles met inclusion criteria | Doctors and nurses generate similar health outcomes for patients in primary care<br><br>Patient satisfaction was higher with nurse led care | Grey Literature was not searched<br><br>Small sample sizes |

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| | source utilization including costs<br><br>Systematic Review | | | |
| Hyer, S., 2019<br><br>USA specific | Examine the practice patterns of nurse practitioners related to weight management in primary care<br><br>Systematic Review | 15 articles were reviewed | Nurse practitioners discussed quality of life considerations more often than other providers<br><br>Successful integration of interdisciplinary team members was linked to successful chronic disease management<br><br>Clarification of nurse practitioner role required | |
| DiCenso, A., Bourgeault, I., Abelson, J., Martin-Misener, R., Kaasalainen, S., Carter, N., Harbman, P., Donald, F., Bryant-Lukosius D., & Kilpatrick, K., 2010<br><br>Canadian specific | Creation of nurse practitioner led clinic in Ontario<br><br>Integration of nurse practitioners in traditional fee-for-service practices in BC<br><br>Scoping Review | N/A | Both models offer quality care and cost-effective solutions to the primary care system in Canada<br><br>Lack of understanding about the NPLC model has created sustainability barriers<br><br>Nurse practitioner roles have been increased throughout Canada due to cost savings associated with increased access to care and patient care services provided<br><br>Nurse practitioners facilitate changes in the delivery of care, address patient self-management goals, links with other health resources in the community, provides comprehensive primary healthcare focusing on health promotion and illness prevention | |

| | | | | |
|---|---|---|---|---|
| | | | Patient surveys indicated high levels of satisfaction with care services received | |
| Mythbusters<br><br>Grey Literature<br><br>Canadian specific | | | A poll of 1000 Canadians found that:<br><br>1 in 5 has been treated by a nurse practitioner<br><br>Greater than three in four would be comfortable seeing an NP in lieu of their family doctor<br><br>Four in five feel that expanding the nurse practitioner role would be an effective way of managing health care costs | |

## Appendix B

## Recruitment Email

Email Script

Subject Line: Nurse Practitioner Led Clinic Research Study

To whom it may concern:

My name is Natalie Floriancic and I am currently a Master of Science in Nursing student at Western University. I am completing a project under the supervision of Anna Garnett, PhD and am contacting you as a member of the Nurse Practitioner Led Clinic Alliance.

The study we are conducting focuses on the Nurse Practitioner role in primary care and how chronic disease management is provided within a Nurse Practitioner Led Clinic model of care. We are seeking volunteers as participants in this study.

Participation in this study involves answering a series of questions regarding your experience providing services related to chronic disease management. Interviews will be conducted over the telephone and take approximately 45-60 minutes to complete. To thank you for your contribution to this study you will receive remuneration.

Participation is voluntary and you are able to withdraw from this study at any time prior to the studies publication date. Agreement to participate in this study will include agreement for the use of the collected data for future analysis in additional studies. Thank you for your consideration.

Sincerely,

Natalie Floriancic, RN, BScN
Research Assistant
Western University

# Appendix C

## Letter of Information and Consent

**Project Title:** Chronic Disease Management in a Nurse Practitioner Led Clinic: an interpretive description study
**Document Title:** Letter of Information and Consent – Nurse Practitioner
**Principal Investigator:** Anna Garnett
**Additional Research Staff:** Natalie Floriancic
**Funding:** Western Nursing Faculty Dean's Initiative

### 1. Invitation to Participate

You are being invited to participate in this study about chronic disease management within a nurse practitioner led clinic model of care. This invitation has been given to you due to your experience as a nurse practitioner within primary care in Ontario.

### 2. Why is this study being done?

The Nurse Practitioner Led Clinic model of care was introduced in Ontario in 2007 to provide primary health care services to vulnerable populations. This model of care has made prevention and management of chronic disease a priority. There are currently few studies published that are specific to this model of care and the role of the nurse practitioner as a most responsible provider. This study is being completed to better understand the impact of nurse practitioner led care and its effect on chronic disease management for patients.

### 3. How long will you be in this study?

Approximately 20 Nurse Practitioners will take part in this study. It is expected that as a participant of this study you will complete one in-depth telephone interview, which will take approximately 45-60 minutes to complete.

### 4. What are the study procedures?

If you agree to participate in this study, you will be expected to provide the research team with a preferred time of contact to complete one in-depth telephone interview. Participation in this study will require consent for telephone interview to be audio recorded. The telephone interview will include questions related to the chronic disease management services provided in a nurse practitioner led clinic.

### 5. What are the risks and harms of participating in this study?

There is a potential risk of breach of privacy when participating in this study due to collection of personal identifying information.

### 6. What are the benefits of participating in this study?

You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole. Review of the literature has identified the positive health outcomes associated with nurse practitioner led care and their ability to provide high quality care for patients with complex presentations. This study can provide further knowledge about the impact the nurse practitioner led clinic model of care has on chronic disease management for vulnerable populations in Ontario.

**7. Can participants choose to leave the study?**
If you decide to withdraw from the study this request can be made in writing by contacting the principal investigator Anna Garnett up to the date of study publication.

**8. How will participants' information be kept confidential?**
Representatives of Western University's Health Science Research Ethics Board may require access to your study-related records to monitor the conduct of the research. There is a risk of breach of privacy with the collection of personal identifier information.

We will collect your name and contact information (phone number and e-mail address), but this information will be kept separate from the study information. The study interviews conducted will be identified by numeric code. Information gathered by the research team from telephone interviews will be transcribed from audio recordings and kept secure through use of Veracrypt programming. All reporting will be done in a group format, so you will not be able to be identified. Anything that we find out about you that could identify you will not be published or told to anyone. Your identity will remain protected in any publications or presentations of the study results.

The researcher will keep all personal information about you in a secure and confidential location through Western's institutional server for at least 7 years. A list linking your study number/pseudonym with your name, phone number and e-mail address will be kept by the researcher in a secure place, separate from your study file.

After seven years the data will be anonymized and kept indefinitely. The data collected as a result of this research may be analyzed again at a later date as part of a secondary data analysis. If the results of the study are published, your name will not be used.

**9. Are participants compensated to be in this study?**
If you choose to participate in this study, you will be compensated for your time and contributions to the study with a $25 gift card of your choice upon interview completion.

**10. What are the rights of participants?**
Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your employment status. You do not waive any legal right by consenting to this study.

**11. Whom do participants contact for questions?**
Principal Investigator: Anna Garnett

Research Assistant: Natalie Floriancic

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics. This office oversees the ethical conduct

of research studies and is not part of the study team. Everything that you discuss will be kept confidential.

**This letter is yours to keep for future reference.**

## Letter of Consent

**Project Title:** Chronic Disease Management in a Nurse Practitioner Led Clinic: an interpretive description study
**Document Title:** Letter of Consent – Nurse Practitioner
**Principal Investigator:** Anna Garnett

**Additional Research Staff:** Natalie Floriancic

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

Yes ☐ No ☐

I consent to the use of unidentified quotes obtained during the study in the dissemination of this research.

Yes ☐ No ☐

I consent to the use of my data for future research purposes.

Yes ☐ No ☐

_____

_____ _____

Print name of participant Signature Date (DD/MMM/YYYY)

My signature means that I have explained the study to the participant named above. I have answered all questions.

| _____ | _____ | _____ |
| --- | --- | --- |
| Print name of person obtaining consent | Signature | Date (DD/MMM/YYYY) |

# Appendix D

## Interview Guide

Overarching Questions
Can you describe the demographic of the clinic you currently work in?
Can you describe the impact of social determinants of health on your patients?
What are some of the effects of chronic disease that you have seen from your patients living with these conditions?
Can you describe how your current scope of practice allows you to care for patients with chronic disease?
Can you tell me how you would ideally support a patient with chronic disease in your current health care setting?
Tell me about a time you felt you were able to provide effective care for a patient with chronic disease(s).
Can you describe one or two key factors that would facilitate the success of this model to support chronic disease management?
What is the composition of your team?
Is there anything that we have not captured during the interview today that you would like to speak to?
The Community *(mobilize community resources to meet needs of patients)*
Can you explain how you currently engage patients with community resources?
Can you describe how your organization addresses patient concerns related to food security?
Can you describe how your organization addresses housing concerns?
Can you describe how your organization addresses patient concerns related to employment security?
Can you explain how your organization addresses patient concerns related to mental health?
Can you describe how your organization addresses patients who are new to Canada without OHIP?
Can you describe how your organization addresses patient concerns related to childcare?
Can you describe your organizations use of internal or external support groups?
Can you describe your organizations current community partnerships?
Can you explain your involvement in community partnership development and maintenance?
Can you identify challenges or facilitators to ongoing community partnerships?
Can you describe a situation where a community partnership was beneficial to providing high quality client care?
Can you identify any current gaps in community resources?
Can you describe your organizations involvement in policy development or evaluation?
Can you describe how the current health system is meeting the needs of your clients with chronic disease?
Self-Management Support *(empower and prepare patients to manage their health)*
Can you describe how your organization enacts ‘patient centered care’?
Can you describe how your patients enact self-management?
Can you identify challenges to promotion of self-management of chronic disease for your patients?
Can you describe if there are language barriers present in your organization?
Can you describe a situation where a cultural barrier impacted your ability to care for a patient?

Can you describe in your role as a nurse practitioner why self-management is important for your patients?
Can you identify how your organization offers patients opportunities to build capacity?
Can you describe what patient education tools you use related to chronic disease management?
Delivery System Design *(ensure effective, efficient care and self-management support)*
Can you describe how your team works in collaboration for patient care?
Can you describe your current understanding of the term 'role confusion'?
Can you describe the current approach your organization takes when providing care for clinically complex clients?
Who currently makes up your multidisciplinary team?
Can you describe a situation where you experienced a barrier to providing chronic disease management care for a client?
Can you describe what scope optimization would be in your role as primary care provider nurse practitioner?
Can you tell me about the efforts of your organization to achieve cultural competence?
Can you describe your organizations approach to scheduling appointments for clients with chronic disease?
Health Systems *(create an organization that provides safe, high quality care)*
Can you describe your organizations approach to quality improvement?
As a nurse practitioner how do you enact leadership in your clinical practice?
What are the challenges you have encountered that impact your ability to enact leadership?
Decision Support *(promote care consistent with scientific data and patient preferences)*
Can you tell me about situations in your role as a nurse practitioner that you would consider referring a client to a specialist related to chronic disease management?
Can you describe how you apply evidence-based guidelines to inform your practice?
Clinical Information Systems *(organize data to facilitate efficient and effective care)*
Can you identify an electronic medical record system that your organization currently uses?
OTN
Can you describe your experience providing virtual care appointments?
Can you describe how technology has impacted the services you provide to clients with chronic disease?
Can you tell me about your experience of technology use within a primary care setting?
What would support your ability to provide care services?
Are your patients faced with obstacles related to technology access or use?

# Appendix E

## Demographic Questionnaire

These questions are about your background for statistical purposes only and will be used to describe the characteristics of the participants in this study.

1. Age: 21-25
   26-30
   31-40
   41-50
   51-60
   61+

2. What best describes your current gender identity?
   Male. Female. Other

3. What is the highest level of education that you have completed?

4. How many years have you been a practicing NP?

5. How many years have you been working in your current position?

6. Clinic Location:

# Appendix F

**Date:** 4 December 2020

**To:** Anna Garnett

**Project ID:** 116755

**Study Title:** Chronic Disease Management in a Nurse Practitioner Led Clinic: an interpretive description study

**Application Type:** HSREB Initial Application

**Review Type:** Delegated
**Meeting Date / Full Board Reporting Date:** 15/Dec/2020
**Date Approval Issued:** 04/Dec/2020
**REB Approval Expiry Date:** 04/Dec/2021

Dear Anna Garnett
The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from Western HSREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University HSREB operates in compliance with,and is constituted in accordance with,the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Patricia Sargeant, Ethics Officer on behalf of Dr. Philip Jones, HSREB Vice-Chair

***Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).***

# Curriculum Vitae

Natalie Floriancic

## Education

**MScN** Western University — September 2021
Supervisor: Anna Garnett
Committee Member: Dr. Lori Donelle

**BScN** Western University — June 2017
Graduated with distinction

## Professional Experience

**Registered Nurse**, Health Zone Nurse Practitioner Led Clinic — October 2017-Present

## Professional Affiliations

**Colleges of Nurses of Ontario**, 2017-Present
Active registration in the general class.

**Registered Nurses Association of Ontario**, 2017-Present
Active registration and professional liability insurance.