Sustainability Failures: The Challenge of Sustaining the NP Role and Other Innovations in Primary Health Care

by

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Abstract

Background: Sustaining innovations in health systems is a topic of increasing importance to stakeholders interested in creating sustainable primary health care (PHC) reform. The Nurse Practitioner (NP) role, a PHC innovation, was initially introduced in Canada in the 1970's and re-implemented with PHC restructuring in the 1990's. Despite extensive evidence that NPs are a cost-effective means to providing comprehensive, high quality care, the role is not optimized throughout much of Canada. Understanding the contextual, policy and decision-making factors that influence sustainability of the NP role and other PHC innovations is an important addition to the current literature.

Purpose: The purpose of this thesis was to examine the sustainability failure of a PHC innovation, an NP primary care clinic in Alberta, Canada.

Methods: This thesis combines three linked scientific papers: 1) a scoping review of peer reviewed and grey literature of clinic closures involving NPs, as well as the sustainability of PHC innovations and the NP role, 2) a theoretically informed critical analysis of NP funding models in Canada and 3) a single, exploratory case study of a NP primary care clinic closure in Alberta, Canada.

Findings/Conclusion: Findings demonstrate that there is a paucity of peer reviewed literature informing the sustainability of the NP role and other PHC innovations. Sustainability failures in our health system are due to deficiencies in provincial and national policies in flawed policy environments. New sustainability knowledge; an updated understanding of the sustainability of

innovations in PHC and a newly visioned conceptual framework for stakeholders to use when assessing sustainability of PHC innovations, have emerged from this work

Preface

This dissertation presents the method and findings of original research completed by Raelene Deanne Marceau (RDM) under supervision by her Chair and in collaboration with her committee. Three consecutive academic papers present a scoping review of the literature, a critical analysis of NP funding mechanisms and a single case study that examined the contextual, policy and decision-making factors that influenced the closure of a NP primary care clinic in Alberta, Canada. The thesis includes the following five chapters;

Chapter One: *Introduction*

Chapter 1 provides a detailed outline of the thesis, background and theoretical foundation supporting this research.

Chapter Two: *Sustaining Primary Health Care Programs and Services: A Scoping Review*

Chapter 2 presents a scoping review which is in press with Policy, Politics, & Nursing Practice. The scoping review was undertaken to inform the case study described in Chapter 4. Raelene Marceau (RM) was the lead author. Co-authors Kathleen F. Hunter (KFH), Tammy O' Rourke (TO) and Stephanie Montesanti (SM), the thesis committee, collaborated on the conceptualization of the review, provided guidance and expert opinion throughout the review process, and critically analyzed and edited the manuscript.

Marceau, R., Hunter, K., Montesanti, S. and O' Rourke, T., 2020. Sustaining Primary Health Care Programs and Services: A Scoping Review. *Policy, Politics and Nursing Practice*, In Press.

Chapter Three: *A Critical Analysis of Funding and Compensation Models: Sustainability of the Nurse Practitioner Role in Canada*

Chapter three presents a publication in process for the Journal of Nurse Practitioner. This publication describes a theoretically-informed critical analysis comparing Canada's current NP funding models. The analysis provides evidence of the need for future research to assist health care leaders, governments, funders and policy-makers in supporting multiple NP roles to meet the demands of a variety of patient populations. RM conceived and designed the analysis with

input from TO and KFH. RM performed the critical analysis and wrote the manuscript with expert guidance, input and edits from KFH, TO and SM.

Marceau, R., Montesanti, S., Hunter, K. and O' Rourke, T., 2020. A Critical Analysis of Funding and Compensation Models: Sustainability of the Nurse Practitioner Role in Canada. *Journal of Nurse Practitioners*, Manuscript in Preparation.

Chapter Four: *Sustainability Failures in Primary Health Care: The Case of an NP Clinic Closure*

Chapter four presents a draft manuscript in preparation for submission to Social Science and Medicine. This publication in process describes the methods and findings from a single case study examining a NP primary care clinic closure in Alberta, Canada. The case study provides an in-depth explanation of why the clinic closed, the contextual factors, the actors involved and the decision-making process that led to clinic closure. Lessons to improve understanding and better inform stakeholders about this sustainability failure and important concepts for consideration in sustaining the NP role and other PHC innovations are presented. RM conceived and designed the study and obtained ethics approval, with guidance and input from TO and KFH. RM, TO and KFH performed data analysis and RM wrote the manuscript with input and editing from KFH, TO and SM.

Marceau, R., Montesanti, S., O'Rourke, T. and Hunter, K., 2020. Sustainability Failures in Primary Health Care: The Case of an NP Clinic Closure. *Social Science & Medicine*, Manuscript in Preparation.

Chapter Five: Conclusions and Future Research

Chapter five presents a summary of the thesis findings and introduces a new conceptual framework, directions for future research and a knowledge dissemination plan is outlined.

Acknowledgments

What has felt at times to be a circuitous path is now coming to a close and the completion of my thesis is in a large part due to the contributions, help, support and patience of some pretty incredible humans – only some of whom I can mention here. With boundless gratitude and appreciation, I would like to extend a heartfelt thank you to my PhD Co-Supervisors Dr. Kathleen Hunter and Dr. Tammy O' Rourke. I am grateful for their steadfast encouragement and unshakeable faith that I could finish this journey. They are clinical and academic role models, scholars, innovators and creators. I am extremely lucky to have had their guidance, their willingness to share knowledge and their determined focus to get me through to the end. A sincere thank you to Dr. Stephanie Montesanti who climbed on board at the beginning as a core committee member, was so patient, supportive and provided an extremely valuable lens from which to view this research. Thank you to my fellow online doctoral 'cohort' friends for their online support, friendship and feedback.

To say the words 'thank you' to my family – it just doesn't seem like enough – those two words can't convey how incredibly grateful I am. To my husband and two children, my parents, my in-laws and my sisters…completing a PhD when you are from a small, rural, northern community requires an army of family members to help out. It requires re-arranging schedules, taking on the role of mom and dad, patience, understanding, and most of all it entails a huge amount of personal sacrifice. I may never be aware of all the sacrifices that have been made, especially by my children. I hope I have role-modeled that hard work, sacrifice and determination are worthwhile endeavors in achieving a goal and that lifelong learning is a valuable pursuit. Thank you to work colleagues. Thank you to best friends. In particular, those who encouraged me through the last final months with daily laughter and love. Thank you for the texts, phone calls, pep talks, the putting up with crankiness and stress; the changing schedules, missed weeks of work due to PhD commitments - together you all provided the support system I needed to bring this dissertation to completion.

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Chapter One: Introduction

The term sustainability is frequently mentioned as an important concept in all sectors of our health system, particularly in reference to sustainability of Primary Health Care (PHC).[1] Sustainability is best defined as "the appropriate balance between the cultural, social, and economic environments designed to meet the health care needs of individuals and populations. This leads to optimal health care outcomes without compromising the ability of future generations to meet their own health care needs".[1(p.13)] While there is a growing body of sustainability research, few studies have examined the challenges involved in sustaining innovations and which factors may ensure sustainability of innovations within PHC.[2]

A common sustainability challenge in Canada has been the Nurse Practitioner (NP) role, which was first introduced in the 1970's and re-implemented in the early 1990's in response to an expanded interest in PHC reform.[3] Several studies have examined the NP role and despite evidence of effectiveness and quality of care, barriers towards full optimization of the role and its sustainability remain at risk.[3] This thesis includes three scientific papers which describe the current state of knowledge in the topic areas of PHC innovation sustainability, Canadian NP funding models and examining sustainability failure in a case study exploring a primary care NP clinic closure in Alberta, Canada. Sustainability failures are influenced by variable provincial initiatives and policies, are particularly relevant in primary care and PHC reform, and the inability of PHC innovations to sustain themselves is an ongoing issue.

Evidence to better inform governments, funders and policy-makers on sustaining innovations in PHC is essential towards achieving a lasting vision of PHC reform. New knowledge, concepts and a conceptual framework to improve our understanding of sustainability of PHC innovations such as the NP role are presented in this thesis.

Background

Primary Health Care Research Focus

PHC research informs clinical practice, improves system performance and patient care, promotes critical thinking, encourages multidisciplinary collaboration and supports health.[4] PHC refers to a foundational approach and the provision of a broad range of services beyond Canada's traditionally funded medical and hospital services. PHC stresses the importance of health promotion, disease prevention and illness care and provides a framework for the delivery of coordinated and collaborative health services for individuals, families and communities.[5,6] Given that national and international bodies have increasingly stressed the importance of strong, comprehensive PHC as the foundation to an effective and efficient health system, it is important to engage in academic research that recognizes the importance of PHC principles and the policies of PHC renewal. This thesis uses a PHC lens and the term PHC is used to indicate a broader concept, a philosophy and model for improving health care.[5,7]

Sustainability of Canada's Primary Health Care System

Sustainability is the continued use of program components and activities for the sustained achievement of desirable program and population outcomes.[8] There are some nuanced differences among definitions of sustainability, but they all generally refer to the continued use of program components and activities beyond their initial funding period.[8–10] Despite long-term interest in sustainability of health care services, the study of sustainability has not developed into a widely utilized program of research and this understudied area has been identified as a significant translational research problem.[9]

Linked to sustainability is innovation, a new and novel idea that promotes a paradigm shift or practice change and has the potential to improve the quality of care and health service delivery. Expanding the scale up and spread of any innovation to achieve, sustainable, large-scale health system transformation remains an understudied area of research. The term scale-up commonly refers to the process in which the coverage and impact of an innovation are expanded to reach all potential beneficiaries. The term spread aims to communicate and implement an innovation, and usually involves adapting an innovation to a new setting. While, interest is

growing within health systems, to focus research on all three; the spread, sustainability and scale-up of any innovation, the focus of this thesis is on the concept of sustainability.

The term sustainability lacks clarity and there is some confusion due to variations in terminology, a lack of agreed upon measurement frameworks and methodological challenges in measuring the concept.[8] Research on the concept of sustainability can require several layers of data collection. This layered approach is required to capture the multiple components impacting the continuation of a PHC innovation and until recently, the sustainability field lacked a common set of definitions, research questions, measures, and conceptual frameworks.[8-11] In light of these conceptual challenges, little is known about the extent to which PHC innovations are sustained or whether their impact on health is maintained after the initial implementation.[9]

Current Canadian health care reform agendas prioritize the provision and sustainability of cohesive, comprehensive PHC services that are responsive to community and patient needs.[5,12] Primary care is usually the first point of contact with the health system and unsustainability of such services contributes to diminished access to health care and poorer health outcomes.[12] Primary care is typically the setting through which patients experience the tenets of PHC. Limited studies have examined the sustainability of PHC innovations in this context and very little is known about long term effects of successful planning and implementation, or the relative elements of sustainability of these services.[13-17] Inadequate funding dedicated to the evaluation of PHC innovations after initial implementation, challenges to ongoing surveillance and lack of validated measures, have further complicated the study of sustainability.[14,17] Stirman et al. suggest that more robust and targeted research, as well as ongoing evaluation, is necessary to better inform sustainability of PHC innovations.[17] The following section describes one PHC innovation, the Nurse Practitioner.

Sustainability of the Nurse Practitioner Role in Canada

The Canadian government recognizes the need to address challenges faced by our health system, as well as the need for an innovative and effective approach to continue to provide sustainable health services.[18] Despite reform recommendations, a continued lack of accessibility

to care, long patient wait-times and gaps in health services continue and Canada has made limited progress towards achieving operationalization of PHC principles.[18-21] PHC reform in Canada has been characterized by numerous small-scale pilot projects, ineffective advocacy of system wide change, and a failure to embrace progressive incremental changes.[19] This approach to reform has resulted in the introduction and implementation of PHC innovations positioned at the periphery of the system rather than as part of its core. For example, a highly cited PHC reform failure has been the integration of NPs in the Canadian health system.[3,18,21,22] Our failure in understanding how to sustain the NP role and other innovations in PHC ultimately continues to impact patient access to health services, patient outcomes and prevents much needed reform.[22-23]

In Canada, NPs possess an extensive body of knowledge and skills, they diagnose acute and chronic illness, prescribe medications and are accountable and responsible for their own professional practice.[20,23-25] NPs were first introduced into the Canadian health system during the 1960's; however, it was not until the early 1970s, during a nationwide physician shortage that NPs were officially recognized.[19,25] NPs provide health services in numerous positions and care delivery models across Canada and all ten provinces and three territories have legislation and regulations set out to support the role. [20,23-25] Despite an increase in numbers of practicing NPs in Canada as well as mounting evidence recognizing the value that NPs contribute to PHC focused change, the majority of Canadians still have no access to NP services.[19,25,26]

Several factors have been recognized as contributing to Canada's inability to unleash NP optimization as a PHC innovation. These factors include a lack of role awareness/clarity; a lack of funding mechanisms to sustain the role, and marginalization of the role across the country.[25-30,] The contributing root cause to these challenges are obstacles associated with the laws and conditions set out by the Canada Health Act (CHA). The act, which has been in existence since 1984, sets out conditions the provinces and territories must meet to receive federal health dollars and defines the principles of health care across Canada.[31] When the act was introduced in 1984, physician and hospital care were set as priorities and the language within the act reflected this by including Physicians and Dentists as the only health care providers eligible for reimbursement through our national health system. After extensive lobbying by the Canadian Nurses

Association, the inclusion into the act of the term "Health Care Practitioner", meant that health care providers other than physicians and dentists could be reimbursed. Despite the importance of this act, it is only a financial arrangement and as such, Canadian health care policy, including decisions about what services will be universally provided, how those services will be funded and who will be permitted to deliver services, is determined exclusively by provincial governments.[31]

There is near-universal agreement that CHA legislation is too vague to provide direction in terms of provincial and territorial health system policy options and the act itself may be restricting PHC reform.[31,32] Consequently, provinces tend to take a 'risk-averse' policy approach, which continues to support the same models of health service delivery across Canada.[31] Numerous calls for policy reform to enhance PHC restructuring have emanated from studies and well researched reports in Canada.[33] Yet most reform proposals have not been acted on in a substantial way and entrenched and outdated health policies continue to endure.[31] Lack of comprehensive, adequate funding through ongoing government financial support is the single most important obstacle affecting NP role sustainability and is blocking the NP role from becoming a substantive part of Canada's PHC strategy.[33]

Sustainability and Policy Failure

The failure to optimize and sustain the NP role across Canada is an issue of great concern. In this thesis, sustainability failure is defined as the breakdown in health care services or provision of health care that has the potential to harm or the ability to impede quality health care.[34] Related to sustainability failure is the concept of optimization. This term addresses challenges in health care by focusing on improving care, accountability, financial and resource management and transparency in order to build a sustainable health care system. Together, the terms optimization and sustainability provide the health care system the opportunity to improve clinical outcomes for patients, advance economic efficiency and address health policy issues in the delivery of care.[34] The interconnected concepts of optimization and sustainability, are

necessary to explore but beyond the scope of this research which focuses specifically on sustainability failure.

To better understand how to improve policy in the Canadian health system to sustain PHC innovations like the NP role, it is important to understand sustainability and policy failure.[34] There is no shortage of explanations for why a policy fails in normal health policy-making circumstances.[34] Early studies in policy failure focus on the cognitive limits of policy-makers as a factor which biases decision-making.[34] Other studies point to more structural factors such as routinization or institutionalization blocking innovation by restricting consideration of innovative alternatives.[34] More recent studies have combined the above behavioural and structural motivations, finding evidence that decision-makers often simply ignore trends, evidence and developments; they are risk averse, like to avoid failure and prefer to maintain the status quo.[34]

Policy failure is a concept that is challenging to define and, in many cases, it is unclear whether the policy has rightly failed. Howlett[33] states that a policy failure is considered to have occurred simply because a stated policy initiative did not correct or resolve a policy problem. Yet defining and understanding policy failure is rarely as straightforward as this definition suggests. For the purpose of this thesis, policy failure is categorized as a lack of evidence informed, supportive policy; a lack of policy response or inaction which does not correct or resolve a health system issue.[34]

Our failure in understanding NP role sustainability, as well as the sustainability of other innovations in PHC impacts patient access to health care, overall patient health outcomes and prevents much needed reform in PHC. This thesis seeks to explore the topic of NP role sustainability by examining Canadian NP funding models and the closure of a NP clinic in Alberta, Canada. The findings from this research are intended to further inform governments, funders and policy-makers about key concepts associated with sustaining the NP role and other innovations in PHC. The theoretical and policy analysis frameworks guiding this thesis are introduced below.

Theoretical Frameworks

Two frameworks are utilized in this dissertation: 1) the Policy Triangle Framework (PTF) by Walt and Gilson[36] and the Sustainability of Innovation Framework (SIF) by Fox, Gardner and Osborne.[35] The PTF scrutinizes the policy environment; what policies support decision making, the context in which decisions are made and the participants involved in the decision-making process (Figure 1-1). The PTF is used to support and strengthen the design and analysis of this research.[36] The SIF is used as a theoretical base for this thesis and examines the factors of sustainability (Figure 1-2). While this framework enhances understanding of the sustainability process, it was developed recently, has not been adequately tested, and does not comprehensively capture the environment where policy decisions are made

Policy Triangle Framework

The PTF, developed by Walt and Gilson, and analyzes the social, economic and political factors, which have influenced a policy-making decision. Walt and Gilson believe that health policy-making is an interactive process within special social-economic and cultural contexts where actors - individuals, groups and organizations - are at the center of this process. This framework stresses the importance of the process by which the policy was initiated, formulated, developed, implemented and evaluated, including the objectives of the policy, and the 'actors' involved in the decision-making process.[35] This simplified framework and approach to policy analysis assists researchers to understand and analyze health-related policies systematically.

Sustainability Innovation Framework

The SIF, merges the concepts presented by Greenhalgh and colleagues' systematic review of health service innovation,[37] and the Dynamic Sustainability Framework of Chambers, Glasgow and Stange.[38] This theoretical framework is suitable for the examination of sustainability of any PHC innovation and identifies five factors that impact sustainability. These factors are: political, organizational, financial, workforce and innovation specific and each factor has clear-cut questions and criteria used to assess sustainability of an innovation in PHC.[35]

Dissertation Objectives

This thesis was planned and is presented in manuscript format. Three manuscripts are provided in various stages from *accepted for publication (in press)* to *in preparation.* The objectives of this dissertation are the following**:**

Study #1: Scoping Review of the Literature

Identify and synthesize peer-reviewed and grey literature in order to understand the factors that influence clinic closures involving NPs in PHC, as well as the factors that influence the sustainability of PHC innovations such as the NP role.

Study # 2: Critical Analysis of NP Funding Models in Canada

Critically analyze NP funding models across Canada utilizing a theoretical framework to understand the current state of these models and provide future directions for governments, funders and policy-makers on achieving funding sustainability of the NP role.

Study # 3: Case Study Examining the Closure of a NP Clinic

Understand the contextual factors, the actors influencing, and the decision-making process of a NP primary care clinic closure in Alberta, Canada. A qualitative approach was used to obtain a comprehensive picture of a case to exemplify the sustainability failure of a PHC innovation. The overall aim of this work was to contribute to theory, knowledge and health policy development regarding sustaining PHC innovations including the NP role.

Methods

Study #1

The method used in Study #1 was a scoping review. In Study #1, 4 electronic databases were searched for peer-reviewed and grey literature related to three research questions. Our

search yielded 2550 articles. We included 24 peer-reviewed and grey literature articles in our final results that matched our review criteria.

Study #2

The method used in Study #2 was a critical analysis utilizing a theoretical framework. We provided an overview on the current funding models for NPs across all jurisdictions in Canada. This information was analyzed with the Sustainability of Innovations Framework by Fox, Gardner & Osborne.[35]

Study #3

The method used in Study # 3 was a single, exploratory case study. Data collected was in the form of semi structured interviews, documents and field notes. We conducted 18 interviews and collected 31 documents for analysis. Participants included health organization leaders, professional organization leaders, health care professionals and patients. Two frameworks; the Sustainability of Innovation Framework and Policy Triangle Framework were utilized to inform Yin's case study analysis approach as the study design.[35, 36, 39]

Researcher Positionality

An important characteristic of qualitative research is the researcher and the role they play in the research process. A researcher must acknowledge they are a human instrument and the primary research tool.[40] In the interest of full disclosure, this researcher acknowledges that their professional experience as a NP may bias the methodological approach and analysis. Therefore, utilizing a reflexive method, specifically, a reflexive journal, where the researcher logs the details of how he or she may have influenced each portion of the research design, was part of the study design. This approach to reflexivity sensitized the researcher to her prejudices while fully informing the research team of the impact of these influences on the credibility of the research outcomes.[40]

Ethics

This study was conducted with full compliance of research ethics, codes and practices established by the University of Alberta, Human Research Ethics Board. Ethical approval to conduct the study in Chapter 4 was received from the University of Alberta Research Ethics Board (Pro00087461).

Conclusion

In this chapter, the background, objectives, and rationale were provided. Subsequent chapters (2-4) contain the manuscripts that represent the outputs of this thesis. Each manuscript reflects the linked studies described in this chapter. The final chapter of this dissertation contains a summary of the findings, main conclusions drawn from each study, main limitations, contributions this research makes to knowledge, theory, practice and policy, and the next steps in the form of a knowledge translation plan for dissemination of the findings.

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Figure 1-1: Policy Triangle Framework[35]

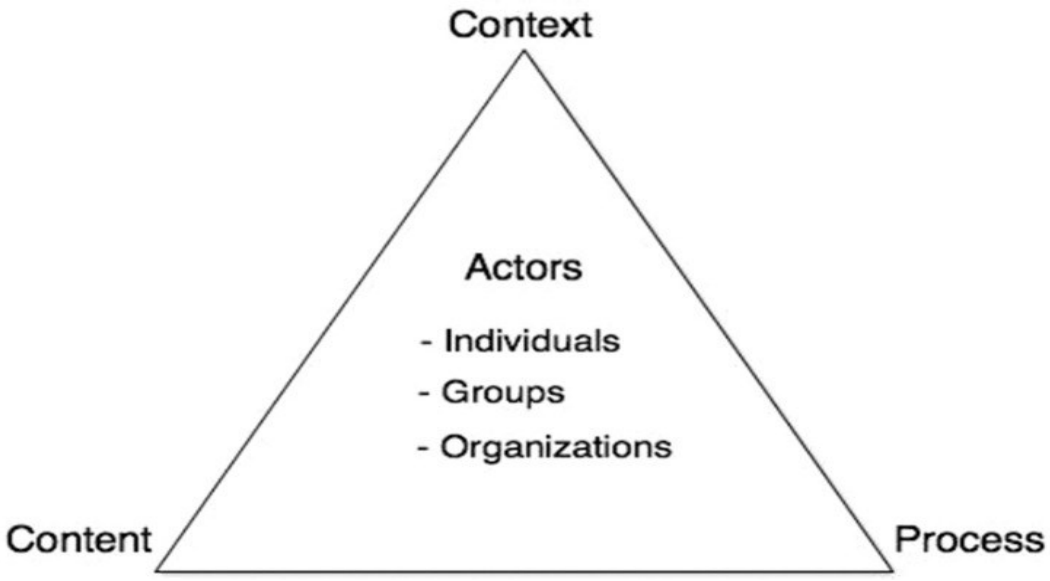
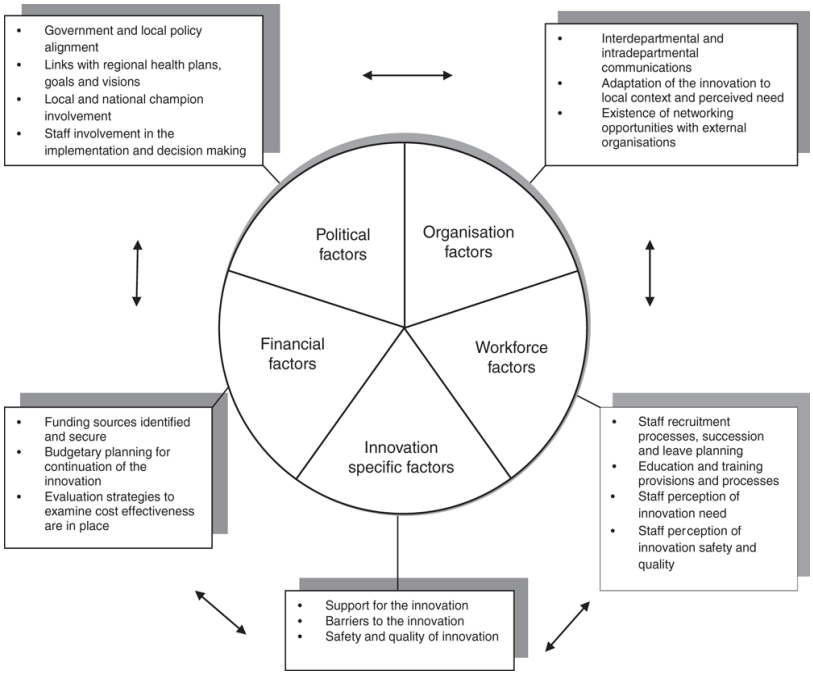


Figure 1-2: Sustainability of Innovation Framework[34]



Chapter Two: Sustaining Primary Health Care Programs and Services: A Scoping Review (Paper 1)

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Sustaining Primary Health Care Programs and Services: A Scoping Review Informing the Nurse Practitioner Role in Canada

Sustainability is an important concept in health care delivery, in particular when examining the principles of PHC and health care reform. Efforts aimed at restructuring Canada's health system have led to the introduction and implementation of numerous PHC programs and services, however, many of these are not sustained.[1] An example is the NP role, which was introduced in Canada in 1967 as a means of addressing the primary care (PC) physician shortage.[2] Utilization of the NP role has fluctuated over the past 40 years and although NPs are acknowledged as an important addition to the health care system, sustainability of the professional role remains at risk.[3] A scoping review was undertaken as part of a research project to examine the closure of an NP clinic in Alberta, Canada with the aim to explore evidence in three main areas: a) the factors which influence decisions to close clinics that include NPs; b) factors which influence the sustainability of PHC programs and services and; c) factors which influence the sustainability of the NP role in PHC. This review summarizes the state of the literature on sustainability of the NP role and other PHC programs and services and identifies existing gaps in knowledge to provide direction for future research.

Background

Primary Care and Primary Health Care

NPs were first introduced into Canada's health system to increase access to PC and to utilize their expertise in PHC service delivery.[4] PC and PHC are terms often used interchangeably, yet denote distinct entities and concepts.[5] For the purpose of this review, PC is defined as "as the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community".[6] In contrast, PHC is defined as essential health care with basic elements and objectives that help attain better

health services for all, is universally accessible to any individual at a cost the community can afford, and includes all areas that interact with health; such as social, cultural, environment, and lifestyle factors.[5,7,8] This scoping review will encompass a PHC focus on sustainability but will include PC as a necessary element to strengthen and enhance the exploration of all relevant literature.[7] To better inform sustainability of the NP role and other PHC programs and services in Canada, literature from Canada, United Kingdom and Australia were included in this review as these countries all have some form of publicly funded health care.

Sustainability in PHC

Sustainability, in the broadest sense, has been defined as the ability to maintain, uphold or support something at a certain level for a long period of time.[1] A comprehensive definition consolidates new and emerging constructs to advance a definition in which sustainability occurs after a defined period of time, when a program or implementation strategy continues to be delivered, involves individuals or organizations whose behaviour is maintained, and may evolve or adapt while continuing to produce benefits for individuals and systems.[9]

Discussion about program and services sustainability often arises within Canada's health care system in reference to PHC reform and understanding how to address sustainability issues is "one of the most significant translational research problems of our time"[9 (p.1)]. However, not all programs and services are sustainable, even with excellent research and evidence. Efforts aimed at restructuring Canada's health system have led to the introduction and implementation of new PHC programs and services, for example, utilization of the NP role. However, little is known about whether, or for how long, many of these programs and services are sustained.[1] Coupled with a rapidly changing health policy environment, the lack of coordinated effort to study PHC programs and services, contributes to a limited understanding of sustainability and seriously compromises Canada's ability to achieve meaningful PHC reform.[1]

Primary Health Care Reform and the NP Role

NPs are essential health professionals with advanced education, such as a Master's or Doctoral degree.[10,11] In Canada, NPs possess a wide range of knowledge and skills, diagnose acute and chronic illness, prescribe medications, and are accountable and responsible for their own professional practice.[10,11] In the mid-1990s to early 2000s, amidst the call for major PHC reform, the use of NPs was identified as a means to improving access to cost-effective, high-quality health care. It was during this time that all Canadian jurisdictions launched a variety of new PHC-focused programs and services that included NPs and each jurisdiction developed their own legislation and regulation for the NP role.[3,4,10,11] In 2010, there were 2,486 NPs practicing in Canada, up from 1,129 in 2006, and in 2018, there were over 5,000 NPs across the country.[12]

Despite this growth, a number of obstacles continue to challenge the sustainability of NPs in Canada.[3,10,11] These obstacles include an absence of policy to support sustainable funding, a lack of role awareness by patients, providers, and policymakers; marginalization of the role by corporations, physician associations and government organizations; and a lack of standardization of the role across all jurisdictions.[3,13,14] PHC programs and services that include NPs have also been erratically introduced and in most jurisdictions the establishment of the role has occurred in a 'piecemeal' fashion with no overarching strategy or long-term funding solution in sight. [3,4,11,14] A comprehensive review of the literature on the factors supporting or adversely influencing NP role sustainability is needed, has the potential to further inform governments and policymakers about PHC programs and services and could stimulate action and change towards health system transformation.

Methods

Arksey and O'Malley's (2005) scoping review method was chosen to guide this review, map existing literature and identify research gaps.[15] This method enables examination of all applicable literature regardless of study design. There are five stages in the methodological framework: (a) identify the research question(s), (b) search for relevant studies, (c) selection of

relevant studies, d) analysis including charting, collecting and summarizing the data, and e) reporting the results .[15] This five-stage format adopts a rigorous process of transparency, enables replication of the search strategy and increases the reliability of the study findings .[15] In addition to peer reviewed articles, we elected to include news articles and media items as part of this review to deepen our understanding on the scope of NP clinic closures that may not have been captured by research studies.

Stage 1: Identify Research Questions

For the purpose of this review, three research questions were formulated to guide the review. What is known about the factors, which influence the closure of clinics specifically using NPs? What is known about factors, which support and/or adversely influence the sustainability of PHC programs and services? What is known about factors, which support and/or adversely influence the sustainability of the NP role in PHC?

Stage 2: Identifying Relevant Studies

The key terms *clinic, closure, nurse practitioner, primary health care, primary care and sustainability,* were expanded to include *Canada, United Kingdom and Australia* as it was felt these countries had a parallel experience with implementation of the NP role in PHC. Since PHC is a term not routinely utilized in the United States (U.S.) as defined in this review, it was not included as a key term. The key terms and synonymous words were then used to guide the search strategy. Databases MEDLINE, CINAHL, ACADEMIC SEARCH COMPLETE and HEALTH POLICY REFERENCE CENTRE were chosen for comprehensiveness. A search of the grey literature was conducted over the same period using the databases Canadian Newsstream, News and Newspapers, News, Policy and Politics Magazine, and Google/Google Scholar search engines.

Inclusion and Exclusion Criteria

Studies, newspaper articles and media items were eligible for inclusion if they addressed the chosen key terms. Both PHC and PC were utilized as key terms as they are often used interchangeably within the health literature. A publication date limit of 1990 to 2019 was set for the database and grey literature search to obtain the most up to date evidence and to assist with further narrowing of the search results .[15] English only limits were set to represent key term countries with similar NP experiences. Studies were excluded if they were outside limit dates, did not contain key terms, were non-English and focused on: hospital closure, private clinic or abortion clinic closure and clinic closure due to physician shortage. Studies using the terms environmental/ecological sustainability, sustainable development (or development goals) and use of any term or designation for the NP role other than nurse practitioner, were also excluded (Inclusion/Exclusion Table 2-1). Relevant peer reviewed studies of any study design were sought, as well as any applicable editorial, letter, policy brief, newspaper article, interview or media item from the grey literature search. The purpose of searching the grey literature, defined as research that is either unpublished or has been published in non-commercial form, was to minimize bias, to create a broad evidence base, and to integrate a complementary perspective utilizing mainstream and peer reviewed publications.[15]

Stage 3: Selection of Studies

A total of 2,550 citations (duplicates excluded) were retrieved, with one author (RM) initially screening by title. Non-relevant items were removed, leaving a total of 215 potential relevant items. Subsequently, these items were screened by two authors (RM, KH), first by abstract (if available), yielding 76 articles after non-relevant items were removed. All applicable articles were then given full-text review by two authors (RM, KH). Each full-text article was evaluated for relevance according to the inclusion and exclusion criteria. Reference lists of included studies were hand searched, with two additional relevant peer reviewed studies identified. A total of 24 articles (2 primary studies, 2 systematic reviews, 20 news items) met the inclusion criteria and were included in the review (See Figure 2-1). As our intent was to map

both the research and grey literature to inform our understanding and answer our questions, we did not undertake a quality appraisal.

Stage 4: Charting the Data

Summary tables were created to chart the data for both peer reviewed and grey literature sources, and data from the sources was extracted to the tables. The tables were analyzed for commonalities addressed in the sources, and grouped into three main topic areas.

Results

This scoping review explored the existing literature concerning three research questions. The results provide a description of the evidence from the three research questions and are divided into results for NP clinic closures, sustainability of PHC programs and services and sustainability of the NP role in PHC.

NP Clinic Closures

There is a lack of published, peer reviewed evidence to better understand clinic closures specifically using NP services, despite numerous newspaper articles and one media source detailing clinic closures in the grey literature (n=20). [16–35] (See Table 2-2). These sources include newspaper articles and a radio interview transcript, and are described in further detail below. Most clinics that included NPs were recorded as closed due to lack of funding (n=15),[16–30] and/or funding termination (n=1).[31] Other reasons cited for closure include patient underutilization (n=1),[32] and clinic mismanagement (n=1).[33] In two of the sources, the rationale for clinic closure was indiscernible.[34,35]

Sustainability of PHC Programs and Services

There is limited peer reviewed literature pertaining to sustainability of PHC programs and services and the existing evidence is poorly developed. A total of five sources pertaining to the sustainability of PHC programs and services were included, all were peer-reviewed articles. [36–39] (See Table 2-3). Of the four, two were systematic reviews.[37,38] The other two include a longitudinal evaluation of PHC service sustainability,[36] and a discussion paper outlining a systems-based solution to PHC sustainability.[39]

Buykx et al[36] used a mixed method, longitudinal design to explore how one PHC service proactively managed change to achieve sustainability. These authors identified six factors influencing sustainability; alignment with government policies, assessment of service performance, maintaining engagement with the local community, maximizing opportunities for alternative funding, initiating workforce succession planning, and actively partnering in research and evaluation designed to ensure quality improvement.[36] Sustainability success did not occur as the result of any one key success factor, but rather through proactively seizing opportunities to strengthen the service and implementing practical responses to risks and threats.[36]

Gruen et al[37] described the degree to which PHC program sustainability is dependent on system connectivity and alignment.[37] Unsustainable PHC programs were the result of an imbalance in the system, represented by misalignment/disconnection between population health, programming and the program administrators. Well-designed PHC programs are vulnerable to withdrawal of funding or community support if stakeholder facilitation is neglected, however, PHC programs that recognize and respond to the needs of key stakeholders at the cost of commitment to health improvement will likely to run out of support. Ultimately, a comprehensive approach to PHC program sustainability is based on the availability of research that would benefit policymakers, funders, and program managers.[37]

Lennox et al[38] acknowledge that the sustainability research ‘landscape’ is fraught with frameworks, models and tools to support and monitor sustainability, yet there is little direction to guide this area of research. This systematic review aimed to identify approaches available to assess and influence sustainability in health systems and to describe the different perspectives,

applications, and constructs within these approaches to guide their future use. Study findings revealed that selecting a sustainability method poses a challenge because of the diverse approaches reported in the literature. Based on these findings, a consolidated framework for sustainability in health care was developed as a resource and tool for researchers, health care professionals and improvement practitioners.[38]

Wakerman and Humphreys [39] also suggest that more research and evaluation is necessary to better inform sustainability of PHC services.[39] From their synthesis of evidence on remote and rural PHC services in Australia, a system-based solution to PHC sustainability was suggested as necessary. Achieving sustainability requires a proactive approach including alignment of health organizations; collaboration amongst health care providers, researchers and consumers; and strong association with the external policy environment.[39]

Sustainability of NPs

Despite a thorough assessment, no peer-reviewed or grey literature sources were selected pertaining to sustainability of the NP role in PHC and there is no evidence to improve understanding on sustainability of NPs in PHC.

Discussion

The key findings of this review include: (a) a lack of published, peer reviewed research to advance the understanding of clinic closures specifically using NPs, despite numerous newspaper articles and one media source detailing clinic closures in the grey literature, (b) limited evidence from peer reviewed research pertaining to sustainability of PHC programs and services, and (c) a lack of peer reviewed, published research informing sustainability of the NP role in PHC is identified.

The subsequent discussion summarizes the results to provide a comprehensive overview of what is known about the state of the literature regarding clinic closures specifically using NP services and sustainability of PHC programs and services, including the NP role. It also draws

attention to prominent gaps in the literature with consideration given to the implications and limitations of this review.

Knowledge Gaps

Although a significant number of sources were assessed in this scoping review, the vast majority of selected sources were from the grey literature. As a result, this review revealed several knowledge gaps. Given the number of clinic closures detailed in popular media sources, as well as the dearth of applicable peer reviewed studies, a lack of rigorous research to broaden understanding on clinic closures is apparent. Multiple news items indicate clinics with and without NPs close frequently. However, there are no peer reviewed published studies that addressed the closure of a clinic specifically using NP services or the closure of clinics utilizing NPs. The lack of substantial evidence on clinic closures suggests that understanding the factors which influence these closures has yet to be explored and such research has potential to support PHC advancement and a more evidenced-informed health policy process within Canada.[1]

There was no literature which articulated a comprehensive, well-defined sustainability definition applicable to PHC and it is recognized the lack of standard, comprehensive sustainability definitions and the use of a wide variety of synonyms, is a significant issue in this area of study.[9] The discrepancy in the use of the term sustainability results in ambiguous understanding of the word, impacts the health policy process and impairs the ability of organization, policymakers, practitioners and researchers to understand how to support programs and services in PHC reform.[9]

This review further confirms a gap in research specific to sustainability of PHC programs and services and the literature on this topic is "fragmented and underdeveloped.[40] There is also scant information on the unintended consequences of sustainability in PHC, which priorities are favored, why some services are sustained and how long a service must remain to be considered sustained.[38–42] Limited funding for examining PHC programs and services after initial implementation, challenges to real-time surveillance and lack of validated measures, make the study of sustainability in PHC complex and difficult.[40,41]

The literature addressing sustainability of the NP role is limited, not explicit to PHC and focuses on discussing the prevailing barriers or strategies to enhance sustainability of the NP role. It does not advance a definition of sustainability that is inclusive and aligned with the NP role in PHC and does not discuss sustainability of the NP role within the context of health policy or PHC reform. The literature also demonstrates a lack of prospective, theoretical and evaluative research on NP role sustainability in PHC, and the paucity of research examining sustainability of the NP role in PHC raises "important questions about this little explored field". [43-45] Consequently, the above strategies require further examination and evaluation to advance NP role sustainability within Canadian PHC reform.[44]

Implications for Future Research

Further research is required on clinic closures specifically using NP services. This area of study could contribute to informing and improving the sustainability of the NP role by examining the reasons for closure, the implications of closures on the health of communities and patients, and the impact on health care professionals and organizations. [36–41] It is equally crucial for organizations, policymakers, and funders to engage in the knowledge generation process when a clinic closes. As evident in the grey literature, clinics close frequently, yet all too often there is no review, evaluation or investigation conducted post closure. The generation of this type of post clinic closure knowledge could have a significant and valuable impact on the Canadian health policy process, could assist with advocacy for NP role sustainability and enhance PHC reform.[36,37,39,41]

With no clear consensus on how to define or influence sustainability and little overarching direction for research, it is clear there is also a substantial need for research specifically focused on sustainability of PHC programs and services.[38] This research should emphasize a definition of sustainability that builds on a standard explanation explicit to PHC and addresses the structures and challenges of this setting. [9,40] Researchers must use frameworks, tools and models which advance the sustainability of PHC programs and services, are the most appropriate for their projects, include multi-level measurements of sustainability and allow for greater methodological

rigor and interpretability of findings.[40] Work in this area of research is evolving, and sustainability frameworks and models exist within the literature; however, there is a risk in continually creating 'novel' approaches with similar constructs divided by semantics and individual interpretations. [37,38,44,46–48] Thus, researchers should take in account the literature and available frameworks/models before 'reinventing the wheel'. Continuous production of new frameworks/models may lead to further division and confusion in the literature resulting in fewer robust studies on sustainability in PHC.[38]

An important opportunity exists to examine clinic closures and the concept of sustainability together, where one could inform and impact understanding of the other. Studies examining sustainability in health systems and PHC are an emerging science and there is no peer-reviewed literature on clinic closures. The intersection of this research may have several benefits; first, most studies have measured sustainability at a single point in time and masked a potentially dynamic phenomenon[38,40] Studying why a clinic has closed and assessing the concept of sustainability over several years rather than at a single time point can capture important information and further develop the PHC sustainability field. Second, combining the two areas of research also has the potential to influence health care organizations, practitioners, policymakers and funders in decision making about future PHC programs and services and their sustainability.[38,40,42]

Given the paucity of published research on sustainability of the NP role in PHC it is important to correlate research findings. A deeper exploration and examination of sustainability of the NP role happens through connection and correlation with other PHC sustainability studies, further enhancing and informing the sustainability of each. Sustainability of the NP role in PHC is complex and is best understood through the use of an evaluative, theoretical framework or conceptual model to structure research questions; more operational definitions with clear measurement guidelines for sustainability; and more robust designs and rigorous methods for testing sustainability concepts. This is an important future step and is crucial towards building a solid evidence base for organizations, policymakers and funders to further support NP role sustainability.[49]

The topic of NP role and PHC programs and services sustainability is at an early stage and more robust research informed by theory, is required to continue to expand knowledge in this field.[49] For too long, sustainability has been a concern only at the "tail end" of the implementation process and thus, is insufficiently addressed.[49(p12)] Continued efforts are needed to bridge the work in the PHC sustainability field, consolidate what is known, identify unanswered research questions, and formulate a plan for accelerating an evidence base to sustain PHC focused programs and services such as the NP role.[49]

Strengths and Limitations of the Review

This review provides improved understanding of the paucity of research on the topic of sustainability of the NP role and other PHC programs and services. A comprehensive approach to this review was taken and includes utilizing two full article reviewers, developing a search strategy in consultation with a librarian, and searching for broad literature from an inclusive group of databases. This approach added rigour to the scoping process and as such, serves as its strength. Despite rigour in the scoping process certain limitations are evident. Scoping reviews offer a distinct opportunity to retrieve and scan a broad range of literature to answer research questions. One potential limitation is that by searching the titles, abstracts, and subject headings only, we may have missed relevant papers. The second limitation is the challenge of comparing literature across countries and health systems. Canada, the UK and Australia all have parallel NP experiences in PHC. The U.S. was purposefully left out of the search due to its divergent health system and focus on PC. Including the key term U.S. in the review would have yielded more information and results but is not as reflective of the NP role in PHC as the other selected countries. The third limitation is that only English-language sources were retrieved and reviewed. This was due to the English-speaking nature of the countries selected as part of the inclusion criteria for the review, as well, the limited resources for translation services. Lastly, while the processes described in this paper are sufficiently transparent to allow the research to be replicated, the quality of the articles examined was not evaluated as per the procedure of a scoping review.[15]

Conclusion

The paucity of literature on clinic closures, and the literature on sustainability of the NP role and PHC programs and services, is in its nascent stage. This review finding emphasizes the need for more robust examination to improve our understanding of the contextual factors which influence clinic closures that involve NP services and thus impede the sustainability of PHC programs and services led by NPs. The pattern of PHC initiatives being generated, implemented and often un-sustained continues at great cost to the health care system.[1,48] It produces an even greater cost to patients, whose access to care and overall health outcomes can be significantly affected. It is important to recognize that these topic areas, when better informed through theoretically driven research, have great capacity to support and advance necessary health system reform.

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Table 2-1: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
• Primary research reports published in peer - reviewed journals of any study design that were relevant to the research questions. • Relevant reviews (systematic, scoping, integrative, narrative) published in peer reviewed journals • Relevant policy documents from the included countries • Relevant editorials, briefs, interviews, policy documents, interviews, newspaper and any other media article. • Dates: 1990-2018 • English Only • Canada, US, Australia, UK	• Study dated before 1990 • Any other country other than those listed in inclusion list • Non English studies and articles • Published reports, relevant reviews, policy documents, editorials, briefs, interviews and newspaper articles which focused on the following: • Hospital Closure, Conversion or Consolidation. • Hospital or clinic closure due to physician shortage, physicians leaving or difficulty recruiting physicians. • • Literature that focused on environmental/ecological sustainability, sustainable development (or development goals). •

• Use of the term Nurse Practitioner, clinics, closure, primary health care, primary care and sustainability.	• Use of any term or designation for the Nurse Practitioner role other than Nurse Practitioner (Advanced Practice Nurse, Clinical Nurse Specialist) • Private Clinics, Abortion Clinics

Table 2-2: Summary of Clinic Closure Grey Literature Articles (Google, Google Scholar, Canadian Newsstream, News and Newspapers, News, Policy and Politics)

Author	Setting	Source	Key Points Addressed	Comments
Arensen (2016)	Winnipeg, MB, Canada	Newspaper Article Winnipeg Free Press	● Winnipeg Regional Health Authority closing 4 Quick Care Clinics and a Primary Care Clinic staffed with Nurse Practitioners stating 'to save money' was the cause of closure.	● The factors which impacted clinic closure are lacking. ● Stakeholders, providers and patients were not consulted prior to the decision being made.
Bruineman (2001a)	Barrie, ON, Canada	Newspaper Article The Examiner	● North Innisfil Health Services Clinic in Barrie, Ontario faced closure without cash infusion of $450,000.	● An interesting funding approach to seniors' care but one that was ultimately not sustainable. ● No answers as to why it was not sustainable.

Author	Setting	Source	Key Points Addressed	Comments
			● The provincial government provided the clinic with temporary funding which runs out in mid-November. ● The clinic is a family practice designed for seniors and is staffed by a doctor and nurse practitioner who work on salary. This allows them to spend more time with their older patients, who generally require more attention.	● First article about Sandy Cove Clinic closure
Bruineman (2001b)	Barrie ON, Canada	Newspaper Article	● Article mentions senior's family practice closing. Both NP and Physician	● This is the second article about the closure of the Sandy Cove Clinic.

Author	Setting	Source	Key Points Addressed	Comments
		The Examiner	funded by government and salaried wages.	
Carter (2015)	Prince George, BC, Canada	Newspaper Article, Prince George Citizen	• Dawson Creek Medical Clinic set to close. • Lone physician is retiring. • Nurse Practitioner also at this clinic has to leave.	• Questions arise as to why clinic sustainability was not maintained with the NP once the physician retired. • There was a lack of information on why the NP had to leave and was it due to funding cuts or personal choice.
Conrad (2015)	Okotoks, AB, Canada	Newspaper Article Okotoks Western Wheel	• Closure of the Sheep River Nurse Practitioner Clinic. • No funding model in place to fund NPs and keep clinic open.	• Lack of funding model for NP practice at issue.

Author	Setting	Source	Key Points Addressed	Comments
Hutton (2013) Niagara This Week	CAN	Newspaper Article	● Niagara Nurse Practitioner clinic closing. ● The Ministry of Health is shutting down the clinic in the wake of a forensic audit which found evidence funding for the clinic provided by the Ministry had not been spent appropriately.	● Mismanagement of funding at issue.
Gilchrist (2005a)	Peterborough, ON, Canada	Newspaper Article, Peterborough This Week	● 1st Article on Greater Peterborough Health Care Alliance NP Clinic (and a peds clinic) written a month before a scheduled closure.	● Lack of information as to whether this was a pilot project and how the clinic was funded.

Author	Setting	Source	Key Points Addressed	Comments
Gilchrist (2005b) (2005b)	Peterborough, ON, Canada	Newspaper Article, Peterborough This Week	• 2nd Article details Greater Peterborough Health Care Alliance NP clinic closure 1 week before scheduled closure and transfer of patients to potential family health teams.	• Same clinic as above. Lack of information as to whether this was a pilot project and how the clinic was funded.
Guest (2012)	Australia	Radio Interview Transcript	• Interview to discuss why the nation's first stand-alone nurse practitioner clinic is closing and reverting to a traditional GP model. • Access to funding rebates for NPs in Australia is limited and the NP clinic was not	• This article points out that funding remains one of the main barriers that exist for NPs and one of the huge roadblocks to sustainability of the role.

Author	Setting	Source	Key Points Addressed	Comments
			profitable compared to a physician funded clinic.	
Herhalt (2015)	Kitchener, ON, CAN	Newspaper Article, Waterloo Region Record	● Primary Care Clinic located at Grand River Hospital closing and NP position will be cut. This is due to more medical residents graduating in the area so there is less of a need for clinic and NP position. ● A satellite clinic in downtown Kitchener greatly improved access to care and was given as a reason for closure.	● Physician in the article states that "NP will be able to apply on a comparable position"
King (2005)	Peterborough, ON, Canada	Newspaper Article,	● 3rd Article from a different Newspaper about the Greater	● Greater Peterborough Health Care Alliance NP Clinic (same clinic as 2 others

Author	Setting	Source	Key Points Addressed	Comments
		Peterborough Examiner	Peterborough Health Care NP Clinic. Written a month before scheduled closure	above). Lack of information as to whether this was a pilot project and how the clinic was funded.
Kovach (2001)	Peterborough, ON, Canada	Newspaper Article Peterborough Examiner	• Clinic employs a nurse practitioner and support staff. It provides medical care to more than 3,000 people in the community who have no family doctor. • There's no money left to run the clinic past January. • MPP Gary Stewart places blame on federal government and there is no word if province will kick in funding.	• Another article detailing ending of funding for NP Clinic.

Author	Setting	Source	Key Points Addressed	Comments
"Looming Walk-In", 2015 The Morning Star	Vernon, BC, Canada	Newspaper Article, The Morning Star	● Vernon Walk in Clinics to close due to shortage of physicians and lack of funding for nurse practitioners. ● Owner of Walk In Clinics proposes that BC health needs to recruit more doctors and provide funding for nurse practitioners.	● Owner of the walk in clinics identifies the need for more NPs
Marchen (2001)	Peterborough, ON, Canada	Newspaper Article. Peterborough Examiner	● Funding dilemma may close a NP clinic in Havelock-Belmont-Methuen.	● Article detailing a funding issue as reason for potential NP clinic closure.
McEacheran (2002)	Pictou West, Nova Scotia	Newspaper Article	● Primary care pilot project draws to a close	● This article highlights how one community, through a

Author	Setting	Source	Key Points Addressed	Comments
		Evening News	in Pictou West, Nova Scotia. It is in its final year of funding. ● Community now better understands what a nurse practitioner does.	NP primary care project, began to understand exactly what NPs do. ● Questions arise as to why this pilot project was not sustainable.
Punch (2005a)	Peterborough, ON, Canada	Newspaper Article Peterborough Examiner	● 4th Article on Greater Peterborough Health Care Alliance NP Clinic ● 2,400 patients (1,700 children) could be without primary health care if the health unit follows through on plans to close two nurse practitioner clinics. ● Health Centre Chair states 'we're not in a position to actually fit	● This article is dated from 2005 and Health Centre Chair notes that they may be getting close to fitting NPs into the system, yet years later the same issues still exist.

Author	Setting	Source	Key Points Addressed	Comments
			nurse practitioners immediately into the system. We think it's getting close. Hopefully the solution is not too far away,' ● Funding is not flowing to the clinics due to logistical issues. The Ministry is not responding effectively to the community.	
Punch (2005b)	Peterborough, ON, Canada	Newspaper Article Peterborough Examiner	● 5th Article on Greater Peterborough Health Care Alliance NP Clinic Closure	●
Ramsay (2013)	Barrie, ON, Canada	Newspaper	● After being open once a week for two years, the	● This was a nurse practitioner led clinic that was closed due

Author	Setting	Source	Key Points Addressed	Comments
		Article, Barrie Advance	Elmvale nurse-practitioner led clinic has closed. ● The closure was due to a staffing shortage and underutilization of the clinic backs up the decision.	to a staffing shortage and underutilization. The article does not mention any consultation with stakeholders or patients prior to the clinic being closed.
MEI, 2016	Ottawa, ON, Canada	Newspaper Article Canada Newswire	● Quebec's Health Department is senselessly blocking the opening of clinics run by nurse practitioners who specialize in front-line care. ● These doctor-less super clinics would respond to real needs among the	● This article is an example of the barriers that continue to exist for NPs. In this situation/article it is not clear why the Quebec Government is blocking the opening of these clinics.

Author	Setting	Source	Key Points Addressed	Comments
			population, access to front-line care being one of the main failings of Quebec's health system. ● Moreover, a nurse practitioner costs the health care system around 1/3 of what a general practitioner costs.	
Wedley (2006)	Peterborough, ON, Canada	Newspaper Article Peterborough This Week	● 6th article on Greater Peterborough Health Care Alliance NP Clinic	● Details about the same NP clinic closure and patients will have to use ED while transitions happen to family health teams.

Table 2-3

Summary of Studies PHC Sustainability Included from CINAHL, Medline, Academic Complete, Health Policy Reference

Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
Buykx et al. (2012) AUS	Mixed Methods 6 Year Longitudinal Evaluation	● Evaluation to explore and illustrate how one primary health care service has proactively managed change to remain sustainable.	● Study was only underway for four years and it was already evident that the Elmore Primary Health Service is exemplary compared with many small rural community health services that have struggled to serve their communities adequately.	● This article highlights the benefits of working with health organizations and stakeholders to benchmark and use primary health care evidence to formulate health policy and programs designed to meet the needs of the community.

Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
		▪	● The EPHS model has demonstrated its capacity to be proactive rather than simply reactive through aligning its approach with government policies, ongoing monitoring of its service performance, maintaining strong engagement with the local community, maximizing opportunities for alternative funding,	

Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
			initiating workforce succession planning and actively partnering research evaluation designed to ensure quality improvement.	
Gruen et al. (2008) AUS	Quantitative Systematic Review	• Using a SR to derive a practical conceptual framework for understanding health-program sustainability; and to use this framework to	• Sustainability is increased to the degree to which the components of the system are connected and aligned—an indication of system equilibrium. • Unsustainable programs are a form	• While the focus of this research is not on program sustainability, the information in this article may be useful to apply to NP role sustainability.

Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
		propose an approach to planning for health-program sustainability.	of disequilibrium, in which the health status of a population, the program implemented within the population, and the drivers of the program are disconnected and misaligned. ● Conceptual model framework was devised.	
Lennox, Maher & Reed (2018)	Mixed Methods Systematic Review	● This study aimed to identify what approaches are available to	● In total, 62 publications identifying a sustainability approach were	● This is the first review to consolidate available approaches for sustainability across diverse health care settings.

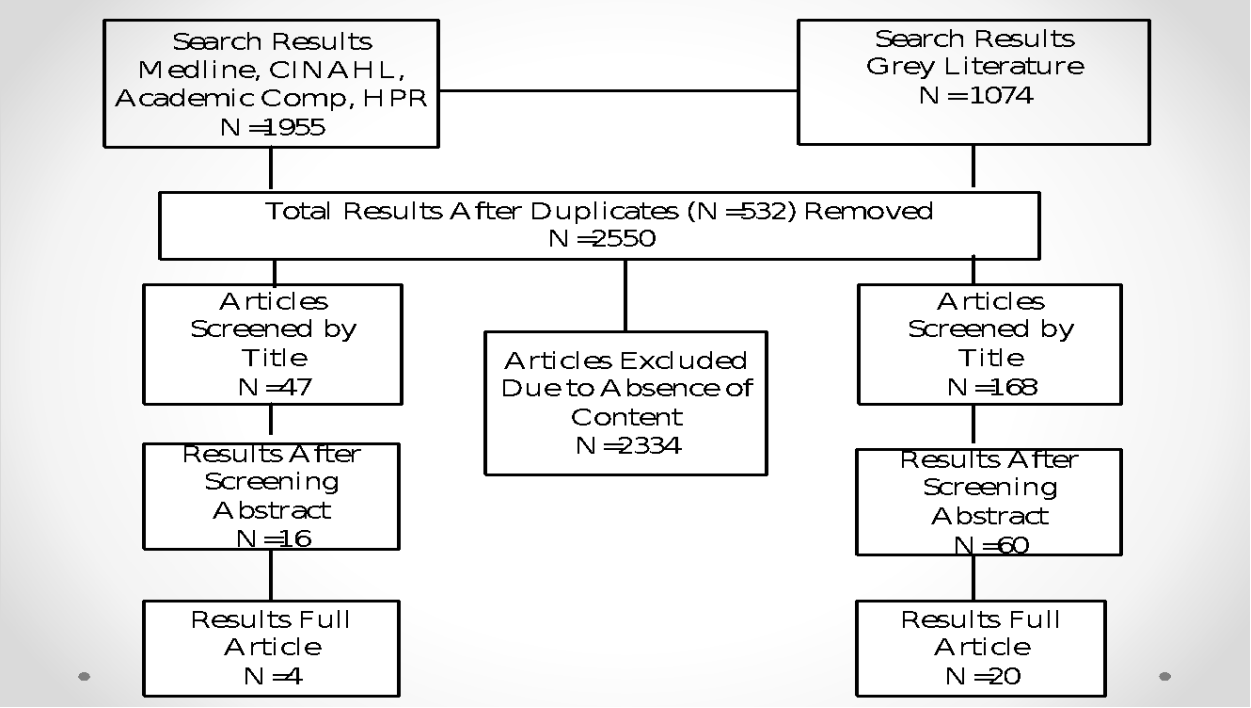
Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
UK		assess and influence sustainability in health care ● Where have approaches come from and how have they been developed? ● What are the approaches key characteristics?	included in this review (32 frameworks, 16 models, 8 tools, 4 strategies, 1 checklist and 1 process). ● Constructs across approaches were compared and 40 individual constructs for sustainability were found. ● Although similarities were found, no approaches contained the same combination of constructs nor did any single approach	● This review could serve as a sustainability knowledge base.

Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
			capture all identified constructs. ● From these results, a consolidated framework for sustainability constructs in health care was developed. ● 66% of approaches reviewed saw sustainability as a process rather than an end state.	
Wakerman & Humphreys (2011)	Mixed Methods	● To highlight how evidence from studies of innovative	● Authors propose a systems-based solution to PHC sustainability	

Author Country	Method Design Sample	Objectives and Aims Setting	Key Findings	Comments
AUS	Discussion of a Previous Study Evaluating Innovative PHC models.	rural and remote models of service provision can inform global health system reform in order to develop appropriate, accessible PHC services to 'difficult-to-service' communities.	• Highlights the paucity of comprehensive, high-quality evaluations of PHC health services in order to better inform PHC sustainability • An effective systemic approach to sustainability relies on alignment of all levels of health services with the external policy environment.	

Figure 2-1

Prisma Diagram, Search Results and Article Selection



Chapter Three: A Critical Analysis of Funding and Compensation Models: Sustainability of the Nurse Practitioner Role in Canada (Paper 2)

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Introduction

The number of Nurse Practitioners (NPs) in Canada has increased substantially over the past decade and the role saw the highest growth rate of 8.02% between 2017 and 2018.[1] Integrating NPs into health care environments has been shown to improve patient outcomes and contribute to high-quality care. The importance of NPs to organizational and system outcomes is also well documented and NPs bring significant added value to various models of health care delivery and the health care system in Canada.[2]

Optimizing the contribution of NPs, including ensuring that they are able to work to their full scope of practice, remains a challenge across the country.[1,2] In spite of the positive evidence indicating the NP role can increase access to quality, cost-effective care for patients, barriers to full implementation of the role persist.[2,3,53] The lack of a sustainable funding model has been cited as a primary barrier to the optimization of NPs in Canada. Sustainable funding and adequate infrastructure and resources, have been cited as the most critical factors to support the NP role going forward.[2,3,53]

We conducted a critical analysis of the current state of Canada's NP funding models utilizing the Sustainability of Innovation Framework (SIF).[4] Our analysis compares Canada's current NP funding models using a theoretical approach. Our results and discussion propose future directions to assist healthcare leaders, funders and policy-makers in supporting a variety of NP roles in Canada to meet the demands of different patient populations in our health system.

Objectives

Significant jurisdictional variation exists in terms of NP funding models within the Canadian health care system and it is apparent this variability creates significant challenges associated with the NP role. This includes: difficulty in defining and legitimizing the role; under-utilization of NPs; scope of practice and liability concerns; insufficient funding for practice-related costs; marginalization of the role; and significant NP wage and benefit disparities across the country.[2,5] The purpose of this analysis is to create a comprehensive review of the funding models for NPs in a variety of healthcare settings, to compare and analyze these NP funding

models across all Canadian jurisdictions and to propose future directions to assist in alleviating the funding challenges Canadian NPs are experiencing.[6-11] We use the SIF to guide our analysis and this theoretical framework was developed to identify factors influencing primary health care (PHC) innovation sustainability.[4] This research is expected to advance our knowledge in regards to the development of sustainable, modernized NP funding models to support the work of health care leaders, funders and policy-makers across Canada.

Background

Overview of the Nurse Practitioner Role in Canada

The NP role in Canada has had a chaotic history with periods of inactivity and near eradication in the 1970s and '80s; coupled with periods of growth and role re-integration in the 1990's and 2000's.[12] Canadian NPs are required to have a minimum Master's level preparation with a growing number also holding doctoral degrees. NPs possess an extensive body of knowledge and skills, diagnose acute and chronic illness, prescribe medications, are accountable and responsible for their own professional practice, and all Canadian jurisdictions[1] have legislation and regulation supporting the role.[13] Literature indicates that NPs provide high quality care, are cost effective and work well with, and greatly complement skill sets of other professionals when working within collaborative teams.[14-18]

The number of NPs in Canada is increasing steadily and the role is the fastest developing sector of the nation's health human resource pool with over 6,000 NPs currently licensed to practice in Canada.[19,20] Despite substantial progress, the number of NPs is still insufficient to meet the growing needs of Canada's population and there are considerably less NPs practicing in rural and remote areas of the country.[20] Considerable opportunity exists to improve expanded NP role integration within the Canadian health care system.[2,21]

[1] The term jurisdiction indicates the ten provinces and three territories in Canada who have the authority and power to regulate, oversee and provide health care delivery in their specific geographic area.

Overview of Canadian NP Funding Models

The integration and optimization of NPs within the health care system depends on the NP funding model within a jurisdiction. A funding model typically has three defining characteristics: a) it generally revolves around a primary source of funding, such as governments or organizations, b) within this primary source of funding, there are decision makers; individuals who dictate the flow of funds (such as government leaders), and c) it focuses on the motivations of decision-makers who control the flow of funds.[22]

Based on these characteristics, an NP funding model involves the payment or remuneration for NP services or employment. Models are based on numerous factors including base salary, bonuses, incentives, health care practice and individual/team employment settings.[6] Every Canadian jurisdiction has their own NP funding model, however, there are significant variations in the defining characteristics of these models across the country.[21,22] It has been proposed that these variations may be necessary to accommodate jurisdictional differences in NP scope of practice, responsibility and accountability, as well as the needs of unique patient population characteristics.[24]

The majority of Canadian NPs are funded either directly or indirectly by jurisdictional governments. These funding models are structured to comply with legislation and regulations set out by their respective jurisdiction. Most NPs are funded indirectly through the use of government money disbursed to an organization. These organizations typically include hospitals, regional health authorities or health care agencies. NPs in these organizations are employees and typically receive an hourly wage or salary. See Figure 3-2 for an image overview of NP funding models in Canada.

A variety of government funding envelopes have been introduced as “special funding” to support NP role implementation. These “special funding” envelopes typically support pilot initiatives driven by perceived and actual physician shortages.[12] Relatively few Canadian NPs are employed by private or non-profit corporations. Only three Canadian jurisdictions report this type of NP employment (Alberta, Newfoundland and the Northwest Territories).[2] NPs in Prince Edward Island, Ontario, and Saskatchewan may work with a physician in a fee for service

environment, in this type of model the physician pays the NP an hourly wage or salary from the revenue generated from physician billing. Very few NPs in Canada are self-employed, these NPs receive funds from direct billing of patients.[6,25,26]

Two jurisdictions, British Columbia and Alberta, have recently introduced a new NP funding model. In 2018, British Columbia approved the allocation of funds for NPs as contract providers. These funds can be used by NPs to join a pre-existing primary care team or to set up a new team. The duration of these contracts is three years, and the goal of this funding model is to increase the number of NP positions in the jurisdiction's primary care system by 200 NPs. These NPs are expected to provide full-scope primary care services and increase health care access to British Columbia residents.[27,28]

In early 2019, the Alberta government announced the Nurse Practitioner Support Program which was also created to increase the number of NPs in primary care through a revised team funding formula. The government has committed $38.5 million in funding over 3 years, to support the continued employment of NPs in existing primary care teams and encourage them to hire more NPs (n=50). These funds are distributed to primary care networks (PCNs) through an application to pay for NP roles within interprofessional teams.[29]

The most innovative NP funding model is found in Ontario, the largest jurisdiction in the country. NP-led clinics which were introduced in 2007, receive funding directly from the government to implement a team-based, PHC initiative. NP-led clinics were introduced to improve access to primary care in areas where a large proportion of the population are without a family physician.[30] Within this model, NPs are the most responsible primary care provider, NPs provide clinical and operational supervision and represent a significant interest on the board of directors.[31]

Every Canadian jurisdiction has an NP funding model, however, there are significant variations in the structure and processes of these models.[23] It is proposed that these variations may be necessary to accommodate jurisdictional differences in NP scope of practice, responsibility and accountability, as well as the needs of unique patient populations.[24] Although the number of NPs continues to grow, the ratio of NPs to citizens remains low (14 NPs per 100,000 population) and the number is insufficient to meet the growing needs of the nations' population.[2]

NP Funding Models: An International Perspective

There are similar barriers to NPs role utilization in most countries. These barriers include opposition from stakeholders, vested interests (e.g., physician workforce), government legislative/ regulatory/policy barriers, financing and reimbursement issues, and challenges in uptake at organizational levels. It is useful to review what is happening from a funding perspective in other countries with similar NP experiences. The NP role was first introduced in the U.S. in the mid to late 1960s, followed by the United Kingdom (U.K.) in the mid-1980s, then Australia in the 1990s.[32] In the U.S., regulation and funding of NP roles vary by state and there is significant variation in wages and compensation models. Most NPs are funded through third-party payers who directly reimburse for services. These payers include: a) Medicare, b) Medicaid, c) commercial indemnity insurers, d) commercial managed care organizations and d) businesses or schools wanting health services for employees or students.[33–35] Direct reimbursement is available to NPs (individually or through an employer, clinics or group practice) who provide service to patients enrolled in Medicare at 85%, or Medicaid at 60% of the physician rate. Managed care organizations' financial arrangements may include fee-for-service and risk-bearing models and compensation are provided via salary or per member-per-month agreements.[33, 35]

In Australia, the majority of NPs are employed in public hospitals, these NPs are funded through State Government salaries. In primary care, NP services are remunerated through the national Medicare Benefits Schedule (MBS). Funds are accessed by private NPs and the reimbursement rate is at least fifty percent less than physicians. This discrepancy in MBS reimbursement for NP services has resulted in unsustainable business models for NPs practicing in primary care.[32,35]

In the UK there is no regulation or national requirements for obtaining or using the NP title other than a regulatory framework for nurse prescribing.[35] Essentially, the diverse, unregulated and flexible nature of the NP role within the UK varies somewhat from the state of NP practice in other western countries. Funding for NPs in the UK is provided through the National Health Service (NHS) which is the publicly funded national health system overseen by

the Department of Health.[34,35] This international comparison of funding models from other countries illustrates the diversity of funding for NPs in western countries and is useful to use as a tool to guide our results and discussion below.

Method

The critical analysis methodology is well-developed and broadly applied in qualitative health research. Critical analysis is the ability to recognize or question, taken-for-granted assumptions and their effects. It attempts to expose hidden power, embraces multiple perspectives, gives space to unheard voices, and stimulates social criticism.[36] The process of critical analysis allows for the interaction of specific topic elements to be examined while at the same time closely studying individual components.[36] Theoretical frameworks are used as an analytical tool to provide guidance for the critical analysis process. The SIF by Fox, Gardner and Osborne was chosen to examine and interpret the data collected to better inform our understanding of Canadian NP funding models.[4]

Theoretical Framework

The NP role is frequently cited as one of the most innovative solutions to Canada's health care system challenges, yet sustainability of the role remains in question and implementation of the role has been cited as the biggest innovation failure in the country.[2] Given these challenges, the SIF developed by Fox, Gardner and Osborne was chosen as the most suitable tool to guide this analysis.[4] The framework merges the concepts presented by Greenhalgh and colleagues' systematic review of health service innovation,[37] and the Dynamic Sustainability Framework by Chambers, Glasgow and Stange (See Figure 3-1).[4,38] It provides a clear framework to guide an in-depth examination of health care innovations and describes five factors that influence sustainability.[4]

Each sustainability factor includes specific elements required to achieve health care innovation sustainability. Factor #1 Political: appropriate government and policy alignment and evidence indicate that a political focus on one particular policy can have a strong influence on the sustainability of a health innovation. Factor # 2 Organizational: Innovation has to be

adaptable to support the local context and address perceived needs. Factor #3 Financial: The innovation is dependent on a specified source and length of funding. Factor #4 Workforce: Innovations aligned with the values and needs of the existing human resource pool are more readily adopted and sustained. Factor #5 Innovation Specific: Innovations must be able to respond to dynamic changes in funding and policy environment, and continue to evolve.[4]

Data Collection and Analysis

Data to inform this critical analysis was collected from individuals involved with NP education and regulation, NP professional organizations and documents and articles via an internet search. The data were reviewed and relevant NP funding information was organized and summarized into Table 3-1 and 3-2. This data is presented in an overview format. Using a critical lens, each factor in the Sustainability of Innovation Framework was used to systematically assess and examine current jurisdictional funding models to determine whether these models address the factors necessary to sustain the NP role.

Results

An overview of the existing NP funding models in Canada was created and compared across the nation. This data was critically examined and the results are organized according to the five factors in the SIF theoretical framework.[4]

Factor 1: Political

Jurisdictional government funding is the main NP reimbursement source and there is variation in how each jurisdiction implements NP designated funding. This type of funding has been instituted with no long term, sustainable vision for NP role utilization. The continued lack of a long-term vision and funding strategy for Canadian NPs is the result of outdated and entrenched health policies that fail to fully advance the NP role.[2] The lack of transformation in Canadian health policy fails to facilitate optimization of the NP role and reinforces barriers that

prevent NPs from working to their full scope of practice, and achieving a sustainable funding solution across Canada.[2]

Factor 2: Organizational

Many Canadian organizations and corporations employ NPs and have multi-level, historic structures and processes that limit change and flexibility in the funding models provided. These types of long-established organizational structures and processes impact the uptake and sustainability of the NP role. These restrictions are especially salient in organizations that adopt a physician-led hierarchical infrastructure in which physicians have final decision-making authority.[39] A prime example of this type of hierarchy are Alberta Primary Care Networks (PCN). These networks are government-funded and physician-led and operated.[40] Despite legislation and regulation to support independent NP practice, the 'physician driven' practices of these organizations and funding models typically restrict NP utilization.[39]

Factor 3: Financial

As demonstrated in Figure 3-1 and Table 3-1, most Canadian NP positions are funded through jurisdictional government-based funding and NPs receive a salary for their services. These salaries are administered through a government agency in each jurisdiction. There is considerable jurisdictional variation in the structure and processes of this funding and there is even more variability in "special funding" envelopes. These grant-type NP funding initiatives continue to be short-term and generally unsustainable.[2] There is a rigid structure to jurisdictional funding which often lacks a comprehensive, team-based focus to support NP and interprofessional integration in different types of PHC environments. To add to the lack of sustainability in NP funding models, NP compensation is not keeping up with market value and there are substantial differences in wage and benefit reimbursement across the country. All Canadian jurisdictions fail to meet the recommendations made in the Hay Group Report (2013) which has specific evidence-based compensation guidelines for NPs.[41]

Factor 4 Workforce

There is a lack of transparency in NP human resource information and no apparent coordinated jurisdictional or national NP workforce strategy. Very few NP organizations or affiliations have up to date workforce information and some NP workforce information is buried within Registered Nursing statistics.[42] Unfortunately, the literature demonstrates that current Canadian NP human resource planning suffers from deficiencies and tends to be intermittent, based on incorrect information, and is often not linked to appropriate research evidence.[43] NP human resource efforts are not consistent across the country nor are efforts comprehensive enough to fully address sustainability issues of the NP role.[2] Additionally, there are areas in Canada's northern jurisdictions (Yukon, North West Territories and Nunavut) where NPs are grossly underutilized and underrepresented.[2]

Factor 5: Innovation

Aside from the NP-led clinic initiative in one Canadian jurisdiction (Ontario) there are no other examples of sustainable NP innovation in Canada. The key word being sustainable. Many other jurisdictions have tried to implement similar models; however, these models were set-up to fail through the use of "special envelope" funding that did not include planning for continuance of the funding past the original grant timeline. For example, a newly established NP-led academic faculty practice model was established in Alberta for seniors. The NP-led clinic was embedded within an existing social service agency, however, with their funding set to end March 2020, the government failed to identify funds for continuance of this innovation. The clinic closure means that many seniors are left with no access to primary care. This lack of access is particularly dangerous in our current Covid19 health crisis. NP roles and associated models of care continue to be organized on the basis of policy tradition, power and politics rather than in relation to the evidence of how best to meet current health needs. Furthermore, there is no consideration given to whether NPs should be integrated into existing service delivery models or whether they are better suited to their own innovative models of care.[2]

Discussion

This critical analysis of current Canadian NP compensation models highlights the following findings: 1) jurisdictional government funding is the standard remuneration mechanism for NPs across Canada. This type of funding is rigid, inflexible, often not based on evidence informed policy making and also perpetuates entrenched policies that continue to inhibit solutions towards addressing sustainability of the NP role, 2) considerable jurisdictional variation exists in NP funding models, including variability of jurisdictional NP initiatives and health policies. This is most obvious in the disbursement of "special envelope" funding for pilot projects or grant type NP funding initiatives across the country. These initiatives have occurred in a piecemealed type fashion, are short term and generally not sustained, 3) current funding models as well as NP compensation (wages and benefits) are not keeping up with market value, 4) organizations with hierarchical infrastructure that support physician-led teams and have total decision making authority, negatively impact NP role utilization, 5) there is a lack of transparency in NP workforce information, deficiencies in NP human resource strategies and no coordinated, national NP workforce strategy, and 6) there is a lack of innovative, interprofessional models such as the NP led Clinic across the nation.[2]

Future Directions

Funding Model Reform

This research suggests that Canadian jurisdictions have implemented a tapestry of funding models and no two provinces are the same in their approach to the integration of NP roles within an antiquated health care system. This analysis also demonstrates that jurisdictional government funding is the prevailing remuneration mechanism for NPs across Canada. This type of funding is rigid, inflexible and frequently not evidenced based. Furthermore, global health budgets provide little incentive for innovation or to improve efficiency of care. Jurisdictions must transition to evidence based, flexible funding models that support PHC environments and variations in NP practice. These funding models must include comprehensive team-based funding where appropriate, as well as increase the number of NP-Led Clinics across the

country.[44-47]

Funding model reform, regardless of setting, should ensure that the money follows the patient, not the provider, and improvements should aim to better support patient-centred care.[2] A mandate to protect funding must focus on stability, sustainability and the potential for long-term evaluation, once funding models have been incorporated into a health care organization or structure.[3,8] There is an urgent need to amend and align Canadian national and jurisdictional health policies to facilitate transformation of NP funding models and considerable opportunity exists to address entrenched and outdated policy directives which continue to impact the optimization and sustainability of the NP role.[2,8]

There is an equal need to enhance and harmonize NPs' salaries and benefit compensation across all health care settings, within each jurisdiction, and to increase the representation of NPs in currently underserved areas.[2, 48] In determining what constitutes appropriate wage compensation, utilizing best research evidence, accounting for NPs' formal education and experience, their scope of practice, professional responsibilities and their accountability as autonomous health care providers is important.[2,48]

Interprofessional Team Expansion

Increasing the number and expanding the role of NPs on interprofessional teams, facilitates the adoption by policy-makers and funders, of multiple, innovative funding models. The influence of existing policies on the success of collaborative practice models needs consideration. Reimbursement structures for NPs have to ensure financial viability of NPs in PHC to increase the motivation for physicians to work in collaboration. The inclusion of NPs on interprofessional teams has the potential to remove some of the current funding barriers, to promote sustainability for the NP role and fosters the creation of positive relationships between NPs, their physician colleagues and other allied health professionals.[49,50] In this scenario, funding models are readjusted to ensure fair compensation across professions and interprofessional teams.[8] This requires integrated consultation where interprofessional teams negotiate compensation together to establish what model of care needs to be implemented, and what funding model(s) will achieve fair compensation for all parties.[8]

Comprehensive Workforce Strategy

Implementing a comprehensive health human resource strategy to optimize the use of Canadian NPs is required. Health human resource planning has traditionally focused on individual health care professional groups rather than taking an integrated, interprofessional approach.[43] Much of this planning has been dominated by supply-oriented thinking and outdated patterns of use. Planning of this nature results in the development of a health human resource allocation that has little relation to actual community needs. Interprofessional health human resource planning needs to be more closely linked to population health outcomes if it is going to produce a desired impact. Linked to this issue is the need for transparent, valid, reliable and current HR data to inform the requirements of a human resource strategy.[43]

It is important to recognize that no single funding model will address all NP funding model barriers and sustainability of the role in Canada's health system. Instead, it is the thoughtful design and integration of a variety of funding models, as well as a modernized, pluralistic and flexible approach that will foster a culture of change, innovation, and hold hope for a sustainable future for NPs.[51] To facilitate formation of these models, and increase the accessibility of quality health care, the nursing community, other health professions groups, and policymakers must establish common ground to remove barriers to NP practice, improve NP wage and benefit compensation and increase interprofessional collaboration.

Implications for Research

Cross jurisdictional variability in funding models points to the need for research to further analyze and examine these exact trends across Canada.[24] Results from these types of studies could better inform policymakers about best practices with respect to funding models, and this may lead to more desirable NP role sustainability.[23] Research related to NP funding models in all settings is required to show the impact of these models on sustainability of NP practice and should be a priority area for investigation. Research also needs to examine interprofessional, integrated funding models and the effect these models have on patient access,

patient outcomes and quality of care.[52]

The information collected and reviewed for the purpose of this critical analysis was challenging to locate due to the significant contrast in how jurisdictions collect and report NP workforce data. The collection and reporting of NP this data is often included with that of other nursing professions and it is challenging to find and separate.[41] Further research on NP funding models relies on current, detailed, transparent workforce data and describes, monitors and compares the practice patterns, trends and funding information of NPs working in each jurisdiction across the country.

Conclusion

This critical analysis is intended to improve our understanding of current NP funding models in Canada. It analyzes the current state of NP funding models across Canada and proposes improvement of NP optimization by employing modern, flexible, interprofessional and integrative models to reflect community health needs and the broad variety of NP practice. It is important to conduct further evaluative research on current NP funding models and to begin to build a robust NP workforce strategy to help ensure sustainability of the NP role in Canada.

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Figure 3-1: Sustainability of Innovations Framework[4]

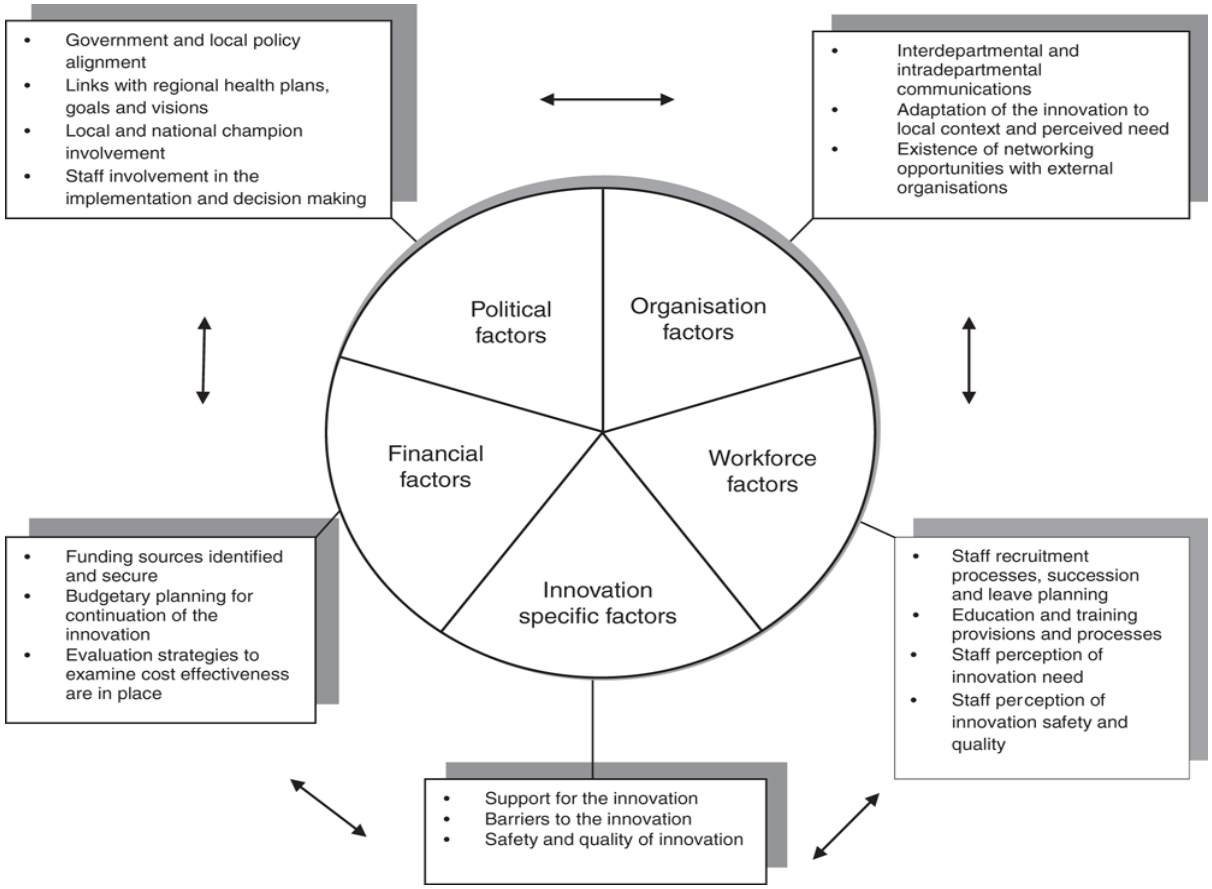

Figure 3-2: Image Representation of NP Funding Models in Canada

Figure 1
Overview of Funding Approaches Nurse Practitioners in Canada

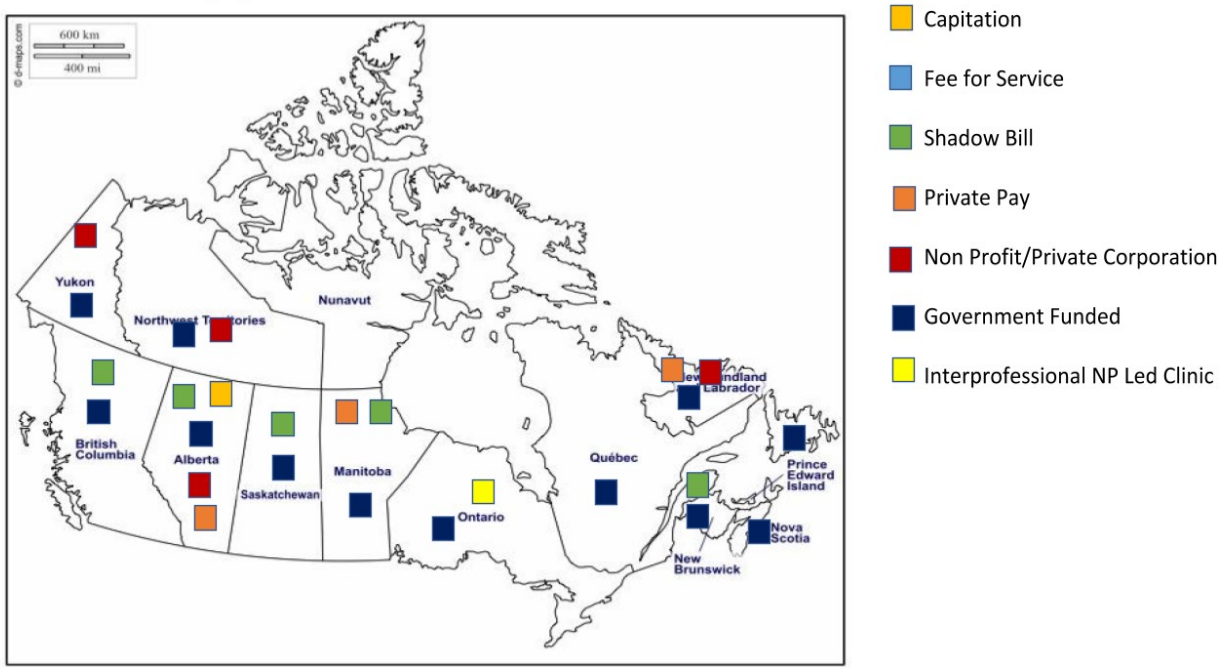

Table 3-1: Explanation of Funding Models for Canadian Nurse Practitioners

Explanation of Funding Models for Canadian NPs	Jurisdiction Utilizing Approach
Government Funded: Most NPs across Canada are employed in a hospital, health region or health care agency environment within an organization run by the government. The majority of these positions are salaried.	**BC, AB, SK, MN, ON, QC, NFLD, NB, NS, PEI, NWT, YT,**
Capitation: Allocates funding for health services based on population demographics. A fixed payment made at regular intervals by the government for each enrolled patient, regardless of services provided. More recent NP integration strategies have involved the payment of the NP's salary by the government to work in primary healthcare practices where physicians are paid through mechanisms other than FFS, such as capitation.	**AB**
Fee For Service: This is a payment model in which NPs charge separately for each service they perform. They direct bill these services to the provincial health insurance plan. There is no fee for service NPs in Canada	**None**
Shadow Bill: Refers to the process where non-fee-for-service health practitioners such as NPs submit claims to Provincial Health Care for insured services provided to patients. Claims are paid at zero and are for	**BC, AB, SK, MN, PEI**

tracking purposes only.	
Private Pay Option: The client has access to any healthcare service that is provided by the NP, but will utilize their personal funds or insurance plans to pay for services. Services can be customized to fit the needs of the client.	**AB, MN, NFLD**
Non Profit/ Private Corporation: a private or community clinic where NPs are employees of the clinic	**AB, NFLD, YT, NWT**
Interprofessional NP Led Clinic: This model is the incorporation of nursing leadership within an interprofessional team and is a formal clinic where the NP independently and collaboratively provides primary care.	**ON**
Academic Institution Funding:	**AB**

Table 3-2: Canadian Jurisdiction Dominant NP and Other Funding Model; Median NP Salary

Jurisdiction	DOMINANT NP FUNDING MODEL	OTHER COMPENSATION MODELS	MEDIAN NP SALARIES
British Columbia	• Government funding for full or partial NP salary, benefits, overhead and administrative costs and professional development expenses. • Majority of B.C. NPs are paid to work in community based/primary health care settings working with specialized populations.	• 2012: NP4BC, 45 new NP positions per year over three years were made available (2012/13 – 2014/15). Integration of NP roles was introduced to support increased access to primary health care services. Salaried model where HA receives partial funding for NP positions (salary, benefits only. HA global budget must cover overhead/admin., professional development) • 2019: 200 new NP positions as part of a shift to a team-based primary health-care system. Positions are being supported by $115 million over 3 yrs, to secure NPs' employment in primary care settings throughout B.C.	$105, 383
Alberta	• Government funding for full or partial funding of NP salary which typically	• 2019 PCN NP Support Program. Government of Alberta (GOA) announced 50 funded NP	$112, 000

Jurisdiction	DOMINANT NP FUNDING MODEL	OTHER COMPENSATION MODELS	MEDIAN NP SALARIES
	includes salary, benefits, overhead and administrative costs and professional development expenses. • Majority of Alberta NPs are paid to work in acute care settings.	positions through PCNs. Interested PCN's must apply for funding ($125,000 for 1 FTE) via an Expression of Intent form which must be approved by GOA.	
Saskatchewan	• Government funds most RN(NP) positions throughout the province. • Government funding for full or partial funding of NP salary which typically includes salary, benefits, overhead and administrative costs and professional development expenses.	• There are a few RN(NP) positions that are receive payment for their services paid for by from physician specialists, who employee incorporates or work with RN(NP)s in their practice setting.	$114,200
Manitoba	• Government funds most of the NPs employed in either autonomous or collaborative teams' positions (which are run by health authorities or attached to private physician clinics).	• No Additional Information	$110,000

Jurisdiction	DOMINANT NP FUNDING MODEL	OTHER COMPENSATION MODELS	MEDIAN NP SALARIES
Ontario	• NPs in Ontario are in salaried positions funded by the Ministry of Health and Long-Term Care (MOHLTC). 100 NP positions in long-term care, approximately 500 positions in FHTs, 425 in Community Health Centres, 117 in Community Care Access Centres and 145 in other community settings • NPs in acute care are funded from a global hospital budget.	• NP Led Clinics, an innovative model for delivery of comprehensive primary health care services. Funding is provided through the MOHLTC and NPs are the lead primary care providers of the clinic's inter-professional team of healthcare professionals. There are currently 27 NP Led Clinics in the province. • Some NPs are employed directly by physicians in their solo practices and are paid from physician salary or FFS revenue.	$103, 822
Quebec	• Government funds NP services in primary care in public organizations, hospital-based family medicine units and family medicine groups (GMFs).	• One extended pilot project Super Nurse Clinic. Led by NP and extended funding by RHA in 2016	$85,000
Newfoundland	• Government funding for full or partial NP salary, benefits, overhead and	• There are private corporations who employ a small number of NPs.	$101,622

Jurisdiction	DOMINANT NP FUNDING MODEL	OTHER COMPENSATION MODELS	MEDIAN NP SALARIES
	administrative cost and professional development expense	• One NP in the province is funded by a private physician's office a • Provincial Department of Justice employs two NPs	
New Brunswick	• Government funds NPs and they are employed by one of two RHAs in a variety of community and clinic settings. •	• In 2015, the Department of Health announced a pilot project whereby a physician could hire an NP and be reimbursed for each client/NP visit at half the usual rate.	$100,000
Prince Edward Island	• The dominant funding mechanism is the provincial government who hires NPs and they are salaried according to the provincial nurses' union collective agreement.	• One NP has been hired through private funding to work in a clinic operated through a non-profit Family Centre. • There are two NPs working in a FFS practice who are hired privately by the practice physicians. These NPs are unable to bill the provincial health plan directly and the physician bills for the work the NP does.	$96,500

Jurisdiction	DOMINANT NP FUNDING MODEL	OTHER COMPENSATION MODELS	MEDIAN NP SALARIES
Nova Scotia needs update	• The government funds majority of NPs	• While NPs can be employed privately, their FFS physician employer must be an active participant in the care of the patient. • 2017: 23 new NP positions announced at collaborative health clinics across the province • 2019: New Nursing Act passed NPs and the requirement to have a documented collaborative practice for NPs was removed (NP formerly must have a collaborative relationship agreement with physician in order to practice).	$103, 000
Yukon		• Only 3 practicing NPs. Two NPs work in collaboration with medical clinics. One NP is contracted in a three-year pilot project through the Yukon government	n/a
North West Territories	• 48 salaried positions through the NWT government. • The salaried positions are distributed throughout family clinics, hospitals and health centres.	• one NP position for a private mining corporation.	$106,000

Jurisdiction	DOMINANT NP FUNDING MODEL	OTHER COMPENSATION MODELS	MEDIAN NP SALARIES
Nunavut	● No available information	● No available information	$126,000

Chapter 4: Sustainability Failures in Primary Health Care: The Case of an NP Clinic Closure (Paper 3)

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Sustainability Failures in Primary Health Care: The Case of an NP Clinic Closure

Canada's health care crisis demands changes to the health system that are patient-centred, cost effective; changes that promote health system stability, and long-term sustainability.[1] Canada can no longer afford ongoing increases to the cost of health care. This financial burden is influenced by persistent inadequate access to all health care services, increasing aging populations, and high incidences of chronic diseases; all which tax an already congested health system. The Canadian government is well aware of the need to address these long-term challenges, as well as the critical importance of introducing innovative, effective and sustainable solutions to save our health system.[2] Sustainability is frequently mentioned as a critical concept in health system reform, yet little is known about how to sustain innovations to improve this system.[3] While there is a growing body of sustainability research, few studies have considered the challenges involved in sustaining innovations and the factors that influence and ensure sustainability of innovations within primary health care (PHC).[4]

One of the most cited sustainability failures in Canada's health system is the Nurse Practitioner (NP) role, which was first introduced in the 1970's and re-implemented in the 1990's.[5,6] Despite indications of NP effectiveness in Canada's health system, barriers towards full implementation of the role and its sustainability remain at risk. These barriers and risks are particularly visible in primary care settings, which limit NPs ability to take on the most responsible care provider role, greatly impacting patient access to health care and NP role sustainability. [6-10, 12] Using a single, exploratory case study, this research examines the closure of a NP clinic in western Canada and seeks to understand the contextual factors influencing the decision to close the NP clinic, which ultimately led to sustainability failure. The case study analysis was guided by a theoretical framework informed through an in-depth review of the literature examining the sustainability of innovations and by a policy framework which systematically considers the factors that may impact the policy environment, and is suitable for policy analysis.[11,13] The findings contribute to the limited literature on sustainability failures, may inform future innovation planning and assessment, and have the potential to enhance governments, funders and policy-makers understanding of the elements that contribute to NP role sustainability and sustainability of other important PHC innovations.

The use of the NP role has fluctuated throughout the past forty years with periods of substantial growth and periods of relative inactivity. The role has been impacted by health care system restructuring, increasing costs of health care, health human resource shortages, and a demand for health spending accountability.[15] All ten provinces and three territories have legislation and regulations set out to support the role of NPs and NPs provide health services in a variety of settings across Canada.[16-21] Currently, over 6,000 NPs practice in Canada and it is estimated that the number of NPs have increased by 300% since 2007.[16,22,23] Despite the increase in numbers and growing evidence recognizing the value that NPs contribute to quality of care, barriers continue to exist towards full optimization of the role. Most individuals in Canada don't have access to, or the option of NP care. This is reflected by a ratio of approximately 14 NPs per 100,000 population and illustrates that the number of NPs is insufficient to meet the growing needs of Canada's population.[11,24]

Background

Despite longstanding and ongoing recommendations for PHC reform, accessibility issues and a lack of comprehensive health service delivery continue to contribute to Canada's absence in fulfilling a vision for PHC integration. [2,16,19,25] The optimization of health care professional scopes of practice and innovative models of care have the potential to initiate transformation and contribute to a health system to better meet patient, community and population needs. However, current institutionalization of scopes of practice has shielded the system from radical reform and there is limited incremental change across Canada in the expansion of scopes of practice for health care professionals, such as NPs. NPs possess an extensive body of knowledge and skills, and they have advanced education, such as a Master's or Doctoral degrees.[16,17] Within their scope of practice, NPs diagnose acute and chronic illness, prescribe medications and are accountable and responsible for their own professional practice.[16]

Sustaining Progress: NP access for all Canadian's

The current Canadian health reform agenda prioritizes the provision and sustainability of cohesive, comprehensive PHC services that are responsive to community and patient needs.[26,27] As PHC health services are usually the first point of contact for patients with the health system, the loss of services contributes to diminished access to health care and poorer health outcomes.[27] The challenges associated with this agenda are many, and in spite of Canada's success to develop, plan and implement many PHC innovations, its ability to sustain, spread and scale up these innovations has been inadequate.[27] A glaring example of this failure to progress is demonstrated by Canada's limited success in implementation of the NP role.

Sustainability is an extensively debated topic and is challenging to define. The application of this concept is particularly difficult in the context of health systems. Sustainability is defined as the "continued use of program components and activities for the continual achievement of desirable program and population outcomes".[28(p2060)] Few studies have examined how best to sustain PHC innovations in Canada.[28-30] There is also a lack of knowledge about successful implementation of innovative models of care and the factors that influence their sustainability. [29–33] Stirman et al.[29] suggest that more research and evaluation is necessary to inform the sustainability of PHC innovations since early efforts to study the sustainability of health programs illustrates that the evidence base is 'fragmented and underdeveloped'. [(p. 3)] Similarly, there is a lack of scholarly debate and research on the factors affecting the capacity of health systems to evolve, transform, or adapt to change, which is necessary information for evaluating PHC innovations.[4] Therefore, more targeted research and evaluation is necessary to better inform knowledge on the sustainability of PHC innovations.[29]

This paper presents a qualitative case study of a NP clinic located in a southern Alberta community in Canada. It represents an in-depth examination of a sentinel innovative PHC model that was implemented to address primary care access issues at a time when the community experienced an increase in their population density and a subsequent shortage of physicians. The innovation was funded by the Calgary Rural Primary Care Network (CRPCN) in the community of Okotoks, Alberta in 2010. Despite strong community support and evidence of outcome attainment, the decision to close the clinic was made by the CRPCN in 2015. A description of the community context and the history of the clinic is described below.

The Case: The Sheep River Nurse Practitioner Clinic

The Sheep River NP Clinic in Okotoks, Alberta opened in October 2010 as a pilot project funded by the CRPCN; a member of the Alberta Primary Care Network. The network was an initiative created and funded by the provincial Government in 2003 as a health reform program to improve patient primary care access.[33] Okotoks is located 18 kms south of the city of Calgary, Alberta and its current population is 28,833 residents. Between 1996 and 2016 the population of Okotoks increased by 192.6% (compared to a 62.2% increase for Alberta) when it was considered one of the fastest growing communities in the country.[34]

The Sheep River NP clinic was introduced to address the physician shortage in Okotoks and increase access to primary care services; while ultimately reducing emergency department wait times.[35–36] The clinic was solely operated by NPs who independently served 1,600 patients and shared a physical space with two established family physicians. It was highly anticipated by funders and organizational leaders that this NP initiative would propel the provincial government towards producing a sustainable funding solution for NPs across the province.[35] Beyond the initial pilot funding period, there was no dedicated budget or definitive project end date.[37] Unfortunately, in October 2015, the decision was made by the CRPCN to close the Sheep River NP clinic in January 2016, despite vigorous community lobbying and support from the local Member of the Legislative Assembly (MLA).[38] The CRPCN sited the following as a reason for closure:

> *"As the PCN has matured as an organization, we have developed other initiatives and programs, many of which integrate interprofessional health teams directly into the offices of member physicians. These programs also provide critical linkages to programs and services that benefit patients throughout our rural communities. In preparing our 2015-2018 business plan, the Physician's Corporation and Board of Directors jointly determined that, in the absence of a stable alternative funding source, long term support for the nurse practitioner program would not be a financially feasible option" (Document 20, 2015)*

> *"Currently the clinic operates at a cost of $297,557.48 per annum, caring for a panel of approximately 1600 patients. Unfortunately, funding the program at this amount prevents*

> *the local community from funding other programs and services that also benefit patients of PCN member physicians practicing in the area"* (Document 20, 2015)

Research Objectives and Questions

Case study allows for in-depth examination of sentinel events, such as a sustainability.[39] The primary purpose of this case study was to understand how the abrupt closure of the Sheep River NP clinic happened and why evidence did not influence sustainability of this pilot project. The knowledge gained from this study may have implications for the sustainability of the NP role in Canada, as well as other PHC innovations. Our research was guided by the following three research questions:

- Why did the Sheep River NP Clinic close and what were the contextual factors influencing clinic closure?
- What was the decision-making process that led to the clinic closure and who were the actors influencing this decision?
- What factors influenced the sustainability failure of the Sheep River NP clinic?

Theoretical and Policy Analysis Frameworks

The focus in this case study was to apply a theoretical framework to support the concept of sustainability and utilize a policy analysis framework to advise health policy. The Policy Triangle Framework (PTF)[13] and the Sustainability of Innovation Framework (SIF)[11] were chosen to inform study development and were used to frame data analysis. Other frameworks, which focus on implementation and scale up and spread, may provide provide an alternative perspective on the sustainability or policy analysis process. However, the SIF and PTF are simple, applicable to PHC settings and it was felt they best support the research questions to examine how sustainability of PHC innovations can be improved. These frameworks will be described in this section.

Policy Triangle Framework

The PTF encourages analysis of the social, economic and political factors, which have influenced a policy-making decision.[13] Walt and Gilson believe that health policy-making is an interactive process within special social-economic and cultural contexts where *actors* - individuals, groups and organizations - are at the center of this process. The PTF stresses the importance of the *process* by which the policy was initiated, formulated, developed, implemented and evaluated, including the objectives of the policy, and the 'actors' involved in the decision-making process.[40] This simplified framework and approach to policy analysis assists researchers to understand and analyze health-related policies systematically.[40] The framework consists of four elements, context (why), content (what), process (how) and actors (who). See Figure 4-1 for framework diagram and Table 4-1 for framework elements.[41]

Sustainability Innovation Framework

The SIF merges the concepts presented by Greenhalgh and colleagues' systematic review of health service innovations,[42] and the Dynamic Sustainability Framework of Chambers, Glasgow and Stange.[43] This theoretical framework is suitable for the examination of sustainability of any health service innovation and identifies five factors that impact sustainability. These factors are: political, organizational, financial, workforce and innovation specific, and each factor has clear-cut questions and criteria to assess sustainability of an innovation in PHC. See Figure 4- 2 for framework diagram, Table 4- 2 for framework factor explanation.[11]

Methods

Design

This study used an exploratory, single case study design and adhered to Yin's rigorous approach to case study research.[39] Documents and fieldnotes relevant to the research questions for this case study were also sub-units of analysis. The case study methodology was chosen because the aim was to analyze the results arising in this individual case to allow the discovery of richer, more detailed and useful information about the Sheep River NP Clinic closure. The

case study approach was also used to gain deep insights into this contemporary and complex issue within a real-life context.[39]

Data Collection

Data were collected from key informant interviews and qualitative document analysis of publicly available and internal documents to promote an in-depth understanding of the phenomenon of interest, and to ensure analytical rigor.[39,44] Data collection occurred from May to June 2019. In-depth, semi structured interviews were conducted with 18 participants regarding their knowledge of the Sheep River NP clinic closure. The interview guide was developed a-priori based on the SIF and PTFs (Table 4-3). Interviews were tape recorded, transcribed verbatim and verified for accuracy of transcription, before being imported into the qualitative data analysis package MAXQDA to facilitate data handling. The research team met to organize and validate the findings, identify any gaps and key themes. Documents were gathered from provincial government documents, government/organizational policies, health organization annual reports, scholarly publications, media reports and opinion pieces (e.g. editorials in newspapers or letters to the editor). Researcher field notes were another data source used as the notes were considered 'analytical in themselves' because they contain 'immediate and later perceptions and thoughts' about the research.[45(p3)]

Participants

We identified a purposive sample of informants using a sampling frame (Palinkas et al., 2015). This sampling frame included health care providers, government and organizational employees/leaders, community members and professional organization stakeholders that were especially knowledgeable about the Sheep River NP clinic closure. Emails with an attached study letter were sent to potential participants with publicly available emails inviting them to take part in the study (Study Letter Figure 4-3). In addition to purposeful sampling, snowball sampling was utilized. Participants identified through purposive sampling were asked during their interviews to identify other appropriate participants and if interviewed, these participants were asked to identify other potential participants.[46] This sampling process continued until no further participants were identified. Baker, Edwards, & Doidge,[47] suggested aiming for a sample

of around 15- 30 interviews to achieve saturation and this was achieved by obtaining a total 18 interviews.

Data Analysis

In keeping with Yin's case study approach, three analytical strategies were employed for this case study.[39] The first was pattern matching, the second was developing a case description using an explanation building strategy, and the third was utilizing a time series analysis. A deductive (using an a-priori pre-set coding scheme) and inductive (coding derived from the data) analysis approach were used as the SIF had not been previously tested. While the SIF guided our understanding of the factors that influence sustainability of PHC innovations, we applied the PTF to understand the role of actors and the social, political, economic and cultural contexts in which the decision to close the NP clinic was made.[14] An a-priori coding framework was developed for deductive analysis using categories from the SIF and PTF (Table 4-4). A multiphase approach was utilized for analysis. In phase one, data were identified from the interview transcripts and documents, pattern matching was utilized and data was coded using the previously developed a-priori framework. The data was matched under the a-priori categories in this initial process and then a second phase of coding was inductively conducted using thematic analysis by Braun and Clark.[48] In this second phase, using an open coding process, interview transcripts and documents were coded to identify any additional relevant codes based on the three research questions. In phase three, the codes from phase one and two were merged to create an explanation building strategy to construct links amongst the data. We overlaid the data from phase 1 codes from the a-priori analysis, with phase 2 codes and confirmed the fit of the categories to the a-priori coding framework. This merging process included the researcher collapsing data to categories, building initial themes, reviewing themes, and defining and naming the themes.[48] There were categories that did not fit the a-priori framework and these were collapsed into new and emerging themes. In the final phase, a timeline for the clinic closure was constructed from the interview transcripts and document data. The timeline plotted the fit of the themes against the events occurring in the case study to further support explanation building and a case description.

Validity and Reliability

According to Yin, the quality of any case study, depends on construct validity, internal validity, external validity, and reliability.[39] Construct validity was achieved in this study through utilizing multiple sources of evidence, and maintaining a strong chain of evidence.[49] Internal validity was achieved through the use of pattern matching, explanation building and a timeline as an analysis strategy, utilizing field notes as a type of audit trail and using multiple sources of evidence.[39] External validity was achieved through utilizing a supportive conceptual and analytical framework to allow for data analysis that was thick and rich in description. Two strategies for ensuring reliability of this case study included: 1) utilizing a case study protocol, and 2) using the MAXQDA database to store all study interviews and documents.[39] Triangulation occurred in the form of multiple sources of data (interviews, documents and field notes), utilizing two coders during the analysis phase, and utilizing one theoretical and one policy analysis framework to support the development of interview questions and analysis of the data.

Ethical Considerations

This study was conducted with full compliance of research ethics, codes and practices established by the University of Alberta, Human Research Ethics Board. This study involved human participants, commencing with face-to-face or telephonic interviews. Every research participant was given a letter of information outlining the purpose and procedures of the study, primary investigator role and contact information, funding sources, and information about how the results of the study would be disseminated and used. The letter also advised participants of their right to receive additional information and procedures for retracting information or withdrawing participation were also explained. Anonymity and confidentiality were explained and no individual participants would be identified in the final research report. Participation in the study was voluntary, and informed consent was discussed with all participants.

Results

The primary purpose of this study was to understand factors that led to the abrupt closure of the Sheep River NP Clinic and why sustainability of the clinic failed. During interviews with participants and through analysis of key documents and research field notes, ten key themes

emerged. Most of these themes aligned with the previously described SIF and PTFs and the concepts they identified and defined. These themes included: Motivation[2] (*Context; PTF*), Details of Day to Day operations (*Process; PTF*), Just a Pilot Project (*Content/Process, PTF; Political, SIF*), Patient, Political and Provider Champions (*Actors, PTF; Political, SIF*), Stakeholder Uncertainties *(Political, SIF; Organizational, SIF),* Insufficient Consultation (*Organizational, SIF*) Funding Failure *(Financial, SIF)*, The Right Model (Workforce; Innovation Specific, SIF), Innovation Barriers *(Innovation Specific, SIF)*, and Profound Social Proof *(Innovation Specific, SIF).* See Table 4-5 for SIF and PTF aligned themes.

Three new themes not previously described in either the SIF or PTF emerged from the analysis: Emotional/Aftermath, Professional Turf and Technicolor Data. Participant and document characteristics, and a timeline presenting the chronological events relevant to the Sheep River Clinic inception and closure are discussed, twelve themes emerging from this research study are described. See Table 4-6 for new emerging themes.

Participant Characteristics

Nineteen participants signed written consents and one participant withdrew their interview, for a total of eighteen interviews. Table 4-7 presents an overview of participant characteristics. Participants (females n=14; males n=4) represented healthcare professionals, health organization leaders, professional organization leaders, and patients/community members.

Document Characteristics

A total of 31 public documents were analyzed, these documents included; media articles (n=4), government reports (n=2), social media postings (n=9,) letters (n=4), a video (n=1), and other special reports (n=11). A summary of all the documents is provided in Table 4-8. Using the search terms Sheep River Nurse Practitioner Closure, documents were retrieved and published between 2010 and 2017. In addition, there were five documents with no date but they were deemed relevant to the closure of the Sheep River NP Clinic and thus included in the analysis.

[2] Themes are presented as their constructed concept first followed in brackets by the framework in which they are aligned. Some themes align with both frameworks.

Case Timeline

A timeline of significant events relevant to the introduction, implementation and closure of the Sheep Rive NP Clinic that occurred between 2009 and 2016 are reported in Figure 4-4. Analysis of this timeline took place by plotting the ten key and three emerging themes on the timeline along with significant events, decisions, and the Ministers of Health (MOHs) in office during the time the clinic was open. The planning for the Sheep River NP Clinic began in November of 2009 with the signing of a project charter agreement by the CRPCN. The clinic officially opened in October of 2010 and an evaluation conducted by the CRPCN was completed in 2012. The project charter agreement was renewed in March of 2013, with no indication of a review date for next renewal and no funding information. In the latter part of 2014, the decision was made by CRPCN to close the Sheep River NP clinic in January 2015, citing that funds were redirected to other priorities within their organization. However, in January of 2015 an order by the MOH was sent to the CRPCN advising them to keep the clinic open using surplus budget funds.

In February 2015, CRPCN responded to this Ministerial Order by agreeing to fund the Sheep River NP Clinic until April of 2016, hoping the Alberta Government would take the next 14 months to create a sustainable funding model for NPs across the province. During this time period the CRPCN organization went through significant changes, consolidating individual community authority, and creating a more centralized budget and decision-making process. In May of 2015 a provincial election saw a switch from the Progressive Conservative party to the New Democrat Party. This government changeover meant that a new Minister of Health was sworn in on May 15th, 2015. Lobbying took place by patients, stakeholders and Okotoks Member of Legislative Assembly (MLA). However, with no sustainable funding solution in sight, the NPs were informed by CRPCN in October of 2015 that the clinic would be closing ahead of schedule in January, instead of April 2016. On November 6th, 2016 a letter from the two NPs was sent out to patients informing them of the imminent clinic closure. On January 15th, 2016 the Sheep River NP Clinic closed its doors for good.

Analysis of the themes plotted on the timeline show that sustainability of the Sheep River NP clinic cannot be viewed as a static or linear state. Rather, sustainability in this case is better understood as a fluid and evolving process, one which remained dynamic and had varying

degrees of progress and regression throughout the time the clinic was open.[4] The Sheep River NP clinic was a small innovative service in a health system constantly undergoing big changes and found itself susceptible to the decision making of key stakeholders. It is evident that without flexibility and responsiveness to wider pressures, the capacity of the Sheep River NP Clinic to adapt to the changing political, economic and health system conditions was lacking.[4] The Sheep River NP clinic closure validates the challenges of trying to sustain and embed an PHC innovation beyond initial implementation and substantiates the current evidence on the complexity of sustaining innovations in PHC. [4] The dynamic nature of sustainability makes it challenging for governments, funders, policy makers and health service planners to systematically address the sustainability of innovations in our health system. This results in economic loss, a lack of coordinated health reform effort and a lack of health policy reform.[4]

Conceptually Aligned Themes

Ten of the thirteen final themes aligned with concepts originally identified and described in the SIF or PTF. This section presents each of these themes and provides evidence of participant quotes that support the label and definition for the theme.

Motivation Clinic Opening and Closing (Context, PTF)

Motivation provides contextually relevant data as to why the clinic was developed, implemented and eventually closed. Documents provided and explanation and the primary motivation for the development and implementation of the Sheep River NP clinic was threefold; a perceived shortage of family physicians, lack of access to primary care and a huge population boom in Okotoks putting pressure on existing primary care services (Document 30, 2009; Document 19, 2012). Most participants (n=12) confirmed that the primary motivation for the development and implementation for the clinic was a perceived shortage of physicians.

> *"Yeah. Well, I don't know if this is the right answer, but my impression was ... I know for sure there was a doctor shortage, and they were looking to address that shortage by bringing in some nurse practitioners to fill in some deficiencies" (Participant 16; Patient)*

"[There was an] absolute shortage of primary care access within the community" (Participant 11; Health Care Professional)

The motivations for the closure of the Sheep River NP clinic was less well defined and participants spoke about many possible contextual reasons for the closure. Three primary motivations for the clinic closure were identified and several participants spoke about these motivations. First, 11 of the 18 participants spoke about the lack of a sustainable funding mechanism for NPs provincially. Second, participants (n=5) felt that NPs were being utilized as "physician gap fillers" in primary care, and when the perceived physician shortage improved, the clinic could be closed. Third, a provincial election and change in the core government party and philosophy as well as a Minister of Health who was in a new portfolio and had no previous government or health policy experience (n=8). The CRPCN NP Family Clinic project charter (Document 30, 2009) and evaluation (Document 19, 2012) for the Sheep River NP Clinic validated the shortage of physicians in primary care. Only 2 of the 18 participants said that they did not know why the clinic closed. Participants talked about five other possible reasons for the clinic closure, these motivations are summarized in Table 4-9. These motivations could not be confirmed in discussions with other participants and documents provided no information on these possible motivations.

Just a Pilot Project (Process, PTF)

The Sheep River NP Clinic was referred to as a 'Pilot Project' by 12 of the 18 participants. Documents confirmed the original CRPCN budget for the clinic was designated to fund a one-year pilot initiative (Document 30, 2009). Three primary purposes of this pilot project were defined in the original charter for the development of the clinic. This pilot project was meant to test whether the model could: 1) provide care attachment, improve access and continuity of care for the residents of Okotoks who were in need of a primary care provider; 2) establish NPs as the first point of contact for a defined panel of patients; and 3) demonstrate the effectiveness, efficiency of NP care in a community of practice, where each health care professional shares information to provide the best possible care in the community. Twelve of the eighteen participants (n=12) understood that the clinic was a one-year pilot project, four participants (n=4) didn't know the nature of the project and two participants (n=2) stated that it

was not a pilot project. The pilot project status of the clinic was confirmed through the document analysis which showed that the funding provisions were set from September 11, 2010 when the charter was signed and for a one-year time period with a community review to be held in March of 2011 (Document 30, 2009).

"[The clinic was] initially opened as a pilot project to fulfill a need: 20% of people in Okotoks without a family physician" (Participant 2; Health Care Professional)

"The nurse practitioner program was developed as a pilot program, aimed at enhancing access to a primary care provider in the Town of Okotoks during a period of physician shortage" (Document 30).

"It was never a pilot project. It was a PCN supported initiative. It only started to become viewed as temporary once there were more physicians in Okotoks" (Participant 6; Health Organization Leader)

Alignment of innovations with policy is an important feature of sustainability and only two participants (n=2) were able to affirm that the implementation of the pilot project aligned with the province's policy priority for primary care networks (PCNs).

"Well, I would say that the mandate of that clinic and the service they provided were completely aligned with the directions in Alberta health at the time" (Participant 1; Health Care Professional)

These policies included increased access for patients to a primary care provider, increased health promotion, disease and injury prevention, improved coordination of primary care, and promoting a multidisciplinary team environment (Document 30, 2009; Document 19, 2012; Document 20, 2015). An important negative finding from this study, is that the majority of participants (n=14) stated they 'didn't know' about policy alignment or had limited knowledge in regards to whether there were organizational policies to support the planning and implementation of the pilot project.

"No, I don't know whether policies were aligned" (Participant 17, Patient)

"I do not know that [if policies were aligned], but I don't think so" (Participant 5, Patient)
"I don't know whether policies aligned" (Participant 3; Professional Organization Leader Provider)

Details of Day to Day Operations (Content, PTF)

Participants were asked questions about the basic organizational structure, funding and relationships of the Sheep River NP Clinic to the Sheep River Medical Clinic. The Sheep River NP clinic staff included two NPs and one Medical administrative assistant (Document 19, 2012) A patient participant confirmed this staffing model.

"I only remember the one NP… [and]there was a person at the front office. It is just like a regular doctor's office. You go in, you check in and she comes and sees you and then you leave." (Participant 17; Patient)

The funding for the clinic came solely from the CRPCN budget and there were no documents or interview data that showed clear documentation of funding beyond the one-year pilot project or a long-term funding agreement.

"Yes, it [Sheep River NP Clinic] was 100% PCN funded. We were contract workers. We put in our hours. Every month, we got paid once a month through the PCN budget." (Participant 1; Professional Organization Leader)

"*The executive director of the CRPCN administered and managed all staffing and budgetary responsibilities "(Participant 2; Health Care Professional)*

Patient, Political and Provider Champions (Actors PTF, Political, SIF)

Champions advocated for the implementation and sustainability of Sheep River NP Clinic. Champions in this case included patients, political figures, and health care providers. Documents identified patients who wrote letters to the Minister of Health (MOH) (Document 16,

2015; Document 17, 2015; Document 18, 2016) and participated in newspaper interviews to try to prevent the clinic from closing (Document 1, 2011; Document 2, 2015; Document 3, 2015). The local Member of the Legislative Assembly (MLA) was a champion for the clinic and presented the issue of the clinic closure during a legislative assembly question period (Document 7, 2018). The Nurse Practitioner Association of Alberta actively discussed the pending closure of the clinic on social media and directed their members to write to the Minister of Health (MOH) to express provider concerns over the closure (Document 13, 2015).

Participants also identified champions who supported the implementation and struggled to sustain the Sheep River NP Clinic; CRPCN organizational leaders, two local physicians co-located at the same physical space, two NPs that were employees of the clinic, the provincial NP association, the provincial nursing regulator, as well as numerous patients/community members.[51]

> *"our local MLA[member of provincial parliament], did some media stuff on it [saving the Sheep River NP Clinic], there were patients sending tons of letters and calling the Minister's office" (Participant 2; Health Care Professional)*

> *"…it was certainly important to me, I know there's many NPs that don't feel like the provincial nursing regulator did enough to profile the NPs, but I can tell you as I ended up doing more advocacy for the Nurse Practitioner role than... Not more but certainly as much as for the 470 NPs in the Province and the 37,800 RNs, and I advocated for both roles. But I advocated just as strongly for NPs role as I did for the RN role." (Participant 1; Professional Organization Leader)*

Stakeholder Uncertainties (Political, SIF; Organizational, SIF)

Participants were open about their uncertainties pertaining to the decision-making process to close the Sheep River NP Clinic. These uncertainties were related to both political factors (accountability) and organizational factors (transparency). Participants (n=12) talked about their perceptions pertaining to a lack of accountability by government. For example, one community member in a newspaper interview discussed how the change in government resulted in a lack of interest to sustain this NP clinic pilot project (Document 1, 2015).

"Yeah. Because as soon as they [government] changed, and Health Minister took over, we started trying to contact the government and get meetings - trying to push it through, and we were told well, we don't need another nurse practitioner pilot project, and we have no plan for funding right now…." [Participant 2; Health Care Professional]

"you always get the feeling there is background stuff at the government level. But I know I was just mystified, like what on earth is going on that this is closing?"(Participant 1, Professional Organization Leader)

Another participant talked about a lack of response to the letters and briefing notes that were provided to inform the sustainability. This participant believed that the clinic was just not a priority at the time, despite the public and professional outcry to save it. Thus, demonstrating a lack of accountability to the public.

"My simple understanding was that even though the minister was given several letters and briefing notes and/or heads up in high level meetings - which are just meetings between the executive teams and the ministry with the minster and her team- that it was not a priority to them" (Participant 18, Health Organization Leader)

Participants also talked about their inability to understand a process; and described this as a loss of trust in a process. Most participants (n=14) were unclear about who was funding the Sheep River NP Clinic, unclear about the length and type of funding for the clinic, who made the decision to close the clinic and what that decision-making process was. One participant clearly states that he/she was not sure how the clinic was funded.

"I don't know [how the Sheep River NP Clinic was funded]. I am pretty sure it was a government funded thing, but I don't know where from." (Participant 9, Patient)

"No [I don't know the terms of funding for the Sheep River NP Clinic], but the fact that they were in operation for a while and then there was threat of closure, and there was a Ministerial intervention, so they stayed open. That would tell me, they were revisiting,

pretty frequently, the decision whether or not to keep this thing open." (Participant 1, Professional Organization Leader"

"I don't know for sure [who made the decision to close the clinic]. I assumed it was the PCN. I assumed it was the funders" (Participant 16, patient)

"No. I do not know who was involved with the closure of this clinic. Participant 17, Patient"

Insufficient Consultation/Engagement (Organization, SIF)

Participants talked frequently about insufficient stakeholder consultation and engagement. Of particular participant concern was the lack of communication to inform stakeholders, patients and community members about the clinic closure. Participants had contradictory opinions or an overall lack of knowledge on who planned, was involved or participated in the decision to open, run and close the clinic. For example, many patient/community members participants didn't know who was involved with the implementation or closure of the clinic.

"I don't remember anything because I don't remember there being a problem. It was just all of a sudden they [Sheep River NP Clinic] were closing" (Participant 17; Patient)

"I don't [know why the decision was made to close the Sheep River NP clinic], but I remember it happening very abruptly. I remember one day it was fine, and the next day it appeared that boxes were being brought in to pack up things" (Participant 9; Patient)

Healthcare professionals and health organizational participants had contradictory understandings about who was involved in planning, why the decision to close the clinic was made and their responses varied. Some participants believed that senior level administrators within the main provincial health care organization were responsible, some believed that the CRPCN was responsible and others believed the Ministry of Health and their respective government representatives made the decision to close the clinic.

"Yeah, I don't really know, [who or how the decision to close the clinic was made]" (Participant 6, Heath Organization Leader)

"Yeah, no it was as firm ongoing funding as anything we did in the PCN. It was never intended to be just temporary, because you wouldn't attach 1600 patients to a clinic and then just say, oh, we're shutting it down." (Participant 6, Health Organization Leader)

"I don't know if the PCN was involved in the decision to close the clinic. No, I don't know who was involved with the decision to close the clinic" (Participant 10, Professional Organization Leader)

"I actually am in the dark [as to why the decision was made to close the Sheep River NP Clinic closed]" (Participant 13, Health Care Professional)

Funding Failure (Financial Factor, SIF)

Participants described several factors that contributed to the funding failure for the Sheep River NP. No documents clearly indicated a commitment to ongoing funding past the initial one-year pilot funding period. Fifteen of the 18 participants knew that at the time of the clinic closure NPs in Alberta did not have a sustainability funding model.

"I mean what can be argued was that you need to have a sustainable funding model dedicated towards nurse practitioners. It can't flow through another group's hands first. It can't flow through PCN hands first or through physician's hands first because then you're asking another profession to develop the nurse practitioner role in primary care." (Participant 3; Health Care Professional)

"[we need a funding model where] …nurse practitioners are funded provincially instead of by local PCNs" (Participant 17; Patient)

"Well, stronger government vision about how primary health care should be developed. A government who'd actually taken it seriously to develop a funding

model for Nurse Practitioners" (Participant 1; Professional Organization Leader)

The Right Model (Workforce, SIF)

Several participants provided supportive statements which positively reflect that the NP model was the right model for this patient population. Participants made statements about the quality, as well as the comprehensiveness of care that these NPs were providing to patients. An informal evaluation conducted by the CRPCN in 2012 confirmed the value of the services that the NP Sheep River clinic was providing. For example:

"There was also a benefit to them [PCN physicians] as the NPs provide coverage for lab work follow up when some of the physicians are away. All physicians who were interviewed expressed confidence in the level of skill demonstrated by the NPs and stated that they were confident that the NPs are practicing safely: they always ask for a second opinion in more complex situations, and know their limitations really well." (Document 19, 2012)

"I think those patients that were getting care at the clinic probably really missing their NPs. I know they got good care. They got quality care that they don't get from their physicians, and they have no other alternative." (Participant 13; Health Care Professional)

"because they [the NPs] were treated as full professionals running their Primary Care practice, and they did a great job to demonstrate that it was valuable" (Participant 6; Health Organization Leader)

"I think it [Sheep River NP Clinic Closure] forced those of us that were really attracted to a more holistic medical model [and found that within the NP model]- we lost that when we lost the NPs". (Participant 16, Patient)

In spite of the recognized value by patients and physicians, participants also talked about the continued marginalization and devaluing of the NP role in this case.

> *"The problem is that we're not equal players. When we're in a PCN we're generally employees. And so that gives somebody else all the power and employee have none…. you really have no voice as an NP." (Participant 3; Professional Organization Leader)*

> *"I think NPs forget they are pioneers in a very NP resistant environment, where docs have way more power and are doing an invisible lobby and sometimes even visible." (Participant 18; Health Organization Leader)*

Lastly, the idea that making change, taking risks, supporting success and utilizing careful planning can encourage an innovation is supported by participants and interview data. Participants described the Sheep River NP clinic as a novel or new idea introduced in Alberta and thought it was an innovative, cost effective and successful model of care. Participants also felt that this NP service delivery model met the needs of patient populations more effectively than existing models. Document analysis highlighted that the CRPCN evaluation "confirmed that the care provided in the community of Okotoks was of a high standard and well regarded by the community, at a comparable cost to other models" (Document 19, 2012).

> *"I thought it was a really effective model of care and actually fulfilled the government's directions around optimizing nurse practitioner workforce." (Participant 1, Professional Organization Leader)*

> *"But the reality is that even under a PC government that tends to be physician friendly they took the risk to actually implement an alternate primary care provider to better meet the needs of the community. That to me was an innovation in itself. Then I think of those NPs as kind of pioneers in that particular community and region in the province - I think they established their service delivery model to really meet the needs of the population." (Participant 18, Health Organization Leader)*

Innovation Barriers (Innovation Supports, SIF)

Barriers to innovation can emerge from attitudes and perceptions of organizational leaders, stakeholders or individuals; other barriers can emerge from political forces and yet others can emerge from economic and financial triggers. Participants in their interviews described various barriers which include a lack of identified long term funding, the lack of patient and stakeholder consultation, the economic and political climate at the time the clinic was closing, frequent changeover of primary government leaders, the lack of health policy alignment to support the clinic and NP role, and the lack accountability on the part of organization and government leaders to address entrenched power and policy arrangements which impacted the sustainability of this clinic. See Table 4-10.

> *"For me, the Sheep River Clinic highlighted the systemic barriers to integrating nurse practitioners into the primary care system." (Participant 10, Patient)*

> *"That (barriers to keeping the Sheep River NP Clinic open) is a multifactorial issue" (Participant 1, Health Care Professional)*

Profound Social Proof (Innovation Specific, SIF)

The overwhelming influence that the actions and attitudes of individuals can have on an innovation; the greater the number of people who support the innovation, the more the innovation is perceived to be a success. Participant interviews alluded to the Sheep River NP Clinic being an "unmitigated or absolute success" (Participant 1, Professional Organization Leader). The outcomes evaluation conducted by the CRPCN was extremely positive, there were numerous champions of the clinic that were vocal within the community, the Sheep River NPs collected meticulous supportive data, and there were supportive comments about the clinic in media sources by patients and community members (CRPCN, 2009; CRPCN, 2012; CRPCN, 2015).

> *"So there was this profound social proof right in front of me about the kind of trust that this clinic had built with their population and with their clientele. And they explained a bit about the history of the clinic to me and explained that they had initially been started as a bit of a desperation move because the PCN*

that had been established in Okotoks was short of physicians, and they had this growing population and no way to meet the primary health care needs in a reasonable way" (Participant 1, Professional Organization Leader)

"To be fair we started out as a pilot; a pilot that kept running for five years because we were effective" (Participant 4; Health Care Professional)

"I certainly did not see, hear or know of any evidence that the Sheep River NP clinic wasn't anything but an unmitigated success. Here was a model within a PCN that was doing brilliant work." (Participant 1; Professional Organization Leader

"I felt that if it [Sheep River NP Clinic] was successful it would continue. I remember when it opened, I asked that question and the assumption that I had was if they're busy enough or stay busy, they'll stay open. I probably wouldn't have gone there knowing that they could lose their funding. I felt very confident that I wouldn't go to a doctor and be told all of a sudden, the doctor's not there anymore. I mean I just, so obviously whatever I've found out at that time I assumed it was, if it's successful, meaning they have the patient base, then why would you close something like that." (Participant 15; Patient)

Newly Emerging Themes

Emotional Aftermath

Stakeholder and patient emotions; the aftereffects and hidden consequences that are often not captured, or regarded as important to consider with sustainability failure. The participant interview data powerfully demonstrated the depth of emotion many patients and stakeholders felt when the Sheep River NP Clinic closed. Words such as 'devastated', 'a sense of loss', 'frustrated' and 'shocked' were used by participants to describe how they felt about the abrupt closure of this clinic.

"Devastated…. I felt like part of me was missing and I was left high and dry [when the Sheep River NP Clinic closed.]" (Participant 16, Patient)

“ I just felt it was devastating for the community and for all the people involved, the nurse practitioners and their staff. I know the clinic, the doctors and the other receptionists or admin assistants that were working there were devastated as well. There was a great connection between them and a great degree of professionality and friendliness and working together as well too. And then, of course, all the patients. We were just sort of scattered" (Participant 9, Patient)

“losing the [Sheep River] NP clinic was equivalent to having two physicians move out of town" (Participant 11, Health Care Professional)

“it’s just not the disruption from the patients that had [received that level of service from the NPs] ... Those patients were just sort of pushed aside, myself included. We were just sort of left” (Participant 9, Patient).

Innovation Challengers

In addition to the champions of this innovation, there were innovation *challengers;* those individuals who were in opposition, acted against or were an obstacle to the Sheep River NP Clinic sustainability. Innovation challengers included professional groups and organizations and/or individuals who used their title, position and power to exert a degree of influence on the Sheep River Clinic process, or initiated measures that restricted or protected themselves against competition from NPs based on the fear of losing power, status and/or income.

> *"I think NPs forgot they are pioneers in a very NP resistant environment, where docs have way more power and are doing an invisible lobby and sometimes even visible" (Participant 18, Health Organization Leader)*
>
> *“[the closure of the Sheep River NP Clinic] was one big perfect storm - a maelstrom of organizational/political and professional power/lobby and corruption” (Participant 18, Health Organization Leader)*
>
> *" I think [given] the physician lobby to invest in physician roles and PCN,*

the new government was more focused on relationship management with physicians, hence they funded physician services [not NP services]"(Participant 13, Health Care Professional)

Technicolor Data

Colorful, meaningful and meticulously collected evidence, in multiple forms illustrated the success of the Sheep River NP clinic and should have secured the clinic's sustainability. Participants spoke about the evidence that could have been used to validate the Sheep River NP clinic effectiveness and secured its sustainability. Evidence discovered in the documentation and confirmed in the interview's points to the Sheep River NP Clinic being an "unmitigated success". The outcomes evaluation conducted by the CRPCN was extremely positive (Document 19, 2012), the Sheep River NPs collected meticulous supportive data, and there were supportive comments about the clinic in media sources by patients and community members (Document 1, 2015; Document 3, 2015)

"I certainly did not see, hear or know of any evidence that the Sheep River NP clinic wasn't anything but an unmitigated success." (Participant 1, Professional Organization Leader)

"Here was a model within a PCN that was doing brilliant work." (Participant 3, Professional Organization Leader)

"…so, it was not all opaque the difference that they'd [Sheep River NPs] made in their community. They had data, right there in technicolor, you could see the difference they made in their community" (Participant 1, Professional Organization Leader)

Document analysis revealed the Sheep River NP Clinic had a positive evaluation in 2012, the NPs collected their own supportive outcomes data and the clinic had strong community/patient support (Document 19,2012).

In spite of this technicolor data, the Sheep River NP clinic closed its doors on January 15th, 2016.

Discussion

The findings (ten themes) from this case study align with the previously published Sustainability of Innovation and Policy Triangle Frameworks. However, three unique themes emerged from the data analysis for this case. These themes add additional depth to descriptions of sustainability and highlight the challenges and complexity of sustaining innovations in a dynamic health care environment. The results of this case study are grouped into four key discussion points: 1) despite evidence, "technicolor data", that points to the Sheep River NP clinic being effective and "an unmitigated success", it was a pilot project that was not sustained, 2) there was a lack of evidence-informed policy to support the decision making in regards to sustainability of this clinic. There was also a lack of accountability, transparency, consultation and communication on behalf of funders and governments regarding the decision making processes involved with the clinic's closure, 3) marginalization and devaluing of the NP role continues to be problematic in primary care settings in Alberta and this influences a sustainable funding solution for NPs, and 4) a major finding in this case study is three new emerging themes which further inform sustainability of innovations in PHC and add to our understanding of the complexity of the sustainability process. These themes together with the SIF and PTF captured the breadth of factors influencing sustainability of the PHC innovation in this case.

First and foremost, this case study analysis revealed that the reasons for closure of the Sheep River NP clinic were multifactorial in nature and combined with the 'perfect storm' of circumstances, the clinic ultimately closed. Canada is well known as the "Land of Pilot Projects". The country perpetually introduces and implements projects that are narrow in scale, prove that they work, and then hope that if successful, this will be enough to convince governments, funders and policy makers to do things differently.[51] The Sheep River NP Clinic was no different. The clinic was created as a one-year pilot project with no documented commitment that future sustainability or funding of the clinic was considered. A comprehensive evaluation of the clinic and other data sources known to decision makers provided evidence of the clinic's success. There is evidence that the CRPCN was hopeful the provincial government would create a sustainable funding solution for NPs, but when this did not happen the clinic ultimately closed.[51]

Second, the decision-making process of closing the Sheep River NP clinic lacked accountability, transparency and clarity. No documentation or information provided an accurate

picture of why the clinic closed; nor was there a clearly stated rationale for clinic closing. Important stakeholders, patients, community members and employees of the clinic were not consulted about the closures, nor did these stakeholders receive timely communication about closures decisions.[23] However, it is evident that the decision to close the clinic was made by the CRPCN due to a lack of jurisdictional support from the health care funder. In absence of formal funding policy, the CRPCN was able to make whatever decision they wanted, regardless of stakeholder consultation and technicolor data. Health service organizations, such as Primary Care Networks (PCNs) need to engage in transparent decision-making processes that use evidence to inform choices that support patient centered approaches to care.[22] Third, participants talked about the continued marginalization and devaluing of the NP role in Alberta. There is continued confusion about the NP role due to a lack of understanding of the role and uncertainty of how the NP can contribute to primary care. The issue is not unique to Alberta and continued limited stakeholder understanding of the NP role is a huge barrier to optimization and a sustainable funding solution for NPs across the country.[22]

Finally, three new themes (Emotional Aftermath, Technicolor Data, Challengers) emerged in the results of this case study. These themes capture additional components of the sustainability process in PHC which was not reflected in the SIF or PTF. These themes offer novel insights into the complexity of sustaining innovations such as the NP role in PHC and these findings raise important questions about the political, social and emotional nature of the sustainability process. These new themes emphasize the multi-facetedness and evolving nature of the sustainability of PHC innovations process. These themes further demonstrate that sustainability of innovations in PHC is composed of a variety of interrelated elements, which should be simultaneously assessed and managed to strengthen the ability of the health care system to promote health and wellbeing.

Implications

Sustainability is crucial to health system reform, however the literature in this area of study is sparse. This study was informed by two conceptual models, the SIF[11] which has not been empirically tested and the PTF[12] which to this point has been used extensively in health policy research but only addresses the decision making and policy process of sustaining a PHC innovation. This study confirms that the five factors described in the SIF and the PTF are

applicable to sustainability assessment. However, three unique themes emerged from the data in this study to complement sustainability assessment.

Limitations

One of the main limitations of case study research is the generalizability of results to other contexts. This case study occurred in Alberta, Canada and due to variable policy and NP initiatives across Canada it is difficult to generalize findings to all Canadian jurisdictions. However, this case produced rich and detailed data about the phenomenon of interest: sustainability failure. The second limitation is that this was a case study using qualitative analysis and no economic data was collected or analyzed. The CRPCN's funding formula utilizes rostering per patient and is not funded beyond this small per patient top up. As such, there is no explicit funding for NPs in the current Alberta PCN funding formula and the Sheep River NP clinic likely operated at a loss. The third limitation involves the potential for researcher bias, the primary investigator was a NP, as were two of her committee members. However, this limitation was mitigated through the involvement of a PhD committee member from the discipline of Public Health with expertise in policy analysis. The fourth limitation involves the length of time between when the Sheep River NP clinic closed and when interviews and data collection occurred. This could lead to recall bias as the participants may unintentionally forget certain important details of their involvement in the case.

Future Research

Key areas for future research include: a) advancing substantive research on sustainability and sustainability failures of the NP role and other PHC innovations, b) advancing methods for sustainability research in PHC, and (c) uilizing mixed methods case studies and applying health policy and economic analysis to further understand the role of NPs in primary care. It is critical there is improved focus on understanding, measuring, and communicating the value of sustainability for the multiple stakeholders involved in the sustainability process.

Summary

Canada's health system continues to experience significant PHC reform delays. Findings demonstrate that the closure of the Sheep River NP clinic was multifactorial, and combined with a 'perfect storm' of events, sustainability failed. Sustainability requires continuing effort through time, rather than representing a final state to be achieved. Our study offers new insights into the process of sustainability of organizational change, and elucidates the complement of strategies needed to make bottom-up change last in challenging contexts replete with competing priorities.

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Figure 4-1: Policy Triangle Framework by Walt & Gilson[35]

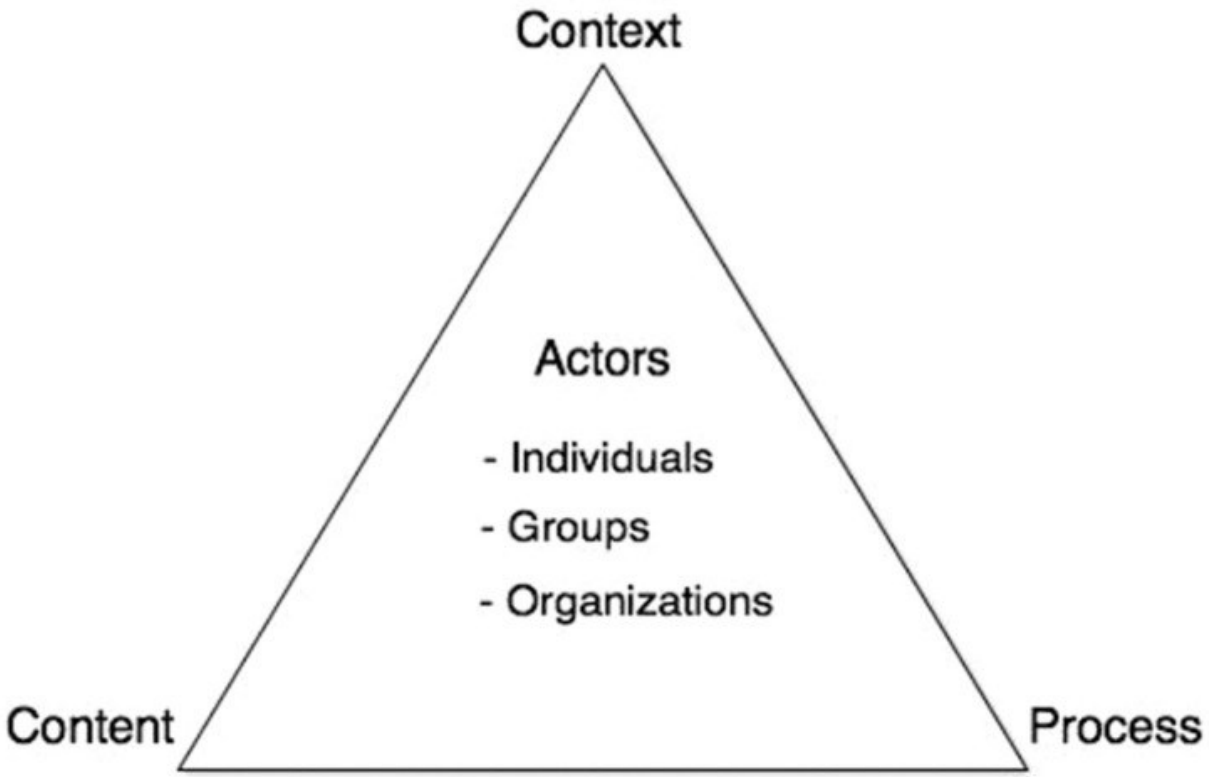

Table 4-1: Policy Triangle Element[35]

Policy Triangle Framework Components	
Context	● The context includes the 'why' of the policy process and considers how political history, economic ideologies, characteristics of government systems and cultural and environmental factors influence the policy process. ● Asks why are certain policy decisions made and why do policies and agendas change (Walt & Gilson, 1994; Ergen, 2012).
Content	● The content is the 'what' of the policy process, and considers the conditions under which the policy process occurred; the research, evidence, and the rules, regulations and legislation that influenced the policy process. ● It considers the objectives of the policy, the evidence and the legislation supporting a policy decision (Walt & Gilson, 1994; Ergen, 2012).
Process	● Process is the 'how' and looks specifically at policy development and the process of policy-making.

	● Assists in understanding how public policy is made and implemented, whom it may influence, and how it is evaluated (Walt & Gilson, 1994; Ergen, 2012).

Figure 4-2: Health Service Innovation Framework by Fox, Gardner & Osborne[34]

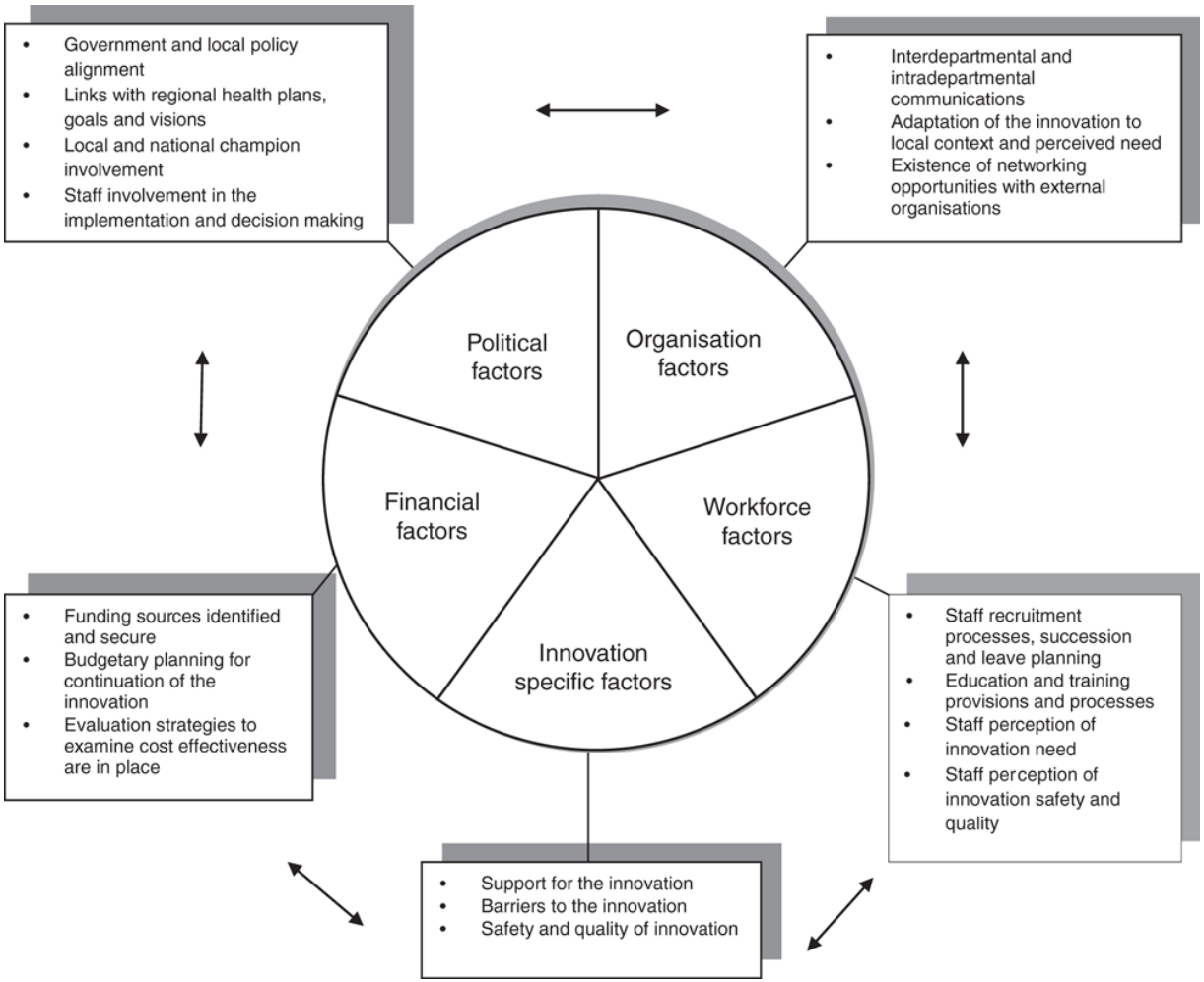

Table 4-2: Sustainability of Innovation Framework[34]

Sustainability of Innovation Framework	
Political Factors	● This factor focuses on appropriate government alignment, linking with regional health plans, involvement of local and national champions, as well as staff involvement. ● Evidence indicates that a political focus on one particular policy can have a strong influence on the sustainability of an innovation. ● When assessing factors that influence health services innovation sustainability, questions to consider include: Was the policy aligned with government health planning? Is there a pending change in government that could impact sustainability? Who are the political 'champions' that can support the innovation? and What are the funding provisions surrounding the policy?
Organizational	● Having flexibility and the ability to adapt an innovation to support the organizational environment is shown to encourage sustainability. ● When assessing factors that influence sustainability of a health services innovation, questions to consider include: What are the established communication pathways in the organization? What networking and communication needs to occur to include all elements of the organization? What levels of government and other organizational stakeholders should be involved? and How can an organization adapt the innovation to fit the local environment
Workforce	● Research indicates that innovations aligned with the value and needs of employees are more readily adopted and sustained. ● When assessing factors that influence sustainability of a health services innovation, questions to consider include: Are the values and needs of employees examined in the planning and

	implementation of the innovation? Was sufficient recruitment, workforce and succession planning assessed? Are minimal changes to roles, policies and procedures expected? and Is regular communication with employees throughout the process anticipated
Innovation	● Innovations that are flexible and adaptable, have the ability to respond to a dynamic funding and policy environment, and continue to evolve. ● These characteristics are an important feature of sustainability. When assessing factors that influence sustainability of health services innovations, questions to consider include: How are stakeholders involved in the innovation? Will they be consulted on the acceptability, quality and safety of the innovation? What barriers and supports to the innovation exist? and Will an evaluation process be initiated, and if so by who (Fox et al., 2015)?
Financial	● One of the most important factors influencing sustainability of a health services innovation are the financial factors. ● These factors include the service delivery model and source and length of funding. ● When assessing factors that influence financial sustainability of a health services innovation, questions to consider include: What funding sources have been identified and secured? Is the budget adequate to meet the needs of an innovation running long term? What will happen when the funding ceases? and Is there any consideration of program sustainability in program planning

Figure 4-3: Patient and Stakeholder Research Information Letters and Consent Forms

STAKEHOLDER/PROFESSIONAL VERSION

Study Title: Sheep River Nurse Practitioner Clinic: A Case Study

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Background

My name is Raelene Marceau and I am a PhD candidate through the Faculty of Nursing at the University of Alberta. I would like to invite you to participate in my thesis research study examining the closure of the Sheep River Nurse Practitioner Clinic in Okotoks, AB. You have been identified through a key informant or via newspaper, media or public government documents, as an individual who had involvement or accessed this clinic.

Purpose

Sustainability often comes up in discussions and debates concerning health system transformation and primary health care reform. Numerous efforts aimed at re-organizing our health system have led to the introduction of new programs and services; however, few of these have been maintained over the long-term. This creates wasted resources, frustration and

increases resistance to later initiatives to improve health care. To date, there has been a limited focus on how to achieve sustainability of health service innovations, which focus on changing the health system such as the NP role. This issue is poorly understood and there is little available literature on the sustainability of the NP role or how to sustain other programs or services in primary health care.

Nurse Practitioners (NPs) are healthcare professionals with additional education, either a Masters or PhD degree. NPs are legally able to assess and treat chronic and acute illnesses, prescribe medications, order diagnostic tests and comprehensively coordinate care to a broad population of patients in a wide variety of settings. In Canada, several issues prevent NPs from working in their professional roles. The most significant current issue is the lack of a sustainable funding to support this role which has resulted in a lack of utilization of NPs across the country. It is crucial we understand the limitations of how NPs are funded and through research, make recommendations towards creating sustainability of the NP role.

The purpose of this research is to closely examine the closure of the Sheep River Nurse Practitioner Clinic to better understand the following:

1. Why the Sheep River Nurse Practitioner Clinic closed and what were the factors that influenced clinic closure?
2. How was the decision to close the Sheep River Nurse Practitioner Clinic made and who was involved in the decision to close the clinic?
3. Was the Sheep River Nurse Practitioner clinic sustainable?

Participation

You have been identified as a potential participant in this study due to your involvement in the Sheep River Clinic or your professional position at the time of the Sheep River Clinic closure. If you volunteer to take part in this study, you will be asked to do the following:

1. Provide information about yourself, such as your age, occupation and where you live.
2. Complete an interview. Interviews will be held at a predetermined location in Okotoks, Alberta or at a location more suitable to your work/life needs. Alternatively, a telephone interview can be scheduled. The interview will take about 60-90 minutes, will be conducted by the student researcher, audio-taped and later transcribed for the purpose of data analysis

3. Respond to questions regarding the Sheep River Nurse Practitioner Clinic, including how you were involved and what your knowledge was of the clinic and its subsequent closure.
4. The interviews will be conducted in February, March and April of 2019.

Benefits

- The anticipated benefit of participating in this research is the opportunity to discuss your knowledge, insights and concerns related to the Sheep River Nurse Practitioner Clinic. An additional benefit is the opportunity to contribute to our improved understanding of how to sustain NP roles and other primary health care programs and services in our health system. However, it should be noted there might be no benefit to participating in this research.
- There are no costs to the participant for taking part in this research.
- There is no compensation or reimbursement for participating in this research.\

Risks

- Potential risks or discomforts include possible uncomfortable emotional feelings when asked questions during the interview. While this project may involve some professional and emotional risks, the utmost care will be taken to anonymize your information and protect your identity. If you do feel any emotional or psychological discomfort from being involved in the study, or for any other reason, you are free to limit your participation and/or withdraw from the study at any time.

Voluntary Participation

- Your participation in this study is voluntary and you are under no obligation to participate.
- You may decline to answer any question(s) you prefer not to answer by requesting to skip the question.

Confidentiality & Anonymity

- Every effort will be made to ensure confidentiality of information about you that is obtained during this research study. What you say during the interview will be audio taped and then transcribed, but names and any identifying information will be removed from the data. Data (audio recordings, personal information, interview notes and anonymized transcripts) will be kept by the research team for a period of 5 years

following the end of the study. The data will be kept in a safe place on a secure, encrypted computer drive that only the research team has access to.

- The results from this study will be presented in academic/professional journals read by government, policy and health care professionals to help them better understand the research topic. The results may also be presented in person to groups of government, policy and/or health care professionals. At no time, however, will your name be used or any identifying information revealed. If you wish to receive a copy of the results from this study, you may contact one of the researchers at the telephone number given below.

Rights of Research Participants:

- You may withdraw from this study until April 30th, 2019, after which your anonymized data will be included in the final research report. To withdraw from the study, participants should contact the researcher by phone or email. After you leave the study, we will not collect any more information about you for the study.
- The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers

How to participate in this study:

1. Review this letter of information.
2. Provide consent if you want to participate.
3. Wait for the researcher to contact you to schedule an interview

Further Information

- If you require any information about this study, or would like to speak to one of the researchers, please call Raelene Marceau (Student Investigator) or Dr. Tammy O'Rourke (PhD Supervisor/Co-investigator) at 780-492-2699.
- The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

Conclusion

We thank you in advance for thinking about being part of this study.
Please do not hesitate to contact me with any questions relating to the study.
Sincerely,
Raelene Marceau MN, NP, PhD(c)

CONSENT FORM

Study Title: Sheep River Nurse Practitioner Clinic: A Case Study

Supervisor /Principal Investigator:

Dr. Tammy O'Rourke

Assistant Professor

University of Alberta, Faculty of Nursing

EMAIL: torourke@ualberta.ca

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Student Research Investigator:

Raelene Marceau MN, NP

PhD Candidate

Faculty of Nursing

University of Alberta

EMAIL: rroot@ualberta.ca

PHONE: 780-618-5396

	Yes	**No**
Do you understand that you have been asked to be in a research study?	❑	❑
Have you read and received a copy of the attached Information Sheet?	❑	❑
Was this consent read aloud in its entirety?		
Do you understand the benefits and risks involved in taking part in this research study?	❑	❑
Have you had an opportunity to ask questions and discuss this study?	❑	❑
Do you understand that you are free to leave the study at any time, without having to give a reason and without affecting your health care and or Sage services?	❑	❑

Has the issue of confidentiality been explained to you? ❑ ❑

Do you understand who will have access to your data, including personally identifiable information? ❑ ❑

Who explained this study to you?

_____

I agree to take part in this study. ❑ ❑

_____ _____

_____

Name of Participant (please print) Signature of Participant Date

Signature of witness: I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____ _____

_____

Name of Witness (please print) Signature of Witness Date

Table 4-3: Interview Questions

	1. What can you recall about the Sheep River NP Clinic? 2. What was your involvement with the Sheep River NP Clinic? 3. *Probe: What was your role? Stakeholder? Employee etc* 4. Can you tell me why this clinic opened and what about this clinic was innovative? 5. Who was involved in the planning and opening of the clinic? 6. Who were the staff at the Sheep River NP Clinic? 7. What do you know about how the Sheep River NP Clinic was funded? 8. *Probes: how was the clinic funded?* 9. Do you know if there were formal policies in place to support the development of the Sheep River Clinic? 10. *Probe: Say for example from Alberta Health and Wellness, Alberta Health or the Primary Care Network?* 11. If there were a policies, were these linked or aligned to Alberta Health goals and vision at the time? 12. *Probe: Do you know if this policy changed? If so, why?* 13. Were NPs consulted on any decisions regarding health policy relevant to the Sheep River Clinic*?* 14. What do you understand about NPs and their role in PC? 15. What do you know about the PCN and how it was structured? 16. *Probe: (patient) What kinds of 'things' did the NP do for you?* 17. Who were the champions of the Sheep River Clinic? 18. *Probes: Were there municipal, provincial government, PCN, AH directors as champions?* 19. Were there other things happening in health care from a political perspective at the time of the closure of the clinic?

	20. There was an evaluation of the clinic conducted by the PCN in March 2012, do you know if the evaluation influenced the decision to close the clinic? 21. *Probe: Do you know if there were any other evaluations of the clinic during the time the clinic was operational or prior to the closure of the clinic?* 22. What is your understanding of why the Sheep River Clinic was closed? 23. Where and when was the decision to close the Sheep River NP clinic made? 24. Were you involved in the decision to close the clinic? 25. Who made the decision to close the Sheep River NP Clinic? 26. How did individuals communicate about the clinic closure within the PCN? 27. *Probes: How was information shared about the closure of the clinic? Within the clinic, within the PCN and Alberta Health?* 28. Was the Sheep River NP clinic intended as a pilot project? 29. Do you know if the budget was adequate enough to meet the needs of running the clinic? 30. How were the decisions to staff the clinic made? Who made those decisions? 31. What kind of communication and updates did the PCN provide to the clinic staff on clinic outcomes and quality of care? 32. How were the NPs recruited to the clinic and were there any staffing changes during the time the clinic was in operation? 33. What might have prevented the closure of the clinic? 34. What were some barriers to keeping the clinic open and what efforts, if any, were made to avoid closure? 35. *Probes: Staff turnover? Lack of key support? Lack of technical assistance? Financial?* 36. What else could have been done to keep the clinic open? 37. What was the effect of closing the NP clinic on the community? Surrounding communities? 38. Do you know anyone else was involved in the planning, implementation or closure process

	39. How did you feel when the clinic closed? (Patient) 40. What was the impact on your community, on you, how long did it take you to find another family physician. 41. Did you have contact from any organization to obtain your feedback on whether this clinic should close? (Patient)
Closing Key Components	42. Is there anything more you would like to add? Is there anything you would like NOT included? 43. Thank you for your time.

Table 4-4: A-Priori Preliminary Codes

Sustainability Innovation Framework Factors	**RESEARCH QUESTIONS**
Organization/Stakeholder	1. Why did the Sheep River NP Clinic close and what were the contextual factors influencing clinic closure? 2. What was the decision-making process encompassing clinic closure and what did this process entail? **3.** Was the Sheep River NP clinic sustainable and what lessons can be garnered from clinic closure to inform organizations, funders, policy makers and governments on sustaining the NP role and other PHC health service innovations?
Systems	
Political	
Workforce/Professional	
Innovation Barriers	
Innovation Supports	
Financial Funding	
Context Why Decision Made	
Content What was the decision-making process	
Legislation/Evidence/Policy Supporting Decision	
Content What were the Political Conditions	
Process How Involvement in Decision	
Actors WhoParticipated in the Decision	

Table 4-5: How Themes Support the Concepts in the Policy Triangle and Sustainability of Innovation Frameworks

Policy Triangle Framework	Key Theme	Category	Informed by	Key Theme Definition	Quote	Participant #	Document #
Context - context element includes the 'why' of the policy process and considers how political history, economic ideologies, characteristics of government systems and cultural and environmental factors influence the policy process. This element asks why are certain policy decisions made and why do policies and agendas change	**Motivation for Clinic Opening and Closing**	Motivation for Clinic Opening	Documents and Interview	The 'why' or reasons and rationale for clinic opening. These include a shortage of family physicians, lack of access to primary care and huge population boom in Okotoks putting	"Initially opened as a pilot project to fulfill a need: 20% of people in Okotoks without a family physician" "The pilot was initiated in a response to a chronic lack of access to primary care physicians in the town of Okotoks. As discussed above, all current	# 2	#22

				pressure on existing primary care services.	physicians were at capacity and there were limited opportunities to recruit more"		
	Motivation for Clinic Opening and Closing	Motivation for Clinic Closing	Documents and Interviews	The 'why' or reasons and rationale for clinic closure. These include the Calgary Rural Primary Care Network (CRPCN) becoming more fiscally accountable and moving from a local model of primary care	"somebody pulled funding" "Loss of AH/AHS executives who were nurses and female" "There is no money we would want to spend to continue to fund this" "Currently, the clinic operates at a cost of $297,557.48 per	#17 #17 #4	#22

				managed by each community in the CRPCN, to a more centralized and less individual focused approach. The fact that there was Provincial Government election and shift from one political party philosophy to another, the fact that there were three different Ministers of	annum, caring for a panel of approximately 1600 patients. Unfortunately, funding the program at this amount prevents the local community from funding other programs and services that also benefit patients of PCN member physicians practicing in the area"		

				Health in a one-year period etc			
Content - content element is the 'what' of the policy process, and considers the conditions under which the policy process occurred; the research, evidence, and the rules, regulations and legislation that influenced the policy process. It considers the objectives of the policy, the evidence and the legislation supporting a policy decision	**Just A Pilot Process**		Documents and Interviews	The 'what' or the planning, processes, structure, staffing, physical space of the Sheep River NP Clinic.	"We created the budget. We were very good with our budget. We were very careful. We were fiscally aware, fiscally responsible" "But, there didn't seem to be any staff changes. There seemed to be the same administration people and the same nurse practitioners that were there. So no, I loved the	#4 #9	

					continuity of it, yes” “My simple understanding was that even though the minister was given several letters and briefing notes and/or heads up in the MDM meetings which are just meetings between the executive teams and the ministry with the minster and her team that it was not a priority to them”	#18	
Process - the ‘how’ element looks specifically at policy	**Just A Pilot Process**		Documents and	‘How’ the Sheep River NP Clinic	“The nurse practitioner		#22

development and the process of policy-making. This element assists in understanding how public policy is made and implemented, whom it may influence, and how it is evaluated			Interviews	came to be in existence (producing the pilot project, funding of the pilot project, description of the project).	program was developed as a pilot program, aimed at enhancing access to a primary care provider in the Town of Okotoks during a period of physician shortage"		
	Details of Day to Day Operation		Documents and interviews	The basic elements (structure, funding, relationships) of the CRPCN organization			
			Documents and interviews	The basic elements (structure,			

				funding, relationships) of Primary Care Networks in Alberta			
			Documents and Interviews	The process/course of action and choices made which influenced the closure of the Sheep River NP Clinic. How was the decision to close the Sheep River NP Clinic made.	“I think it was a PCN decision. And that's only a gut feeling, nothing concrete. And just knowing what I know about the leadership of PCNs. I think the government would've been hard pressed to intervene again as they had in the past. Even though it was a different government, I	#4	

					think that they would be loathe to overturn the decision of a PCN board. That would be my read of it from the political will at the time” “So I don't think they were a bunch of evil people, I think they were trying to make a decision for the best use of their resources that they'd received. And it got to the point where they no longer had the resources to support the clinic	#1	

					out of the envelope that they received"		
Actors/Participants Actors are the participants or the 'who' element of the policy process. A key determinant of policy change is the group of individuals involved and these often include: politicians, government and organizational employees and leaders, community members and various stakeholders. This element asks who are	**Patient, Political and Provider Champions**		Documents and Interviews	Individuals who directly participated or had interest in regards to the Sheep River NP Clinic	4 NPs 1 Other healthcare provider 1 Physician 4 Organizational Leaders 8 Patient/community members		
			Documents and Interviews	Individuals and Stakeholders who supported, defended or fought for the	" it was certainly important to me, I know there's many NPs that don't feel like CARNA did enough to profile the NPs, but I	#1	

the essential 'actors' involved in the policy process, and who plays a key role in the planning, implementation and evaluation of the innovation				Sheep River NP Clinic	can tell you as President, I ended up doing more advocacy for the Nurse Practitioner role than... Not more but certainly as much as for the 470 NPs in the Province and the 37,800 RNs, and I advocated for both roles. But I advocated just as strongly for NP role as I did for the RN role"		
Sustainability of Innovation Framework	Key Theme			Definition			
Organization Factors – Having flexibility and the ability to	**Insufficient Consultation/engagement**		Documents and Interviews	Deficient knowledge, participation, involvement,	"Only on its closing were they (NPs) not consulted. I	#3	

adapt an innovation to support the organizational environment is shown to encourage sustainability. When assessing factors that influence sustainability of a health care innovation, questions to consider include: What are the established communication pathways in the organization? What networking and communication needs to occur to include all elements of the organization? What levels of government and other organizational stakeholders should				interest or investment in the Sheep River NP Clinic Process and/or closure.	know that, but I don't know anything else with their consultation. I believe they were quite involved setting it up because I think that's the gist I remember. But I can say for sure that they weren't involved in it's closing. I think it came down like just a big shutter, "Done, we're done, see ya." “I mean I guess, I don't live in Okotoks, I live in High River, so	#17	

be involved? and How can an organization adapt the innovation to fit the local environment					maybe I didn't know about it in the community that if there was anything going on in the Okotoks community. But, I just feel like I wasn't consulted, it was just, it's just closing”		
	Innovation Barriers	Lack of Transparency	Documents and Interviews	Unable to clearly or easily understand a process; a loss of trust	“Data sharing between the Department, AHS and PCN physicians is limited, and systems to do so are not well developed”		#9

					"The Department provides very little information on the performance of the PCN program. The Department and AHS each report a variety of measures related to the overall area of primary healthcare, but few of them relate directly to PCNs and none reflect on performance of the PCN program"		#31
Political Factors - This factor focuses	**Just a Pilot Process**		Documents and	Organizational policies	"Well, I would say that the	#1	

on appropriate government alignment, linking with regional health plans, involvement of local and national champions as well as staff involvement. Evidence indicates that a political focus on one particular policy can have a strong influence on the sustainability of an innovation. When assessing factors that influence health care innovation sustainability, questions to consider include: Was the policy aligned with government health planning? Is there a pending change in			Interviews	were in place or position to support the Sheep River NP Clinic.	mandate of that clinic and the service they provided were completely aligned with the directions in Alberta health at the time"		
	Innovation Barriers	Lack of Accountability	Documents and Interviews	Fear, Uncertainty, Obscurity, not clearly understanding or withholding knowledge surrounding the decision-making process of the closure of the Sheep	"I think the minister of Health should've stepped in" "He says he's approached Health Minister Sarah Hoffman and was told inquiries would have to come from the Wildrose	#2	

government that could impact sustainability? Who are the political 'champions' that can support the innovation? and What are the funding provisions surrounding the policy?				River NP Clinic	health critic and when he raised the issue in the Legislature she said it was the first time she's heard of it"		
			Documents and Interviews	The organization, political and community mood/opinions during the time the Sheep River NP Clinic was open and in particular closing	"Well, we had a new government that didn't know what they were doing. You had a new deputy minister that did not have one day of healthcare experience. You had the oil drop I think by what was it, 50% or something insane in less than a year? You had	#17	

					all of the sudden this massive deficit. You had the loss of a deputy minister and a CEO both of whom were nurses. The CEO of AHS was booted out in a way, like not booted out but was treated so poorly that she left” “The problem was that occurred in the change of government, and so, in that six month period of time, there was	#15	

					three different health ministers”		
			Documents and Interviews	The response of the Provincial Government to the pending closure of the Sheep River NP Clinic.	“Because as soon as the government changed, and the new health minister took over, we started trying to contact the government and getting meetings and trying to push it through, and we were told well, we don't need another nurse practitioner pilot project, and we have no plan for funding right now, so it was pushed and pushed”	#1	

					"My simple understanding was that even though the minister was given several letters and briefing notes and/or heads up in the MDM meetings which are just meetings between the executive teams and the ministry with the minster and her team that it was not a priority to them"	#18	
	Patient, Political and Provider Champions		Documents and Interviews	Efforts made by organizational, political stakeholders	"I think the political will from decision makers, whether it be senior	#10	

				and community members to prevent clinic closing."	bureaucrats or the actual minister of health or Associate Minister of health, to see it through, to see the nurse practitioner pilot project, fully funded and have a sustainable funding"		
Financial Factors - One of the most important factors influencing sustainability of a health care innovation are the financial factors. These	**Funding Failure**		Documents and Interviews	Funding that was obtained for the of the Sheep River NP Clinic	"With support from the PCN executive and physician leadership within the community, a decision was made to fund the	#18	

factors include the service delivery model and source and length of funding. When assessing factors that influence financial sustainability of a health care innovation, questions to consider include: What funding sources have been identified and secured? Is the budget adequate to meet the needs of an innovation running long term? What will happen when the funding ceases? and Is there any consideration of program sustainability in program planning					NP project for 1 year" "It was a PCN initiative, so it was funded by the PCN" "And, and I mean what can be argued was that you need to have a sustainable funding model dedicated towards nurse practitioners. It can't flow through another group's hands first, flow through PCN's hands first or	#10	

					through physicians hands first because then you're asking another profession to develop the nurse practitioner role in primary care"		
Workforce Factors - Research indicates that innovations aligned with the value and needs of employees are more readily adopted and sustained. When assessing factors that influence sustainability of a health care	**The Right Model**	NP Value	Documents and Interviews	Statements which positively support the NP role and illustrate the value of the role Statements that reflect the treatment	"There was also a benefit to them as the NPs provide coverage for labwork follow up when some of the physicians are away. All physicians who were interviewed expressed		#8

innovation, questions to consider include: Are the values and needs of employees examined in the planning and implementation of the innovation? Was sufficient recruitment, workforce and succession planning assessed? Are minimal changes to roles, policies and procedures expected? and Is regular communication with employees throughout the process anticipated				of NPs as not being valued, supported, welcome or insignifican	confidence in the level skill demonstrated by the NPs and stated that they were confident that the NPs are practicing safely: they always ask for a second opinion in more complex situations, and know their limitations really well” “The problem too is that we're not equal players. When we're in a PCN we're generally employees. And so that gives	#3	

					somebody else all the power and employee has none. So you really have no voice as an NP” “I still don't think that trying to integrate NPs into traditional primary care processes, which is now a PCN process, is the way to go for NPs. I think it's hopeless”	#3	
Innovation Specific Factors - Innovations that are flexible and adaptable, have the	**Innovation Barriers**			A number of different factors, when combined	“ For me, The Sheep River Clinic highlighted the	#10	

ability to respond to a dynamic funding and policy environment, and continue to evolve. These characteristics are an important feature of sustainability. When assessing factors that influence sustainability of health care innovations, questions to consider include: How are stakeholders involved in the innovation? Will they be consulted on the acceptability, quality and safety of the innovation? What barriers and supports to the innovation exist? and Will an				together prevented the Sheep River NP Clinic from being sustainable	systemic barriers to integrating nurse practitioners into the primary care system, even though they're well-integrated and now they have not for profits. Yeah, and certainly the evidence, it's overwhelming evidence” “What I saw was a pattern that I had started to see and continue to see, and that wherever NPs put in because there's a lack of physicians so	#3	

evaluation process be initiated, and if so by who					we're filler. As soon as positions can be found we're replaced with physician" "That (barriers to keeping the Sheep River NP Clinic open) is a multifactorial issue"	#10	
	Stakeholder Uncertainties	Lack of Transparency		Unable to clearly or easily understand a process; a loss of trust in a process Stakeholders that had little awareness or understandin g of the facts in the Sheep	"I do find there's a significant lack of learning, and this goes across all occupations, there's a lack of learning between health occupations as to what one provider provides in	#3	

				River NP clinic process	relation to another. I find it quite amazing. "I don't know. I am pretty sure it was a government funded thing, but I don't know where from"	#15	
				Statements that the Sheep River NP clinic was an advanced novel/new idea introduced in Alberta; was the first clinic of its	"I thought it was a really effective model of care and actually fulfilled the government's directions around optimizing nurse practitioner workforce"	#18	

				kind to open in Alberta.	"But the reality is that even under a PC government that tends to be physician friendly they took the risk to actually implement an alternate primary care provider to better meet the needs of the community. That to me was an innovation in itself. Then I think those NPs as kind of pioneers in that particular community and region in the province I think	#18	

					established their service delivery model to really meet the needs of the population”		
	The Right Model	NP Value		Statements which positively support the NP role and illustrate the value of the role. Statements that reflect the treatment of NPs as not being valued, supported, welcome or insignifican	“We have our own role to play. We are not to fit in with physicians” “The problem too is that we're not equal players. When we're in a PCN we're generally employees. And so that gives somebody else all the power and employee has none. So you	#1 #13	

					really have no voice as an NP"		
	Profound Social Proof - Successful/Sustainable	Social Proof Successful/Sustainable		Statements which demonstrate and validate that the Sheep River NP clinic was sustainable and effective.	"To be fair we started out as a pilot; a pilot that kept running for five years because we were effective" "I certainly did not see, hear or know of any evidence that the Sheep River NP clinic wasn't anything but an unmitigated success" "Here was a model within a	#4 #1 #1	

					PCN that was doing brilliant work”		

Table 4-6: Emerging Theme Definitions to Develop a New Conceptual Framework to Assess Sustainability of Innovations in PHC

Emerging Themes	Key Category	Informed By	Definition	Quotes	Participant #	Doc #
Emotions/Aftermath	Impact	Documents/Interviews	The unpleasant emotions, aftereffects and consequences of the Sheep River NP Clinic closing.	"Losing the NP clinic was equivalent to having two physicians move out of town"	#9	
				"Devastated…I felt like part of me was missing"	#15	
				"I was left high and dry"	#13	
				"All of us patients - we were just sort of scattered"	#18	
				"Devastated, it's a step backwards"		
				"I'm not sure but I think these people are caught in the middle of something that's very tragic,"	#3	

				"And I can't believe they did that. I mean that's unethical. You don't just change providers on people and not ask if that's okay, or "would you mind, or this is what we're doing." It's just, "Okay, well sorry they're out, these guys are in." I just think that's abysmal. I would hate to be treated like that as a patient, so disrespectful."		
Professional Turf This is an emerging theme because it is was found to have a great impact on the sustainability of this clinic. It is a very specific (and often under looked) component that can greatly influence	Challengers	Documents/Interviews	Challengers - Individuals who were in opposition, acted against or were an obstacle in the Sheep River	"Yes. They (senior administration through our health organizations) would do anything to put obstacles in the way and to support the physicians not the NPs. Yes. Yes. Yes" "I wouldn't say it's jealousy. They just don't want us, it's just an	#17	

and impact the sustainability process and it is not specifically addressed in either one of the existing frameworks.			Clinic clinic process.	animosity that we're cutting into their paycheck and their wallets”	#13	
	Protectionism (Fear)	Documents/Interviews	Professional Groups, Organizations and/or individuals who initiated measures that restricted or protected themselves against competition from NPs based upon fear of losing status, income, power etc.	“Physician’s groups are old boys clubs in rural Alberta” “But it's self-interest and I don't really blame them. Boy, if somebody had handed me that package too (PCN) I'd be protecting it. I mean can completely really understand, it's just that nurse practitioners are taking the brunt, we're just not welcome, and that's the hurtful part, it's a social injustice part, right, it's an injustice, but I'm not surprised that's why I think we need something completely separate” “Physicians and the administration of the Health Authority at that time, who never	#18 #3 #13	

				wanted nurse practitioners because they wanted to keep the docs happy, and they didn't want us” “There was tons of politics where the docs were truly undermining the spread and scale up of NP role integration in the province yes. Tons”		
	Power and Positional Authority (Influence	Documents/Interviews	Professional groups, Organizations and/or individuals who use their title, position and power to exert a degree of influence on the Sheep River NP clinic process.	“one big perfect storm - a maelstorm of organizational/political and professional power/lobby and corruption” “I think NPs forgot they are pioneers in a very NP resistant environment, where docs have way more power and are doing an invisible lobby and sometimes even visible”	#18 #13	

				“I suspect the doctors ... The #13Physician's Association put pressure on the Government to protect their own interests”		
Technicolor Data This is an emerging theme because even though they had impeccable data collected on this clinic) that illustrated very positive outcomes), the clinic was still not sustainable. The current frameworks do not address this specific component. We are NOT currently using evidence or outcomes to support the sustainability process. It is not specifically addressed in these frameworks.This needs to be reflected in the new framework.	Profound social proof		Detailed, ‘colorful’, meaningful data, through the evaluation of the Sheep River NP clinic and collected by the NPs themselves which illustrated the success and sustainability of the clinic. Profound social proof, the influence of words and	"So it was not at all opaque, the difference that they’d made in their community. They had the data, right there in technicolor, you could see the difference that they’d made in their community"	#1	

			actions from people around us that positively impacted the success and sustainability of the Sheep River NP Clinic.			

Table 4-7: Participant Characteristics

Stakeholder Group	Perspective	Gender	Discipline	Role
Internal Stakeholders (those who participated in some capacity in the Sheep River NP Clinic Process)	Organizational n=4 Professional n=6 Community/Patient n=0	Female n=8 Male n=2	Nursing n=4 Medicine n=1 Healthcare n=5	Healthcare providers n=6 Healthcare Management n=4
External Stakeholders (Those who had minimal knowledge of the Sheep River NP Clinic Process but may have been involved in another capacity)	Organizational=0 Professional=0 Community Member/Patient n=8	Female n=7 Male n=1	N/A	Community Member/Patient n=8

Table 4-8: Document Summary

#	Date	Title	Author	Source	Type
1	N.D. (No Date)	Calgary Rural Primary Care Network Operating Strategy	Calgary Rural Primary Care Network	Calgary Rural Primary Care Network	Operating Strategy
2	N.D.	Letter addressed to Minister of Health Honorable Stephan Mandel	Community Member	Personal Documentation	Letter
3	N.D.	Letter addressed to Minister of Health Honorable Stephen Mandel	Community Member	Personal Documentation	Letter
4	N.D.	Letter addressed to Minister of Health Honorable Stephan Mandel	Community Member	Personal Documentation	Letter
5	N.D.	Letter addressed to Minister of Health Honorable Stephan Mandel	Community Member	Personal Documentation	Letter

6	9/11/10	Primary Care Service Charter: Family Practice NP Pilot	Calgary Rural Primary Care Network	Calgary Rural Primary Care Network	Project Charter
7	27/10/11	Okotoks nurse practitioner clinic first of its kind in Alberta	Journalist	Okotoks Western Wheel	Newspaper Article
8	2012	Evaluation Family Practice Nurse Practitioner Clinic in Okotoks	Calgary Rural Primary Care Network	Calgary Rural Primary Care Network	Evaluation
9	2012	Office of the Auditor General Report of the Auditor General of Alberta on Primary Care Networks	Auditor General	Office of the Auditor General	Report
10	2013	Calgary Rural Primary Care Network Organizational Structure	Calgary Rural Primary Care Network	Calgary Rural Primary Care Network	Organization structure and chart

11	01/02/13	Family Practice NP Initiative - Updated Charter	Calgary Rural Primary Care Network	Calgary Rural Primary Care Network	Project Charter Update
12	24/04/15	Letter addressed to Minister of Health Honorable Stephen Mandel	Community Member	Personal Documentation	Letter
13	15/05/15	Letter addressed to Minister of Health Honorable Sarah Hoffman	Community Member	Personal Documentation	Letter
14	06/11/15	Calgary Rural Primary Care Network Letter Sheep River Nurse Practitioner Clinic Closure	Sheep River Nurse Practitioners	Sheep River Nurse Practitioner Clinic	Letter
15	01/12/15	Video MLA in Alberta Legislature	Highwood MLA	same	Video
16	01/12/15	Member Legislative Assembly's Facebook Post on Facebook	Community Member	Facebook	Public Social Media Post

17	01/12/15	Facebook Comment on Member Legislative Assembly's Facebook Post	Community Member	Facebook	Public Social Media Post
18	07/12/15	Nurse Practitioner's Office in Sheep River Clinic to Close https://okotoksonline.com/local/sheep-river-clinic-to-close	Journalist	High River Online	Newspaper Article
19	07/12/15	Comment on article "Sheep River Clinic to Close"	Community Member	Facebook	Public Social Media Post
20	07/12/15	Comment on article "Sheep River Clinic to Close"	Community Member	Facebook	Public Social Media Post
21	08/12/15	Nurses Looking For Work Following Sheep River NP Clinic Closure	Journalist	Okotoks Western Wheel	Newspaper Article
22	12/02/15	Calgary Rural Primary Care Network letter to Minister Mandel	Physician Lead Calgary Rural Primary Care Network	Calgary Rural Primary Care Network	Letter

23	16/12/15	Lack of funding closes Okotoks clinic	Journalist	Okotoks Western Wheel	Newspaper Article
24	24/12/15	Comment on article “Okotoks Nurse Practitioner Clinic Could Have Been Saved if Policy was in Place”	Community Member	Facebook	Public Social Media Post
25	02/01/16	Letter addressed to Minister of Health Honorable Sarah Hoffman	Community Member	Personal Documentation	Letter
26	14/01/16	Comment on article “Okotoks Nurse Practitioner Clinic Could Have Been Saved if Policy was in Place”	Community Member	Facebook	Public Social Media Post
27	14/01/16	Comment on article “Okotoks Nurse Practitioner Clinic Could Have Been Saved if Policy was in Place	Community Member	Facebook	Public Social Media Post
28	14/01/16	Comment on article “Okotoks Nurse Practitioner Clinic Could Have Been Saved if Policy was in Place	Professional Association	Facebook	Public Social Media Post

29	24/01/16	Comment on article “Okotoks Nurse Practitioner Clinic Could Have Been Saved if Policy was in Place”	Professional Association	Facebook	Public Social Media Post
30	19/09/16	Calgary Rural Primary Care On Site Visit	Researcher	Calgary Rural Primary Care Network	Email
31	2017	Office of the Auditor General Report of the Auditor General of Alberta on Primary Care Networks	Auditor General	Office of the Auditor General	Report

Figure 4-4: Sheep River NP Clinic Timeline

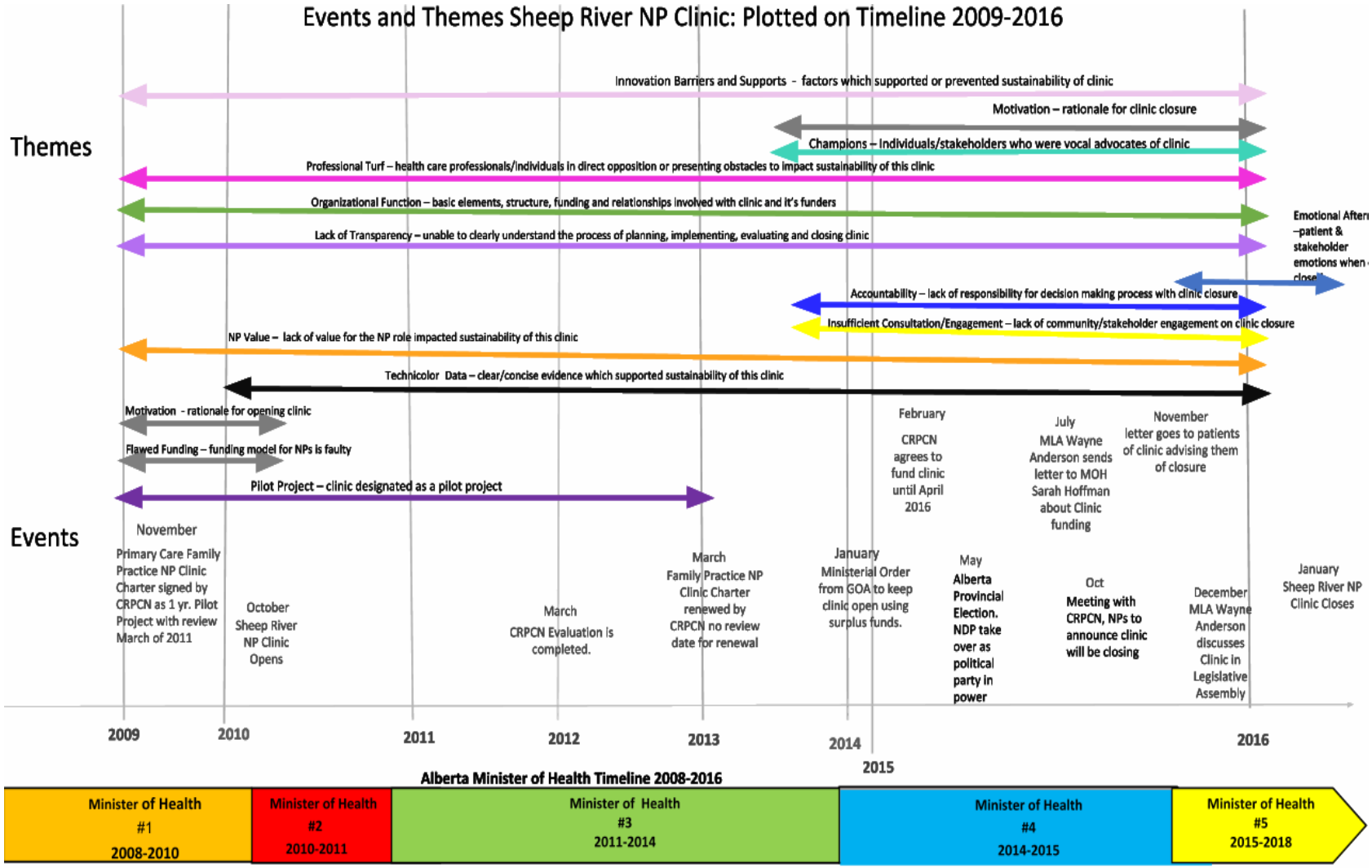

Table 4-9: Participant Identified Motivations for Clinic Closing

Motivation	Participant Response
Change in local community decision making power	*"Because local decision making was taken away in Okotoks, the centralized approach was detrimental to any local health initiatives (even if they were deemed successful). The PCN lost its ability to have discretionary decision-making" (Participant 11; Health Care Professional)*
Physician pressure and lobbying	*"I think the physician lobby to invest in physician roles and PCN, the new deputy minister who was more focused on relationship management with physicians" (Participant 18; Health Organization Leader)*
Lack of awareness and marginalization; of the NP role	*"We need to practice to our full scope of practice. We need to be recognized for that and what we can contribute to the welfare of people, and their health needs. We are to work as partners. We are not there to be competition. The focus is always the patient" (Participant 13; Health Care Professional)*
Lack of stakeholder, community and patient consultation	*"and that's the biggest horror of all is that none of the patients were asked if that was okay with them. I think I was just so disgusted. I think that breach is everything about patient provider relationships. And I can't believe they did that. I mean that's unethical. You don't just change providers on people and not ask if that's okay, or "would you mind, or this is what we're doing." It's just, "Okay, well sorry they're out, these guys are in." I just think that's abysmal. I would hate to be treated like that as a patient, so disrespectful" (Participant 3; Health Care Professional)*

Economic slowdown	*"I think we need to put the oil drop [oil prices decreasing significantly in Alberta] into the timeline - provincial economic stability when this clinic was in the process of closing." Participant 18, Health Organization Leader*

Table 4-10: Additional Participant Identified Innovation Barriers

Innovation Barriers	*Participant Response*
Lack of identified long term funding	*"Had the government said, you know what- this is really innovative PCN. We need you to keep this going, so we're going to create a funding model that allows you to continue this "(Participant 1, Professional Organization Leader)*
Lack of patient and stakeholder consultation	*"I suppose if the patients would have gotten notice that there was possibility that it could have been closed. I just kind of felt like I got the letter that said "We're closing" like a month from now or two weeks from now or whatever it was" (Participant 17, Patient)*
Lack of health policy alignment to support a funding model for the NP role	*"The Barrier - It just was the politics and the money" participant 6, Health Care Management* *Well, I think the government should pay for quality and not [a healthcare professional who] provides for one thing, We are getting more and more to the point where with can tell physicians based on data that they're not doing a good job" (Participant 6, Health Organization Leader)*
Lack of organizational (CRPCN) accountability	*"My simple understanding was that even though the minister of health was given several letters and briefing notes and/or heads up in the MDM meetings which are just meetings between the executive teams and the ministry with the minister and her team that it was not a priority to them"(Participant 18, Health Organization Leader)*
Professional Opposition.	*"Barriers - like I said I think the physician lobby to invest in physician roles was a barrier" (Participant 18, Health Organization Leader)*

Chapter Five: Summary and Synthesis

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Chapter Five: Summary and Synthesis

The overarching purpose of this thesis was three-fold. Firstly, to assess the state of the literature in regards to the closure of clinics utilizing NP services. Secondly, to critically analyze current NP funding models across Canada to provide guidance on improving funding mechanisms to sustain NP roles. Lastly, to examine an NP clinic closure using case study design to generate understanding on sustaining the NP role and PHC innovations. This series of studies establishes a foundation and direction for development of a program of research in the area of sustainability of PHC innovations. This thesis is the first work to explore the closure of NP clinics in PHC settings. The findings contribute to the literature, inform future innovation assessment and planning, and have the potential to enhance governments, funders and policy-makers understanding of the elements that contribute to NP role sustainability and sustainability of other important PHC innovations.

In Chapter Two, a scoping review was undertaken to examine the clinic closures with NP services as the main provider. The aim of this review was to explore evidence in three main areas: a) the factors which influence decisions to close clinics that include NPs; b) factors which influence the sustainability of PHC programs and services and; c) factors which influence the sustainability of the NP role in PHC. The key findings of this review demonstrate a lack of published, peer reviewed research to advance the understanding of clinic closures specifically using NPs; limited evidence of peer reviewed research pertaining to sustainability of PHC innovations, and a dearth of peer reviewed, published research informing sustainability of the NP role in PHC. A summary of the state of the literature on sustainability of the NP role and other PHC programs and services was presented, including existing gaps in knowledge to provide direction for future research.[1-10]

Chapter Three, a critical analysis of the current state of Canadian NP funding models using the Sustainability of Innovation Framework was presented.[2] This chapter emphasizes the challenges of sustaining the NP role in Canada and the current structure of funding models for NPs. The findings demonstrate that there is variability of jurisdictional funding initiatives and policies that can influence sustainability, Canadian jurisdictions need to reform NP funding approaches and transition to evidence based, flexible funding models that support PHC reform and respond to variations in NP practice and patient panels.[11-17] Findings also illustrate that NP

wage and benefit compensation need to be harmonized, interprofessional teams utilizing NPs must be expanded and a coordinated national NP workforce strategy is necessary. Governments, funders and policy makers must consider the influence of existing outdated policies and adopt new and innovative solutions to funding for Canadian NPs to ensure sustainability of the NP role and to further support and advance needed PHC reform.[18]

In Chapter Four, the Sustainability of Innovation (Fox et al., 2015) and Policy Triangle Frameworks are used to inform an exploratory single case study of a NP clinic closure in Alberta, Canada.[2,19,34,35] The contextual factors influencing and the decision-making process surrounding clinic closure were examined. This chapter provides an in-depth explanation of this NP clinic's sustainability failure. Multiple contextual factors influenced clinic closure including: lack of stakeholder and patient consultation, lack of accountability and transparency in regards to clinic planning, frequent government leader changeover, lack of policy alignment for planning, implementation and evaluation of the clinic, and a rapidly changing economic landscape. Data from participants and documents confirmed that the Sustainability of Innovation and Policy Triangle Frameworks, while thorough in their assessment of factors influencing sustainability, did not completely capture the complexity of sustaining innovations in PHC environments such as primary care. In its entirety, this thesis has made important contributions to knowledge, theory, practice and policy and the contributions of these areas are important to note.

Contributions

Knowledge Contribution

This thesis contributes substantially to the state of the science on sustainability of the NP role and other innovations in PHC in the following ways: 1) demonstrates a paucity of peer reviewed evidence on clinic closures involving NP services, as well as the sustainability of innovations in PHC including the NP role, 2) demonstrates through critical analysis there is wide variation in NP funding models across Canadian jurisdictions, as well as frequent use of short term 'pockets' of funding to fill gaps in health services rather than establishing flexible funding models to suit a wide variety of NP practice environments and patient populations, and 3) the identification of three new themes in the case study as additional concepts to consider when examining the sustainability of any innovation in PHC. These themes demonstrate the

complexity and evolving nature of the study of sustainability and have been utilized to inform construction of a new conceptual framework to assess sustainability of PHC innovations. The practice and policy contributions are discussed, after which a newly visualized theoretical framework, and its significance for knowledge is presented.

Practice Contribution

Over a decade ago, Dr. Paul Uhlig described NPs as a 'disruptive innovation' with the potential to be a catalyst in achieving a transformed health system and for the past five decades, researchers have consistently validated the safety and quality of care provided by NPs. [21-27] Despite this evidence, the NP role remains absent or underutilized in some Canadian jurisdictions and NPs in this country continue to struggle with issues that prevent optimization of the role. [12,24,26,28,29] The NP role continues to be labelled as an innovation thought to be important to achieving PHC reform.[12] The concept of innovation; a new method or idea having influence and impact, is one that has been central to the NP profession since it was established.[12] However, decades later we are no closer to sustaining a stable environment for the NP role. This implores an important question; is the NP role still an innovation today or would it be better labelled as is a health care improvement that has failed to be sustained.[30] Innovation does not occur until there is a break from the current paradigm on which the product or health service innovation is based. Only then can we consider it an innovation.[30] There has been incremental changes across Canada in terms of legislation, regulation and the numbers of practicing NPs has increased substantially.[12] Yet, we have failed to achieve the full health system paradigm shift necessary to label the NP role an innovation. Limitations of outdated and entrenched health policies, a lack of policy action and a lack of evidence informed policy design, continue to impact NP role optimization across Canada.[31]

This thesis demonstrates the literature informing sustainability of PHC innovations such as the NP role is lacking, and what does exist is poorly organized and thus not suited to informing evidence-based policy and practice. Our failure in understanding the topic of sustainability, has resulted in a primary care model that is unsustainable and an overall sustainability failure of the NP role. This thesis moves the meter forward in terms of providing a critical lens and evidence on what is needed to improve sustainability of the NP role in PHC.

Policy Contribution

The notion that health service innovations and organizations should learn from failures small and large; has obvious appeal. Yet health care organizations that effectively learn from failure are relatively rare.[32] Pervasive barriers embedded in health care organizational systems make learning from failure difficult.[32] The inability to effectively learn from failures in policy is highlighted in this thesis. The paucity of peer reviewed literature on clinic closures involving NPs, the limited literature on the topic of sustainability of PHC innovations such as the NP role, and the gaps in the literature informing health care sustainability, illustrates the challenges of studying failure in health systems.[9]

In terms of policy, this dissertation demonstrates the following: a) literature suggests that there has been a failure by federal and provincial governments and policy-makers to ensure sustainability of the NP role in Canada as a supportive element in PHC reform, b) in the case study of sustainability failure of a PHC innovation, closure occurred despite conflicting stakeholder support, evaluation success and supportive outcome evidence, c) there was failure to utilize evidence informed policy and processes to support the planning, implementation and evaluation of this innovation in PHC, d) there was failure of governments, funders, policy makers and organizations to engage, be accountable and transparent in regards to decision making processes in this case, d) there was a failure of a consistent health policy approach throughout various election cycles and government changeovers, e) most importantly, a failure of governments, funders and policy-makers involved in this case to ethically consider how sustainability failure impacted patients, stakeholders, communities, organizations, and the health system as a whole, and f) finally a failure to engage in patient centred accountability on the part of governments, funders and policy makers in regards to the long-term sustainability of the Sheep River NP Clinic. An enhanced understanding of sustainability failure in this thesis points to a lack of policy response, policy inaction and policy failure on behalf of governments, policy-makers and funders in Canada.

Minimizing Policy Failure: Recommendations for Action

Currently, the policy context is understood to be much more complex than previously recognized. It is imperative that governments, funders and policy-makers discover how to minimize policy failure and use it to inform future endeavours. It is important to understand how past sustainability failures can inform future innovation planning and how governments, funders and health policy-makers can utilize expert evidence to inform decision making throughout the process.[39] Embedding a culture of effective policy learning to improve health policy design and delivery is necessary in order to sustain innovations in PHC. [36–38,41,42]

Evidence and Evaluation

To minimize policy failure, there is an urgent need for longitudinal studies that systematically evaluate the introduction of health service innovations over time. This is to better understand the impact of factors that receive little attention on how they affect the sustainability process. There is a demand to systematically assess what sustainability strategies will work best in what context and under what conditions, keeping the complexities involved in mind. This requires an adequate understanding of the 'politics' surrounding the various processes, and in particular, the power relationships between the various stakeholders involved.[33]

To avoid policy failure, prolonged evaluation of health service innovations is fundamental to enable sustainable implementation and wider spread. It may also be necessary to frame research evidence differently to convince various stakeholders of its effects. Such reframing is especially important in times of resource constraints, where perspectives on evidence may emphasize cost savings or efficiencies.[33]

Pilot 'Projectitis'

Sweeping policies such as those that support the Canada Health Act (CHA) and are formulated at the national level need some degree of consistent delivery at other jurisdictional levels.[33] This is especially true in Canada, where the jurisdictional governments have a separate degree of political authority and the general guidelines of the CHA are reinterpreted to fit into local contexts. Jurisdictions often use pilot projects as a method of testing a particular health policy to ensure it is the correct solution before investing significant amounts of money. While pilot projects are worthwhile, their benefit may only extend to a small group, ceases on

completion of the project, and the lessons learned from the pilot often fail to translate beyond the final report to sustainable outcomes. This thesis illustrates there is a need to translate the lessons learned from pilots into key principles, generalizable beyond a few pilot projects, to inform health policy and health service planning.[33] This thesis also demonstrates that it is necessary to account for the variability of jurisdictional initiatives and policies that could influence the sustainability of any pilot project and the planning of pilot projects needs to include anticipated long term implementation based on the evaluation.

Government Accountability and Transparency

Government and organizational leaders tend not to be held accountable for the outcomes of their policy decisions. [41] In the event of policy failure, it is likely that they will have moved on or out of office. Consequently, they are easily attracted to the prospect of short-term results. This can lead to the pushing through of policies quickly, rather than getting involved in the protracted and frustrating details of how things might work in practice.[41] Often a culture of protectionism shields government and organizational leaders from meaningful scrutiny when a policy underperforms or fails.[42] Stronger accountability is needed to counterbalance the ambiguity and unavoidable uncertainty of decision making.[42] It is not enough to identify who is responsible for the decision once failure becomes apparent; there needs to be proactive methods which offer assurance that the responsible individuals have properly considered the risks associated with major projects before they begin.[42]

Competent governments and organizations are led by open and transparent leaders. There is a growing consensus that transparency lies at the heart of effective governments and organizations, and that this is an essential ingredient of 21st-century policy-making.[42] A transparent government or organization is described as being open about their actions, willing to facilitate accessibility of information and responsive to new ideas, demands and needs. Together, these 'building' blocks of transparency are seen to support a number of benefits: improving the evidence base for policy making, lessening the risk of policy failure, strengthening integrity, and building public trust in the policy process.[43]

Governments, funders, policy-makers and organizational leaders must establish prerequisites for accountability and transparency when making important policy or program decisions.[44] To conclude this section, these officials need to provide information that enables

stakeholders to understand the consequences of any decision and to be aware of the responsive actions taken by government when these deviations occur.[44] They need to be responsible for ensuring that legislation, regulations and commitments are made public, which enables stakeholders to understand who is accountable for what. These same officials must disclose decisions and results, which enables stakeholders to know whether or not agreed standards and commitments have been met. Particularly, the publication of government decisions, meeting records, audit reports and monitoring and evaluation data, which provide the information to examine whether or not set outcomes have been achieved.[44.]

Utilizing an Ethical Lens and Person-Centred Policy Approach

In addition to the two previous recommendations, there must be a consideration to ethics in the use of public health funds. Governments, funders and policy-makers may not consider the ethical consequences of building and implementing an innovative program without sustainable funding.[45] Organizational and political bodies must use an ethical lens and consider the implications as to whether it is ethical to develop interventions without adequate support to sustain them. Governments and policy-makers must also pay attention to ways in which a person-centred focus can be implemented in the decision-making process of sustaining PHC health services innovations. A person-centred approach is a key component of quality in health care systems but difficult to achieve in practice.[46] Evidence suggests that person-centred participation is a fundamental component for designing effective and sustainable health care systems and this premise can be applied to sustaining health service innovations. Utilizing a person-centred approach in the health policy process requires the engagement of patients as equal partners in decision making in order to ensure that their health needs and perspectives are incorporated into the health policy agenda. Increased person-centred involvement in health policy decision making in regards to sustaining innovations in PHC is associated with improved quality, safety, cost-effectiveness and overall better health outcomes. In this reasoning, person centred involvement is indispensable in the development and implementation of health policies, and the sustaining of health innovations in PHC.[46]

This thesis demonstrates it is necessary to develop further understanding and guidance on evaluating the ethics of emotional responses to sustainability failures and patient engagement in

sustaining innovations such as the NP role in PHC. Schell et al, noted that health service innovations able to sustain themselves are more likely to produce outcomes that are lasting and healthier.[47] Maximising the benefits accrued from studying the sustainability of health service innovations is an essential task for researchers and health care planners. A number of reasons have been advanced to explain the limited focus on the sustainability of health service innovations in PHC.[45] Key among these is the fact that sustainability is often conceptualised as a final phase of program development after planning, implementation and evaluation phases. Many current frameworks to assess sustainability do not take into consideration the importance of sustainability in designing health service innovations. Pluye et al, argue that health service innovation planning, implementation and sustainability are concomitant processes and advocate for the re-conceptualization of sustainability to ensure that it is integrated into the design of interventions and planned for in advance.[48] One key recommendation to improve sustainability of health service innovations, is the use of conceptually and theoretically informed approaches to guide the design, development, implementation, evaluation and sustainability of these innovative health services.[45]

The purpose of this next section is to propose a new conceptual framework, based on three new findings that emerged from a case study of the closure of a NP clinic in Alberta Canada. This new conceptual framework is intended to guide organizations, governments, funders and policy-makers through an early assessment process to better achieve sustainability of health service innovations in PHC.

Theoretical Contribution

Primary Health Care Sustainability of Innovation Assessment Framework

Three new concepts emerged in the case study presented in Chapter 4. These concepts are not currently recognized or included in the assessment of the sustainability of innovations in either the PTF or the SIF. These frameworks are lacking the following: utilization of evidence informed policy and processes, consideration and understanding how stakeholder emotions are affected by sustainability failures, and an understanding how protectionism, fear and individual/organizational opposition impacts sustainability of health services innovations.[36-38,41] The core factors of the SIF and PTF and the emerging data identified in this dissertation, have

been incorporated into a new conceptual sustainability framework. A conceptual framework is defined as the end result of bringing together a number of related concepts which are joined together to illustrate a larger map of possible relationships.[49] The Sustainability of Primary Health Care Innovations Assessment Framework takes the SIF, a theoretical framework suitable for the examination of sustainability of any health service innovation, and utilizes the five factors that impact sustainability, refining them for further understanding and clarity. It merges the SIF with the healthy policy concepts of the PTF in consideration of the broad policy process that is often going on 'behind the scenes'.[2,50] This new envisioned conceptual framework adds the three emerging themes (concepts) identified in the case study to the five factors from the SIF for a total of eight contextual factors that should be considered when assessing the sustainability of innovations in PHC. The purpose of this framework is to help create a shared understanding of the components necessary to assess sustainability amongst governments, funders, policy-makers, practitioners, researchers and evaluators.

Contextual Factor 1: Political

This factor focuses on the small and large political forces that may impact the innovation. This includes considering whether election cycles and government changeover are occurring, is there appropriate government policy alignment, is the innovation linked with regional and organizational health plans, is there accountability and transparency in regards to the decision making surrounding the innovation, and does the innovation involve stakeholder input; local and national champions and staff and community involvement. This factor also focuses on who are the champions, advocates and early adopters of the innovation.[2,50]

Contextual Factor 2: Organizational

This factor focuses on organizations having a sound policy process to assist with health service innovation decision- making at the planning, implementation and evaluation phases of a project. Organizations must have adaptability and be responsive to any changes the innovation will bring forth. They must have established communication pathways and must be transparent in conversations at all levels within the organization. This includes conversations and engagement with organizational and non-organizational stakeholders.[2,50]

Contextual Factor 3: Financial

This factor focuses on clearly outlining a funding model, a source of funding, the amount and length of funding from innovation outset. This factor also focuses on assessing long term fiduciary viability of the innovation in the planning phase and not when the innovation funding term is about to end. Financial viability requires stakeholder input and involvement from the outset to ensure that all potential sources of funding have been identified and exhausted.[2,50]

Contextual Factor 4: Workforce

This factor focuses on health service innovations that have a clear human resource and workforce strategy including recruitment, retention and workforce planning succession. The workforce factor also brings attention policies to support regular, clear, concise and transparent communication pathways with organization employees, including policies and procedures to support organizational roles, structure and function.[2,50]

Contextual Factor 5: Innovation Specific

This factor focuses on creating a policy and organizational environment that supports the innovation. It asks the questions: how complex is the innovation and the environment that the innovation is being introduced too? Is the innovation flexible and adaptive enough to respond to a dynamic funding, policy and organizational environment, and continue to evolve? How are stakeholders involved in the innovation and what communication pathways can be formulated to be transparent and clear about the innovation. What additional barriers and supports to the innovation exist? .[2,50]

New Contextual Factors

The new conceptual model incorporates the three emerging themes from thesis research and labels and defines them as additional factors to be included in the assessment of the sustainability of an innovation in PHC.

New Factor 1: Evidence

This factor focuses on utilizing an evidenced informed policy process to support sustaining an innovation and avoid failure. Evidence includes utilizing sound evaluation strategies and asking what evidence exists to support the innovation. As demonstrated by previous literature; evaluating innovations longitudinally, not just a short window in time, is an important feature of sustainability of health service innovations.[41]

New Factor 2: Challengers

Challengers are those individuals who are fiercely opposed to the innovation. They use protectionism, lobbying and power to influence decision making regarding innovation. The health care sector has many stakeholders, each with an agenda. Often, challengers have substantial resources and power to influence public policy and opinion by challenging the innovation. Identifying the challengers of the innovation in the planning stage is an important feature of sustainability. Learning to anticipate challengers and preparing a plan to deal with opposition to health service innovations is a crucial part of the sustainability assessment process.[51]

New Factor 3: Emotion Aftermath

An often-overlooked aspect of sustaining an innovation is factoring stakeholder, patient and community member's emotions in assessment of sustainability. Individuals, groups, organizations; including key stakeholders, do not make decisions on facts alone. Emotions drive behaviors and decision-making. Ask how key individuals, groups and stakeholders feel about the innovation, about the costs involved, about how they will feel if the innovation fails.[52]

New Conceptual Framework Flow

Researchers have conceptualized sustainability as the final stage in the life cycle of an innovation and it has often been measured as an outcome instead of a process.[53] Limited research has focused on sustainability as a set of processes that occur in the innovation life cycle and evidence now emphasizes the importance of early innovation sustainability planning.[53] Current

research demonstrates that sustainability is likely influenced by early implementation processes, but that conceptualizing sustainability as a process does not emphasize the longitudinal perspective needed for sustainability research. The Primary Health Care Sustainability of Innovations Assessment Framework has been created as an assessment tool and can be utilized during the planning, implementation and evaluative component of any health service innovation. The framework focuses on early assessment of the contextual factors influencing sustainability of a health service innovation and utilizes the outcome of early sustainability assessment as a guide for implementation and evaluation. The framework flows in a left to right direction and the health policy process at the top of the framework funnels down to illustrate how specific health service innovations are very likely to be influenced by the social, economic and political aspects of the policy environment.[54] There are eight contextual factors which influence sustainability. Each factor contains key points to guide the assessment for sustainability of a health service innovation. Moving through the circle and ensuring all the major contextual factor points have been addressed, the framework directs its focus to the outcome of sustainability assessment. It prompts the assessor to consider the innovation in its new sustainable state and to ask whether the innovation is sustainable or not. Criteria to achieve an ideal state of sustainability include: outcome targets are well defined, there is alignment with funding and health policy, workforce and human resource planning is addressed, barriers to funding have been assessed, the health service delivery model has been well thought out, all decisions and planning are patient focused, strategic alignment with determinants of health has been considered and the emotional impact of the innovation has been explored.[54] If after assessment, the health services innovation is considered sustainable, future planning which includes focusing on long term evaluation can occur.[54] If it is determined by the assessor that sustainability is not achievable, the results of the assessment can be utilized to help further improve the sustainability of the health services innovation. See Framework Figure 5-1.

Strengths and Limitations of this Framework

The new conceptual framework is appropriate to assess sustainability across a broad spectrum of health service innovations and may be suitable to use beyond the confines of PHC.

The framework is intended to be applied very early in the innovation planning process but can be utilized at any point in the planning or implementation of an innovation. While the concepts of this framework were developed from the use of several bodies of knowledge, its key limitations should be highlighted. Given the limited evidence informing the Sustainability of Innovations Framework in PHC, testing the sustainability of a variety of PHC innovations is recommended and examining both sustainability success and failure may be an important element to consider in framework testing. Focusing on the connection between implementation, sustainability and scale up and spread may also offer further conceptual insight in this area of research. Additionally, conceptual frameworks, although based on highly regarded concepts and information, are often only a starting point to inquiry and may look considerably different following application in practice, evaluation and with revision.[2]. Operationalizing concepts in this proposed framework in several contexts will provide a broader understanding of its use and development. If future research in this field is to effectively inform health policy and implementation of health services innovations, theoretical frameworks, especially those that focus on implementation and scale up and spread must be used and tested.[2]

Future Research

The following section explains the scholarly and practical implications of this study that will be fruitful for future study. This thesis provides new information regarding the sustainability of innovations and more importantly the avoidance of sustainability failures such as the Sheep River Clinic, as well as the broad NP role in PHC. There are several implications for researchers: (1) using conceptual, theoretical and evidenced informed approaches that guide the design, development, implementation, evaluation and sustainability of any health service innovation is an important contribution to knowledge generation; (2) conducting research on the events that occur early in the innovation planning process, as well as incorporating necessary longitudinal research that examines the continuation of innovation activities or outcomes beyond the initial implementation is critical; 3) conducting research which traces the processes that occur in successful innovation sustainability along with parallel examinations of innovations that did not sustain. This includes comparing NP role implementation projects that were successfully sustained with those that were not.[53,54] This can be illuminated by future in-depth and comparative case studies of what happened and why. Ideally, these case studies would collect

data in an initial wave before the end of external funding and would then collect additional waves of data a year or more after the funding ended; [53,54] 4) conducting research which further examines the variability of Canadian jurisdictional initiatives and policies that influence sustainability of the NP role and other innovations in PHC; 5) advancing the concepts, measurement of the determinants, and outcomes of sustainability through robust prospective designs will also be critical; 6) studying failure in relation to the concepts of innovation, sustainability and optimization; how they are interconnected and how the use of the concepts together can provide solutions towards necessary PHC reform; and 7) coalescing and consolidating the knowledge base, language and terms to define and describe sustainability[53]

Improving the research-based knowledge about sustainability could initiate several desirable consequences. First, governments, policy-makers and funders would have more effective guidance on how to increase the likelihood of sustaining effective innovations. This would ensure a richer and deeper evidence base on how to sustain innovations in PHC.[53] Second, innovation management and coordination could be improved, as health care leaders became more aware of the strategies needed to achieve long-term beneficial outcomes. Third, improved linkage between short-term funding for developing new innovations and longer-term support for sustained programs to improve health outcomes. Finally, creating in-depth knowledge about sustainability and its influences can contribute to the broader research agendas for translation and dissemination of effective sustainability practices into widespread use.[54]

Knowledge Dissemination

Without well planned dissemination, research information will not reach target audiences and in turn will not be effectively understood or utilized. The use of appropriate communication tools is necessary for mobilizing the knowledge generated from this research in order to reach target audiences. A central goal of a communication and dissemination plan is to maximise opportunities to promote, communicate and disseminate research results. This will ensure that organizations, governments, funders and policy- makers can contribute to, and act on the findings in a timely fashion.[55]

Objectives

The dissemination and communication plan for this thesis has four main objectives, namely to: a) to educate, raise interest and awareness around utilizing the Primary Health Care Sustainability of Innovation Assessment Framework for use in assessing a wide variety of PHC and non-PHC health service innovations., b) encourage patients/community members to actively become involved in health policy issues regarding sustaining innovations in PHC, c) identify opportunities to engage among stakeholders and policy-makers to educate on sustaining innovations in PHC, including the introduction of the newly created framework, and 4) disseminate results in strategic and targeted ways.

This dissertation will be disseminated using a variety of communication channels and tools to communicate the results and outcomes of this case study and to actively engage relevant stakeholders as necessary. Research is most effectively disseminated using multiple methods and targeting multiple audiences. As such, there are five key intended audiences for this research. See Table 5-1:

1. Governments, Health Policy-makers, Funders and Organizations
2. Health Care Professionals
3. Communities/Patients/General Public
4. Academic Institutions
5. Media

Communication Avenues

Social Media (Twitter/Facebook)

Use of social media (Facebook, Twitter, YouTube) contributes to establishing and maintaining public engagement about the research findings, any reports, media briefings and publications. Alerts of publications and published articles will be linked on researchers' own personal Facebook and Twitter.

Project brochures

Researchers will provide study brochures summarizing key results. Two different brochures, one for academics/professionals/ leaders and one for non-academics will be published and distributed to target audiences as well as research participants.

Academic publications

The three studies in this thesis are intended for publication with Chapter 1: Scoping Review already accepted for publication in Policy, Politics and Nursing Practice. The other two papers will be submitted in appropriate peer reviewed journals.

Presentations at academic conferences and workshops

The studies produced in this thesis will target high-profile academic conferences and workshops organized by national and international organizations that involve and/or represent health policy, nursing or nurse practitioner associations.

Press Release/Media Reports

Media reports (articles, interviews, online reports, etc.) are based on press releases. One press release will be issued for the Case Study in the local Okotoks Community Paper. The other press release will be prepared for the Nurse Practitioner Association of Alberta. The press release will announce the major findings and policy recommendations.

Policy briefs and reports

One policy brief with recommendations will be issued for the Case Study and distributed to Government Leaders, Policy Makers and Funders as well as major health organizations.

Expected Results of Dissemination Strategy

The following are the expected results of this dissemination strategy: a) the researcher will create publicity of the research findings to attract potential future stakeholders and ensure maximum impact, b) the researcher will communicate to target audiences about policy and future research implications, c) the researcher will promote active participation in the research findings e.g. via the attendance in workshops. This dissemination strategy offers the breadth to reach out to multiple audiences and has the potential to create more in-depth interactive work with key audiences such as governments and policy-makers to influence system, organizational and health policy change.

Conclusion

This thesis explored the topic of sustainability failure of the NP role, a PHC innovation that has failed to be optimized throughout much of Canada and offers new insights into the process of sustainability of the NP role and other innovations in PHC. Achieving sustainability is an evolving process that requires continuing effort over time. This thesis is the foundation from which future research will be developed to improve the knowledge base of sustainability of the NP role and other innovations in PHC.

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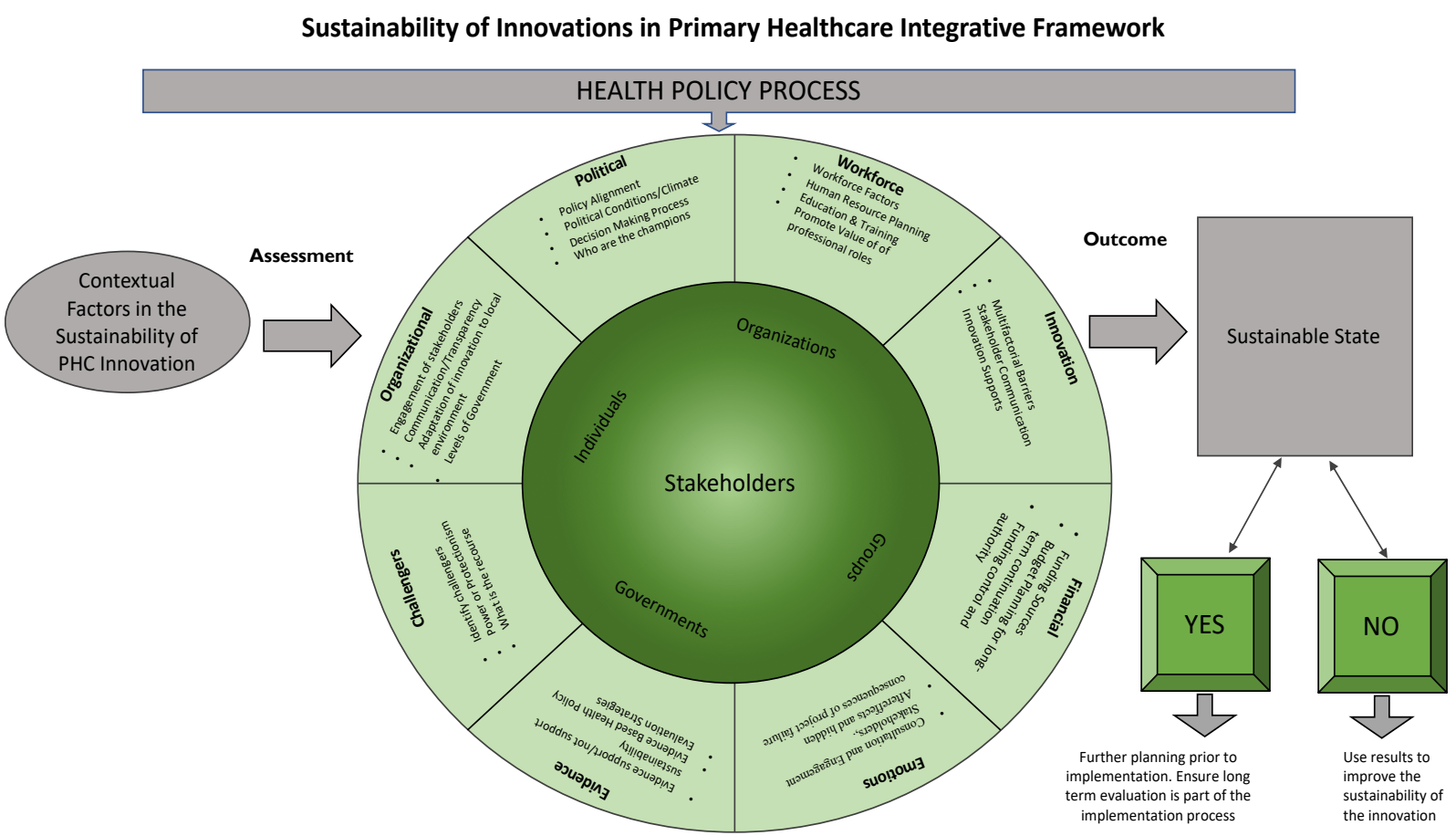
Table 5-1: Dissemination and Use of Results for Different Target Groups

Dissemination and Use of Results for Different Target Groups					
Aims:	**Governments, Funders, Health Policy Makers, Organizations at Different Levels**	**Experts, Academics, Researchers**	**Health Care Professional**	**Media**	**Patients Community Members**
	Education/Involve in discussion ● Disseminate results to above groups ● Use and build on results for future policy making and project funding ● Sustainability Assessment Framework	● Education & Involve in discussion ● Disseminate results to ● Use and build on results for future research ● Sustainability Assessment Framework	● Education & Involve in discussion ● Disseminate results to ● Use and build on results to involve in future sustainability research ● Sustainability Assessment Framework	● Education & Involve in discussion ● Disseminate results to ● Use and build on results to educate general public ● Sustainability Assessment Framework	● Education & Involve in discussion ● Disseminate results to ● Use and build on results to involve in future research ● Sustainability Assessment Framework

Measures to Communicate	• Stakeholder workshops • Policy briefs Policy papers • Social Media • YouTube	• Stakeholder workshops • Academic/expert conference presentations • Academic/expert publications • Social Media/YouTube	• Stakeholder workshops • Materials • Publications aimed at expert audience: project summary brochures, information in the media • Social Media • YouTube	• Regular press releases • Events open to the press • Interviews • Social Media • YouTube	• Stakeholder workshops • Materials developed for patient/community • Publications aimed at layperson: project summary brochures, information in the media • Social Media/YouTube

Figure 5-1: Primary Health Care Sustainability of Innovation Assessment Framework



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