HARNESSING EVIDENCE AND VALUES IN HEALTH POLICY IMPLEMENTATION

By

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy

McMaster University
DOCTOR OF PHILOSOPHY (2020)
Hamilton, Ontario

TITLE: Harnessing evidence and values in health policy implementation

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NUMBER OF PAGES: 152

Abstract

The importance of harnessing research evidence (hereafter evidence) and public values (hereafter values) in health policy implementation (hereafter policy implementation) is widely recognized. Evidence helps policy implementers to find answers to implementation-related questions (e.g., How to address barriers to implementation that may exist at citizen, provider and system levels? What are the most cost-effective interventions?). A culturally sensitive implementation approach that considers values can minimize resistance from the public to policy implementation and contribute to achieving implementation goals. Hence, there is a global push to harness evidence and values in policy implementation. Despite the importance of harnessing evidence and values, little work has been undertaken to understand how the concepts of evidence and values are perceived in the context of policy implementation and how different factors affect the harnessing of evidence and values. This thesis addresses these knowledge gaps through three manuscripts that use a range of methods and approaches to 1) clarify the concepts of harnessing evidence and values in the context of policy implementation; 2) develop a framework that explains how different factors affect policy implementers' decision to harness evidence and values; 3) apply the framework in the context of public health policy implementation and adjust as needed; and 4) elicit public health leaders' perspectives about key strategies that can support harnessing evidence and values. These chapters together make substantive, theoretical and methodological contributions to the field of health policy implementation research, and in particular, to the efforts to strengthen support for harnessing evidence and values in health policy implementation.

Acknowledgements

I am grateful to Almighty God for helping me spiritually in every step of my journey to accomplish this milestone. I want to thank my supervisor, John Lavis, for his tremendous support, encouragement, and training to improve my research skills. He has shown great patience and commitment to listen and answer my questions and helped me to overcome my challenges. He has guided and mentored me to compose my thoughts, clear confusion, and find a straight path to the end. He has also provided me with opportunities to develop professional skills by coding systematic reviews and teaching health policy courses. His trademark systematic approach and highly efficient ways of tackling tasks and time management is a valuable inspiration and learning for me to translate into my career.

I also thank Julia Abelson and Kaelan Moat for their continued guidance and mentorship as members of my supervisory committee over the last four years. Julia was not only my mentor but also someone always available to discuss my challenges and seek guidance. Her rich knowledge and enthusiasm in public values research was an inspiration for me to be interested in the subject. I am genuinely grateful for her incredible support. Kaelan was not only a member of my committee but also was a kind and friendly colleague. Without his support, it would not be possible to frame my thoughts into tangible concepts. His detailed feedback on my thesis was incredibly useful. Kaelan, I owe you big.

I am very grateful to all of my colleagues and friends who have supported me during challenging times. I learnt a lot from senior year Ph.D. students in the program. Peer to peer mentoring is one of the strengths in this program that I feel proud of.

I dedicate this thesis to my beloved parents (Dr. Lutfor Rahman and Mrs. Sakina Begum), who spent their entire life serving poor and vulnerable people by providing healthcare and education. Despite born in an impoverished and backward society, my parents taught me to dream big and never give up. It is because of them I am here today. Last but not least, I thank my beloved wife, Ronaliza and my children (Zeenat and Ayesha). They had to suffer and compromise a great deal due to my inability to provide enough support and care during this roller-coaster period of more than four years. It is their forbearance, encouragement, support and love that helped me to remain sane and focus on the study. I owe them my life.

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Abbreviations

AMO	Association of Municipalities Ontario
CIS	Critical interpretive synthesis
DSSREP	Dental Service Schedule Review Expert Panel
HiREB	Hamilton Integrated Research Ethics Board
HSO	Healthy Smile Ontario
ISR	Institute of Social Research
LDCP	Locally Driven Collaborative Project
LHIN	Local Health Integration Network
LPHA	Local Public Health Agency
MDG	Millennium Development Goal
MEP	Minister's Expert Panel
MOHLTC	Ministry of Health and Long-Term Care
NHS	National Health Services
ODA	Ontario Dental Association
OPH REB	Ottawa Public Health Research Ethics Board
OPHS	Ontario Public Health Standards
PFA	Patient-First Act
PHO	Public Health Ontario
PHU	Public Health Unit
PHWS	Public Health Workstream
PPHD	Population and Public Health Department
RRFSS	Rapid Risk Factor Surveillance System
SDG	Sustainable Development Goal
TAC	Technical Advisory Committee

Preface

The basis for this thesis originally stemmed from my passion for developing tools to support policy implementers' efforts to harness evidence and values in policy implementation. When I dived into the subject and tried to grapple the key concepts around evidence and values in the context of policy implementation, I realized that there is a knowledge gap in the area of clarifying the concepts, bringing together evidence and values into one theoretical framework that can explain the factors affecting the policy implementers' decision to harness them and the mechanisms through which these factors influence policy implementers.

This thesis is an attempt to fill this knowledge gap. It presents three original scientific contributions (chapters 2-4), along with introductory and concluding chapters (chapters 1 and 5).

Each of the chapters in this thesis is co-authored, and I am the lead author for each. Details of specific contributions are provided in the preface to each individual chapter. Overall, I conceived of each chapter with my supervisor (John N. Lavis) and with inputs from members of my supervisory committee (Julia Abelson and Kaelan Moat). I completed all data collection and analysis for chapters 2-4. Finally, I drafted all chapters and each co-author provided comments and suggestions that were incorporated into revisions.

Chapter 1: Introduction

Health policies have a profound effect on population health. Global health policy reforms to achieve good health and wellbeing for all by the year 2030 as part of Sustainable Development Goal (SDG) faces an unprecedented challenge due to lack of resources, widespread health inequality, rapid urbanization, change of lifestyle and morbidity patterns, change of demographics, climate change, war and migration of population, increasing pattern of natural disasters, and the emergence of new epidemics [1-4][1]. Lessons learnt from the implementation of the past policies developed to achieve Millennium Development Goals (MDG) in low and middle-income countries show that harnessing best available research evidence (evidence hereafter) and public values (values hereafter) in policymaking has the potential to overcome some of the above-mentioned challenges [3, 5-28].

Hence, there is a global push to harness evidence and values in policymaking that is commonly known as a policy cycle composed of agenda-setting, policy development, policy implementation and evaluation [6-16, 29]. To date, much of the efforts from different nations have been concentrated on harnessing evidence and values in agenda-setting and policy development. As a consequence, there has been a proliferation of research that explored the factors affecting the harnessing of evidence and values in agenda-setting and policy development [30-55]. While developing sound health policies is a priority across nations, research shows that successful implementation is a crucial factor in enabling health policies to exert a positive and meaningful impact on population health [56-60]. Despite the importance of policy implementation for achieving policy objectives, policymakers and researchers pay little attention to this stage of policymaking. A few studies that explored health policy implementation discuss

[1] https://www.unsdsn.org/new-report-estimates-sdg-financing-needs-for-59-of-the-worlds-lowest-income-countries

the broader factors that affect implementation, not the factors that affect decisions to harness evidence and values in policy implementation [61-65]. Some characteristics that are unique to policy implementation may have contributed to the study of implementation being less attractive. First, the analysis of the implementation process is challenging due to serious boundary problems (e.g., the policy implementation phase usually overlaps with policy development). Second, it is often difficult to define the relevant actors engaged in implementation due to the shift of the dominant public service management model from Westminster style 'public administration' to 'network governance' over the last few decades. Third, variables needed to complete an implementation study are often challenging to measure. Fourth, unlike legislative and judicial arenas where votes are often recorded, implementation-related decisions that occur in administrative settings are frequently difficult to isolate [66-72].

So, there is a knowledge gap in understanding the phenomenon of harnessing evidence and values in health policy implementation. This thesis is an effort to address the knowledge gap through three original scientific papers that employ a mix of methodological approaches.

Specifically, chapter 2 represents the first paper that is written using data from a literature review study. The paper employs a critical interpretive synthesis (CIS) approach to a systematic review of the literature. This study aims to clarify the concepts and identify the factors that influence harnessing of evidence and values in a broader context of health policy implementation that includes both healthcare and public health policies. The findings of the study are inductively synthesized and organized into a theoretical framework that explains how different factors affect harnessing evidence and values in health policy implementation.

Chapters 3 and 4 represent second and third papers that are written using data from a multiple case study conducted in Ontario, Canada. This case study is focused on applying the theoretical

framework developed through the CIS study in a narrower context of health policy implementation that includes only public health policies. Two cases of public health policy implementation are purposively chosen for this study. Multiple sources are used to collect data (i.e., interview of key informants having knowledge about the implementation of those policies and documents relevant to the implementation of these policies). The framework developed in the CIS study is used to frame the interview questions of the case study, organize case study findings, compare and contrast the findings with the CIS study findings.

Chapter 3 is the second scientific paper that exclusively discusses harnessing of evidence in the context of public health policy implementation. It seeks to answer the following questions: How is the concept of harnessing evidence in policy implementation perceived within the public health sector? What factors influence the harnessing of evidence in policy implementation? What approaches can support the harnessing of evidence in policy implementation?

Chapter 4 is the third scientific paper that exclusively discusses harnessing of values in the context of public health policy implementation. It seeks to answer the following questions: How is the concept of harnessing values in policy implementation perceived within the public health sector? What factors determine the harnessing of values in policy implementation? What approaches can support the harnessing of values in policy implementation?

Chapter 5 is the concluding chapter that synthesizes findings across studies to provide key insights into our understanding of harnessing evidence and values in policy implementation. The chapter also explains the substantive, theoretical and methodological contributions of the thesis as a whole to fill the knowledge gap. The thesis clarifies the key concepts and establishes factors and mechanisms that are critical to understanding policy implementers' decision to harness evidence and values in health policy implementation. The thesis also contributes to a theoretical

framework that facilitates a novel way of understanding how different factors affect the harnessing of evidence and values in policy implementation. In addition, the thesis contributes to a unique methodological approach by adopting and applying a newly developed theoretical framework to aid in designing and approach to an empirical study that can be adopted by scholars undertaking similar work in the future.

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Chapter 2: Harnessing research evidence and public values in health policy implementation: A Critical interpretive synthesis

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Word Count:

272 (Abstract)
7,173 (Full text)

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Preface

This chapter addresses a critical knowledge gap in the literature related to harnessing evidence and values in health policy implementation.

The paper presented in this chapter serves as both an attempt to clarify what is meant by harnessing evidence and values in policy implementation, and an effort to develop a theoretical framework that can explain both the factors and the mechanisms through which these factors influence policy implementers' decision to harness evidence and values in policy implementation.

The chapter also provides meticulous documentation of explicit detail of the application of the critical interpretive synthesis (CIS) methods and narratives of strategies that are adopted to overcome some of the challenges we encountered during data collection and analysis.

I was responsible for conceptualizing the idea and design of the study with my supervisor (John N. Lavis) and for completing all data collection, analysis and interpretation. Elizabeth Alvarez contributed as a second reviewer during the article selection process. John Lavis contributed to the analysis during the ongoing iterative process of interpretation and synthesis that led to the development of a theoretical framework that explains factors influencing the policy implementers' decision to harness evidence and values, and mechanisms through which these factors exert their influence. I drafted the chapter, and John Lavis, Julia Abelson and Kaelan Moat provided comments and suggestions that are incorporated into revisions.

Abstract

Context: The importance of harnessing research evidence (evidence hereafter) and public values (values hereafter) in health policy implementation (policy implementation hereafter) is widely recognized. However, there is a knowledge gap in understanding the concepts of harnessing evidence and values in policy implementation and the factors that affect policy implementers' decision to harness evidence and values.

Methods: We conducted a systematic review of the literature by employing Critical interpretive synthesis (CIS) methods, which provides a novel and robust avenue for exploring an appropriate mixing of systematic and purposeful approaches to search and find literature that helped to answer the different components of our complex research question. We also used 3I+E framework (i.e., institutions, interests, ideas and external factors) for organizing our data and categorizing independent variables.

Results: Two institutional factors (i.e., policy legacies, and the nature and dynamics of policy networks) and one ideational factor (policy implementers' perceptions and attitudes) commonly affect the harnessing of both evidence and values. A separate set of specific factors also separately affect evidence and values. Harnessing of evidence is exclusively affected by interests (i.e., support vs. opposition of interest groups, and ability and skills of researchers and knowledge brokers), ideas (i.e., characteristics of evidence and public perceptions about evidence), and external factors (i.e., media). The harnessing of values is exclusively affected by interest groups (i.e., civil society organizations) and ideas (i.e., public awareness, skills and trust over government). We have put together these variables into a theoretical framework.

Conclusion: The results of this study could be a useful input to policies and programs that aim to strengthen efforts to harness evidence and values in policy implementation.

Introduction

Policy implementation is one of the stages of policymaking described in the political science literature. Other stages that precede policy implementation include agenda-setting and policy development, while policy evaluation follows it. Research evidence (hereafter evidence) and public values (hereafter values) are some of the crucial factors that affect policymaking. The importance of harnessing evidence and values in policymaking is widely recognized. More specifically, the need for harnessing evidence and values in health policy implementation (hereafter policy implementation) – not just agenda-setting and policy development – has also been called for global action [1-11]. The underlying argument for such demand is that policy implementation, if informed by evidence and values, has a greater prospect to improve the patient experience and population health [1-11].

Evidence helps policy implementers to find answers to implementation-related questions (e.g., How to address barriers to implementation that may exist at citizen, provider and system levels? What are the most cost-effective interventions?). Moreover, a culturally sensitive implementation approach that considers values can minimize resistance from the public to policy implementation and contribute to achieving implementation goals. Policy implementation processes that fail to take account of evidence and values are found to be one of the obstacles to the achievement of the Millennium Development Goals (MDG) in low and middle-income countries [12-14].

Despite the importance of studying how evidence and values are harnessed in policy implementation, this area has drawn little attention from scholars. Some characteristics that are unique to policy implementation may have contributed to the study of implementation being less attractive. First, the problems of implementation are inherently complex. Second, the analysis of

the implementation process is challenging due to serious boundary problems (e.g., the policy implementation phase usually overlaps with policy development). Third, it is often difficult to define the relevant actors engaged in implementation due to the shift of the dominant public service management model from Westminster style 'public administration' to 'network governance' over the last few decades. Fourth, variables needed to complete an implementation study are often challenging to measure. Fifth, unlike legislative and judicial arenas where votes are often recorded, implementation-related decisions that occur in administrative settings are frequently difficult to isolate [15-21].

In recent years, there has been a proliferation of political science and health systems literature focusing on developing theoretical frameworks that explain the factors affecting the use of evidence and values in agenda-setting and policy development. However, the scope of the literature to explain the factors in the context of policy implementation is limited because most of the literature treat policy development and policy implementation as one continuous process [22-37]. A handful of scholarly works that pay attention to policy implementation neither address the issues of evidence and values together, nor do they discuss the concepts of implementation, evidence, and values comprehensively. In sum, the depth of knowledge about this issue is relatively fragmented. Besides, there is little attempt to develop novel theories using the lenses of political science frameworks, which could help to compare the factors affecting harnessing evidence and values in policy implementation with agenda-setting and policy development [38].

In summary, there is a knowledge gap in understanding the concepts of evidence and values in the context of policy implementation and the factors that affect harnessing evidence and values in policy implementation. An interpretive review of different disciplinary works of literature will provide an opportunity to clarify these concepts further, to identify a list of factors

contributing to the harnessing of evidence and values in policy implementation, and to develop a theoretical framework that can explain how these factors influence harnessing evidence and values in policy implementation.

Methods

We used an interpretive method of review called 'Critical interpretive synthesis (CIS).' We chose this method for several reasons [39, 40]:

1) It allowed us to revise the compass questions (in a transparent way) as the synthesis evolved, which was necessary because the phenomenon of interest was not well developed in the literature that we found at the beginning of our review.

2) The literature that we retrieved through electronic database searches (similar to those used in a conventional systematic review) was not sufficient to answer our study question and left a conceptual gap. The use of a CIS method enabled us to find additional articles through purposive sampling that helped to address the conceptual gap.

3) It allowed us to apply less stringent quality criteria for article selection as opposed to strict criteria used in a conventional systematic review. As a result, we could include a heterogeneous group of literature, including those produced using a range of quantitative and qualitative methods. Reviewing a diverse group of articles allowed us to find relevant documents that could help explain the phenomena of interest.

Compass question

We developed a "compass question" at the initial stage of our study and iteratively revised the question as the study progressed. Our final "compass question" was: How have the concepts of health policy implementation, research evidence, and public values been defined in

the policy implementation literature, and what factors affect the harnessing of evidence and values in health policy implementation?

Article identification

We used a multi-faceted search strategy to find the research literature: 1) electronic database searches; 2) reference harvesting; 3) contacts with experts; and 4) an additional search for papers to fill conceptual gaps.

i) Search string used

Based on the "compass question", and relying on our prior knowledge about the topic addressed by the review, we developed a search string composed of Boolean-linked keywords and their synonyms. We refined and adjusted the search string based on pilot testing and iterative discussion among our study team members. Our final version was: polic* AND (implement* OR administ*) AND health* AND (evidence* OR knowledge* OR research* OR information* OR patient OR public OR civic OR citizen* OR communit* OR value* OR choice* OR preference* OR opinion OR perspective*).

ii) Electronic databases searched

We searched 1) major health databases: CINAHL, EMBASE, HealthSTAR, MEDLINE, Nursing and Allied Health Database, and Pubmed; 2) major (non-health) social and political science databases: Applied Social Sciences Index and Abstracts, International Bibliography of Social Sciences (IBSS), PAIS Index, Policy File Index, Political Science Database, Politics collections, PsycINFO, Sociology collection, Sociological abstracts, and Web of Science core collections; and 3) databases for grey literature: OAIster. We carried out electronic searches between November and December 2017. Although we wanted to use the same search string that we developed through our pilot testing, we had to do minor adjustment due to the subtle

differences between different databases' search interfaces. We did not place any time limit on the searches. The details of the search terms used for the electronic databases search are in Appendix A.

iii) Article selection

We selected relevant articles through a phased approach. The process was iterative and continued throughout our analysis of data.

Phase 1: initial exclusion of irrelevant articles

After removing the duplicates, the principal investigator (MGK) reviewed the titles and abstracts of all the references captured by the electronic database searches, and excluded articles that seemed irrelevant to the purpose of our study. Articles excluded at this stage were mainly those which were outside the health sector or clinically oriented (if focused on health) or not focused on policymaking.

Phase 2: selection of 'potentially relevant' articles

We developed a set of inclusion and exclusion criteria to help us identify 'potentially relevant' articles from the list of articles retrieved in phase 1. The review question in our study was neither static nor had a clear boundary. Due to this evolving nature of our review question, we remained flexible to refine and sharpen our pre-defined criteria as the study progressed. MGK along with a second reviewer (EA) reviewed the titles, abstracts, and/or full text of 5% of articles randomly selected from those that remained after initial exclusion in phase one. We exercised the process twice and discussed several times to sharpen the criteria through an iterative process. We then iteratively refined the criteria through several consultations between the principal investigator and the second reviewer. MGK read and reviewed the titles, abstracts, and/or full text of all articles retrieved in phase one using the refined criteria. We had to further

sharpen the criteria as the study progressed through an iterative discussion between MGK and another member of the study team (JNL). We identified a list of 'potentially relevant' articles by excluding the following types of articles:

- Articles that focused on agenda-setting or policy development only
- Articles that discussed evidence and/or values in health system or organizational decision-making that are not directly related to policy implementation
- Articles that discussed knowledge translation in clinical decision-making
- Articles that focused on evaluating the outcome/impact of health policy implementation
- Articles that explored organizational policy implementation, not public (i.e., government) policy implementation

We used the list of 'potentially relevant' articles as our sampling frame from which we drew our purposive sample in the next phase.

Phase 3: purposive sampling

MGK read the full text of all the 'potentially relevant' articles and purposively sampled the following types of articles that were deemed relevant to the purpose of our study:

- Articles that discussed the concepts of evidence and/or values in the context of health policy implementation
- Articles that discussed factors affecting the harnessing of evidence and/or values in health policy implementation
- Articles that discussed the factors affecting the implementation of evidence-informed health policies

We found that we did not have the adequate number of articles that were sufficient to answer our study question. We also found the following two conceptual gaps as the analysis progressed:

- The articles that discussed the factors affecting harnessing evidence and/or values in health policy implementation did not explore the concepts of either 'policy implementation' or 'evidence' or 'values' in detail.
- The mechanism of influence was not clearly explained in the articles that discussed the factors affecting harnessing evidence and/or values in health policy implementation.

We purposively searched Google for more articles using broader search terms like values in health policy. We located, tracked and aggregated the references in footnotes and bibliographies of relevant articles retrieved through electronic database searches to find additional articles relevant to our study. We also consulted with subject matter experts within (JNL, JA) and beyond our study team and reviewed the bibliographic list of retrieved articles. Thus, we included some articles that were not focused on policy implementation, but that were useful to complement the explanation we found about the concept of public values and research evidence in policy implementation literature. Similarly, we also included some papers from outside the health sector to complement the explanation about policy implementation that we found in the health policy implementation literature. This multipronged strategy helped to fill the conceptual gaps that emerged during the analysis. We continued the process until theoretical saturation was reached [40-42].

iv) Determination of quality

We prioritized 'relevance' as quality criteria over other types of criteria used by authors of critical interpretive synthesis methods [39, 40, 43]. We defined 'relevance' as the ability of the constructs identified in each article to contribute to answering our "compass question". We only excluded articles which were low in relevance.

Data extraction and synthesis

We extracted and synthesized the data through the steps below:

First, we developed a data extraction sheet (Appendix B). The sheet includes information on the article: 1) title, author, year and journal of publication; 2) types of literature and methods used (e.g., empirical versus non-empirical); 3) publication status (i.e., peer-reviewed or grey literature); 4) country or region focus (if applicable); 5) a brief statement about the focus of the article; 6) a summary of the key findings or insights; 7) theoretical categories and questions for organizing data. We drew on a widely-used framework – 3I+E - to develop the theoretical categories and questions that we used in the data extraction sheet. The 3I+E framework is an explanatory framework derived from the political science literature, which broadly explains how institutions, interests, ideas, and external factors affect the policy process. Institutions include factors such as government structures (e.g., unitary states vs federal states), policy legacies, and policy networks (e.g., can be state-directed, closed or pluralist). Institutions may shape the policy process by creating veto points; generating resources and incentives for the government elites, interest groups and mass public; and by allowing or limiting stakeholders' access to the policy process. Interests include policy actors such as citizens, patients, professional groups, elected officials, civil servants, and researchers. Interest groups' influence on the policy process varies depending on their level of power underpinned by access to resources, and their assessment about how they are affected by the policy decisions (e.g., either the policy benefits them, or they bear the costs, which may be concentrated or diffuse). Ideas include knowledge/beliefs about 'what is' (e.g., research evidence, other types of information, and tacit knowledge) and values about 'what ought to be' (e.g., elite opinion and mass opinion). Ideas can inform policymakers about the problems and potential solutions that ultimately shape their views about policy

decisions. External factors include events that occur outside the sector where the policy is being developed or implemented (e.g., political and economic change, media coverage, and international organizations) and affect the policy process by shaping the policymakers' views and availability of resources [40, 44-46].

Second, we read the full text, inductively coded the articles manually, and extracted data using the data extraction sheet simultaneously. We took notes while coding, discussed any challenges with study team members, and iteratively revised the data extraction sheet as needed. We also summarized the extracted data from all the articles in a table (available on request) and shared with our study team members for feedback. After getting feedback from our study team, we revisited some of the articles and revised the codes if needed. This process was repeated several times throughout our analysis.

Third, we compared the codes across articles for similarities, differences, and contradictions. We highlighted the recurring codes. We then identified key themes, and/or concepts that emerged from integrating and comparing the codes [47]. We organized the themes related to the factors affecting the harnessing of evidence and/or values as barriers and facilitators. We then developed theoretical constructs based on the emergent themes and/or concepts. We integrated the theoretical constructs into 'synthesizing arguments' in the form of a theoretical framework that explains the factors that affect harnessing evidence and/or values in health policy implementation. We shared our findings with the study team members several times throughout the process. They critiqued the synthesized constructs for clarity, coherence and their ability to fit into a broad theoretical framework [48]. We were still able to identify conceptual gaps that could help to explain our synthesized constructs. So, we conducted additional purposive search and sampling of articles to fill conceptual gaps until theoretical

saturation was reached [49].

Results

Search results and article selection

As shown in the flow chart in figure 1, we reviewed 50 articles for this study. The majority of the articles were published in peer-reviewed journals (n=42, 84%) and more than one third are empirical (n=40, 80%) papers (See table 1). The most common study designs used in the empirical papers were non-systematic literature reviews (n=13, 32%) followed by case studies (n=7, 17%), interview studies (n=6, 15%), case descriptions (n=3, 8%), mixed methods (n=2, 5%), theoretical (n=2, 5%), scoping review (n=1, 3%), and documentary analysis (n=1, 3%). Five of the empirical papers didn't mention any methods (n=5, 12%). More than one-third of the articles (n=19, 38%) were published after the year 2012, about a third (n=16, 32%) published between 2008-2012, and the rest were before 2008.

Policy implementation

Our included papers describe policy implementation as a set of actions that may encompass one or more of the following: developing implementation guidelines; identifying implementation barriers (which may exist at the level of citizen, providers or systems) and developing strategies to address them; communicating and negotiating with stakeholders; developing new programs and services or restructuring existing programs and services (this includes programs and services developed as part of decision-making processes within organizations that are responsible for implementing government policies); allocating resources and building capacity to achieve a policy implementation goal. These actions do not follow a sequence and may overlap [50-56].

The policy implementers include politicians/legislators, bureaucrats (e.g., political appointees, policy advisors, departmental leads, directors of programs, heads of local agencies, and managers of services) and executives of the non-government agencies (depending on the scope of these agencies to implement health policies developed by the government). [50, 51, 53, 57-62]. The most dominant policy implementation approaches are top-down and bottom-up approaches. The top-down approach is a centrally driven process that involves coercion and control using legal instruments. The bottom-up approach is a locally driven process where policy implementers at the service delivery level hold the key. Governments with vertically integrated accountability structures tend to prefer top-down approaches to ensure the implementation of evidence-informed policies that require compliance from frontline staff. Governments with horizontal accountability structures connected through a network of autonomous or semi-autonomous and decentralized authorities tend to prefer a bottom-up approach to mitigate resistance from local policy implementers. However, the process of policy implementation is not always linear. Irrespective of the approaches, policy implementation activities require the involvement of all levels of governments (e.g., higher-level, executive level and lower/local level) to a different degree [51, 57-60, 62-66].

Harnessing research evidence in policy implementation

Policy implementation papers suggest that the concept of evidence goes beyond citable research, and encompasses a wide range of information that is often found in data, program evaluation reports, and expert opinion. In this paper, we have used three interrelated variables synthesized from the literature that jointly represent the dependent variable/outcome 'harnessing evidence': policy implementers' willingness to pay attention to evidence; efforts to acquire, assess, and adapt evidence; and using evidence in decision-making [61, 67-72]. However, these

variables do not represent phases and are not always in sequence. For instance, policy implementers' willingness to pay attention to evidence may lead them to acquire, assess, and adapt evidence actively (i.e., pull strategy). Conversely, policy implementers may become willing to pay attention once evidence is acquired, assessed, adapted and presented to them by the researchers (i.e., push strategy). Irrespective of pull or push strategies, the most important issues highlighted by the scholars are systematic and transparent processes of acquiring, assessing, and adapting evidence.

We found no universally agreed definition for 'evidence use' across the literature reviewed. However, the most common forms of 'evidence use' are described as instrumental, conceptual, and symbolic. Instrumental use is the most direct form of use when evidence is used to draw strategies to address implementation barriers or to design programs and services. Conceptual use is an indirect form of use when evidence permeates through tacit knowledge, other types of information, and expert opinion. Symbolic use is when policy implementers use evidence to justify a decision already made [52, 56, 61, 67-70, 72, 73].

Harnessing public values in policy implementation

The term 'public' appears in the implementation literature as consumers/users/clients, citizens and stakeholders. These terms are often used interchangeably despite their different meanings underpinned by policy implementers' perceptions [74-76]. The interpretation of values appears as subjective beliefs or perceptions about 'what ought to be'. The scholars do not commonly use the term 'public values' in the implementation literature. The closely related terms that are commonly used include 'public input', 'public belief', 'public voice', 'patient interests', 'public opinion', 'public preferences', and 'public interests'. The implementation

literature depicts public values as collective in nature that often requires the community to find a common ground on shared values [65, 66, 74, 75, 77-81].

Similar to the idea that we explained earlier in the evidence section, we have used three interrelated variables synthesized from the literature that jointly represent the dependent variable/outcome 'harnessing values': policy implementers' willingness to pay attention to values, efforts to elicit values, and using values in decision-making. Policy implementers' willingness to pay attention affects their efforts to elicit values, as well as using values in decision-making. Policy implementers use democratic practices (i.e., voting or input through elected officials), public engagement, stakeholder engagement, and patient or client surveys to elicit values. Public engagement is the most common method and is often used by scholars as a proxy indicator to measure the use of values [64-66, 74-78, 82-85].

The factors that affect harnessing evidence and values in policy implementation

In this section, we have organized the factors according to the broader theoretical categories: institutions, interests, ideas, and external factors. Within each of these categories, we have discussed the types of factors (e.g., policy legacies and policy networks under institutions) and their sub-types (e.g., open vs closed policy networks). In some instances, we have combined our discussion about several sub-types of factors under one broad factor type due to the close relationships between these sub-types. For example, the nature of policy networks, types of relationships between the stakeholders within the policy networks and homogeneity of the networks are discussed under the factor 'policy networks'. We have also discussed the relationship between the factors and the three interrelated variables synthesized from the literature that jointly represent the dependent variable/outcome 'harnessing evidence and values': policy implementers' willingness to pay attention to evidence and/or values; their efforts to

acquire, assess, and adapt evidence and/or elicit values; and using evidence and/or values in decision-making. We have summarized our findings in a theoretical framework (figure 2) and in a table (table 2), and explored them in more detail below.

i) Institutions

The policy implementation literature most frequently discusses the following institutional factors that affect harnessing evidence and/or values:

a) policy legacies created by past policies, political culture and organizational practices; and

b) policy networks:

   a. nature of the policy networks (i.e., open vs. closed); and

   b. the types of relationships between the stakeholders within the policy networks (i.e., partnership vs. hierarchy based relationship) and homogeneity of the networks (homogenous vs. heterogeneous networks)

Policy legacies

Policy legacies created by past policies, political culture and organizational practices can either facilitate or pose barriers to harnessing evidence and values. The critical mechanisms of their influence are incentivizing policy implementers, the interpretive effect on policy implementers, and enhancing or weakening state administrative capacity.

The literature about values suggest that past policies and regulations (e.g., constitutional provision for public engagement, congressional mandate to involve the public in policy implementation) can increase the prospect of harnessing values by incentivizing policy implementers to reach out to the public and elicit values [76, 82-86]. A distinct political culture can shape the views of the policy implementers and affect the harnessing of evidence. For

example, politicians opposed implementing the national alcohol policy using an evidence-informed approach (e.g., state interference in alcohol production and consumption) in Ireland because they interpreted the idea of 'state interference in public life' as unacceptable. Such interpretation was the result of a neo-liberal political culture that shaped their views. Governments' choice of implementation approaches (i.e., top-down vs. bottom-up approaches), an organizational norm, can also influence use of evidence and elicitation of values by allowing or limiting engagement of local organizations in the implementation process [57, 58, 60, 62, 63, 65, 67-69, 73, 86-90].

The state administrative capacity directly or indirectly reflects the effects of policy legacies. The scholars attribute a high state administrative capacity (vs. low capacity) to increased prospects of policy implementers' efforts to acquire, assess and adapt evidence as well as elicit values. Three features of administrative capacity are widely discussed: staff capacity, administrative structure and procedures, and access to resources (i.e., finance, technologies and time) [82, 90, 91].

A high level of staff capacity (e.g., policy implementers having prior knowledge and awareness about the benefit of harnessing evidence and values, staff having the necessary skills required to acquire, assess, and adapt evidence as well as organize public engagement) enables the governments to foster positive attitudes toward evidence and values due to their familiarity with the subject, their ability to gather and interpret evidence and values. Conversely, limited staff capacity, high turnover of skilled staff, and a lack of strong leadership significantly constrains governments' ability to gather evidence and elicit values [12, 52, 58, 60, 62, 64, 67-69, 73, 76, 78, 82, 84, 85, 87, 92].

Having a dedicated administrative unit (e.g., rapid response unit), clear procedures (e.g., public engagement tools), and specified mechanisms (e.g., committees or forums) within the government departments responsible for policy implementation enables governments to quickly respond to the need for collecting evidence and eliciting values [64, 69, 76-78, 82, 83, 85, 87, 92].

Inadequate access to resources (i.e., finance, technologies, and time) limits the ability of the governments and implementing agencies to generate local evidence; to acquire, assess and adapt evidence; and organizing public engagement to elicit values. For example, technological resources that include access to the internet, online libraries, and web-based research archives are less accessible in low and middle-income countries. In addition, staff often have limited time to acquire and assess evidence or elicit values through public engagement due to the need to address other competing priorities [52, 57, 58, 60, 66, 67, 69, 73, 87, 89, 92].

Policy networks

The nature of the policy networks (i.e., open vs. closed), the types of relationships between the stakeholders within the policy networks (i.e., partnership vs. hierarchy based relationship) and the homogeneity of the networks (homogenous vs. heterogeneous networks) affect the harnessing of both evidence and values. The key mechanisms that are in play include allowing/limiting the researchers and the public access to implementation-related decision-making, creating/limiting a level playing field for the researchers and the public to put forward their views, and increasing/limiting conflict between competing interests.

Scholars describe that open policy networks (vs. closed) allow researchers and the public to join the discussion about policy implementation processes without barriers [12, 76, 85, 87-89]. Whether the researchers and the public can draw policy implementers' attention to their agenda

depends on the types of relationships between the stakeholders within the policy networks (i.e., partnership vs. hierarchy based relationship) and homogeneity of the networks (homogenous vs. heterogeneous networks). A partnership-based model of stakeholder relationship is an effective tool to mitigate power imbalance (i.e., symbolic power and authority of professionals and industry groups over researchers and public) between stakeholders and thus creates a level playing field for all stakeholders that include the researchers and the public to put forward their views without barriers. The power imbalance between stakeholders can create a hierarchy based relationship within the policy networks and impede the free expression of public values [12, 66, 76, 83, 85, 87-89, 93]. We also found that homogeneous policy networks (i.e., networks formed by a single government ministry, having a relatively small number of like-minded members) minimize conflict between competing interests and thus reduce the risk of barriers to implementing evidence-informed policy. In contrast, heterogeneous networks (i.e., networks composed of multiple ministries and a wide range of stakeholders) that are more prevalent in decentralized governance settings can pose barriers to implementing evidence-informed policy by allowing a diverse group of stakeholders to put forward their views that are often difficult for the government to converge and reconcile due to increasing conflict between competing interests [52, 57, 58, 69, 92].

ii) Interests

Interest groups affect both harnessing evidence and values by increasing (vs. decreasing) policy implementers' confidence, generating (vs. lowering) demand for evidence, eliminating (vs. creating) barriers to understanding evidence, and creating a linkage between the government and the public.

Policy implementers are more likely to pay attention to evidence when a powerful interest group (i.e., elected officials, civil servants, industry groups, and professional groups) supports evidence or does not strongly oppose evidence. The likelihood of using evidence also increases when a champion (i.e., having a background in the health sector and research, and ability to engage with the politicians and other stakeholders) internal to the government advocates for evidence. In both cases, policy implementers feel confident to pay attention to evidence because they do not see a significant risk and can trust the internal advocate. In contrast, opposition from a powerful interest group reduces policy implementers' confidence to pay attention to evidence. Interest groups may not support evidence when their interests are not aligned with the evidence or they see evidence as a threat to their interests [12, 57, 60, 62, 63, 68, 69, 73, 87, 88].

Researchers and knowledge brokers also act like highly active interest groups by pushing the agenda of using evidence in implementation-related decision-making. Their motivation is underpinned by the concentrated benefit they receive from harnessing evidence in policy implementation. Their ability and skills to advance their interests (e.g., dissemination of evidence) by increasing the demand for evidence and eliminating barriers to understanding evidence is a crucial determinant to draw policy implementers' attention. Maintaining regular interaction with policy implementers and producing evidence that coincides with implementation planning facilitates increasing demand for evidence. Using appropriate communication techniques (e.g., using simple language in the form of a policy brief and through deliberative dialogues) that cater to the policy implementers' need eliminates barriers to understanding evidence [12, 52, 67-69, 87, 92] [67-69, 87, 92, 94].

Scholars suggest that civil society organizations can help draw policy implementers' attention to values by creating a communication bridge between the public and policy implementers. They can also play as an important ally to the governments to educate policy implementers about eliciting values. The willingness and capability of these organizations to engage with the public is a crucial ingredient for eliciting and advancing public values [53, 66, 76, 82, 83, 85, 88, 89]. Financial and capacity-building support from governments is vital to their success. Nevertheless, the role of civil society organizations is not without controversy because powerful societal interest groups often infiltrate them, leading to private interests replacing public values [66, 75, 85, 89].

Smith (1990) suggests that the success of interest groups depend on their relationship with the government, lobbying power characterized by the level of financing and degree of mobilization, and level of legitimacy [95]. Our review reveals that some interest groups (e.g., industry groups) may gain lobbying power and legitimacy by financing government projects. Others can exercise an indirect source of power (e.g., relationship with the public) and raise public awareness to put electoral pressure on the politicians to pay attention to evidence [67-69, 87, 92].

iii) Ideas

Four factors related to ideas are most thoroughly discussed in the literature:

a) characteristics of evidence (e.g., relevant vs. irrelevant) can determine its use in policy implementation by increasing or decreasing policymakers' confidence;

b) public perceptions about evidence (i.e., demand vs. reject) can influence policy implementers' willingness to pay attention to evidence by creating electoral pressure;

c) policy implementers' perceptions and attitudes (e.g., positive vs. negative perceptions and attitudes) can influence policy implementers' willingness to pay attention to evidence and/or values as well as their intention to use evidence and/or values in the implementation-related decision-making; and

d) public awareness, skills and trust over government (i.e., high vs. low) can influence policy implementers' willingness to pay attention to values as well as their efforts to elicit values by enabling/disabling the public to put forward their views.

Characteristics of evidence

Policy implementers tend to pay attention to evidence that is relevant (vs. irrelevant), contextualized (vs. global), and aligned with their priorities (vs. not aligned with their priorities). Relevant evidence is prescriptive (i.e., offering solutions to the identified problem), contains effectiveness data, is locally produced, and is economically feasible to implement. Evidence that is not relevant to the policy in question and inconclusive is likely to be ignored by the policy implementers. Aligning the research agenda with policy implementers' priorities through a joint priority setting at the outset of research can improve the relevancy of evidence. However, joint priority setting is sometimes affected by cultural attributes that set apart researchers from policy implementers because researchers are historically inclined to be independent and avoid any risk of collusion with political interests [12, 52, 63, 64, 67-69, 73, 87, 88, 92, 96].

Public perceptions about evidence

Public perceptions about evidence can influence policy implementers' willingness to pay attention to evidence by creating electoral pressure on the policy implementers (i.e., public either demand evidence or reject evidence presented to them). Public perceptions are underpinned by

their judgment (i.e., drawing a comparison with another jurisdiction or status quo) about the implication of using evidence. For instance, policy implementers in the NHS England used evidence to decide not to fund (i.e., economic policy instrument) the drug Donepezil. The policy implementation failed to garner public support because the public felt the policy was creating widespread social inequality despite underpinned by evidence. Scholars suggest engaging the public in implementation-related research may facilitate improving public knowledge and awareness about the policy issue and evidence, building consensus around evidence use, and gaining public support [57, 63, 67, 69, 88, 96].

Policy implementers' perceptions and attitudes

Policy implementers' perceptions and attitudes (e.g., positive vs. negative attitudes) can influence their willingness to pay attention to evidence and values as well as their intention to use evidence and values in the implementation-related decision-making. Their deep-rooted beliefs and attitudes shape their views about evidence and values.

The literature about evidence suggest that policy implementers may prioritize personal values over evidence if they perceive evidence as a threat to their values. These values are not always individual preferences; sometimes, they are collective and are shaped by national political culture. Some of the underlying factors that shape policy implementers' values to ignore evidence include moral ideologies, evidence threatening the existing belief, and mistrust in evidence produced outside the organization. Moreover, policy implementers may have the attitudes to prefer a compelling idea over evidence unless they see an incentive to use evidence by giving up their idea. Such attitudes pose barriers to harnessing evidence [52, 58, 63, 67-69, 73, 87, 96].

The literature about values describe policy implementers' perceptions and attitudes as a dichotomous variable (i.e., positive vs. negative attitudes). Positive perceptions and attitudes are demonstrated by acceptance and recognition of the lay public as a legitimate 'civic partner,' and 'values' as a credible source of information. On the other hand, negative perceptions and attitudes are demonstrated by treatment of the lay public as merely 'consumers' and doubt about the legitimacy and credibility of values as a source of information. The former fosters and the latter impedes harnessing values (i.e., policy implementers' willingness to pay attention to values as well as their intention to use values in the implementation-related decision-making) by shaping policy implementers' views [76, 83, 84, 88].

Public awareness, skills, and trust in government

A high degree (vs. low degree) of public awareness about policy issues, skills to advocate and coordinate, and trust in governments increase the public's willingness to take part in policy dialogue and the ability to draw policy implementers' attention to their views. High public awareness and skills also facilitate finding common ground on shared values, a determinant of drawing policy implementers' attention. Scholars reiterate that building public awareness and skills through training and skill-building workshops can significantly enhance efforts to elicit values. Mistrust in governments is linked to the governments not fulfilling their commitment or deliberately ignoring public values. Building trust between governments and the public is one of the precursors to meaningful public engagement. [64-66, 76, 78, 82, 83, 85, 88].

iv) External factors

Among the external factors, the 'media' can draw policy implementers' attention to evidence by publishing research findings accurately in plain language that is more permeable to the policy implementers and the public, and by building consensus about evidence. The impact is

dual: policy implementers learn and get oriented about research findings, which helps to shape their views and draw their attention; the informed public can also put pressure on policy implementers to pay attention to evidence. The media can also pose barriers to paying attention to evidence by publishing research findings inaccurately and exploiting divergences rather than clarifying the issue. Interest groups who are opposed to evidence can also use the media to put forward their argument [12, 60, 68, 69].

Discussion

Main findings

Our analysis reveals that the dependent variable 'harnessing evidence and values' is actually a combination of three interrelated variables: policy implementers' willingness to pay attention to evidence and/or values; their efforts to acquire, assess, and adapt evidence, and/or elicit values; and using evidence and/or values in policy implementation-related decision-making. These variables are not sequential events; they often overlap.

Two institutional factors (i.e., policy legacies, and nature and dynamics of policy networks) and one ideational factor (policy implementers' perceptions and attitudes) commonly affect the harnessing of both evidence and values. Two factors related to interests that affect the harnessing of evidence include support (vs. opposition) of a powerful interest group, and the ability and skills of researchers and knowledge brokers (interest groups). On the contrary, the harnessing of values is affected by the willingness and ability of civil society organizations (interest groups) to engage with the public. Two ideational factors that influence the harnessing of evidence include characteristics of evidence and public perceptions about evidence. On the other hand, public awareness, skills and trust in government is the main ideational factor that influences the

harnessing of values. In addition, media is the only external factor that affects the harnessing of evidence explicitly.

We also found that these factors work through various mechanisms among which five are common to evidence and values: i) generating resources and incentives for government elites and the public; ii) allowing (vs. limiting) the researchers and the public access to policy implementation-related decision-making; iii) creating (vs. limiting) a level playing field for the researchers and the public to put forward their views within policy networks; iv) enabling (vs. disabling) governments' capacity to acquire, assess, and adapt evidence and/or elicit values; and v) shaping policy implementers' views toward evidence and values.

Furthermore, the factors do not work in isolation. Many of them overlap and are intertwined, and often the effects of one depend on others. For instance, interest-related factors frequently overlap with factors related to policy networks and values. The functionality of policy networks largely depends on the nature of the interest groups and their relationship with governments. It is also challenging to separate interests from values. Public values are often expressed as interests when mobilized and represented by societal interest groups (e.g., civil society organizations). The path of transformation of public values into organizational interests is complex, and often shaped, defined, and refined by interests of organizations. The ordinary public largely depend on these groups to mobilize their values.

Strengths and limitations of the study

There are three strengths. First, this study lies in its explicit focus on exploring evidence and values together in the policy implementation context and application of robust methods (i.e., CIS). Although evidence and values are studied in parallel by two distinct groups of scholars, we identified policy implementation context as common ground where the integration of these two

concepts is an exciting opportunity. Policy implementers need an overarching understanding of how they can utilize both evidence and values to support policy implementation. Our study provides an insight into this endeavor.

Second, the iterative nature of the CIS methods allowed us to revise our compass question, inclusion/exclusion criteria, and data extraction sheet once we had some clarity around the phenomenon from our preliminary analysis of papers. The inclusion of a second reviewer strengthened our effort to come up with better search terms that helped us to contain our search results within a reasonable limit. In addition to electronic database searches, the inclusion of articles through purposive searches helped us to develop a fulsome understanding of the concepts, factors and mechanisms of influence.

Third, we interpreted the findings through a rigorous and iterative process which helped us to understand how policy implementers give meaning to the concept of evidence and values, and how different factors influence their views about evidence and values.

Nevertheless, three limitations must be worth noting. First, the health policy implementation literature merely discusses the concepts of evidence and values and hardly explains the mechanisms through which different factors influence harnessing evidence and values. We had to purposively search and include literature from outside the health policy implementation field to fill a conceptual gap.

Second, none of the literature that we reviewed (except the ones that we selected for explaining 3I+E framework) explicitly used the variables from 3I+E framework to explain factors that affect harnessing evidence and values in policy implementation. We iteratively interpreted the implicit meaning of the terms and language used for different factors in the

literature and matched them with the variables from the 3I+E framework. Our professional training and past experience helped us in this process.

Third, many of the reviewed papers did not always try to distinguish factors that were relevant to policy implementation from policy development. The nature of the policy process, which draws a faint line between policy development and policy implementation, may have attributed to scholars' portrayal of the factors. We have read those papers several times, discussed about any confusion within our team, and made decisions based on a consensus.

Implications for research

Given the scarcity of literature in the field of harnessing evidence and values in policy implementation, more research is required in the future with a specific focus on policy implementation. Future studies can test the independent variables that we synthesized through this study. In addition, a comparative study is required to explore how the factors that affect harnessing evidence and values in policy implementation are either similar or different than policy development.

Implication for policy and practice

The results of this study have implications for four groups: researchers, knowledge brokers, societal interest groups (e.g., civil society organizations), and policy implementers.

The first three groups can use the results to understand how different factors (e.g., institutions, interests and ideational factors) may influence whether, how and why policy implementers may opt to harness evidence. As a result, the researchers can adopt appropriate strategies (e.g., maintain collaboration with policy implementers, educate public and make an alliance with powerful interest groups) and make the necessary adjustments in their research priorities and agenda (e.g., make research findings relevant by adopting research agenda that can

answer policy implementers' questions about implementation) to draw policy implementers' attention. Knowledge brokers can utilize the findings of this study to develop new tools or revise/update existing tools that can help them to disseminate evidence by capitalizing on the facilitating factors effectively (e.g., maintaining regular interaction with policy implementers, packaging of research findings in the form of the policy brief and avoiding technical language). Societal interest groups can utilize the results to prioritize target groups and adopt advocacy strategies (e.g., educating policy implementers; strengthening public knowledge, awareness, and skills) that are deemed to facilitate building a positive attitude and draw the attention of policy implementers towards values.

The policy implementers may find the results expand their understanding of how their views toward harnessing evidence and values are shaped. The extended knowledge about the factors influencing their decision may help them to allocate resources for the right types of activities (e.g., staff training and community trust-building) that can strengthen their efforts to harness evidence and values in policy implementation.

Figure 1. PRISMA flow chart of the inclusion/exclusion process

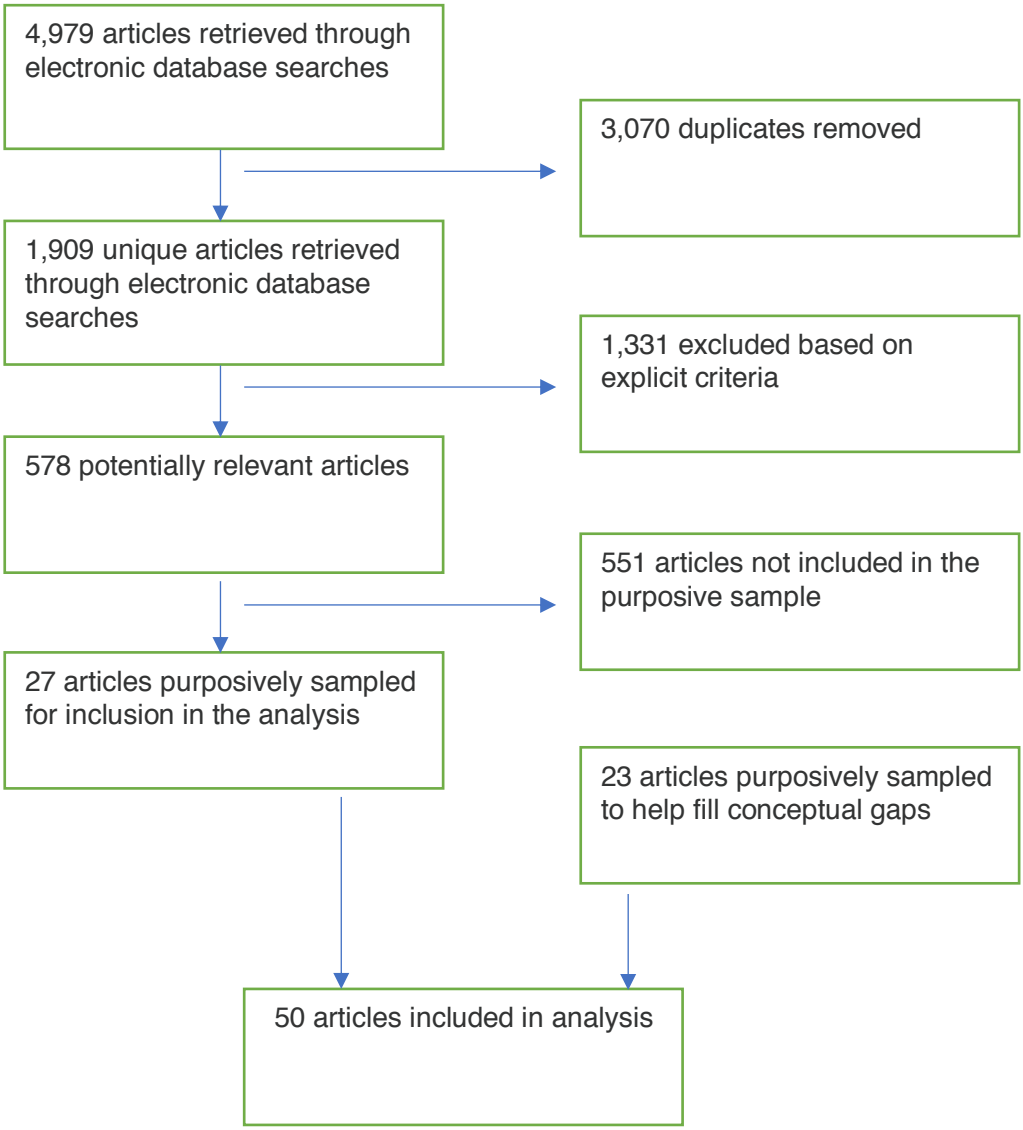

Figure 2: Factors that affect harnessing evidence and values in health policy implementation

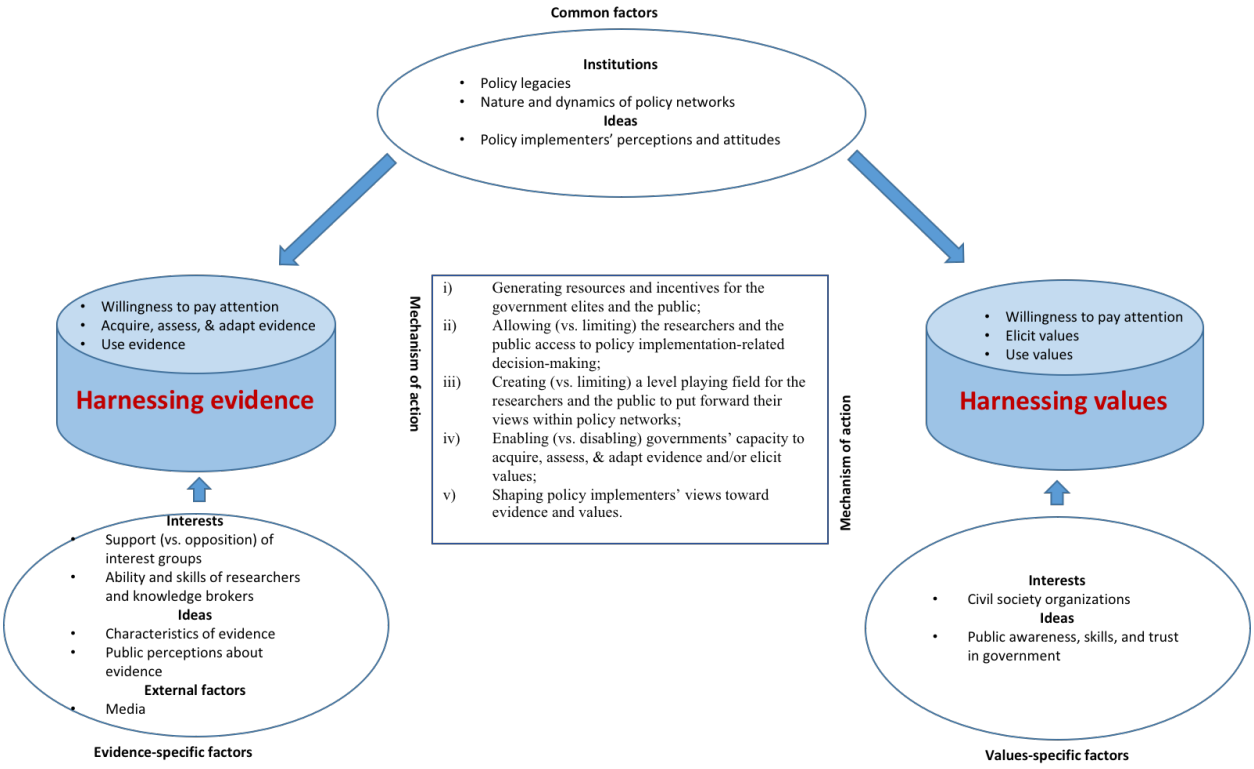

Table 1. Characteristics of documents reviewed for this study

Characteristics		Number	Percentage
Peer-reviewed vs. grey literature	Peer-reviewed	42	84%
	Grey literature	8	16%
Empirical vs. non-empirical	Empirical	40	80%
	Non-empirical	10	20%
Study design (for empirical papers)	Non-systematic literature review	13	32%
	Case studies	7	17%
	Interview studies	6	15%
	No methods mentioned	5	12%
	Case descriptions	3	8%
	Mixed methods (but not case studies)	2	5%
	Theoretical	2	5%
	Scoping review	1	3%
	Documentary analysis	1	3%
Year of publications	2013-2017	19	38%
	2008-2012	16	32%
	2003-2007	5	10%
	1998-2002	5	10%
	Before 1998	4	8%
	Not dated	1	2%
Country/region	High income countries	25	50%
	No country/region focus	17	34%
	Low and middle-income countries	8	16%

Table 2. Factors that affect harnessing evidence and values in health policy implementation

Theoretical categories	Factors type	Factors sub-type	Facilitators (+) Barriers (-)	Harnessing evidence and/or values: (i), (ii), (iii)*	Mechanism of influence
Institutions	Policy legacies created by past policies, organizational practices, and political culture	Not applicable	+/- evidence +/- values	(i), (ii)	• Incentivizing politicians and bureaucrats • Generating resources • Interpretive effect on policy implementers • Enhancing/weakening state administrative capacity
	Nature of policy networks	Open vs. closed	+/- evidence +/- values	(i), (iii)	• Allowing (vs. limiting) researchers and public access to decision-making
	Type of relationship between stakeholders within the policy networks and homogeneity of the networks	Partnership-based (vs. hierarchy-based) relationship and homogenous (vs. heterogeneous) networks	+/- evidence +/- values	(i), (iii)	• Creating (vs. limiting) level playing field for researchers and public to put forward their views • Limiting (vs. increasing) conflict between competing interests
Interests	Position of interest groups (i.e., elected officials, civil servants, industry groups and professional groups)	Support (vs. oppose) or no strong opposition (vs. support)	+/- evidence	(i), (iii)	• Increasing (vs. decreasing) policy implementers' confidence
	Researchers and knowledge brokers' ability and skills to advance their interests	Maintaining (vs. not maintaining) regular interaction with policy implementers, producing evidence that coincides (vs. doesn't coincides) with implementation planning, and using (vs. not using) appropriate communication techniques that cater to policy implementers' need	+/- evidence	(i), (iii)	• Generating (vs. lowering) demand for evidence • Eliminating (vs. creating) barriers to understanding evidence
	Civil society organizations that are willing, and capable of engaging with the public	Not applicable	+ values	(i), (ii)	• Creating linkage between government and public
Ideas	Characteristics of evidence	Relevant (vs. irrelevant), contextualized (vs. no contextualized), and aligned (vs. not aligned) with policy implementers' priorities	+/- evidence	(iii)	• Increasing (vs. decreasing) policy implementers' confidence
	Public perceptions about evidence	Demand (vs. reject) evidence	+/- evidence	(i)	• Creating electoral pressure
	Policy implementers' perceptions and attitudes	Policy implementers' positive (vs. negative) attitudes demonstrated by their treatment of lay public as legitimate 'civic partners' (vs. merely 'consumer'), and their confidence (vs. doubt) about the legitimacy of public values as a credible source of information	+/- evidence +/- values	(i), (iii)	• Shaping policy implementers' views
	Public awareness, skills, and trust in government	High vs. low	+/- values	(i), (ii)	• Enabling (vs. disabling) public to put forward their views
External factors	Media's role in disseminating evidence to the policy implementers and public	Media accurately (vs. inaccurately) reports about evidence and building consensus (vs. exploiting divergence)	+/- evidence	(i)	• Shaping policy implementers' views

*(i) willingness to pay attention to evidence and/or values. (ii) efforts to acquire, assess, and adapt evidence; or efforts to elicit values. (iii) use evidence and/or values in decision-making

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Appendix A. Results of electronic databases search

Searched through	Database Name	Description of database	Search string used	Number of articles found and comments
EBSCO	CINAHL	Nursing, healthcare and allied health literature	TI polic* AND TI (implement* OR Administ*) AND TX Health* AND TX (Evidence* OR knowledge* OR research* OR information* OR patient OR public OR civic OR citizen* OR communit* OR value* OR choice* OR Preference* OR opinion OR perspective*)	508
McMaster Library: WorldCat	OAISter	Grey literature	*The OAIster database was accessed through McMaster Library. The advance search in OAIster database provides only three options. So, the search string was used as follows:* ti: Polic* and (ti: Implement* OR ti: Administ*) and (kw: Health* AND (kw: Evidence* OR kw: knowledge* OR kw: research* OR kw: information* OR kw: patient OR kw: public OR kw: civic OR kw: citizen* OR kw: communit* OR kw: value* OR kw: choice* OR kw: Preference* OR kw: opinion OR kw: perspective*)) and la= "eng"	284
OVID	EMBASE	Biomedical literature	(Polic* and (Implement* or Administ*)).ti. and Health*.ab. and (Evidence* or knowledge* or research* or information* or patient or public or civic or citizen* or communit* or value* or choice* or Preference* or opinion or perspective*).ab.	603
	HealthStar	Literature on health services, technology, and administration. It focuses on both the clinical and non-clinical aspects of healthcare delivery.		193
	PsychINFO	Collection of behavioral and social science literature		207
	MEDLINE	Life sciences and biomedical literature		566
	PubMed	Life science, biomedical, and behavioral science literature	(((Polic*[Title]) AND (Implement*[Title] OR Administ*[Title])) AND Health*[Title/Abstract]) AND (Evidence*[Title/Abstract] OR knowledge*[Title/Abstract] OR research*[Title/Abstract] OR	592

Searched through	Database Name	Description of database	Search string used	Number of articles found and comments
			information*[Title/Abstract] OR patient[Title/Abstract] OR public[Title/Abstract] OR civic[Title/Abstract] OR citizen*[Title/Abstract] OR communit*[Title/Abstract] OR value*[Title/Abstract] OR choice*[Title/Abstract] OR Preference*[Title/Abstract] OR opinion[Title/Abstract] OR perspective*[Title/Abstract])	
ProQuest	Applied Social Sciences Index and Abstracts, International Bibliography of Social Sciences (IBSS), Nursing and Allied Health Database, PAIS index, political science database, sociology collection, and sociological abstracts	Covers anthropology, health services, political science, public policies, psychology, social work, and sociology	ti(Polic*) AND ti(Implement* OR Administ*) AND ab(Health*) AND ab(Evidence* OR knowledge* OR research* OR information* OR patient OR public OR civic OR citizen* OR communit* OR value* OR choice* OR Preference* OR opinion OR perspective*)	653
Web of Science (All Databases)	Citation Index-science, Social sciences, arts and humanities, emerging sources, books, and conference proceedings	General bibliographic database	TITLE: (polic*) AND TITLE: (Implement* OR Administ*) AND TOPIC: (Health*) AND TOPIC: (Evidence* OR knowledge* OR research* OR information* OR patient OR public OR civic OR citizen* OR communit* OR value* OR choice* OR Preference* OR opinion OR perspective*) Timespan: All years. Search language=Auto	1373
TOTAL				4979

Appendix B. Data extraction sheet

1. RefID:
2. Title:
3. Year of publication:
4. Authors:
5. Journal:
6. Types of paper, and methods used:
    a. Empirical paper
        i. Systematic review
        ii. Interview study
        iii. Documentary analysis
        iv. Case study
        v. Mixed methods (but not case study)
        vi. Interrupted time series
        vii. Before-after study
        viii. Non-systematic literature review
        ix. Others (specify)
    b. Non-empirical paper
7. Publication status:
    a. Peer-reviewed journal
    b. Grey literature
8. Country or region focus
    a. No country or region focus
    b. Specific to a country or region
        i. High-income country(ies)
        ii. Low- and middle-income country(ies)
9. The key focus of the article/concepts or factors addressed:
10. Summary of key findings or insights from the article (1-2 paragraphs).
11. Theoretical categories and questions for organizing data:

Concepts	**Data extraction focus**	**Summary of information related to the data extraction focus**
Health policy implementation	Explain whether and how the paper offers insight into the concept of health policy implementation.	
Research evidence	Explain whether and how the paper offers insight into the concept of research evidence with regards to: -defining what constitutes research evidence -explaining what it means by use of research evidence in health policy implementation	
Public values	Explain whether and how the paper	

Concepts	Data extraction focus	Summary of information related to the data extraction focus
	offers insight into the concept of public values with regards to: -defining public values -explaining what it means by use of public values in health policy implementation	

Dependent variables	Categories for independent variables	Data extraction focus	Summary of information related to the data extraction focus
Harnessing evidence and/or values in health policy implementation	Institutions	Explain whether and how the paper offers insights into the factors related to institutions that affect harnessing evidence and/or values: -government structures (e.g., federal versus unitary government); -policy legacies (e.g., past policies, and organizational practices that shape, facilitate and/or constrain harnessing evidence and/or values); -policy networks (e.g., government appointed committees that involve a small number of key stakeholders vs. clientele pluralist or pressure pluralist network).	
	Interests	Explain whether and how the paper offers insights into the factors related to interests that affect harnessing evidence and/or values: -types of interest groups that may be involved (e.g., societal interest groups, elected officials, civil servants, and researchers); -the specific interests in evidence use each group may have; and -the influence/power each group might be able to use.	

Dependent variables	Categories for independent variables	Data extraction focus	Summary of information related to the data extraction focus
	Ideas	Explain whether and how the paper offers insights into the factors related to ideas that affect harnessing evidence and/or values: - Knowledge/beliefs about 'what is' can include: research knowledge, other types of information, tacit knowledge - Values/mass opinion about 'what ought to be' can include: elite opinion, mass opinion	
	External factors	Explain whether and how the paper offers insights into the external factors that affect harnessing evidence and/or values: -Political change, economic change (e.g., recessions), technological change, media coverage, international organizations, donors, etc.	
	Others (i.e., new variables or not sure where the variables fit in the above categories)		

12. Further references to search (reference chaining):

Chapter 3: Harnessing research evidence in public health policy implementation in Ontario: A case study

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Word Count:
259 (Abstract)
8,361 (Full text)

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Preface

This chapter builds on insights from chapter 2. It examines how public health policy implementers conceive the idea of harnessing evidence in policy implementation, what factors affect their decision to harness evidence and what approaches work to support their efforts to harness evidence in policy implementation.

We employed a multiple case study design of key informants and documents in public domain. We used the theoretical framework developed in chapter 2 as an analytical framework to design the interview guide, organize and analyze the data, and compare and contrast the case study findings with the variables of the framework.

I conceptualized the study, designed the interview guide, collected and analyzed all primary and secondary data. John Lavis provided advice and detailed input on the framing of the study question and objectives, the design of the interview guide and approach to the analysis. Julia Abelson provided advice on the methodological foundations of the study design. My committee members reviewed numerous drafts of the manuscript and provided feedback on the interpretation of results.

Abstract

Context: Despite the current knowledge about the importance of evidence to support public health policy implementation, studies show that there is still a considerable gap between evidence and the policy implementation strategies adopted by public health policy implementers. The objective of this study is to understand the meaning and determinants of harnessing evidence and key approaches that can support harnessing evidence in public health policy implementation.

Methods: We used a qualitative research design and carried out an exploratory multiple case study in Ontario, Canada. We interviewed a sample of key informants and reviewed documents available in the public domain. We used an explanatory framework developed through a critical interpretive synthesis of the literature to guide the collection and analysis of the case study data.

Findings: The public health leaders interviewed in the study consider a wide range of information (e.g., research papers, program data, expert opinion and feedback from program staff) as 'evidence' that is relevant to policy implementation. Three factors influence harnessing of evidence in public health policy implementation: the nature of policy networks, interests of societal interest groups and policy legacies. These factors can work at different levels of policy implementation depending on the health systems arrangement (e.g., provincial vs. local). Strengthening local public health agencies' administrative capacity, surveillance, monitoring, and evaluation of policies and programs can support harnessing evidence at the local level.

Conclusion: Policymakers need to continue building a relationship with researchers by including them in the policy networks and strengthen the administrative capacity of public health agencies for harnessing evidence in policy implementation.

Introduction

The importance of harnessing research evidence (hereafter evidence) in health policymaking (i.e., agenda setting, policy development and implementation) has been drawing global attention over the last few decades [1-4]. Successful implementation is a crucial factor in enabling health policies to exert a positive and meaningful impact on population health [5-7]. Harnessing the best available evidence to support policy implementation can help to avoid suboptimal health outcomes and inefficiencies in health systems [8, 9]. Scholars suggest that policy implementers can use evidence to identify the most effective interventions to offer and the most efficient way to deliver services. Evidence can also help to identify the most effective strategies to address barriers to implementation [10-13].

Despite the current knowledge about the usefulness of evidence to support policy implementation, studies from the U.S. show that there is still a considerable gap between evidence and its use in policy implementation. Scholars described that the failure to use the best available evidence in public health policy implementation has led to a missed opportunity to save lives, increase opportunity cost, and negative consequences on population health in the U.S. [14, 15]. So, the question is, what factors influence policy implementers' decision to harness evidence?

The existing scholarship in this regard is limited. Although an extensive body of work has explored factors affecting macro-level decision-making for harnessing evidence in agenda-setting and policy development, only a limited number of studies focused on policy implementation [12, 16-27]. Furthermore, a global review of the literature about public policy implementation shows that only 15% of the studies focused on the health sector [6]. Nevertheless, a few studies that focused on health policy implementation explored the broader

factors that affect implementation, not the factors that affect decisions to harness evidence in policy implementation [28-32]. Some scholars explored factors that affect the harnessing of evidence in micro-level decision-making (e.g., programmatic, organizational and clinical decisions) [33-40]. Those who have studied programmatic decisions, which often overlap with policy implementation decisions, mainly emphasized staff capacity (i.e., knowledge, attitude, and practices) and hardly explored other factors (e.g. institutions and interests) that are equally important in implementation decision-making [33, 35, 41-43]. In sum, there is a scarcity of literature to understand the determinants of harnessing evidence in policy implementation.

The knowledge gap about this issue is even more prominent in the public health sector compared to the 'healthcare' sector, with scholars describing that the public health sector is under-resourced and relatively less studied in terms of evidence-informed decision-making for policy implementation [41, 44-48]. Moreover, the public health systems in many countries, including in Canada, runs parallel to the 'healthcare' systems using a separate governance model. For instance, public health in Ontario is regulated by the provincial Ministry of Health and Long-Term Care (MOHLTC) (Ministry hereafter) and governed by local-level corporations (i.e., boards of health). These boards are three types: autonomous, semi-autonomous, and regional. There are 35 local public health agencies (LPHAs) that administer public health programs and services across the province[2]. The cost of public health programs and services is shared by the province and municipalities (i.e., those who are obligated to pay) [49]. The Ontario Public Health Standards (OPHS) dictate the implementation of public health programs and services by the local agencies. On the contrary, the healthcare programs and services are administered by the Local Health Integration Networks (LHIN), regional crown agencies funded by the Ministry to plan,

[2] http://www.health.gov.on.ca/en/common/system/services/phu/

fund, and integrate healthcare services for their local communities. However, the LHINs are slowly being phased out as part of a new healthcare reform process [50, 51].[3,4]

Hence, it is important to understand what factors affect policy implementers' decision to harness evidence to support public health policy implementation. We previously carried out a critical interpretive synthesis of the literature to clarify the meaning and determinants of harnessing evidence in health policy implementation. However, our synthesized factors represent the broader determinants of harnessing evidence across healthcare and public health policies in a variety of geopolitical contexts, creating an opportunity to explore the phenomenon in a much narrower context (i.e., public health policy implementation) [13, 52-67].

In light of the importance of the phenomenon of interest (i.e., harnessing evidence in public health policy implementation) as well as a knowledge gap in the field of public health, we decided to study specific cases of public health policy implementation in Ontario, Canada. The overarching objective of this study is to understand the meaning and determinants of harnessing evidence in public health policy implementation. More specifically, we sought to answer the following questions: How is the concept of harnessing evidence in policy implementation perceived within the public health sector? What factors determine the harnessing of evidence in policy implementation? What approaches can support the harnessing of evidence in policy implementation?

Methods

We carried out an exploratory case study using the embedded multiple cases design outlined by Yin [68] While there may have been explanatory features to this case study, we consider it exploratory because we did not have an explicit hypothesis at the beginning of the study and our

[3] http://www.health.gov.on.ca/en/common/system/services/lhin/default.aspx
[4] https://www.ontario.ca/laws/statute/s19005

approach was to explore, not necessarily to fully explain, the phenomena from the perspectives of policy implementers). We used this case study to explore two phenomena: evidence and 'public values'. This report is about 'evidence' only; we have addressed the 'values' in another article. We have chosen the case study method because 1) our research sought to answer "how the concept of harnessing evidence is perceived, and what determines harnessing evidence in public health policy implementation"; 2) we were interested in a phenomenon (i.e., harnessing evidence) that is best studied within its own context (i.e., context where public health policies are implemented); 3) we did not intend to manipulate the behaviour of study participants (i.e., public health managers/leaders); and 4) the boundaries were not apparent between the phenomenon and the context [68-71].

Study site

We selected the Ontario province as the site for this study because 1) Ontario is the largest province in Canada and about 40 percent of Canadians live in Ontario; 2) Ontario has one of the robust public health systems that serve a population of a diverse ethnic, linguistic, and cultural background; 3) the research team has a rich knowledge about the public health stakeholders in Ontario; and 4) the principal investigator (Mohammad G Kibria) is familiar with Ontario's public health sector due to his past employment with the Population and Public Health Division (PPHD) at Ontario's Ministry of Health and Long-Term Care.

Selecting and defining the cases

We purposively selected two cases of policy implementation for our study based upon our prior knowledge, and discussion with public health experts. The first case is 'implementation of the Ontario government's decision to integrate six public dental programs into one Healthy

Smiles Ontario (HSO) program' (hereafter 'implementation of HSO').[5] A chronology of events that unfolded since HSO policy development through its implementation is presented in Figure 1. The idea of the policy to integrate different public dental health programs was conceptualized in 2013. In the following year, the MOHLTC established multiple policy networks to advise on implementation planning (e.g., agreed-upon service schedule and program design). These networks have worked almost a year on various issues related to policy implementation and have produced recommendations for the ministry. Their scope of work includes evidence review and consultation with various stakeholders (e.g., LPHAs), including the public. The MOHLTC finally announced the policy change in January 2016, followed by the release of implementation guides and protocols in May 2016. Since then, the LPHAs are implementing the policy. The second case is the 'implementation of the Ontario government's decision to create a formal relationship between local public health agencies (LPHAs) and local health integration networks (LHINs)' (hereafter 'implementation of patient-first act/PFA').[6] Similar to the first case, we have summarized a chronology of events that unfolded since PFA policy development through its implementation in Figure 2. The policy idea came to fruition in December 2015 when the MOHLTC released a discussion paper known as 'Patient first: a proposal to strengthen patient-centred healthcare in Ontario.' This paper is the blueprint of multiple policy reforms within

[5] The HSO program provides oral health services (i.e., preventive, routine and restorative, and emergency) to children and/or youth from low-income families. Prior to HSO implementation, these services were provided through six different public dental health programs (i.e., Healthy Smile Ontario 1.0; Children in Need of Treatment Program (CINOT); Preventive services within the Ontario Public Health Standards (OPHS), 2008 (PSO); Ontario Works; Ontario Disability Support Program (ODSP); and Assistance for Children with Severe Disabilities (ACSD)). These programs were overseen by multiple ministries, each having different administrative mechanisms and service schedules. The HSO program was adopted by Ontario government as a policy shift to integrate fragmented approaches to providing oral health services into a single program.

[6] In 2016, the Ontario government decided that Boards of Health, who oversee the public health policies and programs implemented by Ontario's 35 public health units (PHUs)/local public health agencies (LPHAs), shall formally engage with the Local Health Integration Networks (LHINs) on issues relating to local health system planning, funding and service delivery. The province enforced its decision through passage of legislation '*The Patients First Act*, 2016.'

Ontario health systems; PFA is just one of them. In the following year, the MOHLTC carried out province-wide consultations with various stakeholders, including the public and established multiple policy networks (e.g., public health workstream) for advising the ministry on policy development and implementation. In the last quarter of 2016, the minister of health formally introduced the policy reform agenda in the legislative assembly as a bill known as Bill 41. The assembly passed the bill into an act known as the 'Patient First Act.' The idea of creating a formal relationship between LPHAs and LHINs was enshrined in the PFA. However, the details about its implementation were not clear to any party. So, the minister established an expert panel in the following year to detail out the implementation strategies. The expert panel came out with a broader strategic direction in a report based on their assessment of evidence and consultation with various stakeholders. The report, known as 'Public health within an integrated health system: Report of the minister's expert panel on public health,' was released in June 2017. Over the remainder of that year, the ministry received feedback from the LPHAs and LHINs on the broader strategies proposed by the expert panel. The ministry finally released an implementation guideline in January 2018, which excluded expert panel recommendations due to objections from LPHAs. Since then, the LPHAs have been implementing the policy. These cases were bounded by time (i.e., both policies came into effect in the year 2016), categories (i.e., both are public health policies), place (i.e., both are implemented in Ontario), and participants involved in the case (i.e., policy implementers and researchers).

Data sources and sampling

To explore the two phenomena of interest, we conducted a thematic analysis of semi-structured interviews with purposively sampled key informants who were either directly or indirectly involved in the implementation of the policies that we selected as our cases. For the

key-informant interviews, we reached out to a list of potential key informants by email and then followed up by telephone. We developed the list of potential key informants using personal contacts and policy-relevant documents that mentioned their involvement. We used respondent-driven sampling to find and sample additional key informants while conducting interviews with the first set of potential key informants. We stopped additional sampling and recruitment of key informants once we felt that no additional insights were emerging during interviews, meaning we reached the point of saturation [70, 72, 73].

We also reviewed documents (i.e., policy documents, statues, implementation plans, expert panel reports, discussion papers, evaluation reports, meeting minutes, press releases, news articles, and research articles) that are relevant to our cases (Appendix A). We used documentary data to corroborate and augment the data from interviews. In addition, the principal investigator's (MGK) previous employment with the Ministry facilitated his ability to execute the study by allowing him to more easily identify key informants [68]. The convergence of data from different sources helped us to develop a holistic understanding of the phenomenon being studied [68, 69].

Analytical framework

We used an analytical framework developed through a critical interpretive synthesis (CIS) of the literature to guide the collection and analysis of the case study data. The variables in the analytical framework represent the broader determinants of harnessing evidence and values in health policies (i.e., healthcare and public health) in a variety of geopolitical contexts. These variables are grouped into four categories (i.e., institutions, interests, ideas, and external factors) which are drawn from a widely used theoretical framework 3i+E. It is an explanatory framework derived from the political science literature which broadly explains how institutions (i.e., government structures, policy legacy, and policy networks); interests (i.e., societal interests, and

other interests hold by different actors involved in policymaking); ideas (i.e., knowledge, and values hold by different stakeholders involved in policymaking); and external factors (i.e., political, economic and technological changes, others) affect policymaking [74]. We also used the variables from the analytic framework to compare the findings of the case study.

Data collection tools and procedures

We used a semi-structured interview guide that included both specific and open-ended questions, with potential probes guided by the 'analytical framework' that we discussed in the previous section (Appendix B) [75, 76]. We accommodated further questions (i.e., adding explanation and framing of questions in multiple ways) and probes to the interview guide as we interviewed key informants and analyzed their interviews. For instance, we found there was a need to clarify the concept of 'policy implementation' which was not defined in the original interview guide. We also learned that the diversity of study participants and their various levels of involvement in the implementation of our selected policies required us to frame same questions for different informants differently, and sometimes to ask contextual questions in response to the insights gained from the informants. Moreover, we approached the interviews as conversations to allow informants to feel comfortable sharing insights freely and beyond the structure of the interview guide which provided valuable insights into our case. For instance, we learned through early interviewing that multiple policy networks were formed by the government to guide implementation planning and included questions about policy networks in subsequent interviews.

We shared a short description of our research, interview guide, and consent form with all prospective interviewees by email. Depending on the preferences of the informants, we conducted a 45-60-minute interview with each informant either face-to-face or by the telephone.

We audio-recorded all the interviews and also took handwritten notes throughout the interviews. We transcribed the audio recording of each of the meetings into a detailed summary that incorporates the notes taken for that interview using Microsoft Word. We assigned anonymous identifiers to the notes, audio recordings, and transcripts of each meeting. We encrypted all electronic data, including audio recordings, and stored on a password-protected laptop computer.

We used documents referred/shared by the key informants. We also collected reports, presentations, and letters from the websites of the agencies that are responsible for developing guidelines and protocols for policy implementation, and financing programs and services (i.e., the Ministry); providing technical support (i.e., Public Health Ontario); implementing policies (i.e., public health units); and governing and cost sharing local public health services (i.e., regional and municipal governments). Additionally, we searched key terms in the Google search engine for documents related to our cases. We made a list of documents retrieved from different sources, organized them per case and embedded units (i.e., evidence for this paper, and values for the companion paper), and purposively sampled the ones that are most relevant to our study.

Data analysis

We analyzed data concurrently with data collection. We used transcription software and manual techniques to transcribe, organize and analyze the data. The process involved six iterative steps.

First, we read the data and organized them into three groups for each case aligned with our three research questions. At this stage, we applied labels (e.g., concept, factors and approaches) to each group that describes the phenomena found in the text. The purpose of organizing data into different groups was to facilitate our analysis paying distinct attention to each of the research questions [68, 77].

Second, we read each line, sentence and paragraph in each data group and applied open coding manually to find categories and their properties. We labelled the categories and their properties directly in the hard copies of the transcripts and the documents. We highlighted the concepts and phrases that reflected the study participants' perspectives. Later, we used these highlighted texts as quotes to support our interpretation of data. We also wrote memos in notebooks while coding. We used these memos for our interpretation of the data and theme building.

Third, we listed the categories from the transcripts in a Word table for each case. To compare cases, we organized the categories into two columns (one for each case). We also created a third column as we discovered that the respondents often answered the interview questions by referring their personal experience of implementation of policies that are outside of our selected cases. We carried out cross-case analysis by comparing the categories/patterns that emerged in two cases. The purpose was to probe whether different cases appear to share similar patterns (i.e., literal replication) that may lead to a more assertive conclusion about the phenomenon. Contrasting patterns led us to revisit our data and develop a further explanation.

Fourth, we applied axial coding to find connections between the categories generated through open coding. We explored connections between categories that explain the concept (i.e., evidence), factors affecting harnessing of evidence, and causal link between the factors and the phenomenon (i.e., harnessing evidence). We used a visual mapping/mind mapping technique to accomplish this. We created visual maps by using coloured post sticks and hard boards. We also tallied and highlighted the categories that appeared most frequently as well as the most salient ones (i.e., focused coding) to explain the phenomenon of interests.

Fifth, we then conceptualized the themes through an iterative process of re-assembling categories, constant comparison between categories, revisiting the transcripts and memos to discover latent themes and comparison across cases. The variables from the analytic framework guided us in this process by helping us to organize the categories aligned with variables: institutions, ideas, interests, and external factors. However, we remained open to any new categories. We also used the technique of 'pattern matching' to compare the patterns related to independent variables (i.e., factors affecting harnessing evidence) that emerged from the case study data with the variables from the analytical framework. The purpose was to probe whether the case study findings confirm the variables of the analytical framework. In the case of disconformity, we pursued further enquiry to explain the factors underlying the differences [68].

Sixth, we used data triangulation to compare and contrast interview transcripts, memos and documentary data to strengthen the credibility of our findings [78]. We enquired further into the topic if the documentary data contradicted with interview data. This enquiry involved revisiting the interview transcripts, memos and documents. We also searched for new documents that may help explain the contradiction. Such enquiry led to building an explanation as well as using thick description to present the contradiction.

Seventh, we invited some study participants to review the draft report of the study. We summarized the feedback from those who took part in this process. We explored whether the study findings resonate with the participants' overall experiences and perspectives. In case of any disagreement between our interpretation of data and the participants' perspectives, we revisited the interview transcripts, memos and documentary data. This has led us to revise our interpretive statements in a few instances. We also had a further discussion with a few participants that led

them to revise their initial statement on one occasion. This strategy, widely known as 'member checking,' ensured the credibility of our interpretation of data [79, 80].

Ethical considerations

We obtained ethics approval from Hamilton Integrated Research Ethics Board (HiREB) Hamilton, Ontario, Canada, before data collection. We obtained additional approval from the Ottawa Public Health Research Ethics Board (OPH REB) because the Ottawa LPHA requires this before staffs participate in any research study. Each participant signed an informed consent form before being interviewed (Appendix C).

Results

Interviewee attributes

We conducted 29 semi-structured interviews with key informants (26 by telephone and three in-person) between December 2018 and February 2019. During the interviews, 22 key informants were working with LPHAs, two were former employees of LPHAs, four were from universities, and one was from provincial public health agency. Among the participants from the LPHAs, fourteen were medical officers of health, five were directors of programs and services, and four were managers of programs and services. The key informants from the Ministry of Health and Long-Term Care declined to participate in this study due to confidentiality reasons.

Thematic results

We have organized the results aligned with our three specific research questions: i) conceptualization of harnessing evidence in policy implementation, ii) factors that affect harnessing evidence in policy implementation, and iii) approaches that can support harnessing evidence in policy implementation. We have used unique identifiers to mask the identity of the interviewees in the in-text referencing of direct quotes from interviews (Appendix D).

i) Conceptualization of harnessing evidence in policy implementation

The information gathered from the interviewees provide us with an in-depth understanding of types of evidence that are considered relevant to policy implementation, and the purposes that underpin evidence use in policy implementation. Most of the respondents described that they seek implementation-relevant evidence in scholarly journals, grey literature, programmatic data, expert opinion (i.e., knowledge of subject matter expert), and lived experience (e.g., front-line staff feedback). All respondents described that studies published in scholarly journals provide the best quality evidence. However, experiential evidence and programmatic data are considered as important as evidence published in scholarly journals because data often fill the knowledge gap regarding problem clarification and monitoring of policy implementation.

"Research evidence that's published in peer reviewed journals is higher quality, but it doesn't cover everything that's relevant. So, I think the evidence also coming out of people's experience and evaluations that they do and things that may not be quite as rigorous that are still relevant (MOH9)."

> *"Typically from a public health perspective, we'd be looking at data (MOH10)."*

> "*In the implementation, to me it's a different kind of evidence. It's more experience based, as to you know what are we thinking to the enabler and barriers to implementation based on experience on doing similar thing elsewhere or things that we have done for other topics (D6)."*

Local evidence draws more attention than international ones. The interests of professional groups and variation in demographics and socio-economic context appear to be the key factors that underpin policy implementers' preference for local evidence. One respondent explained:

> *"I think it's evidence that's relevant to us locally and locally could be Ontario. I find for all, like specifically oral health, there isn't a whole lot with respect to evidence and public health strategies for Ontario. So, when we do find those studies or they're available to us, I find that they're extremely useful, especially if something that we're*

> *doing involves local dental providers. They want to know the local context, they're not interested in hearing about what the United States does or the United Kingdom or anywhere like that (M2).”*

Our findings also show that the scope of using evidence to support policy implementation occurs at two levels in Ontario’s two-layered public health systems: provincial level (i.e., the Ministry) and local level (i.e., LPHAs). It appears that the Ministry seeks evidence to develop provincial policies about public health standards (i.e., OPHS), broad implementation strategies (i.e., protocols for specific interventions), and a basket of services that must be offered (i.e. service schedule). The LPHAs seek evidence for identifying the most effective interventions to reach policy implementation targets and developing strategies to address community needs. One participant from an LPHA provided an example about how they use data for choosing the appropriate service delivery model:

> *“We have a great clinic in the area where we have the poorest mothers in Canada, but they are not coming to the clinics. So, our research has told us that every month they go to the food bank. So, guess where we are gonna go. We are gonna go to the food bank and get them there (MOH1).”*

ii) Factors that affect the harnessing of evidence in public health policy implementation

Our analysis reveals that public health policy implementation in Ontario occurs at two levels of public health systems: provincial level (i.e., led by the Ministry) and local level (led by the LPHAs). At the provincial level, two factors influence the policy implementers’ decisions to harness evidence: the nature of policy networks and the interests of powerful societal interest groups. At the local level, policy legacies are the most critical factors. Below, we provide a detailed analysis of the provincial-level factors followed by the local-level factors.

Provincial level factors

Policy networks

We found that the provincial government's efforts to acquire, assess, and adapt evidence relevant to the policy implementation is influenced by its willingness to include researchers and subject matter experts in the policy networks (i.e., expert panels and public health workstream[7]) for both cases (i.e., HSO and PFA). *"Well, the facilitators were that the fact that the government wanted evidence. Government has put forward resources to collect, and synthesize evidence. (A1)"* For example, the Ontario government formed a Dental Service Schedule Review Expert Panel (DSSREP) and a Technical Advisory Committee (TAC) for HSO implementation before the policy came into effect. Similarly, the government established a minister's expert panel (MEP) and a public health workstream (PHWS) for PFA implementation after the policy was in effect. The government nominated key researchers and subject matter experts from the LPHAs as a member of these policy networks. These groups reviewed research evidence, experiential and contextual evidence [81]. They advised the government regarding service provision; program design; and structural, organizational, and governance changes required to implement policies [82-84]. *"I think there has been some evidence, there has been some policy analyses, there has been came from interviews, there has been focus groups. (A2)"*

The above-mentioned policy networks are state-led closed networks where the government led the process and had full control over the member selection. This very nature of these networks may have influenced the types of evidence that received attention and evidence use in implementation-related decision-making. For example, some respondents mentioned that the Minister handpicked MEP members for the PFA implementation. These members are not

[7] The term 'workstream' appears in the Ministry documents and it indicates a working group

essentially public health experts and eventually did not facilitate transferring local level evidence in the expert panel recommendations. *"Although it was called an expert panel, the panel had lack of public health expertise. Some of the members had work experience in the local public health but did not have Royal College certification in public health. (MOH5)"* So, the MEP may have cherry-picked evidence that supports the idea of the Health Minister who wanted to see a restructuring of public health system governance arrangements and alignment of LPHA boundaries with the LHIN. *"I think they chose the evidence that they wanted, Assistant Deputy Minister of Health, XXX wanted a certain outcome and she chose to look at evidence that supported that outcome. (MOH5)"*

On the other hand, the Ministry's control over the DSSREP for HSO implementation (by setting out terms and conditions) may have limited the scope of using evidence as one DSSREP member explained:

> *"We kept hearing from government that 'you are not making recommendations, you are providing us advice'. So immediately the government establishes structure and processes that limit or that act as a barrier to implementing that evidence because I may make a recommendation, and you can ignore that recommendation. But It's a lot easier to ignore advice than ignore recommendation in a sense (A1)."*

This sentiment is shared by the members of the other policy networks too as one member of the TAC described:

> *"They (the Ministry) would just listen to us. We would do a whole bunch of white boarding and then we'll come back for our next meeting in a month. ....So, they almost had their own agenda that they were trying to design and work within the parameters that they've been given (D5)."*

However, this view is not shared by all respondents as one TAC member said: *"In most situations as I said the evidence we provided swayed the Ministry. So, in some situations because of their own constraints, they have some political constraints, they couldn't take our advice, and that's fair (D3)."*

Interests

The interests at play include societal interest groups. In the case of HSO, the Ontario Dental Association (ODA) influenced the provincial government to overlook some of the evidence while designing HSO implementation strategies. In the case of PFA, the LPHAs and the Association of Municipalities Ontario (AMO) acted as interest groups. They posed barriers for the Ministry to use evidence-informed recommendations presented by the MEP to develop PFA implementation strategies.

The ODA advocated and lobbied for the privatization of HSO program administration and claim management of dental services [85]. The provincial government offered a contract to a private company (i.e., ACCERTA, a wholly-owned subsidiary of ODA) to manage program administration and insurance claims.[8] Privatization mainly served the ODA's interests and created a challenge for the LPHAs to ensure equal access to care [86].

> *"There had been a lot of political lobbying by the Ontario Dental Association to privatize the program and have the treatment provided through private offices….. You can tell these little kids to go to private offices and get their work done. If you're up here, we have very few private offices, they might be 200 kilometres away and their parents don't have money for a car. So, there is no way of getting there (M4)."*

The interests of ODA also played over the evidence with regards to services (i.e., polishing and X-rays) that were selected to be offered. For example, dental polishing was included in the service schedule despite a lack of evidence to support its benefit.

> *"There were certain procedures that should not be covered. And polishing is one because there is no benefit of polishing from a public health point of view……But the Ministry still put it in there because the dental providers wanted it, because that's a billable code that they can make money [from] (D5)."*

[8] Retrieved from https://www.youroralhealth.ca/privacy-statement-for-members-and-prospective-members

The government decided to offer X-rays at six months intervals instead of nine months despite the lack of evidence for more frequent X-rays [87]. One DSSREP member explained:

> *"They decided to do that because that's what they were told dentists wanted. And dentists, want to get [that] from a cynical perspective, I'll tell you, because they can bill for and is one of those things they can bill and whether or not it is needed is immaterial. So, I think there are examples in the fee guide. It was created through the expert panel that I was on. The expert panel does not agree with [it], but the Ministry decided they were going to do [it] regardless (D1)."*

The dominance of the ODA's interests over the evidence is underpinned by ODA's special relationship with the Ministry that is comparable to 'clientele pluralism' although there is no formal structure (like the Physician Services Committee) exists to engage ODA [88]. The Ministry does not possess the ability on its own to deliver the dental healthcare services, so they had to relinquish some authority to ODA. One respondent described:

> *"The weariness of not losing the support of the dentists in a program that they would be charged with delivering the actual dental services for. So, they (i.e., Ministry) have to keep them happy to some degree because those are the ones who are in the end going to be developing the treatment (C1)."*

For the case of PFA implementation, the LPHAs resisted MEP's evidence-informed recommendations (i.e., creating 14 regional public health entities by reducing the number of boards of health from 36 to 14, and aligning LPHA boundaries with LHINs) due to protectionism and fear of losing control [83, 89]. *"There was a lot of push back by public health….Of course, public health is always concerned about being consumed in the larger health system (A2)."* The LPHAs' campaign against MEP recommendations garnered strong support from the AMO. *"Not only did the public health system reacted very negatively, but the Association of Municipalities, Ontario reacted very negatively to that as well (MO7)."* The LPHAs and the AMO touted their opinion against MEP's recommendations through multiple written submission to the Minister of Health [90-93]. They perceived the cost of implementing the MEP's recommendations as

concentrated on them, as one respondent described: *"[The] biggest pushback was this is going to take a lot of resources away from what we're doing. And what we're doing is actually more important than guiding healthcare services (MOH5)."* Initially, the Ministry was keen to use evidence presented by the MEP as the Health Minster's idea was clearly aligned with the MEP's recommendations. Nevertheless, stiff resistance from the LPHAs and the AMO swayed the Ministry to give up adopting MEP recommendations. The Liberal political interests may have underpinned the change of the government's position on this issue as one respondent explained:

> *"The staffs are all in different types of unions⋯..So, if you go to amalgamate health units with LHINs or with hospitals, whatever you wanted to do or create a regional, you have to tackle these issues with the unions. And as long as we had the Liberal government, they didn't want to take on those issues (A3)."*

Local level factors

Policy legacies

We found that the provincial policy about public health standards (i.e., OPHS) and past decisions within the LPHAs to strengthen administrative capacity acted as policy legacies at the local level. The policy legacies shaped the views of the policy implementers to pay attention to evidence and facilitated their efforts to acquire, assess and adapt evidence.

For example, the OPHS mandate boards of health to use the best available evidence, which may come from population health assessment, surveillance, research and program evaluation, to address public health problems [94].

> *"What are now known as the Ontario public health standards and, prior to that, the mandatory health programs and services guidelines gave rise to the importance of research and a knowledge exchange and created the expectation that we would be engaged in research and knowledge exchange (MOH3)."*

A clear mandate regarding evidence use in the OPHS contributes to a high level of willingness to pay attention to the evidence in policy implementation across LPHAs. *"It's clearly part of our*

public health standards that we are to do with evidence informed practice (AMOH)."

Nevertheless, there is a variation of administrative capacity (e.g., structure and mechanisms, trained staff, etc.) to acquire, assess, and adapt evidence across the province. *"I would say that by no means do all health units have the capacity to do that (i.e., searching and compiling evidence). Some absolutely have no capacity at all (MOH2)."* Some respondents believe that lack of allocation of additional resources coupled with provincial funding cuts contributes to low administrative capacity in some of the LPHAs. *"Our capacity collectively is lost…Public Health Ontario itself has had its budget frozen for many years (M013)."* Others do not see funding is a challenge; it is a matter of willingness of the leaders to redistribute and leverage resources. *"We sometimes use funding as an excuse because really it is about reallocation. So, you have to decide what's most important (M04)."* For example, one LPHA took the lead by putting out key research questions around the implementation of PFA and was able to execute a research project by leveraging the resources from Public Health Ontario. The research project, also known as the locally driven collaborative project (LDCP), helped to identify areas where the LPHAs and LHINs can collaborate [95].[9]

We also found that past decisions made by local leaders to invest in building administrative capacity helped some of the LPHAs to strengthen their ability to acquire, assess, and adapt evidence. Such local-level decisions worked as a legacy to pass on the idea of resource allocation and capacity building for evidence-informed decision-making to successive leaders.

> *"This has been going on for about 10 years now in XXX, this work was started by XXX, who has just recently retired, and really has taken quite a long time to develop to the state that it is now……..And, so over time, very specific decisions have been made by the public health leadership team to take positions and invest them in ways that will support this approach (MOH10)."*

[9] https://www.publichealthontario.ca/en/health-topics/public-health-practice/ldcp

> *"90% of it's probably a leadership level, but some of it is convincing your board of health, which approves your budget (M04)."*

Our analysis and findings of policy legacies are mainly underpinned by the study participants' experience of harnessing evidence in implementation of policies other than our selected cases (i.e., HSO and PFA). We learned that the scope of harnessing evidence was limited in both cases at the local level. The HSO was not a new policy, and it was built on a past program (i.e., healthily smile 1.0) that was in place since 2010. Policy implementation was highly centralized, and the Ministry developed broad implementation strategies, service schedules, and program protocols.

> *"The Healthy Smile Ontario program is pretty prescriptive. It just tells you, you should do these and these and we just do it, we just operationalize and do it. So, there's very limited latitude to do learning or anything like that (D3)."*

The policy statement in the PFA was ambiguous, and the LPHAs were still trying to figure out the ways to implement the policy when we carried out the interviews. The Ministry released a guideline for implementing the policy as late as January 2018, although the policy was in effect since January 2016 [96].

iii) Approaches that can support harnessing evidence in policy implementation

A couple of approaches can effectively support harnessing evidence in public health policy implementation at the local level.

First, strengthening the administrative capacity by allocating adequate resources to train and develop skilled staff. It appears that establishing a partnership with universities and external agencies helps to develop skilled staff.

> *"We have a few people in the health unit who had been trained specifically in evidence-informed decision making through McMaster (AMOH1)."*

> *"I see places like McMaster University, you know, I'm thinking here of NCCMT, McMaster Health Forum, Health Evidence. I think they actually do quite a lot of work in*

> *terms of capacity building, to build the ability to use evidence. I see them as being a resource where they can provide some of the training (MOH11)."*

Some respondents suggest changing recruitment practices (e.g., asking relevant questions during the hiring process and raising educational requirements) to find skilled staff. *"Evidence-informed decision-making is one of the standard questions we ask when we hire people (MOH3)."* However, the efforts to change recruitment practices is challenging. *"I'll be honest, I get significant amount of pushback from my HR corporate lead to require masters for certain positions (MOH10)."* Strong leadership is perceived as a critical ingredient for success by most of the respondents.

Second, enhancing the production of local-level evidence by strengthening surveillance, monitoring, and evaluation of policies and programs.

> *"Surveillance, evaluation, those are core activities and I think that the more that they're done routinely at local levels, the more they get used. That's my experience. People in the decision-making roles, if they see themselves in the data, they will use it more (A2)."*

Discussion

Principal findings

Our study reveals that there is common ground among public health leaders in their perspectives about the role and types of evidence that are relevant to the public health policy implementation. The public health leaders interviewed in this study consider a wide range of information (e.g., research evidence, program data, expert opinion and feedback from program staff) as 'evidence' that is relevant to policy implementation.

Factors that influence harnessing evidence in public health policy implementation in Ontario work at two different levels of policy implementation: provincial (i.e., the nature of policy networks and interests of societal interest groups) and local level (i.e., policy legacies).

At the provincial level, the government's willingness to include researchers in the policy networks enhances its ability to acquire, assess, and adapt both scientific and experiential evidence relevant to policy implementation. However, the government's authority and control over member selection may influence the type of evidence that is translated into recommendations. The interests of societal interest groups (e.g., professional organizations and local public health agencies) profoundly influence the decision to use evidence-informed recommendations. In the case of HSO, the ODA could successfully sway the government's decision about HSO program administration aligned with their interest due to their special relationship (similar to clientele pluralism) with the Ministry coupled with a lack of significant threat from the counter forces (i.e., LPHAs). In the case of PFA, there were no interest groups that had a special relationship with the Ministry, similar to the ODA. However, the MEP recommendations drew strong opposition from the LPHAs and the AMO as they were frightened of losing control and ultimately of being consumed in the larger healthcare systems. The governing Liberal party saw a threat to lose support from the staff unions if the decision went against their interests. So, the final decision was to ignore the recommendations from the MEP. The Liberal political interests, coupled with strong interests from the LPHAs and the AMO superseded the MEP recommendations in this case.

At the local level, past policies (e.g., OPHS) and decisions (i.e., past decisions by the local leaders to strengthening administrative capacity) shape the views of policy implementers to pay attention to evidence and influence their administrative capacity to acquire, assess, and adapt evidence.

Strengthening local public health agencies' administrative capacity, surveillance, monitoring, and evaluation of policies and programs can support harnessing evidence at the local level.

Findings in relation to other studies

We compared this case study findings with the variables of the analytical framework that we developed through a critical interpretive synthesis (CIS) of literature (Table 1). The findings of this case study reinforce the results of the CIS study concerning interest groups and policy legacies. However, the findings of policy networks slightly differ from what we found in the CIS study. We found in the CIS study that state-directed closed policy networks often pose a barrier to harnessing evidence, which turns out to be a mismatch with our case study findings. The policy networks for the HSO and PFA implementation were state-directed and closed. The nature of the networks did not pose any barrier to acquiring, assessing or adapting evidence. The underlying reason may be a high level of awareness and willingness for evidence-informed decision-making across governments in Canada, including Ontario. However, government authority and control over member selection may have influenced the type of evidence that was translated into recommendations.

In the CIS study, we found that the researchers and knowledge brokers' ability and skills to advance their interests, characteristics of evidence, policy implementers' perceptions and attitude towards evidence, public perceptions towards evidence and media can influence harnessing evidence. However, these factors did not emerge strongly from our case study data. Moreover, the case study findings show that factors may work at different levels (i.e., provincial and local) of the health systems, a finding that was not evident from the CIS. We see some dissimilarities in findings between the CIS and the case study. The possible reasons could be their differences in

focus on types of policies and geopolitical context. For example, CIS includes studies that focus on both healthcare and public health policies, whereas the case study focuses on only public health policies. Besides, the CIS studies are from both high and low-income countries, whereas the case study is from Canada, a high-income country.

In addition, the study findings resonate with the theoretical perspectives developed by scholars about how interests and ideas play in policy context [11, 97], why certain interest groups support/oppose evidence [98], and what makes some interest groups more powerful than others [99].

Strengths and limitations

The key strength is that, this study is one of a few comprehensive studies that focus on specific policy implementation cases and explores the real-world experience of policy implementers with regards to harnessing evidence in policy implementation. In addition, having multiple cases enabled us to draw a cross-case comparison and find an explanation in the case of discordant findings. Multiple sources of data (i.e., interviews and documents) enabled us to triangulate findings and improve their credibility. Applying a set of variables from a theoretical framework developed through the CIS study helped us to design the interview guide, organize and analyze data, and compare and contrast the case study findings with the findings of the CIS study. Moreover, our detailed probing of key informants during the interviews, which was informed by the theoretical framework, helped us to gain a deeper insight into the phenomenon.

The study has three limitations.

First, we did not have full access to data from confidential documents (e.g., meeting minutes of policy networks and workstreams, discussion notes) and the policy implementers working in the MOHLTC as they declined to participate in the study. The transition of government, coupled

with an ongoing review of program portfolios, may have underpinned their decision to decline to participate in the study. Although most of the invitees gave confidentiality reasons for the decline, one invitee shared that she was unable to talk about the specific policy issues as the government was undertaking an extensive review of all government programs and agencies at that time. It is common practice within the government not to talk about policies and programs with external stakeholders during a transition of government as well as during an ongoing program review. Due to this limitation, we may have missed valuable insights that could enrich our findings further. For example, had we interviewed policy implementers working in the MOHLTC, we could learn more about how they prioritize evidence and what underpins their decision to incorporate selective evidence. We mitigated this limitation by carefully selecting key informants who were intimately involved in the provincial level policy implementation planning (i.e., member of the policy networks). We also reviewed a few confidential documents shared by the study participants. However, we could not cite those documents because they are not in the public domain.

Second, our sample of cases may not be representative of a diverse range of policies that are implemented in the public health sector. The inclusion of a diverse range of policies was beyond our control because major policy changes rarely occur concurrently in the public health sector.

Third, we studied the cases in Ontario, which has a two-layered public health systems that run parallel to the healthcare system. So, the findings of our study may not be applicable to a different context where the public health systems are significantly different from Ontario. We partly mitigated the second and third limitations by comparing and contrasting the case study findings with the CIS study findings that had a broader geopolitical and policy focus.

Implications for policy and practice

This case study is a first opportunity to actually use a robust framework developed through a critical interpretive synthesis. The results of this study have a broader implication on harnessing evidence in public health policy implementation. Our findings could be used by three groups of the audience: national/provincial policymakers, local-level policy implementers and researchers.

First, national/provincial policymakers can make use of the lessons from this study that creating policies to encourage policy implementers to harness evidence in policy implementation may not generate expected outcomes unless adequate resources are allocated concurrently. Investing to build local administrative capacity may enhance the production of local data and enable local level policy implementers to utilize data as a complementary source to research evidence for clarifying implementation problems and adjusting implementation planning.

Second, the local-level policy implementers may want to leverage the scope of partnerships with researchers and academic institutions that can help to build their staff's capacity to acquire, assess and adapt evidence for policy implementation planning, as we observed in our study.

Third, our findings demonstrate the importance of recognizing how factors that affect policy implementers' decision to harness evidence differ at different levels of policy implementation (e.g., provincial vs. local). As a result, researchers may need to pay attention to the arrangements of health systems across different countries while developing their research priorities and knowledge translation strategies.

Implications for future research

This study provides an in-depth understanding of how evidence is perceived and harnessed in public health policy implementation. Our research was done in Ontario, where the province and the LPHA share responsibilities for public health policy implementation. It appeared that the

provincial level factors that affect the harnessing of evidence in policy implementation are different from the local level factors. So, researchers should continue to explore whether these factors are relevant in other types of public health systems.

Future research can also focus on a longitudinal study design to track the actual implementation of a policy starting from its development stage. For example, the recent changes in the healthcare systems in Ontario (i.e., the introduction of Ontario Health Teams) could be an immediate opportunity to design a prospective study building on our second case. The study design can adopt an ethnographic approach where a researcher can attend all the discussions in the policy networks and observes actual implementation at the local level. A longitudinal study with an ethnographic approach will enable researchers to craft a more in-depth understanding that we may have missed in our study due to a lack of access to confidential documents and relevant provincial-level policymakers who declined to participate in the study. However, such a study design will require joint planning with the government.

Table 1. Comparison of factors (affecting harnessing evidence in policy implementation) identified through a CIS and this multiple case study

Theoretical categories	CIS findings	Case study findings		
		Case 1 (HSO)	Case 2 (PFA)	Study participants' experiential knowledge
Institutions	⇒ Policy legacies created by past policies, political culture, and organizational practices	N/A	N/A	⇒ Policy legacies created by past policies and decisions
	⇒ Open vs. closed policy networks ⇒ Type of relationship between stakeholders within the policy networks	⇒ State-led closed policy networks ⇒ Government's willingness to include researchers in the policy networks	⇒ State-led closed policy networks ⇒ Government's willingness to include researchers in the policy networks	N/A
Interests	⇒ Support (vs. oppose) or no strong opposition (vs. support) from interest groups (i.e., elected officials, civil servants, industry groups and professional groups) ⇒ Researchers and knowledge brokers' ability and skills to advance their interests	⇒ Interests of provincial dental association	⇒ Interests of local public health agencies and association of municipalities	N/A
Ideas	⇒ Characteristics of evidence ⇒ Public perceptions about evidence ⇒ Policy implementers' perceptions and attitude	N/A	N/A	N/A
External factors	⇒ Media's role in disseminating evidence to the policy implementers and public	N/A	N/A	N/A

- N/A-Not applicable

Figure 1. Sequence of events from policy development to implementation of HSO

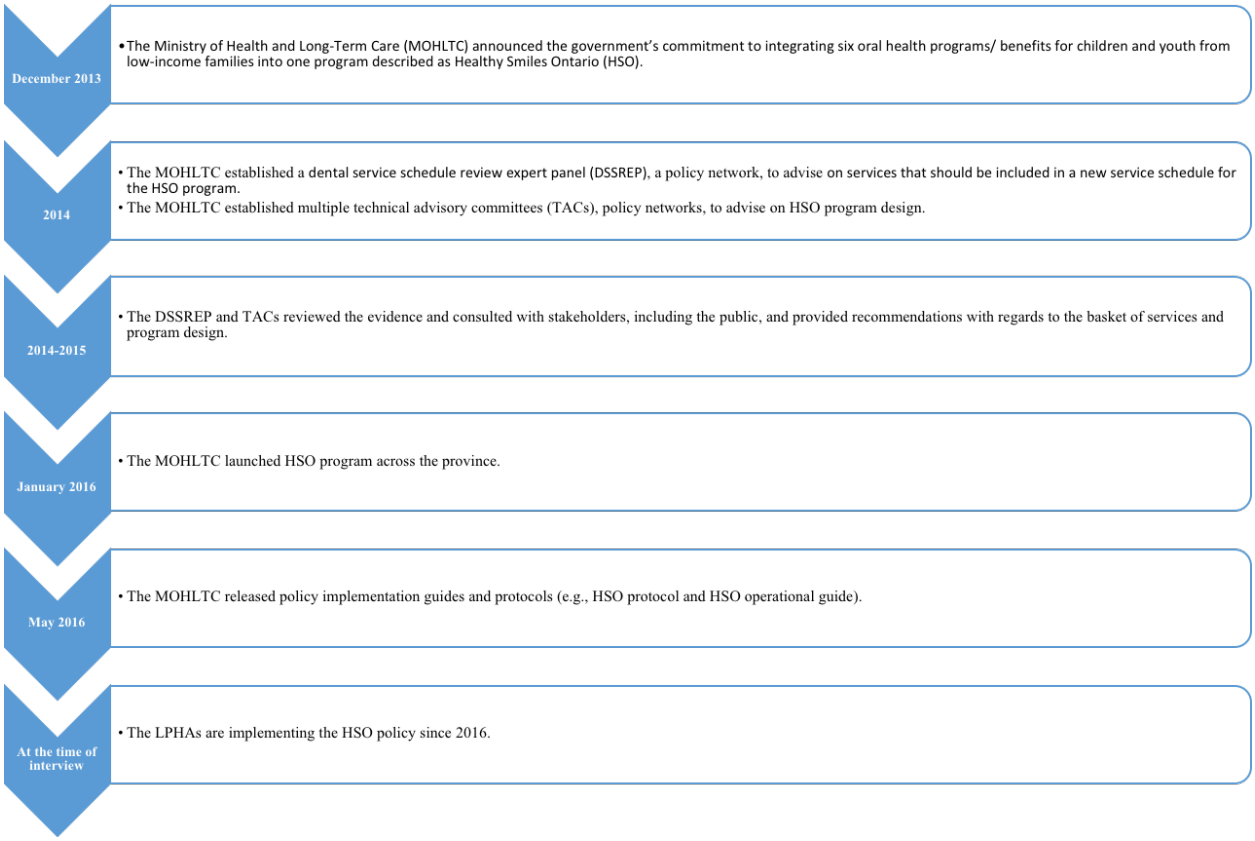
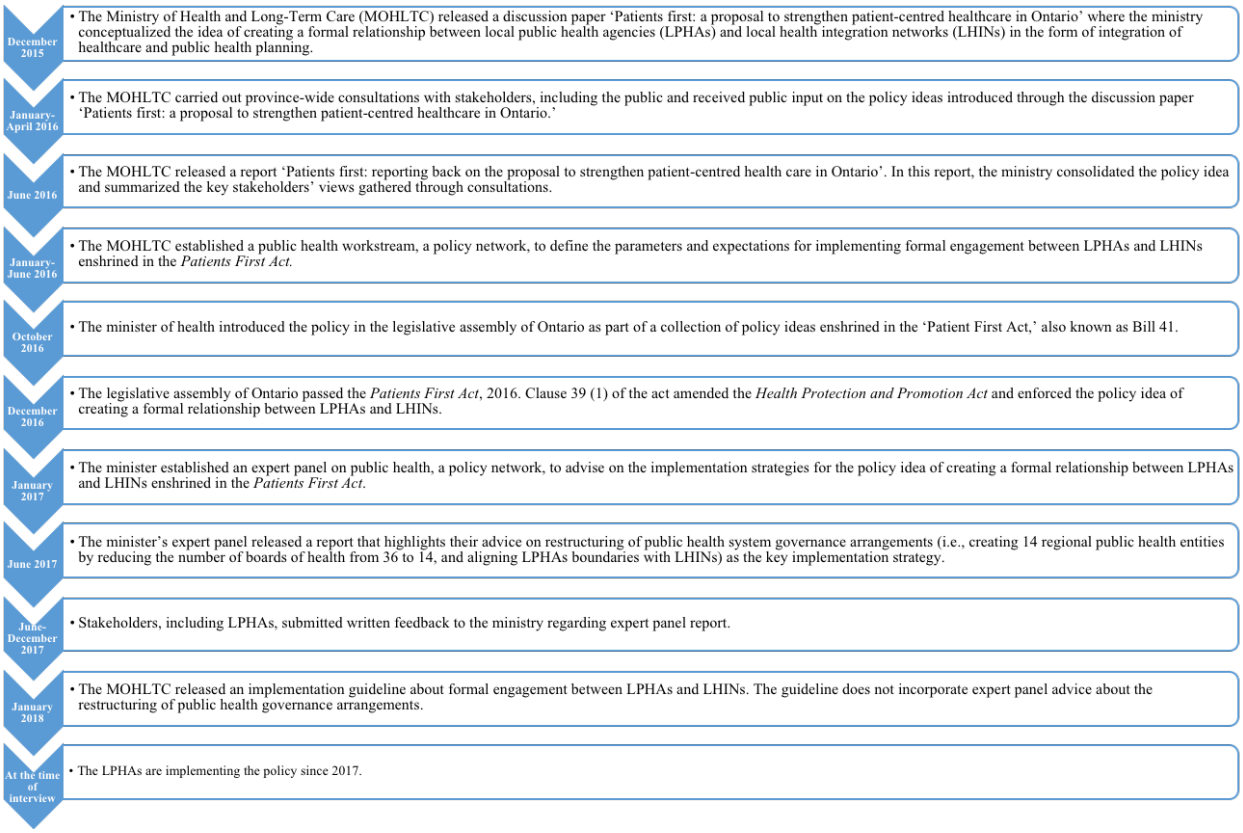


Figure 2. Sequence of events from policy development to implementation of PFA



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101. *Patients First Act, 2016, S.O. 2016, c. 30 - Bill 41.* . 2016: Ontario.
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103. Ministry of Health and Long-Term Care. *Health Bulletin: Patients First: Reporting Back on the Proposal to Strengthen Patient-Centred Health Care in Ontario*. 2016; Available from: http://www.health.gov.on.ca/en/news/bulletin/2015/hb_20151217.aspx.
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106. Government of Ontario, *Ontario Expands Free Dental Care for Eligible Children and Youth*. 2016.
107. Oxman, A.D., et al., *SUPPORT tools for evidence-informed health policymaking (STP).* 2010.

Appendix A. Documents analyzed

Document type	**Document selected**	**Date published**
Correspondences	Council of Ontario medical officers of health (COMOH) response to the provincial consultations on the report of the minister's expert panel on public health- a letter to the minister of health [92]	2017
	OPHA's response to the expert panel's report on public health [91]	2017
	AMO's response to the expert panel on public health [93]	2017
	A letter to the minister of health on proposed expert panel – LHIN and public health unit partnerships [100]	2016
	A letter from the Assistant Deputy Minister about the status of policy implementation with regards to the integration of dental health programs [81]	June 2015
Government statutes	*Patients First Act,* 2016, S.O. 2016, c. 30 - Bill 41[101]	2016
Government policy documents and reports	Board of health and local health integration network engagement guideline [96]	2018
	Ontario public health standards [102]	2018
	Public health within an integrated health system: Report of the minister's expert panel on public health [83]	2017
	Patients First: Reporting back on the proposal to strengthen patient-centred health care in Ontario [103]	2016
	Healthy Smiles Ontario operational guide for dental providers [87]	2016
	Patients First: A proposal to strengthen patient- centred health care in Ontario (discussion paper) [104]	2015
Grey literature	Strengthening a population health approach for health system planning: A Public Health Ontario 2017-18 special edition Locally Driven Collaborative Project (LDCP) [95]	2018
	Report on access to public dental programs in Ontario: An analysis based on interviews with public health units [86]	2017
	The impacts on the public health function with integration with regionalized healthcare systems [89]	2016
	Improving access to oral health care for vulnerable people living in Canada [85]	2014
Presentations	A presentation on board of health and LHIN engagement at the Ontario public health convention [84]	2018
	A presentation on minister's expert panel on public health [105]	2017
	Technical briefing on Ontario public health standards modernization [82]	2017
Press releases	Ontario expands free dental care for eligible children and youth [106]	April 26, 2016

Appendix B. semi-structured interview guide

Harnessing evidence and values in public health policy implementation in Ontario

Background

I would like to thank you for agreeing to participate in this interview. I would also like to remind you that if there are any questions that make you uncomfortable and you would prefer not to answer, you are free to decline answering. You are also free to stop the interview and withdraw from the study at any time. If you choose to do so, all you have to do is let me know that you no longer wish to continue. If you have any questions at any point throughout the interview, please do not hesitate to ask for clarification.

The purpose of this study is to understand how the concepts and use of research evidence and public values are perceived in the public health sector, and what determines the use of evidence and values in public health policy implementation in Ontario. I'd also like to learn from your experience about different approaches to support incorporation of evidence and/or values in public health policy implementation in Ontario.

*We will share a description of the study before the interview. We will then address the ethical issues and seek consent to participate. We will record the interview on a digital audio device, and later transcribe into word document.

Date:

Time:

Name of the interviewer:

Name of the interviewee:

Employment title/designation of interviewee:

Questions:

Evidence:

1. What does 'evidence' mean to you in the context of public health policy implementation? *(Policy implementation is defined as one of the stages of policy process when policymakers a) develop strategies to address barriers to policy implementation, and/or b) design new programs and services or reform existing programs and services to support the implementation of a policy goal)*
    a. What constitutes research evidence?
    b. What constitutes 'evidence use' in policy implementation?
2. Could you describe your experience with regards to the use of research evidence in the implementation of the selected public health policy?
    a. To what extent evidence was used?
    b. What were the facilitators and barriers to the use of evidence you experienced?

   i. *Prompt guided by the variables developed through another study: What factors influenced paying attention to, seeking and finding, and using evidence for decision-making in this case?*
   ii. *Prompt guided by the variables developed through another study: the factors may be institutional, interests, ideas, and external factors.*

3. What approaches do you think support the systematic use of evidence in public health policy implementation?

   **Systematic use of evidence includes identifying need for research evidence, finding and assessing evidence, going from evidence to decisions*[107].

4. Could you refer any policy documents, and/or archival records (e.g. reports) that are relevant to this study?
5. Could you refer any other key informants who might provide helpful insights about the case?

Values:

1. How do you perceive the concept 'values' in the context of public health policy implementation?
   a. How do you define public values?
   b. What constitutes 'values use' in policy implementation?
2. Could you describe your experience with regards to the use of public values in the implementation of the selected public health policy?
   a. To what extent were public values was used?
   b. What were the facilitators and barriers to the use of public values you experienced?
      i. *Prompt guided by the variables developed through another study: What factors influenced paying attention to, eliciting, and using values for decision-making in this case?*
      ii. *Prompt guided by the variables developed through another study: the factors may be institutional, interests, ideas, and external factors.*
3. What approaches do you think support the systematic elicitation and use of public values in public health policy implementation?
4. Could you refer any policy documents, and/or archival records (e.g. reports) that are relevant to this study?
5. Could you refer any other key informants who might provide helpful insights about the case?

Appendix C. Letter of consent

Harnessing evidence and values in public health policy implementation in Ontario

Investigators:

Local Principal Investigator:	**Student Investigator:**
John N. Lavis Professor and Director McMaster Health Forum McMaster University 1280 Main St West, MML-417 Hamilton, ON, L8S 4L6 Tel: +1 (905) 525-9140 ext 22121 E-mail: lavisj@mcmaster.ca	Mohammad Golam Kibria PhD Candidate McMaster University CRL-209, 1280 Main Street West Hamilton, ON, L8S4K1 Tel: +1 289 788 4103 Email: kibrim1@mcmaster.ca

Purpose of the study

The purpose of this study is to understand how the concepts of research evidence (hereafter evidence) and public values (hereafter values) are perceived in the public health sector, what determines the use of evidence and values in public health policy implementation in Ontario, and what approaches can support the use of evidence and values. Participants will include the public health managers/leaders who are either currently working or previously worked in the Ontario's public health sector to support the implementation of our chosen public health policies in Ontario. This research study is being conducted as a part of my thesis project in partial fulfilment of the requirements for a doctoral degree in Health Policy.

Procedures involved in the research

I will be asking you a series of questions regarding: your perception of the concept and use of evidence and/or values in public health policy implementation; your experience about the factors that may facilitated or impeded the incorporation of evidence and/or values in the selected cases of policy implementation; and your perspective about the approaches to support use of evidence and values in policy implementation. I will also ask you some background information like your employment status, designation/position at employment, name of the organization where you work in Ontario. With your permission, the interview will be audio recorded, and I will also be taking hand-written notes. The interview is expected to last about 45-60 minutes.

Potential harms, risks or discomforts:

There are no known risks to participation in this study, and you are free to choose whether you will participate. You are not required to answer questions that you do not want to answer or that make you feel uncomfortable.

Potential benefits

You may benefit indirectly by knowing that your perspective has been useful to enrich our knowledge about the use of evidence, and/or values in public health policy implementation in Ontario. This could potentially help influence

policymakers' understanding, and lead to policy reform that can support incorporation of evidence, and/or values in public health policy implementation in Ontario.

Confidentiality

I will make every effort to guarantee your confidentiality and privacy. To ensure confidentiality, I will mark all data with a study ID number, and I will not use any personal identifier in reporting results. I will only share the direct information collected throughout this study with my thesis supervisors. However, results of the study will be made available in the form of a written thesis dissertation and I may wish to publish these results in academic journals in the future.

We will store the hard copy data or paper files in a locked filing cabinet in the McMaster Health Forum's ImpactLab at McMaster University. We will encrypt all electronic data, including audio-recordings, and store on a password protected laptop computer. We will delete all electronic data, erase the audio-recordings, and destroy the hard copies after 10 years.

Participation and withdrawal

Your participation in this study is voluntary. You may refuse to participate in the research study, and you may choose to withdraw from the study at any time. If you decide to withdraw your consent after you are interviewed, you can do so by sending a notification to the student investigator before April 30, 2019. This will allow the investigator to conduct analysis and write up findings without interruption. If you decide to withdraw, there will be no consequences to you.

Questions about the study

If you have questions or need more information about the study itself, please contact me at:

Mohammad Golam Kibria
Telephone: 289 788 4103
Email: kibrim1@mcmaster.ca

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HiREB). The HiREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please contact the Office of the Chair of HiREB at +1 905 521 2100 extension 42013.

CONSENT

I have read the information presented in the information letter about a study being conducted by Mohammad Golam Kibria, of McMaster University, Canada.

I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time.

1. I agree to participate in the study. Yes No

2. I agree that the interview can be audio recorded. Yes No

_____	_____	_____
Name of Participant (Printed)	Signature	Date

Consent form explained in person by:

Mohammad Golam Kibria

_____	_____	_____
Name and Role (Printed)	Signature	Date

Appendix D. List of key informants interviewed by the position and organizational affiliation

Identifiers	**Position**	**Number of key informants interviewed**	**Organization**
A1-4	Researcher	4	University
D1-5	Director	5	Local public health agency (LPHA)
D6	Director	1	Provincial public health agency
MOH1-13	Medical officer of health	13	Local public health agency (LPHA)
AMOH	Associate medical officer of health	1	Local public health agency (LPHA)
M1-4	Manager	4	Local public health agency (LPHA)

Chapter 4: Harnessing public values in public health policy implementation in Ontario: A case study

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Word Count:
328 (Abstract)
7,355 (Full text)

5. McMaster University
6. University of Johannesburg

Preface

This chapter builds on insights from chapter 2. It examines how public health policy implementers conceive the idea of harnessing values in policy implementation, what factors affect their decision to harness values and what approaches work to support their efforts to harness values in policy implementation.

We employed a multiple case study design drawing on in-depth interviews of key informants and documents in public domain. We used the theoretical framework developed in chapter 2 as an analytical framework to design the interview guide, organize and analyze the data, and compare and contrast the case study findings with the variables of the framework.

I conceptualized the study, designed the interview guide, collected and analyzed all primary and secondary data. John Lavis provided advice and detailed input on the framing of the study question and objectives, the design of the interview guide and approach to the analysis. Julia Abelson provided advice on the methodological foundations of the study design. My committee members reviewed numerous drafts of the manuscript and provided feedback on the interpretation of results.

Abstract

Context: Public health policies are both driven by, and a shaper of, public values. Despite such an integral relationship between public values and public health, the scholarly work in this field is scarce and fragmented. Although an extensive body of work in this field has focused on exploring the methods of eliciting public values, the scholarship is mainly limited to agenda-setting and policy development, leaving a knowledge gap about harnessing values in policy implementation. The objective of this study is to understand the meaning and determinants of harnessing public values and key approaches that can support harnessing values in public health policy implementation.

Methods: We used a qualitative research design and carried out an exploratory multiple case study in Ontario, Canada. We collected data from a sample of public health leaders through semi-structured interviews and from case-related documents available in the public domain. We used an analytic framework developed through a critical interpretive synthesis of the literature to guide the collection and analysis of the case study data.

Findings: Our findings reveal that the term 'public values' is not commonly used in the public health sector. The alternative terms that are more familiar include 'public opinion', 'citizen views', 'public perceptions', 'public input', and 'public feedback'. Public consultations and surveys are the most common methods used in the public health sector to elicit public values. Two factors influence the harnessing of public values in public health policy implementation: policy legacies and policy implementers' perceptions about the relevance of values in policy implementation. These factors can work at different levels of policy implementation depending on the health systems arrangement (e.g., provincial vs. local). Improving the public engagement

process and fostering innovative ways to elicit public values facilitate harnessing values in policy implementation.

Conclusions: Policies promoting harnessing public values need to be coupled with adequate resource allocation. Policymakers need to continue improving the public engagement process and pay attention to deal with divergent values while using them in policy implementation.

Introduction

Public values (hereafter values) play a crucial role in health policymaking (i.e., agenda-setting, policy development and implementation). For instance, the dominant Canadian values of 'equity' and 'solidarity' underpin *Canada Health Act,* Canada's federal health insurance legislation, and its principles of public administration, comprehensiveness, universality, portability and accessibility [1-3]. Public health policies are both driven by, and a shaper of, public values [4]. For example, the public health advocacy campaign against tobacco smoking over the last fifty years has shifted public perspectives about smoking from an individual choice to a stigmatized behaviour [5]. On the other hand, the growing public acceptance of marijuana encouraged governments across the world to pay attention to legalizing its medical and recreational use [6, 7].

Nevertheless, the public health approach of regulating and controlling collective behaviour (e.g., smoking ban, water treatment, mandatory immunizations of school children, sanctions against the disposal of untreated sewage and restrictions on movement) often contradicts public values (i.e., values of individual liberties and freedom). Some scholars describe this complex relationship between values and public health as a challenge to harness values (i.e., paying attention to, eliciting and using values) in the policy process [4, 8-11]. Public engagement is a means to elicit values and also a powerful tool to ensure good governance by being transparent in decision-making and encouraging the public to hold the government accountable for its actions [12-15]. The United Nations described public engagement in policymaking as one of the critical elements for achieving the Sustainable Development Goals [16-18].

Despite such a crucial role of values and its integral relationship with public health, we know little about how public health leaders perceive values and what determines their decision to

harness values in policy implementation-related decision-making. Scholarship in this area is limited and fragmented. Nonetheless, an extensive body of work in this field has focused on exploring the methods of eliciting public values (e.g., public engagement techniques; strategies and tools to support and evaluate public engagement). But the scholarship is mainly limited to agenda-setting and policy development, leaving a knowledge gap about harnessing values in policy implementation [12, 15, 19-28].

We previously carried out a critical interpretive synthesis (CIS) of the literature to clarify the meaning and determinants of harnessing public values in health policy implementation. However, our synthesized factors represent the broader determinants of harnessing values across healthcare and public health policies in a variety of geopolitical contexts, creating an opportunity to explore the phenomenon exclusively in public health policy implementation [29-41]. Healthcare and public health approaches are fundamentally different, as the former emphasizes an individual care approach in contrast to the later that follows a population-based approach [42]. Moreover, the public health systems in many countries, including Canada, runs parallel to healthcare systems and use a separate governance model. For instance, public health in Ontario is regulated by the provincial Ministry of Health and Long-Term Care (MOHLTC) (Ministry hereafter) and governed by local-level corporations (i.e., boards of health). These boards are three types: autonomous, semi-autonomous, and regional. There are 35 local public health agencies (LPHAs) that administer public health programs and services across the province.[10] The cost of public health programs and services is shared by the province and municipalities (i.e., those who are obligated to pay) [43]. The Ontario Public Health Standards (OPHS) dictate the implementation of public health programs and services by the local agencies. On the contrary,

[10] http://www.health.gov.on.ca/en/common/system/services/phu/

the healthcare programs and services are administered by the Local Health Integration Networks (LHIN), regional crown agencies funded by the Ministry to plan, fund, and integrate healthcare services for their local communities. However, the LHINs are slowly being phased out as part of a new healthcare reform process [44, 45].[11,12]

Given the importance of values in public health policy implementation and the knowledge gap in this field, we decided to study specific cases of public health policy implementation in Ontario, Canada. The overarching objective of this study is to understand the meaning and determinants of harnessing values in public health policy implementation. More specifically, we sought to answer the following questions: How is the concept of harnessing values in policy implementation perceived within the public health sector? What factors determine the harnessing of values in policy implementation? What approaches can support the harnessing of values in policy implementation?

Methods

We used an exploratory case study design to collect data about multiple cases of public health policy implementation in Ontario, Canada [46]. We used this case study to explore two phenomena: evidence and values. This article is about 'values' only; we have addressed the 'evidence' in another article. The methods are common to both articles. Thus, we describe here a summary of the methods as we explained the detail methods in the other article that we wrote about evidence.

We purposively selected two cases of policy implementation. The first case was 'implementation of the Ontario government's decision to integrate six public dental programs

[11] http://www.health.gov.on.ca/en/common/system/services/lhin/default.aspx
[12] https://www.ontario.ca/laws/statute/s19005

into one Healthy Smiles Ontario (HSO) program' (hereafter 'implementation of HSO')[13] (Figure 1). The second case was the 'implementation of the Ontario government's decision to create a formal relationship between local public health agencies (LPHAs) and local health integration networks (LHINs)' (hereafter 'implementation of patient-first act/PFA')[14] (Figure 2). We also purposively selected key informants for interviews (i.e., public health leaders and researchers who were directly or indirectly involved in the implementation of the selected cases) and documents for analysis (i.e., policy documents, statues, implementation plans, expert panel reports, discussion papers, evaluation reports, meeting minutes, press releases, news articles, and research articles) relevant to the cases (Appendix A).

We used a semi-structured interview guide that included both specific and open-ended questions with potential probes guided by an analytical framework that we developed through the previously mentioned critical interpretive synthesis (CIS hereafter) of literature (Appendix B) [47, 48]. We iteratively adjusted the questions as we interviewed key informants and analyzed their interviews. Each interview was about 45-60-minute long and mostly conducted by telephone, with a few conducted face-to-face. We audio-taped all the interviews, took handwritten notes during the interviews, and transcribed the audio records.

For documents, we used papers from the websites of implementing agencies (i.e., Ontario

[13] The HSO program provides oral health services (i.e., preventive, routine and restorative, and emergency) to children and/or youth from low-income families. Prior to HSO implementation, these services were provided through six different public dental health programs (i.e., Healthy Smile Ontario 1.0; Children in Need of Treatment Program (CINOT); Preventive services within the Ontario Public Health Standards (OPHS), 2008 (PSO); Ontario Works; Ontario Disability Support Program (ODSP); and Assistance for Children with Severe Disabilities (ACSD)). These programs were overseen by multiple ministries, each having different administrative mechanisms and service schedules. The HSO program was adopted by Ontario government as a policy shift to integrate fragmented approaches to providing oral health services into a single program.

[14] In 2016, the Ontario government decided that Boards of Health, who oversee the public health policies and programs implemented by Ontario's 35 public health units (PHUs)/local public health agencies (LPHAs), shall formally engage with the Local Health Integration Networks (LHINs) on issues relating to local health system planning, funding and service delivery. The province enforced its decision through passage of legislation '*The Patients First Act*, 2016.'

government, Public Health Ontario, regional/municipal governments, and LPHAs) and documents referred/shared by the key informants. Additionally, we searched key terms in Google for additional documents.

We analyzed data concurrently with data collection. We used NVivo12, transcription software, and manual technique to transcribe, organize and analyze the data. Data coding and category/pattern development were informed and guided by the analytical framework discussed in the earlier section while remaining open to any new themes. For example, we intended to organize data into three groups aligned with our three research questions. While grouping the data, we discovered a group of data (fourth group) that explained the way policy implementers elicit values. So, we organized data into four groups. We constantly compared new information with the existing information to help refine the categories/patterns as the data collection progressed concurrently with data analysis [46]. We enquired further into the topic if the documentary data contradicted the interview data. Such enquiry led to building an explanation. We carried out a cross-case analysis to compare the categories/patterns that emerged in the two cases using Word tables. The purpose was to probe whether different cases appear to share similar patterns (i.e., literal replication) that may lead to a more assertive conclusion about the phenomenon. Contrasting patterns led us to revisit our data and develop a further explanation. We also used the 'pattern matching' technique to compare the patterns related to independent variables (i.e., factors affecting harnessing evidence) that emerged from the case study data with the variables from the analytical framework. The purpose was to probe whether the case study findings confirmed the variables of the analytical framework. In the case of disconformity, we pursued further enquiry to explain the underlying factors for the differences [46]. We also invited some interviewees to review the draft report of the study. This strategy, widely known as

'member checking', contributed to the credibility of our interpretation of the data [49, 50].

Ethical considerations

We obtained ethics approval from Hamilton Integrated Research Ethics Board (HiREB) Hamilton, Ontario, Canada, before data collection. We obtained additional approval from the Ottawa Public Health Research Ethics Board (OPH REB) because the Ottawa LPHA requires this before staffs participate in any research study. Each participant signed an informed consent form before being interviewed (Appendix C).

Results

Interviewee attributes

We conducted 29 semi-structured interviews with key informants (26 by telephone and three in-person) between December 2018 and February 2019. During the interviews, 22 key informants were working with LPHAs, two were former employees of LPHAs, four were from universities, and one was from provincial public health agency. Among the participants from the LPHAs, fourteen were Medical Officers of Health (MOH), five were directors of programs and services, and four were managers of programs and services. The key informants from the Ministry of Health and Long-Term Care declined to participate in this study due to confidentiality reasons.

Thematic results

We have organized the results aligned with our three specific research questions and added a fourth theme about the elicitation of values that emerged from our data. Hence, our discussion follows the following order: i) conceptualization of harnessing values in policy implementation, ii) the way policy implementers elicit values, iii) the factors that affect harnessing values in policy implementation, and iv) the approaches that can support harnessing values in policy

implementation. We used unique identifiers to mask the identity of the interviewees in the in-text reference for quotes (Appendix D).

i) Conceptualization of harnessing values in policy implementation

In this section, we first present the perspectives of the policy implementers about the concept 'public values', and then explain how they think values are linked to public health policy implementation. Our study reveals that the use of the term 'public values' is not common in the public health sector. *"The language of 'public values' isn't a really common part of public health conversation. (AMOH)"* The alternative terms that are more familiar include 'public opinion', 'citizen views', 'public perceptions', 'public input', and 'public feedback'. None of these terms explicitly represents the normative position of the public. However, one can assume that public opinion is informed by their value judgements. *"I don't think you can necessarily bring the values and, but you can, by bringing in public perspectives, you can say this is informed by societal norms. (A3)"* Many respondents also referred specific values (e.g., equity, accessibility, transparency, accountability, etc.) that they think are essentially public values.

The policy implementers described that values are linked to public health policy implementation in three ways.

First, values reflect whether the public support or oppose implementation strategies as gaining public support through the convergence of public opinion is an essential step toward achieving policy implementation goals. A majority of respondents described that a divergent public opinion regarding policies pose barriers to implementation. *"If you have a greater percentage of the population that have those biases, it does affect the ability to maintain or implement policy at a public level. (M2)"*

Second, values can be an essential input to the design of the service delivery models of the implementation planning. The public has lived experience that can contribute to answering questions about the timing of services, location of service delivery that is suitable to the public, and expectations or concerns about services.

> *"Public values or public opinion is very important to some of the work I'm doing on opioid(s). I'm working now on supervised consumption site (SCS) issue……. We're doing consultations……. And so that's going to be asking people…what do people think of potential benefits of an SCS for our community and how can we make sure that those are achieved, you know, what do they think are potential concerns and how can we make sure those are addressed or prevented? And then what is their input into actual planning of the service delivery itself? (AMOH)"*

Third, values may provide information about types of barriers (e.g., tensions between values and evidence, and tensions between libertarian values and public health principles that are often driven by coercion and control of public life through regulations) that policy implementers may encounter during policy implementation. *"This tension between values and evidence is something we live in on a regular basis. (MOH12)"* Being aware of these potential barriers can help to design appropriate implementation strategies that are often targeted to sway public opinion. *"I would say more often than not, we actually want to know what public opinion is, so we can work towards swaying public opinion in the direction that we think is a public health benefit. (AMOH)"* One respondent exemplified:

> *"So, for instance, I think public health in general has never felt that criminalization of illicit drug use is the most effective way to prevent harms from it. So, for a long time public values were more along the line of using enforcement as the method of harm reduction. And, I think that, in the cases like where the public values are contrary to what evidence may show is more effective……you still need to know the fundamental values that you're addressing and determine how best to advocate or educate. (MOH6)"*

ii) The way policy implementers elicit public values

Most of the respondents shared that the elicitation of values is not always systematic or follows standard procedures. *"I don't think we do it that well right now. Not a systematic,*

consistent kind of way. (MOH10)" However, both the province and the LPHAs get a sense of values through various mechanisms which are not necessarily designed to elicit only values.

The provincial government uses multiple mechanisms to capture values. The most common ones are public and stakeholder consultations through state-led commission or expert panel, local public health agency reports about public feedback, surveys, and web-based platforms (e.g., webinars and online submission of public responses to policy questions).

For example, the provincial government formed a Dental Service Schedule Review Expert Panel (DSSREP), who was responsible for advising on services that should be included in the new schedule of services for the HSO program implementation [51]. The panel carried out public engagement through focus group discussion and interviews using both closed-ended and open-ended questions. *"We specifically undertook deliberative process. We specifically asked as many people as possible. (A1)"* The questions were focused on values related to access to types of services, preference for specific services, preference for the location of service delivery, and importance of different dental services. The government also gathered public feedback about the existing programs from the data shared by the LPHAs who had routine interaction with the public, *"Took feedback from the field. (C1)"* One respondent described: *"Our health unit has informally done that. We did it by asking every single client who comes to our clinic…….We often offered it to the ministry, comments clients made to us. (M3)".*

For the case of PFA, the government gathered public feedback through in-person meetings, emails, surveys and webinars. We could not find any documentation that contains the detail of these consultations apart from a summary of the activities posted on the government website [52]. A couple of documents available in the public domain include a set of questions that the government forwarded to the public for their response and a structured summary of public

responses. The summary response highlighted the public value *'integration of public health and healthcare planning'* that is directly relevant to the case of PFA. In addition, *'access', 'trust between public and providers', and 'culturally sensitive care toward indigenous population'* are the key public values elicited through these public consultations [53, 54].

At the local level, the most predominant methods of eliciting public values are public consultations and surveys. We found that public consultations are consistently done by most of the LPHAs during the development of the multi-year strategic plan. The LPHAs develop a multi-year strategic plan every three to five years. *"Every three years, we undertake a new strategic direction. And part of our strategic planning involves external stakeholder consultation, which includes both community partners as well as the end users or clients or community. (D2)"* The values elicited through the consultation process are refined and incorporated into the multi-year strategic plan. These final sets of values that get into the strategic plan are considered as 'core values' that guide any policy implementation planning. We purposively selected four strategic plans and found three of them explicitly listed core values and one listed values as principles. The most common values that we found in the strategic plans are *'equity', 'collaboration', 'accountability' and 'respect'* [55-58].

Public consultations are also done by the LPHAs on a case by case basis depending on the issue. Rapid Risk Factor Surveillance System (RRFSS) survey is used by many LPHAs to elicit public values. The survey is conducted by the Institute of Social Research (ISR) at York University, on behalf of the LPHAs. The survey is administered through telephone and includes questionnaires related to public perceptions about public health programs and services, social determinants of health, and client satisfaction with the services [59, 60]. The LPHAs also

conduct surveys on specific issues depending on their needs. One respondent described the surveys conducted for HSO implementation:

> *"We provided a client feedback survey in our clinic and it was more just around accessing dental clinics such as, you know, is it a good time of the clinic? Is it a good location? Are you getting the services you expected? So, it was more kind of, you know, around quality assurance. Also looking at, you know, in a healthy smiles dental clinic are we where we should be or are there areas where the clients can access us? (D2)"*

Sometimes, the LPHAs use both public consultations and surveys and corroborate the findings. One respondent shared experiences from the implementation of supervised consumption site policy:

> *"We're doing consultations, a variety of sorts, but the parts that are specific for the general public is going to be two-fold. One is a public survey that's going to be online……And then we're also going to be holding an open house, which is going to be an opportunity for people to both educate themselves about the issue and also provide feedback to us. (AMOH)"*

The LPHAs also use websites and social media (e.g., Twitter, Facebook, Instagram and YouTube) accounts to engage with the public on various issues.

> *"We do follow the conversation generated on social media to ascertain what people are thinking and feeling about, uh, uh, activities by the health unit…… there's also, opportunity to engage and dialogue through other media like newspaper articles and feedback that goes through, you know, public radio. (MOH6)"*

Despite using multiple means by the province and the LPHAs to elicit values, we could not find any document in the public domain to validate the processes that are undertaken to elicit values as well as to prioritize values over other factors (e.g., evidence). A few respondents provided a glimpse of the process that depends on the alignment of values with prevailing norms and principles of public health approaches. One respondent explained:

> *"I think the starting point would be we take a look at what we hear from the public and see does it really fit in with the legislative framework that we operate under public health mandate, that we offer the guidance from the board of health, etc. and see first is that input fit in……..I think the second part we do is if there are stuffs there about the specifics of what we should be doing in public health, we would try and look at the*

> *evidence to see if the evidence actually validate those opinions or at least you know, compatible with those or does it not really reflect what the evidence……..Obviously any kind of strategic planning exercise at the end of the day is, you know, decision about values and priorities and so, you know, would probably be at some level be what we as a leadership group think is most important to do it. We would act accordingly. (MOH11)"*

iii) The factors that influence the harnessing of values in policy implementation

Our analysis reveals that public health policy implementation in Ontario occurs at two levels of public health systems: provincial level (i.e., led by the Ministry) and local level (led by the LPHAs). At the provincial level, policy legacies play a crucial role by shaping policy implementers' views towards paying attention to values and by enhancing their ability to employ multiple mechanisms to elicit values. At the local level, two factors influence the policy implementers' decision to harness values: policy legacies and policy implementers' perceptions about the relevance of values to the policy implementation. Below, we provide a detailed analysis of the provincial-level factors followed by the local-level factors.

Provincial level factors

Policy legacy created by Ontario's open government policy encouraged provincial policy implementers to engaging the public on issues related to implementation of HSO and PFA. Ontario embarked on an open government initiative in 2013. The policy eventually generated resources that led to developing new administrative structures (i.e., open government partnership) and tools (i.e., Ontario public engagement framework and online public consultation directory) to facilitate public engagement [61, 62]. The former president of the Treasury Board Ms. Mathews described the public engagement framework as:

> *"Public engagement framework will help us better engage with Ontarians and give them a say in the policies, programs and services that affect their daily lives, making them*

> *stronger as a result. This is part of Ontario's commitment to be the most open and transparent government in the country.[15]"*

In the case of HSO, the Ministry gathered public opinion about the dental programs through LPHAs and DSSREP. However, there was no province-wide large scale public consultation because the Ministry had the opportunity to learn from the existing program implementation as one respondent explained:

> *"Because we had CINOT since 1986 and we'd had healthy smiles since 2010 and because there had been feedback from dentists, from health units, and maybe even directly from the public to the ministry, I don't know, perhaps they felt there was less of a need to consult. (M3)"*

In the case of PFA, the government employed multi-faceted mechanisms to capture values through in-person meetings, email, web surveys, webinars and online submission. These activities occurred before the policy was finalized [53]. So, we assume that the values are embedded in the policy which may have permeated to policy implementation planning. *"The public values expressed to the government related to the healthcare system. And it was largely to do with wait times and accessibility and accessibility is a big one. (MOH2)"*

Nevertheless, values were not the subject of discussion in the multiple policy networks formed by the government. *"Provincially at the ministry, a lot of it was like a big dark box and we have no idea about how they gathered the information……We don't know how they went out and got evidence on public values because that was never shared with us. (M3)"* So, the respondents' (who are mainly from outside the Ministry) insight into the provincial level factors that may have influenced the government to engage the public is limited. We analyzed purposively selected government documents to understand what determined the government's

[15] https://news.ontario.ca/tbs/en/2016/03/ontario-launches-new-consultations-directory-and-public-engagement-framework.html

efforts to reach out to the public. The results about the provincial level factors are mainly based on the documentary analysis.

Local level factors

At the local level, two factors are in play: policy legacies and policy implementers' perceptions about the relevance of values to the policy implementation. We found that there were very limited or no efforts from the LPHAs to elicit values for any of the policy implementation cases (i.e., HSO and PFA). Regardless, the respondents shared their experience about harnessing values in the implementation of policies other than these cases. So, we present here both the case-specific factors (i.e., policy implementers' perceptions about the relevance of values to the policy implementation) and the factors that are shared by the policy implementers based on their experience with the implementation of policies other than HSO and PFA.

Policy legacies

Provincial policy about public health standards (i.e., OPHS) created a policy legacy because it mandates the boards of health to engage the public in policy implementation.

> *"Boards of health shall foster the creation of a supportive environment for health through community and citizen engagement in the assessment, planning, delivery, management, and evaluation of programs and services. [63]"*

A clear mandate through the OPHS may have had interpretive effects on the local public health leaders by increasing their awareness about the need for public engagement. *"Part of the requirements to apply for a supervised consumption site at the provincial level now is to have a pretty robust consultation process. (AMOH)"* In addition, OPHS also encourages LPHAs to incorporate values like 'equity' as one of the core values in their implementation planning. One respondent said:

> *"I would say, health equity has become an ever-stronger value in public health. A commitment to identify at risk populations and to seek to equalize, you know, to change*

> *our programming so it's more effectively meets the health needs of those most vulnerable. So that that has increased and in stature in public health, and is now forcefully enshrined within our standards. (MOH13)"*

Nevertheless, the policy legacy created by the OPHS did not generate adequate resources for enhancing administrative capacity consistently across the LPHAs to systematically organize public engagement to a high standard. Most of the respondents mentioned a low administrative capacity characterized by inadequate resources (i.e., funding and personnel) as a barrier to elicit values.

> *"We have had funding shortages now for few years. We had to reduce positions over time. We've had to do a prioritization process to minimize the damage of it. ……But that can only go on for so long before it becomes very challenging to do new things. So, if we ended up with a significant cut from our budget from the province, I think we would find it hard. ……In the midst of all that, it's hard to then launch a new engagement to do new things with groups such as the indigenous population. (MOH13)"*

Some described a lack of competent staff (i.e., those who have adequate knowledge about public engagement and techniques to elicit public values) designated to champion the issue of public engagement is a barrier.

> *"I don't think health units have specific people in charge of community engagement. If we had a lead person guiding our work, given us all, both more time and more competence, with doing community engagement, I think that would probably take us quite a way. (AMOH)"*

Some blamed the province for not allocating additional resources despite a provincial mandate for LPHAs to engage the public. *"When new policies are created, sometimes they don't come with funding. (D2)"* Others think that it is not about more funding; it is about reallocation of funding at the local level. *"I don't know that it requires more local funding. The barrier actually is how the budget is organized, how funds are allocated. (MOH2)"*

So, the policy legacy created by the OPHS facilitates policy implementers' attention to values. Nevertheless, the OPHS is not coupled with the allocation of additional resources that could strengthen administrative capacity, the lack of which pose barriers to elicit values.

Policy implementers' perceptions about the relevance of values in policy implementation.

The existing knowledge of policy implementers about values and their perceptions about its relevance in policy implementation underscore their decision to employ limited or no efforts to elicit values for the cases of HSO and PFA.

The policy implementers did not see the relevance of eliciting values for HSO implementation because the policy did not give birth to a new program, the policy led to integration of existing programs. They already knew the values of the public who came in contact with them through the existing program implementation over the years.

> *"We think we have our finger on the pulse of the community when it comes to certain issues. I'm not sure that we're always correct about our assumptions. (M2)"*

> *"I think what I've seen is there is some sense of reluctance to do a lot of community engagements because sometimes what you hear is what you think is the best way forward (MOH9).*

In the case of PFA, the policy implementers thought that values were not relevant to the case because the policy did not affect the day to day interaction of the public with either the LPHAs or the LHINs. *"I don't know that it affected the public very much…….I don't think they have an opinion because it doesn't affect their day to day interaction with either of those agencies. (MOH4)"*

In contrast, we found that the policy implementers elicited values through public engagement for the implementation of supervised consumption site policy. They believe that public opinion was very relevant to this policy and could actually help to develop realistic implementation strategy.

> *"Public values or public opinion is very important to some of the work I'm doing on opioid(s). (AMOH)"*

> *"I can give you an example around supervised consumption services…….we share the results of the survey showing the spectrum of support and where the majority lies typically is of interest. So, highlighting the majority are in support was useful in advancing that service….making sure that we say this is where the majority felt. We also can say what the key alternate views were. (MOH9)"*

iv) Approaches that can support harnessing values in policy implementation

The respondents suggest two broad approaches that can facilitate a systematic and meaningful way of eliciting values: improving public engagement processes and exploring innovative ways to elicit values.

Improving public engagement process

Most of the respondents suggest four ways to improve the process of public engagement process.

First, putting up the right structure that can facilitate to overcome the poor turnout and finding a representative sample of the public. One respondent described:

> *"It's very hard to get an individual to represent a large group of people unless you have a structure. Encountering the same challenge in our work with indigenous communities because we don't have specific indigenous governance within this area. There's no band council that you can work with leadership in that way. You just have groups of people or individuals without clear leadership and they really admit they are not comfortable speaking on behalf of others. (MOH10)"*

Second, involving local groups and civil society organizations could be useful as public health agencies often lack dedicated and skilled staff for public engagement.

> *"If you have a local group, where you may have people who have lived experiences or recruit champions, people who have that lived experience or understand the issue or the program. Sometimes you have to have a relationship and sometimes those vehicles really assist in developing a relationship with a particular target group if you want their involvement in a particular project or if we want their buy in. (M2)"*

Third, building partnership with the community can avert low turnout of the public in engagement activities. Partnership building requires an investment of time as well as changing the power dynamics in decision-making within public health governance. *"If you truly want to do community engagement, I think that you have to share ultimately some of the power and the decision-making authority with that community. (MOH10)"*

Fourth, applying the technique of 'public deliberation' can help to generate more interactive discussion and finding common ground on shared values. The public often has little or no knowledge about the policies and related subject matters (e.g., evidence). So, sharing information and educating the public about the issues beforehand facilitates active participation. One respondent shared her experience from implementation of supervised consumption site policy:

> *"I used supervised consumption as an example. We tried to educate as part of the consultation process. Most of the consultation was online and we have resources people could look at. But, about 500 people came to a number of different in-person consultations and we gave them, you know, half an hour PowerPoint presentation about what supervised consumption is and those sorts of things we're planning for XXXX. And that was really helpful because I got people in the same page……much more labour intensive to do that education. But it's certainly worth it when you got really big important policy objective. (MOH5)"*

Exploring innovative ways to elicit values

Some respondents think that policy implementers should be more proactive and thinking out of the box for eliciting values. Using multiple mechanisms and triangulating information from different sources may help in this regard. For example, the information could be gathered from face to face public engagement reports, population surveys, social media, print and digital media reports that often advance public interests and values. The policy implementers can also take part in social gatherings and listen to people, discuss with politicians as they reflect public values, and regularly interact with clients. One of the suggestions is to change the way policy

implementers interact with the public, and this means getting familiar with the changing landscape of social discourse and finding ways to become an active participant.

> *"So that's the whole issue of being involved in social discourse. And that itself is a changing world. It used to be your newspaper, your radio station, your television, they were probably the three formats of social discourse. But nowadays, you know, through social media, there is social discourse happening at a whole other level. So, I think the issue is how to insert yourself into that new format of social discourse. (MOH6)"*

Another suggestion is to learn from other sectors, like the commercial approach of large corporations (e.g., Coca Cola company) that are using a robust campaign to reach out to the wider public.

> *"If you're a private corporation like Coca Cola who wants people to drink more soda popper, buy more junk food, they're looking at public opinion data, social media data and using that to target their messaging. And I think we need to be doing similar kind of thing and really starting to collect that kind of data, …… We don't know how to access well and I think we need to build the skillset internally so that we're able to do that. (MOH11)"*

> *"We talk about hard to reach populations. Coca cola do it very well. We just do it badly. So, I think that requires a whole new look. (MOH2)"*

Discussion

Principal findings

Our findings reveal that the term 'public opinion', 'citizen views', 'public perceptions', 'public input', and 'public feedback' are more familiar than public values in the public health sector. The public health leaders most commonly use public consultations and surveys to elicit values.

The factors that influence the harnessing of values in public health policy implementation work at the provincial level (i.e., policy legacies) and the local level (i.e., policy legacies and policy implementers' perceptions about the relevance of values in policy implementation).

Both at the provincial and local level, policy legacies (i.e., Ontario's open government policy and OPHS) shape the views of the policy implementers to pay attention to values. However, unlike the open government policy, the OPHS is not coupled with allocation of adequate resources. Thus, local-level administrative capacity required to systematically organize public engagement remains inconsistent across the LPHAs. Policy legacies at the local level also interact with policy implementers' perceptions about the relevance of values in policy implementation. Policy implementers did not elicit values for HSO and PFA implementation because they felt that they had an idea about values for HSO and values may not be relevant to PFA. However, they deployed resources for public engagement to elicit values for implementation of the 'supervised consumption site' policy because they think values are highly relevant to that policy. The important take away from this observation is that the effects of policy legacies on harnessing values depend on other factors like policy implementers' perceptions about the relevance of values in policy implementation.

Public health leaders suggest, improving public engagement process (i.e., putting up the right structure, engaging civil society groups, partnership with the community and public deliberation) and exploring innovative ways to elicit public values (i.e., using multiple mechanisms, learning from other sectors) are the two approaches that can foster harnessing values.

Findings in relation to other studies

We compared the case study findings with the variables in the analytical framework that we developed through our previously completed critical interpretive synthesis (CIS) (Table 1). The case study findings reinforce the results of the CIS study with regards to the role of policy legacies and policy implementers' perceptions about the relevance of values in policy

implementation. However, in contrast to the CIS study, we did not find policy networks or interest groups played a significant role in influencing policy implementers' decision to harness values. We learned from the CIS study that policy implementers' perceptions can determine the quality of public engagement and the use of values in implementation-related decision-making. On the other hand, the case study reveals that policy implementers' perceptions are related to their willingness to pay attention to values. In addition, the CIS reveals that public awareness, skills, and trust in the government can influence their participation in the policy process. We could not find strong evidence in the case study data to support this claim apart from the incidence of low public turnout in some engagement activities. The case study findings also show that the factors may work at different levels (i.e., provincial and local) depending on a jurisdiction's health systems arrangements, and this was not obvious in the CIS.

Strengths and limitations

The main strength is that, this study is one of a few comprehensive studies that looked at specific policy implementation cases and explored the real-world experience of policy implementers with regards to harnessing values in policy implementation. In addition, having multiple cases enabled us to draw a cross-case comparison and find an explanation in the case of discordant findings. Multiple sources of data (i.e., interviews and documents) enabled us to triangulate findings and improve their credibility. Applying a set of variables from a theoretical framework developed through the CIS study helped us to design the interview guide, organize and analyze data, and compare and contrast the case study findings with the findings of the CIS study. Moreover, our detailed probing of key informants during the interviews, which was informed by the theoretical framework, helped us to gain a deeper insight into the phenomenon.

The study has three limitations; the first two are the same as the 'evidence' paper. We describe here a summary of the first two limitations as we explained the detail in the other article that we wrote about evidence.

First, we did not have full access to data from confidential documents (e.g., meeting minutes of policy networks and discussion notes) and the policy implementers working in the MOHLTC as they declined to participate in the study. Had we interviewed policy implementers working in the MOHLTC, we could learn more about the process and the factors that underpin the government's choice to incorporate values in implementation-related decision making. We mitigated this limitation by carefully selecting key informants who were intimately involved in the provincial level policy implementation planning (i.e., member of the policy networks). We also reviewed a few confidential documents shared by the study participants. However, we could not cite those documents because they are not in the public domain.

Second, our sample of cases may not be representative of a diverse range of policies that are implemented in the public health sector. In addition, we studied the cases in Ontario, which has a two-layered public health systems that run parallel to the healthcare systems. So, the findings of our study may not be applicable to a different context where the public health systems are significantly different from Ontario. We mitigated the limitations by comparing and contrasting the case study findings with the CIS study findings that had a broader geopolitical and policy focus.

Third, the key informants were not well conversant with the concept 'public values' as the term is not commonly used in the public health sector. We mitigated this limitation by explaining the concept during the interview.

Implications for policy and practice

The results of this study have four implications for the harnessing of values in public health policy implementation.

First, policymakers may need to take into account that the allocation of adequate resources is an essential ingredient to build administrative capacity that can facilitate efforts to elicit public values. High administrative capacity can address the potential challenges of public engagement: policy implementers' disagreement with values, widely diverse values, fear of public backlash unless policy implementers act on values and confusion around the action points after eliciting values [64-66].

Second, researchers and societal interest groups may need to consider working with policy implementers at different levels of public health systems. We observed in our study that factors that influence the harnessing of values may work at different levels and may produce different outcomes depending on the types of public health systems.

Third, there is a tendency to reconcile values and come up with a core set of values through public deliberation in public health. This practice may lead to unwanted consequences in a pluralistic society where it is challenging to find common ground on shared public values. Trying to find common ground through public deliberation may exclude minority views. Finding some divergent values among the public is a reality. Policy implementers may need to deal with these divergent values to garner support for policy implementation strategies that different groups of the public are equally concerned about but do not have a common notion [67, 68].

Fourth, policy implementers need to be aware of the risk of using social media to elicit values because social media can be favourable for some groups and unfavourable for others. It can be challenging to trace and distinguish 'fake news' that favours vested interests from more

widely held citizen views [69]. Moreover, all types of issues can not be discussed in detail through digital engagement. Some issues need longer face to face interaction.

Implications for future research

This study provides an in-depth understanding of policy implementers' perceptions about values and the factors that affect the harnessing of values (i.e., paying attention to values, eliciting values, and using values for decision-making) in public health policy implementation. Future studies can explore how values, once elicited, 'get into' decisions because the current study does not provide any insight into this issue. In addition, researchers should continue to explore whether these factors are relevant to other types of public health systems, particularly where federal governments intervene. Future research could also adopt a longitudinal study design to track the actual implementation of policy, starting from its development stage. The study could incorporate an ethnographic approach with a researcher attending all the implementation-related discussions and observing actual implementation. However, such a study design will require joint planning with the government.

Table 1. Comparison of factors (affecting harnessing values in policy implementation) identified through a CIS and this multiple case study

Theoretical categories	CIS findings	Case study findings		
		Case 1 (HSO)	Case 2 (PFA)	Study participants' experiential knowledge
Institutions	⇒ Policy legacies created by past policies, political culture, and organizational practices	⇒ Policy legacies created by past policies	⇒ Policy legacies created by past policies	N/A
	⇒ Open vs. closed policy networks ⇒ Type of relationship between stakeholders within the policy networks	N/A	N/A	N/A
Interests	⇒ Civil society organizations that are willing, and capable of engaging with the public	N/A	N/A	N/A
Ideas	⇒ Policy implementers' perceptions and attitude ⇒ Public awareness, skills, and trust over government	⇒ policy implementers' perceptions about the relevance of values to the policy implementation	⇒ policy implementers' perceptions about the relevance of values to the policy implementation	⇒ policy implementers' perceptions about the relevance of values to the policy implementation
External factors	N/A	N/A	N/A	N/A

- N/A-Not applicable

Figure 1. Sequence of events from policy development to implementation of HSO

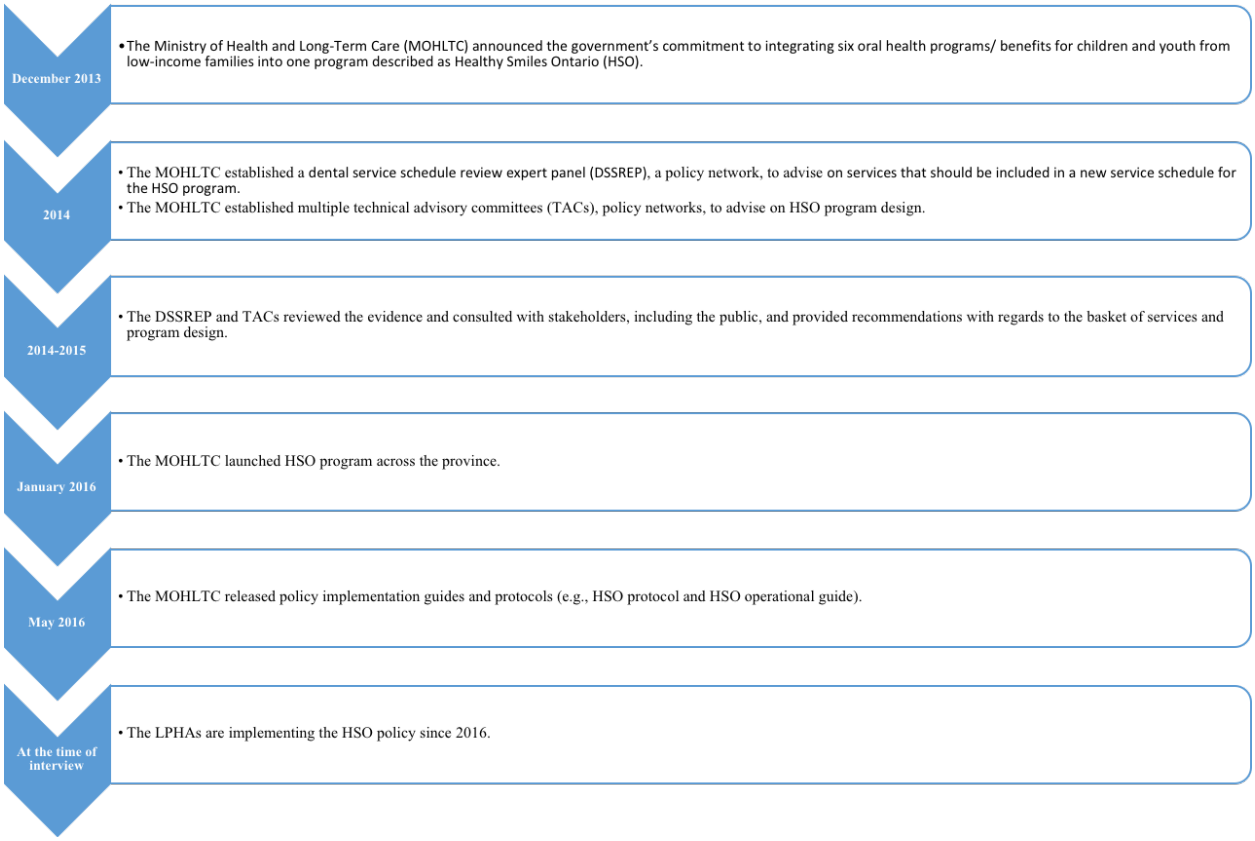
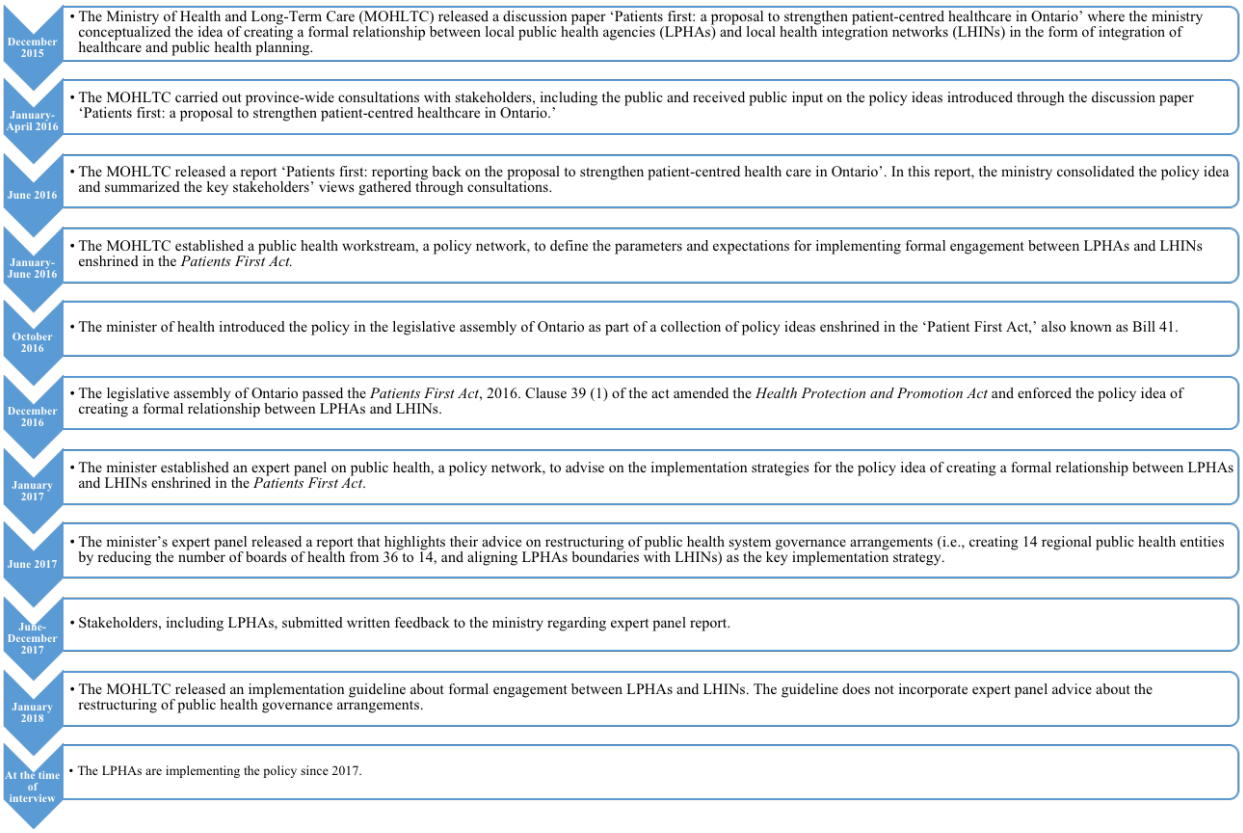


Figure 2. Sequence of events from policy development to implementation of PFA



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Appendix A. Documents analyzed

Document type	**Document selected**	**Date published**
Correspondences	A letter from the Assistant Deputy Minister about the status of policy implementation with regards to the integration of dental health programs [51]	June 2015
Government statutes	*Patients First Act,* 2016, S.O. 2016, c. 30 - Bill 41[70]	2016
Government policy documents and reports	Board of health and local health integration network engagement guideline [71]	2018
	Ontario public health standards [72]	2018
	Public health within an integrated health system: Report of the minister's expert panel on public health [73]	2017
	Patients First: Reporting back on the proposal to strengthen patient-centred health care in Ontario [53]	2016
	Healthy Smiles Ontario operational guide for dental providers [74]	2016
	Patients First: A proposal to strengthen patient- centred health care in Ontario (discussion paper) [54]	2015
Government strategic plans	Public health Sudbury and Districts' 2018–2022 strategic plan [56]	2018
	The 2017-2021 Windsor-Essex County Health Unit strategic plan [57]	2017
	Haldimand-Norfolk health unit strategic plan 2016-2020 [55]	2016
	Ottawa public health strategic plan 2015-2018 [58]	2015
Presentations	A presentation on board of health and LHIN engagement at the Ontario public health convention [75]	2018
	A presentation on minister's expert panel on public health [76]	2017
	Technical briefing on Ontario public health standards modernization [77]	2017
	Ontario open government [62]	2016
Press releases	Ontario expands free dental care for eligible children and youth [78]	April 26, 2016
	Ontario launches new consultations directory and public engagement framework: New tools to help engage more Ontarians in government decisions [61]	2016
Websites	Frequently asked questions about RRFSS	

Appendix B. semi-structured interview guide

Harnessing evidence and values in public health policy implementation in Ontario

Background

I would like to thank you for agreeing to participate in this interview. I would also like to remind you that if there are any questions that make you uncomfortable and you would prefer not to answer, you are free to decline answering. You are also free to stop the interview and withdraw from the study at any time. If you choose to do so, all you have to do is let me know that you no longer wish to continue. If you have any questions at any point throughout the interview, please do not hesitate to ask for clarification.

The purpose of this study is to understand how the concepts and use of research evidence and public values are perceived in the public health sector, and what determines the use of evidence and values in public health policy implementation in Ontario. I'd also like to learn from your experience about different approaches to support incorporation of evidence and/or values in public health policy implementation in Ontario.

*We will share a description of the study before the interview. We will then address the ethical issues and seek consent to participate. We will record the interview on a digital audio device, and later transcribe into word document.

Date:

Time:

Name of the interviewer:

Name of the interviewee:

Employment title/designation of interviewee:

Questions:

Evidence:

6. What does 'evidence' mean to you in the context of public health policy implementation? *(Policy implementation is defined as one of the stages of policy process when policymakers a) develop strategies to address barriers to policy implementation, and/or b) design new programs and services or reform existing programs and services to support the implementation of a policy goal)*
    a. What constitutes research evidence?
    b. What constitutes 'evidence use' in policy implementation?
7. Could you describe your experience with regards to the use of research evidence in the implementation of the selected public health policy?
    a. To what extent evidence was used?
    b. What were the facilitators and barriers to the use of evidence you experienced?

i. *Prompt guided by the variables developed through another study: What factors influenced paying attention to, seeking and finding, and using evidence for decision-making in this case?*
ii. *Prompt guided by the variables developed through another study: the factors may be institutional, interests, ideas, and external factors.*

8. What approaches do you think support the systematic use of evidence in public health policy implementation?
   **Systematic use of evidence includes identifying need for research evidence, finding and assessing evidence, going from evidence to decisions*[79].
9. Could you refer any policy documents, and/or archival records (e.g. reports) that are relevant to this study?
10. Could you refer any other key informants who might provide helpful insights about the case?

Values:

6. How do you perceive the concept 'values' in the context of public health policy implementation?
   a. How do you define public values?
   b. What constitutes 'values use' in policy implementation?
7. Could you describe your experience with regards to the use of public values in the implementation of the selected public health policy?
   a. To what extent were public values was used?
   b. What were the facilitators and barriers to the use of public values you experienced?
      i. *Prompt guided by the variables developed through another study: What factors influenced paying attention to, eliciting, and using values for decision-making in this case?*
      ii. *Prompt guided by the variables developed through another study: the factors may be institutional, interests, ideas, and external factors.*
8. What approaches do you think support the systematic elicitation and use of public values in public health policy implementation?
9. Could you refer any policy documents, and/or archival records (e.g. reports) that are relevant to this study?
10. Could you refer any other key informants who might provide helpful insights about the case?

Appendix C. Letter of consent

Harnessing evidence and values in public health policy implementation in Ontario

Investigators:

Local Principal Investigator:	**Student Investigator:**
John N. Lavis Professor and Director McMaster Health Forum McMaster University 1280 Main St West, MML-417 Hamilton, ON, L8S 4L6 Tel: +1 (905) 525-9140 ext 22121 E-mail: lavisj@mcmaster.ca	Mohammad Golam Kibria PhD Candidate McMaster University CRL-209, 1280 Main Street West Hamilton, ON, L8S4K1 Tel: +1 289 788 4103 Email: kibrim1@mcmaster.ca

Purpose of the study

The purpose of this study is to understand how the concepts of research evidence (hereafter evidence) and public values (hereafter values) are perceived in the public health sector, what determines the use of evidence and values in public health policy implementation in Ontario, and what approaches can support the use of evidence and values. Participants will include the public health managers/leaders who are either currently working or previously worked in the Ontario's public health sector to support the implementation of our chosen public health policies in Ontario. This research study is being conducted as a part of my thesis project in partial fulfilment of the requirements for a doctoral degree in Health Policy.

Procedures involved in the research

I will be asking you a series of questions regarding: your perception of the concept and use of evidence and/or values in public health policy implementation; your experience about the factors that may facilitated or impeded the incorporation of evidence and/or values in the selected cases of policy implementation; and your perspective about the approaches to support use of evidence and values in policy implementation. I will also ask you some background information like your employment status, designation/position at employment, name of the organization where you work in Ontario. With your permission, the interview will be audio recorded, and I will also be taking hand-written notes. The interview is expected to last about 45-60 minutes.

Potential harms, risks or discomforts:

There are no known risks to participation in this study, and you are free to choose whether you will participate. You are not required to answer questions that you do not want to answer or that make you feel uncomfortable.

Potential benefits

You may benefit indirectly by knowing that your perspective has been useful to enrich our knowledge about the use of evidence, and/or values in public health policy implementation in Ontario. This could potentially help influence

policymakers' understanding, and lead to policy reform that can support incorporation of evidence, and/or values in public health policy implementation in Ontario.

Confidentiality

I will make every effort to guarantee your confidentiality and privacy. To ensure confidentiality, I will mark all data with a study ID number, and I will not use any personal identifier in reporting results. I will only share the direct information collected throughout this study with my thesis supervisors. However, results of the study will be made available in the form of a written thesis dissertation and I may wish to publish these results in academic journals in the future.

We will store the hard copy data or paper files in a locked filing cabinet in the McMaster Health Forum's ImpactLab at McMaster University. We will encrypt all electronic data, including audio-recordings, and store on a password protected laptop computer. We will delete all electronic data, erase the audio-recordings, and destroy the hard copies after 10 years.

Participation and withdrawal

Your participation in this study is voluntary. You may refuse to participate in the research study, and you may choose to withdraw from the study at any time. If you decide to withdraw your consent after you are interviewed, you can do so by sending a notification to the student investigator before April 30, 2019. This will allow the investigator to conduct analysis and write up findings without interruption. If you decide to withdraw, there will be no consequences to you.

Questions about the study

If you have questions or need more information about the study itself, please contact me at:

Mohammad Golam Kibria
Telephone: 289 788 4103
Email: kibrim1@mcmaster.ca

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HiREB). The HiREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please contact the Office of the Chair of HiREB at +1 905 521 2100 extension 42013.

CONSENT

I have read the information presented in the information letter about a study being conducted by Mohammad Golam Kibria, of McMaster University, Canada.

I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time.

3. I agree to participate in the study. Yes No

4. I agree that the interview can be audio recorded. Yes No

_____	_____	_____
Name of Participant (Printed)	Signature	Date

Consent form explained in person by:

Mohammad Golam Kibria

_____	_____	_____
Name and Role (Printed)	Signature	Date

Appendix D. List of key informants interviewed by the position and organizational affiliation

Identifier	**Position**	**Number of key informants interviewed**	**Organization**
A1-4	Researcher	4	University
D1-5	Director	5	Local public health agency (LPHA)
D6	Director	6	Provincial public health agency
MOH1-13	Medical officer of health	13	Local public health agency (LPHA)
AMOH	Associate medical officer of health	1	Local public health agency (LPHA)
M1-4	Manager	4	Local public health agency (LPHA)

Chapter 5: Conclusion

This chapter presents the conclusions drawn from the thesis as a whole through five sections. The first section summarizes the principal findings from each paper presented in chapters 2-4. Second, the substantive, theoretical and methodological contributions of the thesis as a whole are discussed. Third, the strengths and limitations of the thesis as a whole, as well as those related to each individual study, are considered. Fourth, the implications of this scholarly work on policy and practice are discussed. Finally, the implications of this work on future research need are discussed.

Principal findings

Three discrete papers (i.e., chapters 2-4) presented in this thesis collectively provide an in-depth understanding of how the concepts of evidence and values are perceived in health policy implementation, the key factors that influence harnessing of evidence and values in health policy implementation, how these factors affect policy implementers' decision, and key approaches that can be used in public health sector to promote harnessing evidence and values.

Chapter 2 presents findings related to clarifying the concepts and factors that influence harnessing of evidence and values in health policy implementation from a critical interpretive synthesis (CIS) of literature. The review of literature identified that the dependent variable 'harnessing evidence and values' is actually a combination of three interrelated variables: policy implementers' willingness to pay attention to evidence and/or values; their efforts to acquire, assess, and adapt evidence, and/or elicit values; and using evidence and/or values in policy implementation-related decision-making. These variables are not sequential events; they often overlap. The results highlight that two institutional factors (i.e., policy legacies, and nature and dynamics of policy networks) and one ideational factor (policy implementers' perceptions and

attitudes) commonly affect the harnessing of both evidence and values and that a separate set of specific factors also separately affect the harnessing of evidence and values. For instance, the unique factors influencing the harnessing of evidence include two related to interests (i.e., support vs. opposition of a powerful interest group, and the ability and skills of researchers and knowledge brokers), two ideational (i.e., characteristics of evidence and public perceptions about evidence) and one external (i.e., media). On the contrary, the unique factors influencing the harnessing of values include one related to interests (i.e., the willingness and ability of civil society organizations to engage with the public) and one ideational (i.e., public awareness, skills and trust in government). The above-mentioned factors work through various mechanisms among which five are common to evidence and values: i) generating resources and incentives for government elites and the public; ii) allowing (vs. limiting) the researchers and the public access to policy implementation-related decision-making; iii) creating (vs. limiting) a level playing field for the researchers and the public to put forward their views within policy networks; iv) enabling (vs. disabling) governments' capacity to acquire, assess, and adapt evidence and/or elicit values; and v) shaping policy implementers' views toward evidence and values. Furthermore, these factors do not work in isolation. Many of them overlap and are intertwined, and often the effects of one depend on others.

Chapter 3 presents findings related to harnessing of evidence in public health policy implementation from a multiple case study. The results include that the public health leaders interviewed in this study consider a wide range of information (e.g., research evidence, program data, expert opinion and feedback from program staff) as 'evidence' that is relevant to policy implementation. The factors that influence harnessing evidence in public health policy implementation may work at different levels of policy implementation (e.g., national vs.

provincial vs. local) given the types of public health systems (e.g., unitary vs. multilayered systems) in concern. The main factors that affect harnessing evidence in public health policy implementation include institutional factors (i.e., policy networks and policy legacies) and societal interest groups. The government's willingness to include researchers in the policy networks appears to enhance its ability to acquire, assess, and adapt both scientific and experiential evidence relevant to policy implementation. The interests of societal interest groups (e.g., professional organizations and local public health agencies) profoundly influence the decision to use evidence-informed recommendations. Past policies and decisions can shape the views of policy implementers to pay attention to evidence and influence their administrative capacity to acquire, assess, and adapt evidence. These findings reinforce the results of the CIS study concerning the influence of interest groups and policy legacies on harnessing evidence. However, the case study findings reveal that the state-directed closed policy networks may not always pose a barrier to harnessing evidence, as is found in the CIS study. It depends on the level of governments' willingness to include researchers in the policy networks. Moreover, government authority and control over member selection in the networks may influence the type of evidence that is translated into recommendations. The case study findings reiterate that strengthening local public health agencies' administrative capacity, surveillance, monitoring, and evaluation of policies and programs can support harnessing of evidence.

Chapter 4 presents findings related to harnessing of values in public health policy implementation from a multiple case study. It appears that the term 'public opinion', 'citizen views', 'public perceptions', 'public input', and 'public feedback' are more familiar than public values in the public health sector. The public health leaders interviewed in the study most commonly use public consultations and surveys to elicit values. The factors that influence the

harnessing of values in public health policy implementation may work at different levels of policy implementation (e.g., national vs. provincial vs. local) given the types of public health systems (e.g., unitary vs. multilayered systems) in concern. The key factors include policy legacies and policy implementers' perceptions about the relevance of values in policy implementation. Policy legacies can shape the views of the policy implementers to pay attention to values. However, merely the change of policy implementers' views is not sufficient to enhance administrative capacity required to organize public engagement systematically and consistently unless policies are coupled with the allocation of adequate resources. Moreover, the effects of policy legacies on harnessing values also depend on policy implementers' perceptions about the relevance of values in policy implementation. It is unlikely for policy implementers to pay attention to explicitly articulated public values unless they find it very relevant to the policy implementation. These findings reinforce the results of the CIS study with regards to the role of policy legacies and policy implementers' perceptions about the relevance of values in policy implementation. However, in contrast to the CIS study, policy networks and interest groups did not appear in the case study to play a significant role in influencing policy implementers' decision to harness values. Public health leaders interviewed in the study suggest, improving public engagement process (i.e., putting up the right structure, engaging civil society groups, partnership with the community and public deliberation) and exploring innovative ways to elicit public values (i.e., using multiple mechanisms, learning from other sectors) are the two approaches that can foster harnessing of values.

Thesis contributions

I present the key contributions of this thesis as follows: (1) substantive contributions; (2) theoretical contributions; and (3) methodological contributions.

Substantive contributions

There are two substantive contributions that facilitate understanding of harnessing evidence and values in policy implementation by clarifying the concepts and establishing the factors that affect policy implementers' decisions through various mechanisms.

First, this thesis collectively contributes to clarifying key concepts (i.e., policy implementation, evidence and values) and more nuanced understanding of the term 'harnessing evidence and values in policy implementation'. For example, chapter 2 explains how the concept of policy implementation is discussed in the literature and presents a set of actions that characterize policy implementation: developing implementation guidelines; identifying implementation barriers and developing strategies to address them; communicating and negotiating with stakeholders; developing new programs and services or restructuring existing programs and services; allocating resources and building capacity to achieve a policy implementation goal. It also provides a nuanced understanding of the term 'harnessing evidence and values' by discussing three interrelated variables (i.e., policy implementers' willingness to pay attention to evidence/values; efforts to acquire, assess, and adapt evidence or elicit values; and using evidence or values in decision-making) that collectively explain the meaning of 'harnessing'. Chapters 3 and 4 explain how the concepts of evidence and values are perceived by the policy implementers and discuss nuances between different terms commonly used by the policy implementers.

Second, chapter 2 establishes a group of factors and mechanisms that are critical to understanding policy implementers' decision to harness evidence and values in policy implementation. Chapters 3 and 4 provide a more nuanced understanding of these factors and mechanisms by applying them in a specific policy implementation context (i.e., public health

policy implementation) through a multiple case study. The rich narratives of the comparative analysis add depth in our understanding about the factors that may work similarly or differently in different policy contexts (e.g., broader health policy vs. public health policy implementation). In addition, these chapters also provide an insight into the way different factors work at different levels of health systems (e.g., unitary vs. multi-layered health systems).

Theoretical contributions

Chapter 2 contributes to a theoretical framework that facilitates a novel way of understanding how different factors affect the harnessing of evidence and values in policy implementation. Chapters 3 and 4 have applied this framework in the context of public health policy implementation through a multiple case study. These chapters provide a comparative analysis of the variables from the framework and the variables that emerge from the case study. We have not adapted the framework based on its application in public health policy implementation context in Ontario as most of the findings from the case study resonates with the key variables of the framework. The minor differences may be attributed to the context underpinned by types of policy implementation (i.e., public health policies) and health systems arrangements (i.e., multi-layered public health systems). However, the application of this framework in other policy implementation contexts where health-system arrangements are different than this study site may provide more information for necessary adaptation.

Methodological contributions

This thesis does not contribute to entirely new methods. The methodological contributions of this thesis are in applying already existing robust methods to study a novel topic. We describe two such contributions below.

First, chapter 2 contributes to an approach that integrated multiple methods (e.g., using a

priori framework, a traditional systematic review of literature, purposive sampling of literature and adoption of an inductive approach to analysis from grounded theory methods) to establish a coherent set of variables and mechanisms from relatively fragmented concepts found in different disciplinary works. The chapter also meticulously documented explicit detail of the application of different methods. Hence, chapter 2 provides a methodological approach that can be useful to scholars undertaking similar work in the areas where a flexible approach to review methodology is required, given the nature of the questions posed.

Chapters 3 and 4 adopted multiple case study methods with embedded units within each case. The case study applied a theoretical framework developed in chapter 2 to design study questionnaires, organize data and facilitate the analysis by comparing and contrasting the case study findings with the variables of the framework. Adoption and application of a newly developed theoretical framework to aid in structuring and approach to an empirical study is a unique methodological approach that can be used by scholars undertaking similar work in the future.

Strengths and limitations

This thesis has three strengths.

First, chapter 2 represents a study that explored harnessing of evidence and values together in the policy implementation context. Although evidence and values are studied in parallel by two distinct groups of scholars, this study is a first attempt to bring these two concepts within a single theoretical framework and examine factors that commonly affect harnessing of evidence and values in policy implementation. Policy implementers, researchers, knowledge brokers and values advocates often face a challenge in dealing with harnessing of evidence and values because the evidence is value-laden, and values can often pose barriers to harnessing of

evidence. The theoretical framework can help the above-mentioned groups to advance their understanding around interaction of these two concepts in the context of policy implementation.

Second, the integration of multiple methodological approaches with the CIS methods is a strength of our first study presented in chapter 2. For instance, besides the rigorous application of CIS methods, we used a priori framework (i.e., 3i+E) to organize the variables and adopted an inductive approach to analysis from grounded theory. This methodological integration allowed us to bring together a diverse range of literature to weave relatively fragmented concepts found in different disciplinary works into a coherent set of variables. We used these variables to develop a theoretical framework that can explain how different factors influence policy implementers' decision to harness evidence and values in policy implementation.

Third, the design of the case study, which employed multiple cases with embedded units within each case, helped to facilitate cross-case comparison with different policy issues unfolding in a single jurisdiction. This enabled the research team to tease out key aspects of how evidence and values are harnessed in implementation. Moreover, the case study also provided a platform for the application of the framework developed in chapter 2 in a specific context of public health policy implementation. As a result, a comparison could be drawn between the variables of the framework and the case study findings. This approach enabled us to connect the case study with the CIS study and construct a holistic and overarching understanding of the concepts and factors that influence the harnessing of evidence and values in health policy implementation.

Nevertheless, three limitations must be worth noting.

First, while conducting the CIS study, we discovered much literature focused on implementation fails to take into account key political variables, including institutions, interests,

ideas, and external factors that required additional interpretation and synthesizing of concepts from implicit meaning. Our professional training and experience helped us in this process. To mitigate this limitation, we tabulated the original codes from the literature along with the interpreted themes and categories, shared with our research teams and reached a consensus about the interpretation of the themes and categories through consultation.

Second, in the CIS study, many of the reviewed papers do not always try to distinguish factors that are relevant to policy implementation from policy development. The nature of the policy process, which draws a faint line between policy development and policy implementation, may have attributed to scholars' portrayal of the factors. To mitigate this limitation, we read those papers several times, discussed any confusion within our team, and made decisions based on a consensus.

Third, for the case study, we did not have access to data from confidential documents (e.g., meeting minutes of policy networks and workstreams, discussion notes) and the policy implementers working in the MOHLTC as they declined to participate in the study. The transition of government, coupled with an ongoing review of program portfolios, may have underpinned their decision about not to participate in the study. Due to this limitation, we may have missed valuable insights that could enrich our findings further. For example, had we interviewed policy implementers working in the MOHLTC, we could learn more about how they prioritize evidence and what underpins their decision to incorporate selective evidence. We mitigated this limitation by carefully selecting key informants who were intimately involved in the provincial level policy implementation planning (i.e., member of the policy networks). We also reviewed a few confidential documents shared by the study participants. However, we could not cite those documents because they are not in the public domain.

Implications for policy and practice

The findings from this thesis can be used to understand how different factors (e.g., institutions, interests, ideas, and external factors) may influence whether, how and why policy implementers may opt to harness evidence and values.

As a result, the researchers can adopt appropriate strategies (e.g., maintain collaboration with policy implementers, educate public and make an alliance with powerful interest groups) and make the necessary adjustments in their research priorities and agenda (e.g., make research findings relevant by adopting research agenda that can answer policy implementers' questions about implementation) to draw policy implementers' attention. Knowledge brokers can utilize the findings of this study to develop new tools or revise/update existing tools that can help them to disseminate evidence by capitalizing on the facilitating factors effectively (e.g., maintaining regular interaction with policy implementers, packaging of research findings in the form of the policy brief and avoiding technical language).

Similarly, societal interest groups (e.g., civil society organizations) can utilize the results to prioritize target groups and adopt advocacy strategies (e.g., educating policy implementers; strengthening public knowledge, awareness, and skills) that are deemed to facilitate building a positive attitude and draw the attention of policy implementers towards values.

The policy implementers may find the results expand their understanding of how their views toward harnessing evidence and values are shaped. The extended knowledge about the factors influencing their decision may help them to allocate resources for the right types of activities (e.g., staff training and community trust-building) that can strengthen their efforts to harness evidence and values in policy implementation.

Implications for future research

While this thesis makes valuable contributions to the understanding of factors that affect policy implementers' decision to harness evidence and values in policy implementation, it also generates additional research questions that are worthy of exploring in future research.

First, given the framework developed in chapter 2 is only applied in one particular context (public health policy implementation in Ontario), future research can apply this framework in another context where the set of policies and health systems arrangement is different. Applying this framework in multiple contexts will add valuable insight into the subject.

Second, a comparative study is required to explore how these factors that affect harnessing evidence and values in policy implementation are either similar to or different than policy development. The current study had no scope to compare how these factors differ between policy development and policy implementation.

Third, future research can also focus on a longitudinal study design to track the actual implementation of a policy starting from its development stage. The study design can adopt an ethnographic approach where a researcher can attend all the discussions in the policy networks and observes actual implementation at the local level. A longitudinal study with an ethnographic approach will enable researchers to craft a more in-depth understanding that we may have missed in our study due to a lack of access to confidential documents and information from relevant provincial-level policy implementers who declined to participate in the study. However, such a study design will require joint planning with the government.