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Impact of Primary health care reforms in Quebec Health Care System: A Systematic Literature Review Protocol.

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Manuscripts

Impact of Primary health care reforms in Quebec Health Care System: A Systematic Literature Review Protocol.

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Abstract

Introduction: During the last decade the Quebec Public Health Care System (QPHS) had important transformation in primary care planning activity. The increase of the service demand together with a significative reduction of supply in primary care may be at risk of reducing access to health care services, with a negative impact on health outcomes. The aims of this systematic literature review are to map and aggregate existing literature and evidence on the primary care provided in Quebec, showing the benefits and limitations associated with the health policies, and highlighting areas of improvement.

Methods and Analysis: PubMed, EMBASE, Web of Science, and CINAHL will be searched for articles and government reports between January 2000 and January 2022 using a pre-specified search strategy. The review will be performed in accordance with the framework suggested by PRISMA. A wide range of electronic databases and grey literature sources will be systematically searched using predefined keywords. The review will include any study design, with the exclusion of protocols, with a focus on the analysis of health care policies, outcomes, costs and management of the primary health care services, published in either English or French languages. Two reviewers will independently screen titles, abstracts, full-text articles and select studies meeting the inclusion criteria. A customised data extraction form will be used to extract data from the included studies. Results will be presented in tabular format developed iteratively by the research team.

Ethics and dissemination: Research ethics approval is not required as exclusively secondary data will be used. Review findings will be used to advance understanding about primary care in QPHS, its characteristics, and the policies. The review will develop recommendations on possible improvements in health care policies to provide equal access to the population. Findings will be disseminated in peer-reviewed journals, presentations and through discussions with stakeholders.

Keywords: Primary care**,** health care policies, Primary care management, primary care access, systematic literature review

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Strengths and limitations of this study

- This is the first study that provide a comprehensive view and analysis of the primary care in Quebec Public Health Care System and its impact on costs, outcomes and health organisation.
- This systematic literature review will provide a deeper understanding of the characteristics of the impact of last two decades of Quebec Public Health Care System policies and it will provide a synthesis of the existing evidence about Quebec primary care services.
- The systematic literature review will consider only studies published from 2000 onwards.
- Findings from this review will be used to provide an insight of the primary care in Quebec and recommendations about how to improve the primary care of Quebec Public Health Care System.
- Grey literature will be considered in this review. Studies will be considered and limited to those published in French and English languages.

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BACKGROUND

Primary health care services represent an important element in public health care systems. As reported by the World Health Organization "*Primary Health Care (PHC) is a whole-of-society approach to health that aims at ensuring the highest possible level of health and well-being and their equitable distribution by focusing on people's needs and as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation and palliative care, and as close as feasible to people's everyday environment*"[1].

PHC is the most inclusive, equitable, cost-effective, and efficient approach to enhance people's physical and mental health, as well as social well-being. A strong primary health care presents lower health costs, better population health, higher patient satisfaction, fewer inappropriate and unnecessary hospital admissions, better rates of screening and early detection of chronic diseases, better patient follow-up for patients, a better management of patients with multimorbidity, and finally greater socioeconomic equity [2-8].

The PHC services include the general practitioners (GP) or family physicians, who represent generally the first point of contact of individuals with the health care system, and focus care on the individual within the community, delivering services across the entire spectrum of care (e.g., mental health, preventive medicine, respiratory diseases). They play an important role in health promotion and illness prevention, coordinating care with other specialties and health professionals, and advocating on behalf of their patients with respect to the care and services they need in all parts of the health care system.

The importance of GPs for patients is highlighted in the international literature [9-14]. The physician's personal commitment to the patient is one of the most important determinants of the patient's sense of safety, and it has a large impact on patient decision to consult a specialist or to access to an Emergency Department (ED) [15].

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Canada has a decentralised and universal publicly funded health care system, called Canadian Medicare, with the funding and administrations of health care primarily managed by the thirteen Provinces and territories and the entire country. Each province has its own insurance plan and each province receive money and assistance from federal government on a per-capita basis. Each system is managed publicly and it is accessible to any citizen (universally). Each provincial government is responsible for the management, organisation, and delivery of health care services for Canadians. The insurance plans must meet the standards of the Canadian Health Act to access to federal funds.

Since 2014, Quebec's health care system has two levels of governance: the Ministerial level with the Ministry of Health and Social Services (MSSS), and the local level with 34 health care organisations, thirteen of which are Integrated Health and Social Services Centres (CISSS) and nine are Integrated University Health and Social Services Centres (CIUSSS), while only one organization between them is responsible for five specific subjects: continuing care for short and long term patients, rehabilitation services, youth protection, mental health, elder care with loss of autonomy [16].

By the early 2000s, the Family Medicine Groups (GMF) were introduced as a new primary care model. This was supposed to provide a small capitation payment for registering patients and additional resources to support multidisciplinary team-based care and continuity care. However, this new model did not reach the expected results within the primary care organisation.

In 2003, the Quebec government made important changes in the primary health care (PHC) system. This reform included the creation of new models of PHC, Family Medicine Groups (e.g. multidisciplinary health teams with extended opening hours and enrolment of patients) and Network Clinics (clinics providing access to investigation and specialist services) [17]. In 2015, Gaétan Barrette, Minister of Health and Social Services for the Québec Government, introduced the Bill 20 law, that set a patient quota for general practitioners. One of the Bill 20's objectives is to improve access to family medicine by increasing the number of patients in charge for each general practitioner. The goal of this policy is to maximize the utilisation of medical and financial resources to improve access to primary care. If general practitioners failed to achieve the minimum number of patients requested from the Bill 20, then the general practitioner might have financial penalties.

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In Quebec province in 2021 were recorded 10 660 GPs available for over a population of 8 604 895 inhabitants, that is a GP for each 807 patients. Provided that Quebec is one of the largest provinces of Canada (1.668 million km²), the accessibility of PHC might represent an issue in terms of health policy [18]. In Nunavik and Bay St. James health districts (HDs) only the 3% of population has a GP, while in Montréal HD there is the largest part of the population without a GP (31%). Only in Chaudière-Appalaches, Bas-Saint-Laurent, Saguenay–Lac-Saint-Jean, and Gaspésie–Îles-de-la-Madeleine HDs the 90% of population is assigned to a GP [19,20]. This shows us that there is a variation between HDs with a mean of 81.4% and a standard deviation of 26.6%. In addition, about the 13% of the population of Quebec has at least a chronic disease that has to be managed by a GP. The Provincial Government reports that there is no possible estimation of the waiting time once an individual is registered in the Quebec Health Care System (QHCS). However, as reported in newspapers the waiting time required at least to be assigned to a GP usually is larger than 599 days [28].

Objectives

As equity is one of the guiding principles of the Quebec health system, our goal is to assess the impact of the PHC reform on equity, accessibility, costs, outcomes, and services provided between 2000 and 2021. In order to assess this impact, we present a systematic literature review that collect all the evidence together with a detailed analysis on several points of view.

Since the beginning of the COVID-19 pandemics, the accessibility to primary health care worsened, as most resources were concentrated on secondary care, and the gap between available resources in QHCS and the population health needs increased. The problem was already reported previously [21-23], but after the pandemics this problem will become more evident and it will represent a challenge for the government.

The aim of this work consists in studying, through this systematic literature review, the last two decades of the QHCS primary care and the impact of the health policies developed on health organisation, costs, health outcomes, accessibility, and services, considering both patient and QHCS perspectives.

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METHODS AND ANALYSIS

This protocol has been prepared using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols guidelines [24], as shown in PRISMA-P checklist (Supplementary material 1). Important amendments made to the protocol will be documented and published alongside the results of the systematic review.

Research question

This systematic literature review poses the question about a new reform for Primary care and GPs activities, together with a collection of evidence of the impact of the actual PHC organisation in Quebec, in order to assess the health care services accessibility and equity.

Eligibility criteria

The criteria for the study selection will be based on studies that will explicitly analyse the impact of any policy implementation or activity provided where GPs or family doctors are included, together with the information about corresponding health outcomes, costs, or performance on system organisation.

Study design/characteristics

Target studies will include Meta-Analysis, Systematic Review, Randomized Controlled Trial, Cohort Study (Prospective Observational Study), Case-control Study, Cross-sectional study, Case Reports, and Series, that show the impact of GP activities on health outcomes, costs, health organisation and management, services in QHCS. We will consider also summary papers, government and public health reports and other analyses to source relevant primary papers. Study protocols will not be considered in this systematic literature review.

Information sources

A research of academic databases including: PubMed, EMBASE, Web of Science, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) will be performed

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by an author experienced in conducting systematic reviews (FB). The search will look for potentially relevant articles using predefined strategies (Supplementary material 2). A manual search of the reference lists of the studies will be performed in order to check for any additional possible relevant articles. The manual search will be based on backward snowballing search that will involve search of the reference list of the articles selected and identified. In addition, for some of the relevant journals will be performed a hand search to ensure a saturation of the literature. Studies will be excluded if they do not investigate on QHCS.

Search strategy

The search strategy (Table 1) will be reviewed by the first (PL) and the second (JDL) reviewer, together with the supervision of the third reviewer (KSA). The search strategy will have filters limiting studies to 2000 onwards, studies published in English or French. The time limitation is chosen as by the early 2000s, the Family Medicine Groups (GMF) were introduced as a new primary care model. The literature review searches will be updated at the end of the search process. In addition, using the Population, Intervention, Comparison, Outcome, Timing and Study design (PICOTS) strategy [25,26], we elaborated the guiding question of this review to ensure the systematic search of available literature: "What is the impact of last two decades of primary health care reform for GP activities on health outcomes, costs, equity and accessibility for Quebec adult population?".

PICOS strategy	**Inclusion criteria**	**Exclusion criteria**
P – Population	Primary health care reform/setting/practice/activities in Quebec	Infants and adolescents treated in Quebec province and adults treated outside Quebec province
I – Intervention	Any health care treatment	
C – Comparison	No comparator	
O – Outcomes	Health service accessibility and equity	

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T - Timing	Studies from 2000 onwards	Studies published before year 2000
S – Study design	Meta-Analysis, Systematic Review, Randomized Controlled Trial, Cohort Study (Prospective Observational Study), Case-control Study, Cross-sectional study, Case Reports and Series,	Protocols

Table 1 - Inclusion and exclusion criteria

Screening and data collection

The abstracts and full-text articles retrieved from the search strategy will be undertaken using Covidence® (www.covidence.org) [27], an online systematic review tool recommended by the Cochrane Collaboration, and duplicates will be removed. Two review authors (PL and JDL) will independently assess titles and abstracts of records, and exclude articles that will not meet eligibility criteria. Disagreements between the selected papers made by the two review authors will be resolved by discussion or by a third review author (KSA or JBG).

Quality assessment

Two independent reviewers (PL, JDL) will assess the methodological quality of eligible studies. Two independent reviewers will score the selected studies and disagreements will be resolved by a third reviewer (KSA or JBG).

Data extraction and synthesis

Two review authors will independently extract and record data from included studies using a predefined data extraction form. The reviewers will pilot the data extraction form with a sample of a limited number of papers (10) and amendments will be made as necessary.

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After the evaluation of piloting, the data extraction will be developed and completed using Covidence®. The data extraction form will include the following information: study reference, project name, country, year, study design, participant information, accessibility, equity, health outcomes (such as QALYs), costs (direct and indirect), clinical area of interest of the study, role of the GP in the study, GPs activities. Other additional information will be included during the review process. If additional information will be required from the studies, the reviewers will contact study authors. At the end of data extraction, two reviewers will resolve any discrepancies that will be present applying a consensus-based decision, or if necessary, discussion with a third reviewer.

Data synthesis will be undertaken through a narrative approach, providing detailed written commentary on the data extracted previously. This will help in the understanding of the impact of GPs activity to the delivery of care and the related issues. In addition, summary tables will be used to present data in a structured format.

Cumulative evidence

We will use the GRADE approach to assess the certainty of the evidence for each outcome, and present data 'Summary of Findings' tables [29].

Conclusion

Our results will include information about the impact of the public health reforms on costs, key outcomes (such as mortality, HRQOL and adverse events), health resources utilisation, health service delivery, accessibility and equity. Therefore, it may help in supporting decision-making for Quebec Government to improve the QPHC system, especially for GPs activity and patient quality of care. We will also identify gaps in the evidence which will inform suggestions for future research priorities.

Patient and public involvement

Patients were not directly involved in the design of this study. As this is a protocol for a systematic review and no participant recruitment will take place, their involvement on the recruitment and dissemination of findings to participants was not applicable.

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ETHICS AND DISSEMINATION

To our knowledge, this systematic review will be the first to synthesise the available evidence on the impact of PHC reforms on health care organisation in Quebec evaluating several dimensions (e.g. costs, health outcomes, services accessibility, equity). The results of this review will also inform policy-makers and leaders of Quebec Public health in developing appropriate reforms to improve the PHC organization. Our results may highlight gaps in knowledge and guide future research concerned with the PHC organization.

This study does not require the ethical review as it is a systematic literature review. The objective is submitting this work and the future development to a peer-reviewed journal and presenting the main findings at Quebec government, national and international meetings and conferences.

Contributors: PL, JDL led the design, search strategy and conceptualisation of this work and drafted the protocol. FB performed the search strategy and provided the corresponding results. PL, JDL, MR, KSA, ET, AC, JBG were involved in the conceptualisation of the review design, inclusion and exclusion criteria and provided feedback on the methodology and the manuscript. PL, MR, ET, AC, JBG and JDL were involved in data extraction forms. All authors provided feedback on the manuscript and approval to the publishing of this protocol manuscript.

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Competing interests: The authors declare no potential conflict of interest

Patient consent: Not required.

Ethics approval: Research ethics approval is not required for a systematic literature review.

Provenance and peer review: Not commissioned; externally peer reviewed.

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PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item	Yes/No	Line	Description
ADMINISTRATIVE INFORMATION					
Title:					
Identification	1a	Identify the report as a protocol of a systematic review	Yes	1-2	
Update	1b	If the protocol is for an update of a previous systematic review, identify as such (No)	N.A.		Not applicable
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	N.A.		Not registered on PROSPERO
Authors:					
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	Yes	6-18	
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	Yes	300-307	
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N.A.		Not applicable
Support:					
Sources	5a	Indicate sources of financial or other support for the review	Yes	309-311	
Sponsor	5b	Provide name for the review funder and/or sponsor	Yes	309-311	
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	N.A.		Not applicable
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	Yes	157-170	
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	Yes	217-229	
METHODS					
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	Yes	217-229	
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	Yes	205-213 217-221	
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned	Yes		Supplementary material

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		limits, such that it could be repeated			
Study records:					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	Yes	232-246	
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	Yes	232-246	
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	Yes	250-265	
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	Yes	250-265	
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	Yes	255-256	
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	N.A.		Not applicable
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	Yes	262-265	
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)	N.A.		Not applicable
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	N.A.		Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	N.A.		
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	N.A.		Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	Yes	269-270	Not applicable

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

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Supplementary materials – Database search strategy

PubMed

Date of the search: 10-01-2022
Database limit: No database limit has been applied

#	Search strategy	Results
1	"Primary Health Care"[Mesh:NoExp] OR Primary Care[TIAB] OR Primary Healthcare[TIAB] OR Primary Health Care[TIAB] OR "Physicians, Family"[Mesh] OR Family Physician*[TIAB] OR Family Practi*[TIAB] OR "General Practitioners"[Mesh] OR "General Practice"[Mesh] OR General Practi*[TIAB]	
2	"Health Services Needs and Demand"[Mesh] OR "Health Services Accessibility"[Mesh:NoExp] OR "Delivery of Health Care"[Mesh:NoExp] OR "Health Care Reform"[Mesh] OR "Health Policy"[Mesh:NoExp] OR "Appointments and Schedules"[Mesh:NoExp] OR OR "Mass Screening/organization and administration"[Mesh:NoExp] OR Outcome and Process Assessment, Health Care[Mesh] OR Quality Indicators, Health Care[Mesh:NoExp] OR Waiting Lists[Mesh] OR Health Polic*[TIAB] OR Healthcare Polic*[TIAB] OR National Polic*[TIAB] OR Healthcare Delivery[TIAB] OR delivery of care[TIAB] OR Health access*[TIAB] OR Healthcare access*[TIAB] OR Health Care Reform*[TIAB] OR primary care demand[TIAB] OR Health demand[TIAB] OR care demande[TIAB]	
3	"Quebec"[Mesh] OR Quebec[TIAB]	
4	#1 AND #2 AND #3	272

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BMJ Open

Impact of Primary health care reforms in Quebec Health Care System: A Systematic Literature Review Protocol

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2022-068666.R1
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Date Submitted by the Author:	18-May-2023
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Primary Subject Heading:	Public health
Secondary Subject Heading:	Health services research, Health policy
Keywords:	PRIMARY CARE, Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Organisation of health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Protocols & guidelines < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PUBLIC HEALTH

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Manuscripts

Impact of Primary health care reforms in Quebec Health Care System: A Systematic Literature Review Protocol

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Abstract

Introduction: During the last decade the Quebec Public Health Care System (QPHCS) had important transformation in primary care planning activity. The increase of the service demand together with a significative reduction of supply in primary care may be at risk of reducing access to health care services, with a negative impact on costs and health outcomes. The aims of this systematic literature review are to map and aggregate existing literature and evidence on the primary care provided in Quebec, showing the benefits and limitations associated with the health policies developed in the last two decades, and highlighting areas of improvement.

Methods and Analysis: PubMed, EMBASE, Web of Science, and CINAHL will be searched for articles and government reports between January 2000 and January 2022 using a pre-specified search strategy. The review will be performed in accordance with the framework suggested by PRISMA-P. A wide range of electronic databases and grey literature sources will be systematically searched using predefined keywords. The review will include any study design, with the exclusion of protocols, with a focus on the analysis of health care policies, outcomes, costs and management of the primary health care services, published in either English or French languages. Two authors will independently screen titles, abstracts, full-text articles and select studies meeting the inclusion criteria. A customised data extraction form will be used to extract data from the included studies. Results will be presented in tabular format developed iteratively by the research team.

Ethics and dissemination: Research ethics approval is not required as exclusively secondary data will be used. Review findings will synthesise the characteristics and the impact of the reforms of QPHCS of the last two decades. Findings will therefore be disseminated in peer-reviewed journals, conference presentations and through discussions with stakeholders.

Keywords: Primary care**,** health care policies, Primary care management, primary care access, systematic literature review.

Strengths and limitations of this study

- This is the first study that provide a comprehensive view and analysis of the primary care in Quebec Public Health Care System and its impact on costs, outcomes, accessibility, equity and health organisation.
- This systematic literature review will provide a deeper understanding of the characteristics of the impact of last two decades of Quebec Public Health Care System reforms and it will provide a synthesis of the existing evidence about Quebec primary care services.
- The systematic literature review will consider only studies published from 2000 onwards.
- Findings from this review will be used to provide an insight of the primary care in Quebec and recommendations about how to improve the primary care of Quebec Public Health Care System.
- Grey literature will be considered in this review. Studies will be considered and limited to those published in French and English languages.

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BACKGROUND

Primary health care services represent an important element in public health care systems. As reported by the World Health Organization "*Primary Health Care (PHC) is a whole-of-society approach to health that aims at ensuring the highest possible level of health and well-being and their equitable distribution by focusing on people's needs and as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation and palliative care, and as close as feasible to people's everyday environment*"[1]. PHC is the most inclusive, equitable, cost-effective, and efficient approach to enhance people's physical and mental health, as well as social well-being. A strong primary health care presents lower health costs, better population health, higher patient satisfaction, fewer inappropriate and unnecessary hospital admissions, better rates of screening and early detection of chronic diseases, better patient follow-up for patients, a better management of patients with multimorbidity, and finally greater socioeconomic equity [2-8].

The PHC services include the general practitioners (GP) or family physicians, who represent generally the first point of contact of individuals with the health care system, and focus care on the individual within the community, delivering services across the entire spectrum of care (e.g., mental health, preventive medicine, respiratory diseases). They play an important role in health promotion and illness prevention, coordinating care with other specialties and health professionals, and advocating on behalf of their patients with respect to the care and services they need in all parts of the health care system. The importance of GPs for patients is highlighted in the international literature [9-14]. The physician's personal commitment to the patient is one of the most important determinants of the patient's sense of safety, and it has a large impact on patient decision to consult a specialist or to access to an Emergency Department (ED) [15].

Canada has a decentralised and universal publicly funded health care system with the funding and administrations of health care primarily managed by the thirteen Provinces and territories and the entire country. Each province has its own insurance plan and each province receive money and assistance from federal government on a per-capita basis. Each system is managed publicly and it is accessible to any citizen (universally). Each provincial

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government is responsible for the management, organisation, and delivery of health care services for Canadians. The insurance plans developed by each province must meet the standards of the Canadian Health Act to access to federal funds.

Two reforms were introduced since the early 2000 (Family Medicine Group in 2003 and Bill 20 in 2015) aimed at maximising medical and financial resource use in order to improve the patient access in primary care [16,17]. However, actually the accessibility to primary care for patients still represent a public health issue in Québec (Supplementary material 1). In addition, since the beginning of the COVID-19 pandemics, the accessibility to primary health care worsened [18]. This problem was already reported previously [19-22] and it still represent a challenge for the government [23,28].

The aim of this work consists in studying, through this systematic literature review, the last two decades of the QPHCS primary care and the impact of the reforms developed on health organisation, costs, health outcomes, accessibility, equity and services, considering health care system perspective.

METHODS AND ANALYSIS

This protocol has been prepared using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols guidelines [24], as shown in PRISMA-P checklist (Supplementary material 2). Important amendments made to the protocol will be documented and published alongside the results of the systematic review.

Research question

This systematic literature review will synthesise the scientific literature on interventions that have been developed in QPHCS, focusing on Primary care and GPs activities, together with a collection of the evidence for assessing health outcomes, costs, equity and accessibility for Quebec adult population.

Eligibility criteria

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The criteria for the study selection will be based on studies that will explicitly analyse the impact of any policy implementation or activity provided where GPs or family doctors are included, together with the information about corresponding health outcomes, costs, accessibility or performance on system organisation.

Study design/characteristics

Target studies will include Meta-Analysis, Systematic Review, Randomized Controlled Trial, Cohort study (Prospective Observational Study), Case-control study, Cross-sectional study, Case Reports, Series, Quasi-experimental design, Difference in Difference analysis, natural experiments, regression discontinuity design that show the impact of GP activities on health outcomes, costs, accessibility, health organisation and management, services in QPHCS. We will consider also summary papers, government and public health reports and other analyses to identify relevant primary papers. Study protocols will not be considered in this systematic literature review.

Information sources

A research of academic databases including: PubMed, EMBASE, Web of Science, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) will be performed by an author experienced in conducting systematic reviews (FB). The search will look for potentially relevant articles using predefined strategies (Supplementary material 3). A manual search of the reference lists of the studies will be performed in order to check for any additional possible relevant articles. The manual search will be based on backward snowballing search that will involve search of the reference list of the articles selected and identified. In addition, for some of the relevant journals will be performed a hand search to ensure a saturation of the literature. Grey literature will be included in order to explore all the available documentation published. Studies will be excluded if they do not investigate on QPHCS.

Search strategy

The search strategy (Table 1) will be reviewed by the first (PL) and the second (JDL) author, together with the supervision of the third author that is a medical librarian able to

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provide the support and the guidance on search terms and strategies (FB). The search strategy will combine MeSH terms and free text words such as (Primary Health Care OR Primary Care OR Primary Healthcare OR Family Physicians OR Family Practitioner OR General Practitioners OR General Practice AND Health Services Needs and Demand OR Health Services Accessibility OR Delivery of Health Care OR Health Care Reform OR Health Policy OR Appointments and Schedules OR Mass Screening/organization and administration OR Outcome and Process Assessment, Health Care OR Quality Indicators, Health Care OR Waiting Lists OR Health Policy OR Healthcare Policy OR National Policy OR Healthcare Delivery OR delivery of care OR Health access OR Healthcare access OR Health Care Reform OR primary care demand OR Health demand OR care demande AND Quebec). The search strategy will have filters limiting studies to 2000 onwards, and studies published in English or French. The time limitation is chosen as by the early 2000s, the Family Medicine Groups were introduced as a new primary care model. The literature review searches will be updated at the end of the search process. In addition, using the Population, Intervention, Comparison, Outcome, Timing and Study design (PICOTS) strategy [25,26], we elaborated the guiding question of this review to ensure the systematic search of available literature: "What is the impact of last two decades of primary health care reforms for GP activities on health outcomes, costs, equity and accessibility for Quebec adult population?".

PICOS strategy	Inclusion criteria	Exclusion criteria
P – Population	Primary health care reform/setting/practice/activities in Quebec	Infants and adolescents treated in Quebec province and adults treated outside Quebec province
I – Intervention	Any health care treatment and activity performed by Primary Care organisations and GPs that are affected from PHC reforms	Any individual activity in Primary Care that is not related to PHC reforms
C – Comparison	No comparator	

O – Outcomes	Health outcomes (e.g. QALYs), costs, equity and accessibility	
T - Timing	Studies from 2000 onwards	Studies published before year 2000
S – Study design	Meta-Analysis, Systematic Review, Randomized Controlled Trial, Cohort Study (Prospective Observational Study), Case-control Study, Cross-sectional study, Case Reports and Series, Quasi-experimental design, Difference in Difference analysis, natural experiments, regression discontinuity design	Protocols

Table 1 - Inclusion and exclusion criteria

Screening, data collection and extraction

The abstracts and full-text articles retrieved from the search strategy will be undertaken using Covidence® (www.covidence.org) [27], an online systematic review tool recommended by the Cochrane Collaboration, and duplicates will be removed. Two authors (PL,JDL) will independently assess titles and abstracts of records, and exclude articles that will not meet eligibility criteria. Disagreements between the selected papers made by the two authors will be resolved by discussion or by a third author (KSA, JBG, AC, MR or ET). Four authors will independently extract and record data from included studies using a predefined data extraction form (PL, JDL, JBG, MR).

The authors will pilot the data extraction form with a sample of a limited number of papers (10) and amendments will be made as necessary. After the evaluation of piloting, the data extraction will be developed and completed. The data extraction form will include the information reported in the Supplementary material 4. Other additional information will be included during the review process. If additional information will be required from the studies, study authors will be contacted. At the end of data extraction, four authors (PL,

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JDL, JBG, MR) will resolve any discrepancies that will be present applying a consensus-based decision, or if necessary, discussion with a fifth author (AC).

Data synthesis will be undertaken through a narrative approach, providing detailed written commentary on the data extracted previously. This will help in the understanding of the impact of GPs activity to the delivery of care and the related issues. In addition, summary tables will be used to present data in a structured format. We will use a convergent synthesis design to synthesise qualitative, quantitative and mixed-method results [29]. Thus, using a thematic synthesis procedure, we will synthesise the evidence from the selected studies.

Quality assessment

Two independents authors (PL, JDL) will assess the methodological quality of eligible studies. Two independents authors will score the selected studies and disagreements will be resolved by a third author (KSA, JBG, AC, MR or ET). For quality assessment we will use the Mixed Methods Appraisal Tool (MMAT), that is a critical appraisal tool that is designed for the appraisal stage of systematic mixed studies reviews that include qualitative, quantitative and mixed methods studies. It enables the appraisal of five categories of methodologies such as qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies (Supplementary material 5) [30].

Cumulative evidence

We will use the MMAT approach to assess the certainty of the evidence for each study, and will present the data results on the MMAT rating tables.

Discussion

To our knowledge, this systematic review will be the first to synthesise the available evidence on the impact of the last two decades reforms on primary health care organisation in Quebec evaluating several dimensions (e.g. costs, health outcomes, services accessibility, equity). The results of this review will also inform policy-makers and leaders of Quebec Public health. Our results may highlight gaps in knowledge and guide future research concerned with the primary health care organization in Quebec.

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Patient and public involvement

Patients were not directly involved in the design of this study. As this is a protocol for a systematic literature review and no participant recruitment will take place, their involvement on the recruitment and dissemination of findings to participants was not applicable.

ETHICS AND DISSEMINATION

This study does not require the ethical review as it is a systematic literature review. The objective is submitting this work and its future development to a peer-reviewed journal and presenting the main findings at Quebec government, national and international meetings and conferences.

Contributors: PL, JDL led the design, search strategy and conceptualisation of this work and drafted the protocol. FB performed the search strategy and provided the corresponding results. PL, JDL, MR, KSA, ET, AC, JBG were involved in the conceptualisation of the review design, inclusion and exclusion criteria and provided feedback on the methodology and the manuscript. PL, MR, ET, AC, JBG and JDL were involved in data extraction forms. All authors provided feedback on the manuscript and approval to the publishing of this protocol manuscript.

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Competing interests: The authors declare no potential conflict of interest.

Patient consent: Not required.

Ethics approval: Research ethics approval is not required for a systematic literature review.

Provenance and peer review: Not commissioned; externally peer reviewed.

Prospero registration number: CRD42023421145

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Supplementary material 1 - Distribution of GPs by administrative region in Quebec province

Administrative region	GPs or Family doctors[1]	Inhabitants (year 2022) [2]	GP each 1000 inhabitants
01 Bas-Saint-Laurent	287	200,507	1.431
02 Saguenay-Lac-St-Jean	388	282,330	1.374
03 Québec	1,084	771,611	1.405
04 Mauricie	350	281,163	1.245
05 Estrie	409	507,208	0.806
06 Montréal	2,649	2,038,845	1.299
07 Outaouais	445	408,979	1.088
08 Abitibi-Témiscamingue	200	148,493	1.347
09 Côte-Nord	154	90,405	1.703
10 Nord du Québec	152	46,916	3.240
11 Gaspésie-Îles-de-la-Madeleine	196	92,403	2.121
12 Chaudière-Appalaches	443	444,072	0.998
13 Laval	462	446,476	1.035
14 Lanaudière	500	544,265	0.919
15 Laurentides	671	657,375	1.021
16 Montérégie	1,644	1,475,578	1.114
17 Centre-du-Québec	244	259,033	0.942
Total	**10,278**	**8,695,659**	**1.182**

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[1] Collège des médecins du Québec - Répartition des médecins selon la région administrative - http://www.cmq.org/statistiques/region.aspx - last access April 27th, 2023

[2] Institut de la statistique du Québec - Principaux indicateurs sur le Québec et ses régions (https://statistique.quebec.ca/fr/vitrine/region)- last access April 15th, 2023

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PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item	Yes/No	Line	Description
ADMINISTRATIVE INFORMATION					
Title:					
Identification	1a	Identify the report as a protocol of a systematic review	Yes	1-2	
Update	1b	If the protocol is for an update of a previous systematic review, identify as such (No)	N.A.		Requested
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	N.A.		Registered on PROSPERO
Authors:					
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	Yes	4-18	
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	Yes	263-269	
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N.A.		Not applicable
Support:					
Sources	5a	Indicate sources of financial or other support for the review	Yes	271-273	
Sponsor	5b	Provide name for the review funder and/or sponsor	Yes	271-273	
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	N.A.		Not applicable
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	Yes	77-120	
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	Yes	171-193	
METHODS					
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	Yes	139-153	
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	Yes	157-167 183-185	
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned	Yes	171-193	Supplementary material 2

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		limits, such that it could be repeated			
Study records:					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	Yes	197-218	
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	Yes	197-218	
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	Yes	205-231	
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	Yes	197-218	
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	Yes	207-208	Supplementary material 3
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	N.A.		Not applicable
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	Yes	213-218	
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)	N.A.		Not applicable
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	N.A.		Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	N.A.		
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	N.A.		Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	Yes	223-236	Supplementary material 5

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

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Supplementary material 3 – Database search strategy

PubMed

Date of the search: 10-01-2022
Database limit: results will be limited from January 2000 to January 2022.

#	Search strategy	Results
1	"Primary Health Care"[Mesh:NoExp] OR Primary Care[TIAB] OR Primary Healthcare[TIAB] OR Primary Health Care[TIAB] OR "Physicians, Family"[Mesh] OR Family Physician*[TIAB] OR Family Practi*[TIAB] OR "General Practitioners"[Mesh] OR "General Practice"[Mesh] OR General Practi*[TIAB]	
2	"Health Services Needs and Demand"[Mesh] OR "Health Services Accessibility"[Mesh:NoExp] OR "Delivery of Health Care"[Mesh:NoExp] OR "Health Care Reform"[Mesh] OR "Health Policy"[Mesh:NoExp] OR "Appointments and Schedules"[Mesh:NoExp] OR OR "Mass Screening/organization and administration"[Mesh:NoExp] OR Outcome and Process Assessment, Health Care[Mesh] OR Quality Indicators, Health Care[Mesh:NoExp] OR Waiting Lists[Mesh] OR Health Polic*[TIAB] OR Healthcare Polic*[TIAB] OR National Polic*[TIAB] OR Healthcare Delivery[TIAB] OR delivery of care[TIAB] OR Health access*[TIAB] OR Healthcare access*[TIAB] OR Health Care Reform*[TIAB] OR primary care demand[TIAB] OR Health demand[TIAB] OR care demande[TIAB]	
3	"Quebec"[Mesh] OR Quebec[TIAB]	
4	#1 AND #2 AND #3	
5	#4 AND 2000/01/01:2022/01/01[dp]	

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Supplementary Material 4 – Data extraction form

Information used in data extraction	Description
Study reference	Identification of the study (e.g. Smith, 2018)
Project related to the study	If the study is related to a specific project (e.g. a trial or some other public or private interventions)
Authors	List of authors of the study
Country	Country where the study was issued
Year	Year of publication of the study
Study design	Type of the study design
Service type	Service type related to primary care
Participant characteristics	Information related to patient characteristics (e.g. age, disease, sex, and other useful information of the cohort)
Performance measures	Information related to the performance measures of the activity
Accessibility	Information related to the service accessibility for patients
Equity	Information related to the access service equity for patients
Health outcomes	Types and description of the health outcomes included in the study
Costs	Types and description of the health costs (direct and indirect) included in the study
Clinical area of interest	Clinical area of interest (e.g. Respiratory, Cardiovascular)
GP role	The role of the GP in the study
GP activities	The activities of the GP in the study
GP Organisation	Type of organisation within the GP works (e.g. Group of GPs)

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Supplementary Material 5 - Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	**Methodological quality criteria**	**Responses**			
		Yes	**No**	**Can't tell**	**Comments**
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5 Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative Descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

Hong, Q. N., Gonzalez-Reyes, A., & Pluye, P. (2018). Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the Mixed Methods Appraisal Tool (MMAT). Journal of Evaluation in Clinical Practice, 24(3), 459-467.
Hong, Q. N., & Pluye, P. (2018). A conceptual framework for critical appraisal in systematic mixed studies reviews. Journal of Mixed Methods Research, Advance online publication, https://doi.org/10.1177/1558689818770058

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BMJ Open

Impact of Primary health care reforms in Quebec Health Care System: A Systematic Literature Review Protocol

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Impact of Primary health care reforms in Quebec Health Care System: A Systematic Literature Review Protocol

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Abstract

Introduction: During the last decade the Quebec Public Health Care System (QPHCS) had important transformation in primary care planning activity. The increase of the service demand together with a significative reduction of supply in primary care may be at risk of reducing access to health care services, with a negative impact on costs and health outcomes. The aims of this systematic literature review are to map and aggregate existing literature and evidence on the primary care provided in Quebec, showing the benefits and limitations associated with the health policies developed in the last two decades, and highlighting areas of improvement.

Methods and Analysis: PubMed, EMBASE, Web of Science, and CINAHL will be searched for articles and government reports between January 2000 and January 2022 using a pre-specified search strategy. This protocol adheres to the Preferred Reporting Items for Systematic Reviews and Meta-analysis for Protocols and has been registered with PROSPERO. A wide range of electronic databases and grey literature sources will be systematically searched using predefined keywords. The review will include any study design, with the exclusion of protocols, with a focus on the analysis of health care policies, outcomes, costs and management of the primary health care services, published in either English or French languages. Two authors will independently screen titles, abstracts, full-text articles and select studies meeting the inclusion criteria. A customised data extraction form will be used to extract data from the included studies. Results will be presented in tabular format developed iteratively by the research team.

Ethics and dissemination: Research ethics approval is not required as exclusively secondary data will be used. Review findings will synthesise the characteristics and the impact of the reforms of QPHCS of the last two decades. Findings will therefore be disseminated in peer-reviewed journals, conference presentations and through discussions with stakeholders.

Keywords: Primary care**,** health care policies, Primary care management, primary care access, systematic literature review.

Strengths and limitations of this study

- This systematic review protocol follows the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols guidelines.
- The search algorithm was developed by an experienced librarian and customised to four large databases, including any type of grey literature.
- The certainty of the evidence of this systematic review may be limited by the limited number of studies available and the possible low quality of the individual studies.
- We aim to create the most comprehensive systematic review providing a comprehensive view and analysis of the primary care in Quebec Public Health Care System and its impact on costs, outcomes, accessibility, equity and health organisation.
- The systematic literature review will consider only studies published from 2000 onwards and those published in French and English languages.

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76 **BACKGROUND**

77 Primary health care services represent an important element in public health care systems.
78 As reported by the World Health Organization "*Primary Health Care (PHC) is a whole-*
79 *of-society approach to health that aims at ensuring the highest possible level of health and*
80 *well-being and their equitable distribution by focusing on people's needs and as early as*
81 *possible along the continuum from health promotion and disease prevention to treatment,*
82 *rehabilitation and palliative care, and as close as feasible to people's everyday*
83 *environment*"[1]. PHC is the most inclusive, equitable, cost-effective, and efficient
84 approach to enhance people's physical and mental health, as well as social well-being. A
85 strong primary health care presents lower health costs, better population health, higher
86 patient satisfaction, fewer inappropriate and unnecessary hospital admissions, better rates
87 of screening and early detection of chronic diseases, better patient follow-up for patients,
88 a better management of patients with multimorbidity, and finally greater socioeconomic
89 equity [2-8].

90 The PHC services include the general practitioners (GP) or family physicians, who
91 represent generally the first point of contact of individuals with the health care system, and
92 focus care on the individual within the community, delivering services across the entire
93 spectrum of care (e.g., mental health, preventive medicine, respiratory diseases). They play
94 an important role in health promotion and illness prevention, coordinating care with other
95 specialties and health professionals, and advocating on behalf of their patients with respect
96 to the care and services they need in all parts of the health care system. The importance of
97 GPs for patients is highlighted in the international literature [9-14]. The physician's
98 personal commitment to the patient is one of the most important determinants of the
99 patient's sense of safety, and it has a large impact on patient decision to consult a specialist
100 or to access to an Emergency Department (ED) [15].

101 Canada has a decentralised and universal publicly funded health care system with the
102 funding and administrations of health care primarily managed by the thirteen Provinces
103 and territories and the entire country. Each province has its own insurance plan and each
104 province receive money and assistance from federal government on a per-capita basis. Each
105 system is managed publicly and it is accessible to any citizen (universally). Each provincial

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government is responsible for the management, organisation, and delivery of health care services for Canadians. The insurance plans developed by each province must meet the standards of the Canadian Health Act to access to federal funds.

Two reforms were introduced since the early 2000 (Family Medicine Group in 2003 and Bill 20 in 2015) aimed at maximising medical and financial resource use in order to improve the patient access in primary care [16,17]. However, actually the accessibility to primary care for patients still represent a public health issue in Québec (Supplementary material 1). In addition, since the beginning of the COVID-19 pandemics, the accessibility to primary health care worsened [18]. This problem was already reported previously [19-22] and it still represent a challenge for the government [23,24].

The aim of this work consists in studying, through this systematic literature review, the last two decades of the QPHCS primary care and the impact of the reforms developed on health organisation, costs, health outcomes, accessibility, equity and services, considering health care system perspective.

METHODS AND ANALYSIS

This protocol has been prepared using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols guidelines [25], as shown in PRISMA-P checklist (Supplementary material 2). Important amendments made to the protocol will be documented and published alongside the results of the systematic review.

Research question

This systematic literature review will synthesise the scientific literature on interventions that have been developed in QPHCS, focusing on Primary care and GPs activities, together with a collection of the evidence for assessing health outcomes, costs, equity and accessibility for Quebec adult population.

Eligibility criteria

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The criteria for the study selection will be based on studies that will explicitly analyse the impact of any policy implementation or activity provided where GPs or family doctors are included, together with the information about corresponding health outcomes, costs, accessibility or performance on system organisation.

Study design/characteristics

Target studies will include Meta-Analysis, Systematic Review, Randomized Controlled Trial, Cohort study (Prospective Observational Study), Case-control study, Cross-sectional study, Case Reports, Series, Quasi-experimental design, Difference in Difference analysis, natural experiments, regression discontinuity design that show the impact of GP activities on health outcomes, costs, accessibility, health organisation and management, services in QPHCS. We will consider also summary papers, government and public health reports and other analyses to identify relevant primary papers. Study protocols will not be considered in this systematic literature review.

Information sources

A research of academic databases including: PubMed, EMBASE, Web of Science, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) will be performed by an author experienced in conducting systematic reviews (FB). The search will look for potentially relevant articles using predefined strategies (Supplementary material 3). A manual search of the reference lists of the studies will be performed in order to check for any additional possible relevant articles. The manual search will be based on backward snowballing search that will involve search of the reference list of the articles selected and identified. In addition, for some of the relevant journals will be performed a hand search to ensure a saturation of the literature. Grey literature will be included in order to explore all the available documentation published. Studies will be excluded if they do not investigate on QPHCS.

Search strategy

The search strategy (Table 1) will be reviewed by the first (PL) and the second (JDL) author, together with the supervision of the third author that is a medical librarian able to

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173 provide the support and the guidance on search terms and strategies (FB). The search
174 strategy will combine MeSH terms and free text words such as (Primary Health Care OR
175 Primary Care OR Primary Healthcare OR Family Physicians OR Family Practitioner OR
176 General Practitioners OR General Practice AND Health Services Needs and Demand OR
177 Health Services Accessibility OR Delivery of Health Care OR Health Care Reform OR
178 Health Policy OR Appointments and Schedules OR Mass Screening/organization and
179 administration OR Outcome and Process Assessment, Health Care OR Quality Indicators,
180 Health Care OR Waiting Lists OR Health Policy OR Healthcare Policy OR National Policy
181 OR Healthcare Delivery OR delivery of care OR Health access OR Healthcare access OR
182 Health Care Reform OR primary care demand OR Health demand OR care demand AND
183 Quebec). The search strategy will have filters limiting studies to 2000 onwards, and studies
184 published in English or French. The time limitation is chosen as by the early 2000s, the
185 Family Medicine Groups were introduced as a new primary care model. The literature
186 review searches will be updated at the end of the search process. In addition, using the
187 Population, Intervention, Comparison, Outcome, Timing and Study design (PICOTS)
188 strategy [26,27], we elaborated the guiding question of this review to ensure the systematic
189 search of available literature: "What is the impact of last two decades of primary health
190 care reforms for GP activities on health outcomes, costs, equity and accessibility for
191 Quebec adult population?".
192

PICOS strategy	Inclusion criteria	Exclusion criteria
P – Population	Primary health care reform/setting/practice/activities in Quebec	Infants and adolescents treated in Quebec province and adults treated outside Quebec province
I – Intervention	Any health care treatment and activity performed by Primary Care organisations and GPs that are affected from PHC reforms	Any individual activity in Primary Care that is not related to PHC reforms
C – Comparison	No comparator	

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O – Outcomes	Health outcomes (e.g. QALYs), costs, equity and accessibility	
T - Timing	Studies from 2000 onwards	Studies published before year 2000
S – Study design	Meta-Analysis, Systematic Review, Randomized Controlled Trial, Cohort Study (Prospective Observational Study), Case-control Study, Cross-sectional study, Case Reports and Series, Quasi-experimental design, Difference in Difference analysis, natural experiments, regression discontinuity design	Protocols

Table 1 - Inclusion and exclusion criteria

Screening, data collection and extraction

The abstracts and full-text articles retrieved from the search strategy will be undertaken using Covidence® (www.covidence.org) [28], an online systematic review tool recommended by the Cochrane Collaboration, and duplicates will be removed. Two authors (PL,JDL) will independently assess titles and abstracts of records, and exclude articles that will not meet eligibility criteria. Disagreements between the selected papers made by the two authors will be resolved by discussion or by a third author (KSA, JBG, AC, MR or ET). Four authors will independently extract and record data from included studies using a predefined data extraction form (PL, JDL, JBG, MR).

The authors will pilot the data extraction form with a sample of a limited number of papers (10) and amendments will be made as necessary. After the evaluation of piloting, the data extraction will be developed and completed. The data extraction form will include the information reported in the Supplementary material 4. Other additional information will be included during the review process. If additional information will be required from the studies, study authors will be contacted. At the end of data extraction, four authors (PL,

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JDL, JBG, MR) will resolve any discrepancies that will be present applying a consensus-based decision, or if necessary, discussion with a fifth author (AC).

Data synthesis will be undertaken through a narrative approach, providing detailed written commentary on the data extracted previously. This will help in the understanding of the impact of GPs activity to the delivery of care and the related issues. In addition, summary tables will be used to present data in a structured format. We will use a convergent synthesis design to synthesise qualitative, quantitative and mixed-method results [29]. Thus, using a thematic synthesis procedure, we will synthesise the evidence from the selected studies.

Quality assessment

Two independents authors (PL, JDL) will assess the methodological quality of eligible studies. Two independents authors will score the selected studies and disagreements will be resolved by a third author (KSA, JBG, AC, MR or ET). For quality assessment we will use the Mixed Methods Appraisal Tool (MMAT), that is a critical appraisal tool that is designed for the appraisal stage of systematic mixed studies reviews that include qualitative, quantitative and mixed methods studies. It enables the appraisal of five categories of methodologies such as qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies (Supplementary material 5) [30].

Cumulative evidence

We will use the MMAT approach to assess the certainty of the evidence for each study, and will present the data results on the MMAT rating tables.

Discussion

To our knowledge, this systematic review will be the first to synthesise the available evidence on the impact of the last two decades reforms on primary health care organisation in Quebec evaluating several dimensions (e.g. costs, health outcomes, services accessibility, equity). The results of this review will also inform policy-makers and leaders of Quebec Public health. Our results may highlight gaps in knowledge and guide future research concerned with the primary health care organization in Quebec.

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Patient and public involvement

Patients were not directly involved in the design of this study. As this is a protocol for a systematic literature review and no participant recruitment will take place, their involvement on the recruitment and dissemination of findings to participants was not applicable.

ETHICS AND DISSEMINATION

This study does not require the ethical review as it is a systematic literature review. The objective is submitting this work and its future development to a peer-reviewed journal and presenting the main findings at Quebec government, national and international meetings and conferences.

Contributors: PL, JDL led the design, search strategy and conceptualisation of this work and drafted the protocol. FB performed the search strategy and provided the corresponding results. PL, JDL, MR, KSA, ET, AC, JBG were involved in the conceptualisation of the review design, inclusion and exclusion criteria and provided feedback on the methodology and the manuscript. PL, MR, ET, AC, JBG and JDL were involved in data extraction forms. All authors provided feedback on the manuscript and approval to the publishing of this protocol manuscript.

Funding: Université Laval - Fonds de démarrage Université Laval (Canada). Soutien à la recherche (SAR) Faculté des Sciences de l'administration - Volet 1A : Démarrage nouveau professeur adjoint (DC132416).

Competing interests: The authors declare no potential conflict of interest.

Patient consent: Not required.

Ethics approval: Research ethics approval is not required for a systematic literature review.

Provenance and peer review: Not commissioned; externally peer reviewed.

Prospero registration number: CRD42023421145

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Supplementary material 1 - Distribution of GPs by administrative region in Quebec province

Administrative region	GPs or Family doctors[1]	Inhabitants (year 2022) [2]	GP each 1000 inhabitants
01 Bas-Saint-Laurent	287	200,507	1.431
02 Saguenay-Lac-St-Jean	388	282,330	1.374
03 Québec	1,084	771,611	1.405
04 Mauricie	350	281,163	1.245
05 Estrie	409	507,208	0.806
06 Montréal	2,649	2,038,845	1.299
07 Outaouais	445	408,979	1.088
08 Abitibi-Témiscamingue	200	148,493	1.347
09 Côte-Nord	154	90,405	1.703
10 Nord du Québec	152	46,916	3.240
11 Gaspésie-Îles-de-la-Madeleine	196	92,403	2.121
12 Chaudière-Appalaches	443	444,072	0.998
13 Laval	462	446,476	1.035
14 Lanaudière	500	544,265	0.919
15 Laurentides	671	657,375	1.021
16 Montérégie	1,644	1,475,578	1.114
17 Centre-du-Québec	244	259,033	0.942
Total	**10,278**	**8,695,659**	**1.182**

Sources :

[1] Collège des médecins du Québec - Répartition des médecins selon la région administrative - http://www.cmq.org/statistiques/region.aspx - last access April 27th, 2023

[2] Institut de la statistique du Québec - Principaux indicateurs sur le Québec et ses régions (https://statistique.quebec.ca/fr/vitrine/region)- last access April 15th, 2023

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PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item	Yes/No	Line	Description
ADMINISTRATIVE INFORMATION					
Title:					
Identification	1a	Identify the report as a protocol of a systematic review	Yes	1-2	
Update	1b	If the protocol is for an update of a previous systematic review, identify as such (No)	N.A.		Requested
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	N.A.		Registered on PROSPERO – Registration number: CRD42023421145
Authors:					
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	Yes	4-18	
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	Yes	263-269	
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N.A.		Not applicable
Support:					
Sources	5a	Indicate sources of financial or other support for the review	Yes	271-273	
Sponsor	5b	Provide name for the review funder and/or sponsor	Yes	271-273	
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	N.A.		Not applicable
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	Yes	77-120	
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	Yes	171-193	
METHODS					
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	Yes	139-153	
Information	9	Describe all intended information sources (such as electronic databases, contact with study authors,	Yes	157-167	

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sources		trial registers or other grey literature sources) with planned dates of coverage		183-185
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	Yes	171-193 Supplementary material 3
Study records:				
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	Yes	197-218
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	Yes	197-218
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	Yes	205-231
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	Yes	197-218
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	Yes	207-208 Supplementary material 4
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	N.A.	Not applicable
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	Yes	213-218
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)	N.A.	Not applicable
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	N.A.	Not applicable
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	N.A.	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	N.A.	Not applicable
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	Yes	223-236 Supplementary material 5

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated.** **The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

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Supplementary material 3 – Database search strategy

PubMed
Date of the search: 10-01-2022
Database limit: results will be limited from January 2000 to January 2022.

#	Search strategy	Results
1	"Primary Health Care"[Mesh:NoExp] OR Primary Care[TIAB] OR Primary Healthcare[TIAB] OR Primary Health Care[TIAB] OR "Physicians, Family"[Mesh] OR Family Physician*[TIAB] OR Family Practi*[TIAB] OR "General Practitioners"[Mesh] OR "General Practice"[Mesh] OR General Practi*[TIAB]	
2	"Health Services Needs and Demand"[Mesh] OR "Health Services Accessibility"[Mesh:NoExp] OR "Delivery of Health Care"[Mesh:NoExp] OR "Health Care Reform"[Mesh] OR "Health Policy"[Mesh:NoExp] OR "Appointments and Schedules"[Mesh:NoExp] OR OR "Mass Screening/organization and administration"[Mesh:NoExp] OR Outcome and Process Assessment, Health Care[Mesh] OR Quality Indicators, Health Care[Mesh:NoExp] OR Waiting Lists[Mesh] OR Health Polic*[TIAB] OR Healthcare Polic*[TIAB] OR National Polic*[TIAB] OR Healthcare Delivery[TIAB] OR delivery of care[TIAB] OR Health access*[TIAB] OR Healthcare access*[TIAB] OR Health Care Reform*[TIAB] OR primary care demand[TIAB] OR Health demand[TIAB] OR care demande[TIAB]	
3	"Quebec"[Mesh] OR Quebec[TIAB]	
4	#1 AND #2 AND #3	
5	#4 AND 2000/01/01:2022/01/01[dp]	

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Supplementary Material 4 – Data extraction form

Information used in data extraction	**Description**
Study reference	Identification of the study (e.g. Smith, 2018)
Project related to the study	If the study is related to a specific project (e.g. a trial or some other public or private interventions)
Authors	List of authors of the study
Country	Country where the study was issued
Year	Year of publication of the study
Study design	Type of the study design
Service type	Service type related to primary care
Participant characteristics	Information related to patient characteristics (e.g. age, disease, sex, and other useful information of the cohort)
Performance measures	Information related to the performance measures of the activity
Accessibility	Information related to the service accessibility for patients
Equity	Information related to the access service equity for patients
Health outcomes	Types and description of the health outcomes included in the study
Costs	Types and description of the health costs (direct and indirect) included in the study
Clinical area of interest	Clinical area of interest (e.g. Respiratory, Cardiovascular)
GP role	The role of the GP in the study
GP activities	The activities of the GP in the study
GP Organisation	Type of organisation within the GP works (e.g. Group of GPs)

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Supplementary Material 5 - Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5 Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative Descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

Hong, Q. N., Gonzalez-Reyes, A., & Pluye, P. (2018). Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the Mixed Methods Appraisal Tool (MMAT). Journal of Evaluation in Clinical Practice, 24(3), 459-467.
Hong, Q. N., & Pluye, P. (2018). A conceptual framework for critical appraisal in systematic mixed studies reviews. Journal of Mixed Methods Research, Advance online publication, https://doi.org/10.1177/1558689818770058

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