Appendix A: Consolidated criteria for reporting qualitative research (COREQ) checklist.

Domain 1: Research team and reflex	ivity	I a a mati a ma i m
Personal Characteristics		Location in Manuscript, section (page number)
Which author/s conducted the interview or focus group?	ME, EF, SJ plus 2 research assistants who are not authors.	Methods, Page 2
What were the researcher's credentials? e.g. PhD, MD	Interviewers: Authors: ME (PhD), EF (MSc), SJ (MA), plus 2 research assistants one with an MA and one with BA. Other Authors TP (PhD), ML (MSc OT), MB (PhD), FB (MD), EC (MHA), JI (PharmD), EM (PhD), RMM (PhD), TS (PhD), JZ (MD), JPL (PhD).	Title Page
What was their occupation at the time of the study?	ME (Post-doctoral fellow), TP (Director, School of Health Administration, Professor, School of Occupational Therapy), EF (Research Assistant), SJ (Research Associate), ML (Research Occupational Therapist), MB (Associate Professor), FB (Professor & Faculty Researcher), EC (Director, Clinical Networks, Nova Scotia Health), JI (Associate Professor), EM (Associate Professor), EM (Professor & Director, School of Nursing, Assistant Dean Research), TS (Senior Scientific Director. Research, Innovation and Discovery, Nova Scotia Health), JZ (Family Physician, Clinician Educator, Medical Director), JPL (Assistant Professor).	The research team is described on page 1 as follows: "research team (researchers, licensed health providers, policy makers, and patients)"

Was the researcher male or female?	Female: TP, EF, SJ, ML, MB, EC, JI, EM, RMM, TS, JZ, JPL	Not reported in manuscript
What experience or training did the researcher have? Researchers had experience in qualitative research methods and thematic		Methods, Page 2 and 3
Relationship with participants	analysis.	
Was a relationship established prior to study commencement?	Informed consent processes and data collection were conducted by trained research staff. No relationship existed between them and participants before study commencement. To reduce bias, the licensed health professionals on the team did not conduct or code the interviews. However, all members of the team were involved in developing the interview guide.	Methods, Pages 1 and 2
What did the participants know about the researcher? e.g. personal goals, reasons for doing the research.	Upon enrollment in the study, participants were emailed the study objectives and goals for the semi-structured interview.	Methods, Page 2 describes the informed consent process.
What characteristics were reported about the interviewer/facilitator? e.g. bias, assumptions, reasons, and interests in the research topic	Interviews were conducted by trained research staff. To reduce bias, the licensed health professionals on the team did not conduct or code the interviews. However, all members of the team were involved in developing the interview guide.	Methods, Pages 1 and 2
Domain 2: Study design Theoretical framework	-	
What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Thematic Analysis.	Methods, Page 2-3

Participant Selection			
How were participants selected? e.g. purposive, convenience, consecutive, snowball	Purposive sampling.	Methods, Page 1	
How were participants approached? e.g. face-to-face, telephone, mail, email	Via professional contacts, newsletters, and listservs of local organizations. Informed consent processes were done by research staff.	Methods, Page 2	
How many participants were in the study?	24.	Results, Page 3	
How many people refused to participate or dropped out? Reasons?	1 participant decided to withdraw from the study after receiving their transcript (citing a lack of time to respond).	Results, Page 3	
Setting			
Where was the data collected? e.g. home, clinic, workplace	Virtually using Zoom videoconferencing or telephone.	Methods, Page 2	
Was anyone else present besides the participants and researchers?	Due to the use of virtual technology, it is not possible to say with 100% certainty that nobody was present with the participant for the duration of the interview.	Methods, Page 2 (reported as a 30-60- minute, individual, semi-structured interview).	
What are the important characteristics of the sample? e.g. demographic data, date	Participant characteristics are reported in Table 2.	Results, Page 3	
Data collection			
Were questions, prompts, guides provided by the authors? Was it pilot tested?	A semi-structured interview guide was developed to ensure relevant topics were covered while also leaving opportunity for participant driven narrative and insights. It is available on request.	Methods, Page 1	
Were repeat interviews carried out? If yes, how many?	No.	Methods, Page 1	
Did the research use audio or visual recording to collect the data?	Interviews were recorded using Zoom videoconference technology.	Methods, Page 2	
Were field notes made during and/or after the interview or focus group?	Fieldnotes were made during and after the interviews.	Methods, Page 2	
What was the duration of the interviews or focus group?	30 to 60-minutes.	Methods, Page 2	

Was data saturation discussed?	Yes.	Methods, Page 2 & 3
Were transcripts returned to	Participants were sent a copy	Methods, Page 2
participants for comment and/or	of the transcript of their	
correction?	interview to provide	
	additional feedback or	
	comments.	
Domain 3: analysis and findings		
Data analysis		
How many data coders coded the	4.	Methods, Page 3
data?		
Did authors provide a description of	Yes.	Results, Pages 3-4
the coding tree?		
Were themes identified in advance or	An a priori codebook was	Methods, Page 2
derived from the data?	developed, based on the	
	questions, to assist coders in	
	organizing responses. Four	
	transcripts were analysed to	
	pilot test the codebook and	
	refinements were made.	
	Illustrative quotations were	
	added to the codebook to	
What asftware if applicable was	support further organization. NVivo12.	Methods, Page 2
What software, if applicable, was used to manage the data?	NVIVOI2.	Methous, rage 2
Did participants provide feedback on	No. Member checking was	N/A
the findings?	completed, but participants	14/11
the imanigo.	did not see the final findings.	
Reporting	are not see the mar mange.	
Were participant quotations presented	Participant quotes have been	Results, Pages 4-9
to illustrate the themes/findings? Was	identified by profession to	,
each quotation identified? e.g.	demonstrate similarity across	
participant number	participants. Including both	
	profession and participant	
	code increased potential that	
	participants might be	
	identifiable, so participant	
	codes were not included.	
Was there consistency between the	Yes.	Results/Interpretation,
data presented and the findings?		Pages 3-10
Were major themes clearly presented	Yes.	Results/Interpretation,
in the findings?		Pages 3-10
Is there a description of diverse cases	Yes.	Interpretation, Pages
or discussion of minor themes?		9-10

The impact of COVID-19 on primary care physicians and nurses in Nova Scotia: A qualitative exploratory study.

Introduction

The coronavirus disease 2019 (COVID-19) has brought immense disruption worldwide, dramatically altering the ways we live, work, and learn on a day-to-day basis. Healthcare systems have seen a tremendous impact, caused by gaps in critical knowledge, staffing shortages, and the psychological and social impact on patients (1) and healthcare professionals (2). In many jurisdictions public health policies and recommendations resulted in nonessential health services being cancelled or delayed (3.4), disruptions in continuity of care for patients with chronic conditions (5–7) and heightened reliance on virtual care (VC)(8). The pandemic not only forced changes to patient care, it influenced providers' lives and practices, including their personal and family well-being (9). While the impact of the pandemic has been investigated in many areas of medicine (10,11), few studies have investigated, from the perspective of primary care providers (e.g., nurse practitioners, physicians, family practice nurses, social workers, pharmacists and other health professionals), the impact that COVID-19 has had on their practice, patients, and themselves. A first point of contact with the health system at any time (12), primary care can be a first line of defence during public health emergencies (13), providing disease management, health promotion, community-based screening and surveillance, and emergency response (12), making it central to an equitable and sustainable health system (14).

Since the province of Nova Scotia declared a state of emergency on March 22, 2020 (15) primary care providers (PCPs) have responded to rapidly changing public health measures. Exploring the experiences of PCPs during the pandemic may provide insight into the primary care response to, and the impact of, a major health emergency. The objectives of this study were, therefore, to better understand (1) the impact of COVID-19 on PCPs' ability to provide care, (2) their information pathways (i.e., how information about COVID-19 was accessed and shared), and (3) the personal and professional impact of COVID-19. While the overall project investigated the impact across multiple disciplines, this paper reports data from family physicians (physicians), nurse practitioners (NPs) and family practice nurses (FPNs), collectively referred to as PCPs in the remainder of this paper.

Methods

Research design:

A qualitative research design (16) was used to investigate experiences of Nova Scotian PCPs during the early months of COVID-19. PCPs were purposively recruited to participate in a single, remote interview (videoconferencing or phone) conducted by trained research personnel. A semi-structured interview guide (available on request) was developed and piloted by the research team (researchers, licensed health providers, policy makers, and patients) to ensure relevant topics were covered while also leaving opportunity for participant driven narrative and insights. The Consolidated Criteria for Reporting Qualitative Research Checklist (17) was used to guide reporting (Appendix A).

Participants:

PCPs who self-identified as working in primary health care in Nova Scotia were recruited via professional contacts, newsletters, and listservs of local organizations. Research staff sent interested participants study information and a consent form. Participants had the opportunity to ask questions via email, then answered questions (discipline, age, geographic location of practice) to guide recruitment. All participants provided informed, voluntary, oral consent at the beginning of the remote interview. The study was approved by the Research Ethics Board at Nova Scotia Health (NSHA REB ROMEO File #: 1025661).

Data Collection:

Interviews were conducted and field notes taken between June 2020 and April 2021 by five research staff, including three authors (ME, EF, SJ) with previous experience conducting qualitative interviews. Each participant completed a single, 30 to 60-minute, individual, semi-structured interview via Zoom videoconferencing (https://zoom.us/) or telephone. Participants responded to questions related to four topics (Table 1). To reduce bias, licensed health providers on the team were not involved in the consent or interview processes.

Table 1: Topics Explored in Individual Interviews with Primary Care Providers

1	Perceived impact of COVID-19 on the primary care system in NS		
2	Perceived impact on their practice setting(s) and capacity to manage and respond to the		
	pandemic, including access to personal protective equipment (PPE) and use of video		
	conferencing (VC)		
3	Access to information and information sharing/dissemination		
4	Direct impact of COVID-19, both personally and professionally		

Interviews were recorded, transcribed verbatim, and de-identified, then imported into QSR International NVivo 12 software (18). Member checking (16) was achieved by providing interviewees a copy of their interview transcript and an opportunity to provide additional feedback or comments. One participant withdrew their transcript (citing lack of time to respond) and other participants provided minor feedback. Data collection continued until thematic saturation (16) was achieved.

Data analysis:

Analysis was conducted by research staff, a post-doctoral fellow and a full professor (EF, SJ, ML, ME, TP), all with training and experience in thematic analysis. An a priori codebook was developed, based on the research questions, to assist coders in organizing responses (19). Four transcripts were analysed to pilot test the codebook and refinements were made. Illustrative quotations were added to the codebook to support further organization. Each transcript was then double coded.

Thematic analysis involved identifying patterns of meaning by coding and classifying data according to themes (20,21). Emergent themes were then interpreted by seeking commonalties, divergence, relationships, and overarching patterns in the data. Transcripts were read and reread

as data were extracted into the codebook. Next, the organized data were analyzed, and themes related to the objectives and supported by interview data emerged. To support thematic analysis, team members met regularly to review the organized data, identify, and develop codes, and discuss generated themes. Discrepancies were resolved as a team, through constructive discussion. Saturation occurred when participant responses were repetitive to those of previous participants and no new insights were revealed.

Results

Twenty-four PCPs were interviewed (Table 2); one participant withdrew their data. Although physicians, NPs and FPNs experienced their roles differently, in the context of this study, similar patterns of responses were found with little divergence in their experiences. Therefore, combined results from all participants are presented.

Table 2: Participant characteristics*

Profession	Number
Physician	8(35%)
Nurse Practitioner (NP)	9 (39%)
Family Practice Nurse (FPN)	6 (26%)
V 05	
Years of Experience	
<10	11 (48%)
>10	12 (52%)
Geographic Area by Health	
Authority Zone	
Central	6 (26%)
Northern	8 (35%)
Eastern	5 (22%)
Western	4 (17%)

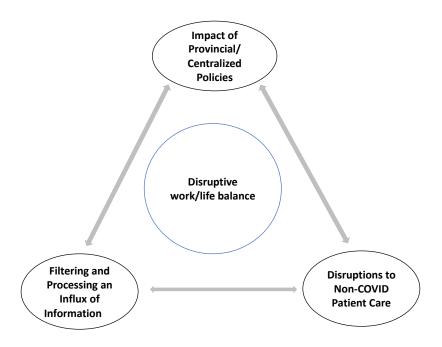
^{*}Characteristics of the participant who withdrew not included.

Four inter-related themes were identifed within the data and are displayed in Figure 1:

- 1. Disruption to work/life balance,
- 2. Disruptions to "non-covid" patient care,
- 3. Impact of provincial/centralized policies, and
- 4. Filtering and processing an influx of information.

The disruption to work/life balance is centralized in Figure 1 to highlight the direct and foundational influence on PCPs' personal lives. The bidirectional arrows highlight the interaction observed between themes.

Figure 1: Depiction of impact of COVID-19 on family physicians, nurse practitioners and family practice nurses



Theme 1: Disruptive Work/Life Balance

"It's just – it's stressful. I don't know if you feel like you fully get a break sometimes" Nurse Practitioner

Participants described disruption to their work/life balance during the first months of COVID-19, characterized by increased burden in both home and work roles, and coupled with feelings of isolation (Box 1). Multiple factors contributed to the imbalance, including changes in professional roles and responsibilities, changes in work location, and increased overall stress. The closure of schools and childcare programs created disruptions to everyday routines for providers with children. Many reported seeking child-care assistance from family members and friends, allowing them to "see" patients, often from home.

For those who continued to work in high-risk clinic environments, concerns for the safety of family members created additional anxiety, and stress. Providers described putting in place physical precautions to prevent transmitting the virus to their family members. These included removing clinical/hospital clothes and showering before greeting family or staying physically removed from family altogether. Feelings of isolation were exacerbated by social situations when family and/or friends did not understand the severity of the pandemic. Due to this lack of understanding, many participants felt that they were unable to share their fears and concerns.

Box 1: Disruptive Work/Life Balance - Illustrative Quotes

Shift in Work/life Balance

They [kids] basically just really had to fend for themselves within the house and had to be quiet while mommy was on the call with patients and so, you know, tablets, iPad, TV, a lot of that stuff which still gives me – that I'm really still upset about. *Family Practice Nurse*

I have a husband who is one of those folks with chronic conditions and so absolutely I was the huge risk of the house. I'm in the hospitals, I am in the evening walk in clinics, I am in the office...we very quickly separated our house into an upstairs/downstairs....We meet at opposite ends of the dinner table for a break time and then go our separate ways again. *Physician*

Physical Isolation

The day we were told that everything was shutting down, in my personal life I said, 'Husband, I'm moving to the spare room. I'll have the spare bathroom. You're over there.' I said, 'And I'll come out when we slowly start to reopen.' So, for three months I slept separately from my husband in case I was exposed. *Nurse Practitioner*

Social Isolation

I found, like, nobody else really got it. Like, even if I would talk to my friends and I would kind of be like, huffing and puffing and they were always trying to be optimistic... I was just like, oh, I give up, like, talking to you guys. Like, people just really didn't know. *Nurse Practitioner*

Theme 2: Disruptions to "Non-COVID" Patient Care.

"People were just terrified. They didn't want to come in. They didn't want to be seeing me for their medications, for their blood work even if it was necessary blood work" Nurse Practitioner

PCPs voiced deep-seated concerns about the long-term impact of the pandemic on the health of individuals and the health care system. Specifically, these included delayed "non-COVID" patient care, the pressure on health system capacity, and health care costs (Box 2). Although services became more available after the first few months, participants observed that many of their patients continued to hesitate to seek care and they worried that patients' conditions would worsen as a result.

Box 2: Disruptions to "Non-COVID" Patient Care - Illustrative Quotes

You don't realize until all you have is a phone call that a great deal of your assessment is actually done as the patient walks up the hall with you...a lot of it is visual. *Nurse Practitioner*

I think the fall down for COVID has been with blood pressure and prenatal for family practice.... For example, if they had cramping or a miscarriage, then it was months before they were seen at the obstetrician's office. We had two babies born premature which potentially if they had been followed more often this may not have happened. This was an unexpected issue. *Family Practice Nurse*

We might be preventing COVID, but what are we going to miss in the meantime...what about my senior citizen who now is, like has a sugar of 26 and is not coming in. *Nurse Practitioner*

My biggest challenge was getting interventions, so diagnostic interventions for my patients. I needed to contact the physician on call in the emergency room, have the person go to the emergency room to be assessed by the physician. *Nurse Practitioner*

People were just terrified. They didn't want to come in. They didn't want to be seeing me for their medications, for their blood work even if it was necessary blood work. *Physician*

Theme 3: Impact of Provincial/Centralized Policies

"The problem with primary care in Nova Scotia is that a lot of policies and a lot of the decisions are made based on how primary care looks in the city." Physician

Participants described two significant impacts that occurred during the pandemic; both arose from implementation of provincial policies: (1) the pivot to VC (Box 3); and (2) challenges faced by rural clinics (Box 4).

The Pivot to Virtual Care

In response to provincial public health policies, all PCPs increased use of VC. Simplified billing for VC for physicians, either by phone or video conferencing technology (i.e., Zoom for Healthcare), was approved by the province of NS. Providers highlighted and welcomed the adoption of VC, emphasizing the need to maintain VC post-pandemic as an effective health care option for patients (Box 3). PCPs discussed the benefits of VC, describing how they directed patients to either in-person or virtual visits over the phone. This enabled effective use of their limited hours for in-person care and related time-savings for their patients and themselves.

Despite the positive response to VC, participants identified challenges related to the high reliance on the internet and technology. Providers reported that their patients, and they themselves, had challenges accessing and/or working with the technology associated with VC. Internet bandwidth and VC set up were frequently mentioned challenges. Access to and affordability of necessary equipment were additional challenges, particularly in rural areas.

Box 3: Pivot to Virtual Care - Illustrative Quotes

Benefits

It would be a real shame if some of that innovation such as virtual care will not be carried forward. *Physician*

People are pumped. People have wanted this (VC) for a long time I think and are quite happy to do it...I find a lot of people are really happy to be able to access care and not have to come in, you know, they don't have to take half a day off work...I've discussed it with management a few times. I really would like to keep it. *Physician*

There are many appointments that we could do virtually, and I do believe that it is timesaving, it is cost saving, it provides better patient and provider satisfaction. *Nurse Practitioner*

Simplifying VC

I think systemic challenges, I would hope that if virtual care is okay going forward that it wouldn't be mired in issues that make the utility lower in terms of, like, increased paperwork, etcetera. I would hope there would not be aggressive auditing, punitive auditing processes of the visits. *Physician*

I think it does, in some way, shape or form, needs to become some kind of permanent key structure, so I think that's really important. *Physician*

Challenges with VC

I work in an area where we have an older and less affluent population. A lot of the population don't actually have access to – they're still using flip phones, if they even have phones.... It was really kind of a sad thing to see and a big challenge for me to try and help them when I still also said, "you can't go anywhere", but here's some medication and here's some supports you can't access because you don't have a computer. *Physician*

Unique Needs of Rural Communities

Participants working in rural communities described how top-down policies, enacted to mitigate the spread of COVID-19, were primarily designed for PCPs and clinics in the urban centre (Box 4). For example, physicians described how policies designed to meet the needs of solely office-based practitioners were less applicable to those in rural areas who frequently worked in multiple locations (e.g., primary care office, and emergency room). To avoid disease transmission, PCPs were restricted to a single work setting, which created staffing challenges in areas that rely on mobility of a small number of staff.

Box 4: Unique Needs of Rural Communities - Illustrative Quotes

Impact of policies on rural clinics

...if I have to quarantine, what do I do? And the answer from higher up was always, well find someone to cover your practice...in places rurally, like in some of our communities we have two doctors doing everything so you can't just say, "find someone to cover your practice." *Physician*

Characteristics of rural populations

Well, you know, what they weren't taking into consideration is that many people in rural areas don't have great internet service so getting onto a website, particularly since libraries were all shut down and for some that was their only means to actually get online. *Physician*

... we serve [rural] which is demographically very different than let's say the Central Zone where... A lot of our patients don't have the internet. A lot of our patients don't have vehicles. A lot of patients live in poverty, and so guidelines and kind of expectations put out by the Health Authority about providing care look really different here than they do in [urban area]. *Family Practice Nurse*

Theme 4: Filtering and Processing an Influx of Information

"There's no human way to keep on top of all of this" Physician

Participants described a fear of missing important policy or procedural changes and the need to develop new strategies to efficiently review and manage the most relevant information (Box 5). They scanned information for pertinent changes to rules and regulations and directed attention to profession-specific information. They also compared knowledge with colleagues to confirm what they gleaned. These strategies were an attempt to deal with the overwhelming amount of information being shared and a fear of missing important policy or procedural changes.

While struggling themselves to maintain currency amidst the rapidly changing science, PCPs also discussed their need to disseminate information to patients in response to misinformation. For example, mask use was frequently discussed with patients due to misinformation regarding use and importance. PCPs noted their increased role in patient education and reassurance during the pandemic to counter outdated or incorrect information.

Box 5: Filtering and Processing an Influx of Information - Illustrative Quotes

Too much information, not enough time

If it was too much information you would just, you know, sift through and delete what was not relevant to you and then you would keep what was relevant to you. **Nurse Practitioner** I didn't have enough time in my day to keep up with all the information...it was just that ever-changing update that I found difficult...I got nervous for a little while about missing other things. *Nurse Practitioner*

I think one of the problems was, not problems but challenges, there was such a large volume of communication and such rapidly changing rules that a lot of doctors felt really confused. *Physician*

Misinformation

It's the confirmation bias thing, right? Like, you read a story somewhere and it's, well obviously the oxygen issue is the problem because that's how I feel. I feel like I can't breathe. So, there's like a banging your head against the wall type of education that you have to provide where it doesn't really matter what you say people have already convinced themselves that they don't want to do it. *Physician*

Interpretation

The COVID-19 pandemic has transformed how the primary care system functions (7,12). Our results highlight multiple impacts that public health policies and regulations, enacted to mitigate and prevent the spread of the COVID-19 virus, have had on PCPs in Nova Scotia. The impact of provincial policy, disruption to "non-COVID" patient care, filtering and processing information, and disruptions to providers' work/life balance influenced PCPs experience and delivery of care.

Our results, and those of others (13,22), support the need to tailor policies to communities' unique characteristics and needs (13), particularly the needs of vulnerable populations. Provincial policies were found to be insufficient in accounting for organizational and patient differences between communities and clinics during the pandemic. An example of this challenge was the province-wide adoption of VC. Participants reported that patients, particularly in rural areas, had challenges or were unable to access the internet and/or technology for VC. Others concur, reporting how rural communities have had difficulty addressing surge capacity during the pandemic due to staff or funding shortages (22). We thus conclude that the application of the same policies across all regions may have had detrimental consequences for patients. Given the research evidence calling for measures to reduce inequities in digital health training and policies (23), we similarly recommend that health system solutions enacted in response to public health measures be tailored to local contexts.

A critical component of the pandemic response, required to preserve capacity of the health system, was the enactment of policies and procedures to reduce and restrict non-essential health services (24). This meant that many patients, including people with chronic conditions, mental illness, and healthcare hesitation due to the pandemic (7), lacked regular access to care for extended periods. PCPs in this study described the harmful impacts on patients, including significant unforeseen consequences of physical closure of offices and restricted access to primary care. Based on this study, and in concert with others (25), we propose that primary care systems are reinforced with a specific primary care pandemic response plan aimed to mitigate the impact of public health crises by attending to patient needs in the community and offsetting pressures on hospital care.

Continued research is needed to enhance system resilience and recovery from the current pandemic and to prepare for future public health crises. Many PCPs implemented creative

changes to their clinics and offices while others, particularly women, were challenged to find new ways to balance home and office. Further research is needed to support policies designed with the flexibility to meet the local needs of patients and providers. Finally, evidence that supports effective system-wide policies that accommodate new ways to achieve work/life balance and gender equity appear critical for the primary health care system to emerge from the pandemic better prepared for times of crisis.

Limitations

Strengths of this study include the composition of the research team (patients, health authority directors, administrators, and clinicians) and the rigorous efforts made to ensure trustworthiness (credibility, confirmability, dependability, and transferability) of study findings. However, this study only explored the experiences of physicians, NPs and FPNs, limiting the transferability of results to patients, health administrators, and other primary care providers. Research that includes and compares experience across multiple disciplines may uncover new insights. While all participants were asked to reflect on their experience during the very early months of the COVID-19 pandemic, participants interviewed later in the study may have experienced recall bias. They may also have been able to look back on that time with a deeper understanding of the pandemic, potentially providing more reflective responses.

Conclusion

COVID-19 has presented challenges to the primary health system and workforce. Finding ways to manage the crisis and its accompanying stress and workload will need coordinated efforts and new ways of working, balancing professional and personal life, and adapting to already implemented changes (i.e., VC). A specific primary health pandemic response plan could mitigate the challenges imposed on the overall system by public health crises.

Data Sharing

The data set is held securely at Dalhousie University. The data is not available for use other than for the current research project. Only individuals approved through Dalhousie ethics may access the confidential data.

References

- 1. Ballatore Z, Merloni F, Ranallo N, Bastianelli L, Vitarelli F, Cantini L, et al. Cancer patient perspective in the arena of COVID-19 pandemic. Psycho-Oncology. 2021.
- 2. Chen SC, Lai YH, Tsay SL. Nursing perspectives on the impacts of COVID-19. J Nurs Res. 2020 June; 28(3):1–5.
- 3. Bielska IA, Embrett M, Jewett L, Buote R, Manis DR, Parikh M, et al. Canada's Multi-Jurisdictional COVID-19 Public Health Response January to May 2020. Zdr Publiczne i Zarządzanie [Internet]. 2020; 18(1): 88–105. Available from: https://www.ejournals.eu/Zdrowie-Publiczne-i-Zarzadzanie/202/Tom-18-zeszyt-1/art/17391/
- 4. Government of Nova Scotia. New Restrictions; Province, Health System Working to Increase Capacity Government of Nova Scotia, Canada [Internet]. 2021 [cited 2021 Jul 30]. Available from: https://novascotia.ca/news/release/?id=20200318004
- 5. Danhieux K, Buffel V, Pairon A, Benkheil A, Remmen R, Wouters E, et al. The impact of COVID-19 on chronic care according to providers: a qualitative study among primary care practices in Belgium. BMC Fam Pract. 2020 Dec 5; 21(1):1–6.
- 6. Beran D, Perone SA, Perolini MC, Chappuis F, Chopard P, Haller DM, et al. Beyond the virus: Ensuring continuity of care for people with diabetes during COVID-19. Prim Care Diabetes. 2021;15(1):16–7.
- 7. Kendzerska T, Zhu DT, Gershon AS, Edwards JD, Peixoto C, Robillard R, et al. The effects of the health system response to the COVID-19 pandemic on chronic disease management: a narrative review. Risk Manag Healthc Policy. 2021 Feb 15;14:575-84.
- 8. Glazier RH, Green ME, Wu FC, Frymire E, Kopp A, Kiran T. Shifts in office and virtual primary care during the early COVID-19 pandemic in Ontario, Canada. Cmaj. 2021 Feb 8;193(6):E200–10.
- 9. Yu JC, McIntyre M, Dow H, Robinson L, Winston P. Changes to Rehabilitation Service Delivery and the Associated Physician Perspectives During the COVID-19 Pandemic: A Mixed-Methods Needs Assessment Study. Am J Phys Med Rehabil [Internet]. 2020 Sep;99(9):775–82. Available from: https://pubmed.ncbi.nlm.nih.gov/32833382
- 10. Sadler D, DeCara JM, Herrmann J, Arnold A, Ghosh AK, Abdel-Qadir H, et al. Perspectives on the COVID-19 pandemic impact on cardio-oncology: results from the COVID-19 International Collaborative Network survey. Cardio-oncology. 2020 Nov 27;6(28):1–13.
- 11. Butler CR, Wong SPY, Wightman AG, O'Hare AM. US clinicians' experiences and perspectives on resource limitation and patient care during the COVID-19 pandemic. JAMA Netw open. 2020;3(11):e2027315.

- 12. Haldane V, Zhang Z, Abbas RF, Dodd W, Lau LL, Kidd MR, et al. National primary care responses to COVID-19: a rapid review of the literature. BMJ Open. 2020 Dec 8;10(12):e041622.
- 13. Krist AH, DeVoe JE, Cheng A, Ehrlich T, Jones SM. Redesigning primary care to address the COVID-19 pandemic in the midst of the pandemic. Ann Fam Med. 2020;18(4):349–54.
- 14. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. milbank Q. 2005;83(3):457–502.
- Government of Nova Scotia. Declaration of Provincial State of Emergency [Internet].
 2020 [cited 2021 Jul 30]. Available from:
 https://novascotia.ca/coronavirus/docs/Declaration-of-Provincial-State-of-Emergency-by-Minister-Porter-Signed-March-22-2020.pdf
- 16. Creswell JW, Poth CN. Qualitative inquiry and research design: Choosing among five approaches. Sage publications; 2016.
- 17. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Heal care. 2007 Dec 19;19(6):349–57.
- 18. Ravikumar A, Myers R, Kowler LF, Tovar JG. Project Guide to Coding in Nvivo and Codebook. Proj Guid to Coding Nvivo Codeb. 2015.
- 19. Carley-Baxter L. Codebook In: Encyclopedia of Survey Research Methods. 2008 [cited 2021 Apr 8]; Available from: https://dx.doi.org/10.4135/9781412963947
- 20. Schwandt TA. Thematic Analysis In: The SAGE Dictionary of Qualitative Inquiry Book Title: The SAGE Dictionary of Qualitative Inquiry Chapter Title: "Thematic Analysis." 2011 [cited 2021 Apr 8]; Available from: https://dx.doi.org/10.4135/9781412986281.
- 21. Price JMC. Coding: Open coding. In: Mills AJ, Durepos G, Wiebe E, editors. Encyclopedia of Case Study Research. Thousand Oaks; 2010. p. 154–56.
- 22. Rust G, Melbourne M, Truman BI, Daniels E, Fry-Johnson Y, Curtin T. Role of the primary care safety net in pandemic influenza. Am J Public Health. 2009;99(S2):S316–23.
- 23. Crawford A, Serhal E. Digital health equity and COVID-19: the innovation curve cannot reinforce the social gradient of health. J Med Internet Res. 2020;22(6):e19361.
- 24. Canadian Institute for Health Information. COVID-19's effect on hospital care services | CIHI [Internet]. CIHI. 2020 [cited 2021 Apr 13]. Available from: https://www.cihi.ca/en/covid-19-resources/impact-of-covid-19-on-canadas-health-care-systems/covid-19s-effect-on-hospital
- 25. Matos LL, Forster CHQ, Marta GN, Junior GC, Ridge JA, Hirata D, et al. The hidden curve behind COVID-19 outbreak: the impact of delay in treatment initiation in cancer patients and how to mitigate the additional risk of dying—the head and neck cancer model. Cancer Causes Control. 2021;32(5):459–71.