Patient Experience and Virtualized Healthcare:

Thematic analyses of news, scientific literature, and user experience discourses

Hanako Smith

A Dissertation submitted to the Faculty of Graduate Studies in Partial Fulfillment of the

Requirements for the Degree of Doctor of Philosophy

Communication & Culture, York University, Toronto, Ontario

December, 2023

Abstract

This dissertation uses mixed methods to examine three discourses of patient experience of virtualized healthcare. The three discourses examined are: (1) a news discourse, (2) a scientific literature discourse, and (3) a user experience discourse. Virtualized healthcare is defined by this dissertation as healthcare activities specifically conducted via mediated communication. Uptake in virtualized healthcare has accelerated as many Ontario practitioners have recently offered this form of care due to the onset of the COVID-19 pandemic, and the Ministry of Health creating temporary "COVID-19 pandemic allowance" for all physicians to bill for virtual care. As a period of initial unregulated use of virtual care by Ontarians ends, there is now an opportunity to take a closer look at the patient experiences of these healthcare services.

By analysing the three distinct discourses (each of which is a form of health communication), this dissertation maps central themes that are consistently brought up in discussions of virtualized healthcare and patient experience. Comparing the themes that come up in the discourse genres of scientific literature and news articles provides an understanding of how patients may come to understand the phenomenon of virtualized healthcare. Adding an analysis of user experience discourse to this understanding provides findings of what themes overlap in both public discourses and accounts of personal experiences of virtualized healthcare.

The themes found across the three discourses are ultimately developed into three recommendations the implementation or practicing of virtualized healthcare, which are to be tested and evaluated in future research programs. The three recommendations (engaging patients in healthcare innovation, viewing healthcare as a hybrid patient-centric network, and understanding that virtualization requirements of healthcare interactions vary) are ways of thinking about how healthcare can become virtualized, and what affects the potential

virtualization of healthcare. These recommendations are evidenced based, proven to not only be observed in user experience discourse, but also in how researchers and the public discuss issues and concepts of virtualized healthcare. Different and overlapping elements of each recommendation are highlighted by each discourse. Each of the recommendations is discussed in terms of its theoretical and practical implications.

Dedication & Acknowledgements

Thanks so much to my supervisor Dr. Charles Davis, and committee members, Dr. Anne

MacLennan and Dr. Sibo Chen. Thanks to my family for their support.

Table of Contents

List of Tables

List of Figures

1. Introduction

This dissertation uses mixed methods to examine three discourses of patient experience of virtualized healthcare, or virtualized healthcare, with a specific focus on examples from Ontario. The three discourses examined are: (1) a news discourse, (2) a scientific literature discourse, and (3) a user experience discourse. The analysis of these discourses reveals three main themes regarding the virtualization of healthcare: that patients should be engaged in virtualized healthcare innovation, that healthcare is a patient-centric network, and that virtualization requirements of healthcare interactions vary. This dissertation, building on existing theoretical concepts and existing practice standards, features two novel concepts. First, through analysis of existing research on virtual care and applicable theoretical frameworks, this dissertation offers (in the Literature Review chapter) the novel concept of *virtualized healthcare* to reference the virtual care activities specifically associated with mediated communication, in contrast to digital health monitoring activities which are mainly oriented around data collection, storage, and retrieval. Second, recognizing that practitioners are encouraged (by policy makers and their medical colleges) to use their own judgement to determine whether or not virtualized healthcare is appropriate, this dissertation adds patient preference for modality of care as a necessary consideration when determining appropriateness of virtual methods of care delivery. This dissertation additionally offers (in the Conclusion chapter) a practical guiding framework that may be useful for practitioners to help determine which elements of healthcare can or should be virtualized given current widely-adopted technology capabilities.

These novel offerings are helpful in a "post-COVID-19" context in Ontario. Uptake in virtual care has accelerated as many practitioners in Ontario have recently offered this form of care due to the onset of the COVID-19 pandemic, and the Ministry of Health creating temporary

"COVID-19 pandemic allowance" for all physicians to bill for virtual care (MOH & MOLTC, 2019b). As a period of initial unregulated use of virtual care by Ontarians comes to a close (MOH & MOLTC, 2022b), there is now an opportunity to take a closer look at the patient experiences of these healthcare services. Virtual care, or virtual care, is an term that denotes care delivered via telecommunication technology. As defined in a policy brief delivered by the Ontario Chamber of Commerce, virtual care "encompasses the entirety of remote and technology-driven health care solutions that can take place between a patient and health care professional (i.e., interactions via video, telephone, secure messaging, and remote monitoring)" (Kronfli, 2020, p. 3). This definition, along with frameworks of virtual care, is further explored in the literature review. This dissertation offers a novel distinction between two activities commonly associated with virtual care: proposing that combined, *virtualized healthcare* and *digital monitoring* comprise virtual care. Further analysis of virtualization frameworks in the literature review section of this dissertation results in the proposition of the term *virtualized healthcare* to reference the virtual care activities specifically associated with mediated communication. This dissertation focuses on *virtualized healthcare,* as opposed to the other aspect of virtual care, that of *digital monitoring* activities. This dissertation recognizes that digital monitoring activities are a significant aspect of virtual care, however the focus here is on telehealth discussions that consider people's interpersonal experiences in the digital health space, as opposed to technology or data centred discussions, which can become centred in discussions of digital monitoring activities.

Patient experience is a core concept in this dissertation, that is defined as "the sum of all interactions, shaped by an organisation's culture, that influence patient perceptions, across the continuum of care" (Wolf et al., 2014, p. 8). There are many elements to healthcare in general,

and more specifically, virtualized healthcare, that can impact patient experience. Taking these elements into account, specifically from a patient's perspective, centres the patient within their own healthcare. Fooks et al. point to the Ontario Ministry of Health and Ministry of Long-Term Care's 2012 declaration to be "obsessively patient-centred." Attempts to maintain or increase patient centricity within Ontario's healthcare system inherently necessitate consideration of patient experience. As elements of virtualized healthcare become more regulated and normalised in Ontario, understanding patient experiences of this form of care becomes essential.

In this dissertation, mixed methods are used to examine three discourses of patient experience of virtualized healthcare: (1) a news discourse, (2) a scientific literature discourse, and (3) a user experience discourse. By analysing the three distinct discourses (each of which is a form of health communication), this dissertation maps central themes that are consistently brought up in discussions of virtualized healthcare and patient experience. This dissertation defines health communication as a field that examines "communication strategies to inform and influence individual and community knowledge, attitudes and practices (KAP) with regard to health and healthcare" (Thomas, 2006, p. 1). It has been noted by health communication scholars (Atkinson, 1995; Babrow et al., 1998; MacDonald, 2005) that the delivery and reception of health information can be altered, depending on the discourse genre (type of discourse). Comparing the themes that come up in the discourse genres of scientific literature and news articles provides an understanding of how patients may come to understand the phenomenon of virtualized healthcare. Adding an analysis of user experience discourse to this understanding provides findings of what themes overlap in both public discourses and accounts of personal experiences of virtualized healthcare. As discussions move from the news discourse to the scientific discourse, to the user experience discourse, thematic consistencies can be derived.

The themes found across the three discourses are ultimately developed into three recommendations of virtualized healthcare, which should be tested and evaluated in future research programs. The recommendations (engaging patients in healthcare innovation, viewing healthcare as a hybrid patient-centric network, and understanding that virtualization requirements of healthcare interactions vary) are ways of thinking about how healthcare can become virtualized, and what affects the potential virtualization of healthcare. These recommendations are evidenced based, proven to not only be observed in user experience discourse, but also in how researchers and the public discuss issues and concepts with regard to virtualized healthcare. Different and overlapping elements of each recommendation are highlighted by each discourse. Each of the recommendations, along with their theoretical and practical implications, is discussed in the concluding chapter. The goal of health communication is to improve "health outcomes by encouraging behavior modification and social change… It is a comprehensive approach that relies on the full understanding and participation of its intended audiences." (Schiavo, 2013, p. 9). The analysis of virtualized healthcare across three different discourses aims to understand the experiences of its intended audiences (patients) and suggest best practices that may improve health outcomes of those populations that engage with the innovation/mediated form of health communication.

1.1 Case Context

This dissertation focuses on the virtualized healthcare patient experience in Ontario. Ontario has a mixed health system, where healthcare is provided by regulated health professionals through both publicly and privately funded means. In Ontario, these regulated health professions include:

- Audiology and Speech Language Pathology

- Chiropody and Podiatry

- Chiropractic

- Dental Hygiene

- Dental Technology

- Dentistry

- Denturism

- Homeopathy

- Kinesiology

- Massage Therapy

- Medical Laboratory Technology

- Medical Radiation Technology

- Medicine (Physicians and Surgeons)

- Midwives

- Naturopathy

- Nursing

- Occupational Therapy

- Opticianry

- Optometry

- Pharmacy

- Physiotherapy

- Psychology

- Psychotherapy

- Respiratory Therapy

- Traditional Chinese Medicine and Acupuncture

Each regulated health profession is monitored by its own regulatory college, that "set standards of practice for the profession, investigate complaints about members of the profession, and where appropriate, discipline them" (MOH & MOLTC, 2018a). Currently in Canada, "provincial governments are responsible for setting budgets for health care spending and management of their health care system and related services that affect broad determinants of health," while "the federal government is permitted to spend money in the area of health care, either through fiscal transfers to the provinces or directly to individuals and groups" (OSOT, 2022). Historical regulatory choices at the federal and provincial level have impacted which of the regulated health professions are socially funded. This trend has continued for the regulation of virtualized healthcare, which has recently undergone a first phase of regulation regarding new virtual care (the term used in Ontario's regulatory briefings) billing implementation in Ontario (MOH & MOLTC, 2022b).

A combination of failed and successful regulatory actions established the groundwork for the provincially governed health system in Ontario today. In 1945 the Government of Canada attempted to establish a national health insurance plan, which ultimately failed (Lavis, 2016, p. 18). This insurance plan was intended to cover hospital care, physician care (both family/general practitioners and specialists), nurse-provided care, prescription drugs, laboratory services, and dental care. Until this point, health care mainly had been managed and regulated locally (alPHa, n.d.). In 1957, the Government of Ontario established the Ontario Hospital Services Commission (later named Ontario Hospital Insurance Plan in 1959), to administer hospital-based care insurance that is partially funded by the Government of Canada per their Hospital Insurance and Diagnostic Services Act (also established in 1957), (Lavis, 2016, p. 19). In 1966, the

Government of Canada passed the Medical Care Act, which, like the Hospital Insurance and Diagnostic Services Act, establishes cost-sharing for physician services with provinces and territories (Lavis, 2016, p. 19). The Government of Ontario then established the Ontario Medical Services Insurance Plan to cover physician services for those who cannot afford private medical insurance in 1966, and then expanded this coverage to all Ontarians in 1969 (Lavis, 2016, p. 19). The two insurance plans in Ontario that cover in-hospital care and physician care were then combined in 1972 under the administration of the Ontario Health Insurance Plan (OHIP) (Lavis, 2016, p. 19). Since these regulatory actions, OHIP has since been expanded to cover some additional services (listed below in Table 1).

There are three main ways in which the healthcare is paid for in Ontario. In terms of government funding, services from some of the regulated health professions are covered by the Ontario Health Insurance Plan (OHIP) (See Table 1). Some of the regulated health professions can also be covered via government funding through regional groups, known as Ontario Health Teams, that cover local hospitals and various community-level care services, among other things. Regulated health profession services that are not covered by OHIP or through Ontario Health Teams are typically covered through third party private insurance or are paid out-of-pocket by patients themselves. Figure 1 displays a rough overview of which professions are covered by which form of funding.

Table 1

OHIP Covered Regulated Health Professions (MOH & MOLTC, 2017)

Dentistry	Physicians
Fertility Clinics	Physiotherapy Facilities
Independent Health Facilities (Laboratory and Radiation Technology)	Podiatry
Midwifes	Primary Health Care Services
Optometry	Registered Nurses with Extended Class

Note: Not all services from above listed health professionals are covered by OHIP.

It should be noted that the dividing lines of these categories of payment are very blurry, with most providers being able to charge "privately" for certain services (for example ophthalmologists bill OHIP for cataract surgery, but can charge privately for upgraded lenses in said cataract surgery). Additionally, some services from regulated health professionals are covered through specific programs that operate beyond the funding provided for Ontario Health Teams. For example, in the field of dentistry, OHIP covers medically necessary dentistry within hospitals (meaning dentists can bill for certain dental surgeries when performed in hospital). Most other dental services are generally paid by third party insurance, or out-of-pocket by the patient. However, there are also seven other provincial and federal programs that cover dental services (Baldos & Szymczak, 2022).

The regulation of virtual care services in Ontario in 2022 is heavily tied to funding practices (MOH & MOLTC, 2022b). Therefore, health professions that are covered by OHIP or those that operate under Ontario Health Teams are the professions that are beginning to see provincial regulation affect their virtual care practice. At the moment in Ontario, it is up to the

healthcare practitioner to decide whether or not their service can or should be provided through

virtual methods (MOH & MOLTC, 2022b).

Figure 1

General Overview of Healthcare Funding Flows in Ontario

The health professionals who can bill the services they provide to Ontarians through OHIP has

slowly expanded since OHIP's initiation in 1972 and are listed in Table 2, below. It is worth

noting that many of the health professions can also be paid through government funds alternative

to OHIP. For example, funding can come directly from the federal level (for example: funds for

healthcare for First Nations people living on reserves, or members of the Canadian Forces, among other groups) (Government of Canada, 2019). Health professions that bill OHIP are most directly regulated through Ontario's new virtual care program, which outlines the circumstances in which virtual appointments are covered, and the amount the practitioners are paid per virtual appointment (MOH & MOLTC, 2022b).

Secondly, the health services that operate under Ontario Health Teams are important to discuss as they are also regulated by means of government funding and whether or not this funding covers the provision of virtual services. Ontario Health Teams represent "groups of providers and organizations that are clinically and fiscally accountable for delivering a full and coordinated continuum of care to a defined geographic population" (MOH & MOLTC, 2019a, p. 6), and include (but are not limited to) services listed in Table 2, below. These regional groups used to be known as Local Health Integration Networks, but have since been re-structured as Ontario Health Teams under *Ontario Health*, which was established as the acting agency of the Ministry of Health and Ministry of Long Term Care in 2019 (The People's Health Care Act, 2019). There are currently 54 Ontario Health Teams recognized by Ontario Health, divided over six regions across the province (as outlined in Figure 2 and Table 3 below), (MOH & MOLTC, 2022a).

Table 2

Services that make up Ontario Health Teams (MOH & MOLTC, 2022a)

Primary Care (including inter-professional primary care and physicians)	Secondary care (e.g., in-patient and ambulatory medical and surgical services)
Home Care	Community Support Services
Mental Health and Addiction Services	Health Promotion and Disease Prevention Services
Rehabilitation and Complex Care	Palliative Care (e.g., hospice)
Residential Care and Short-term Transitional Care	Long-term Care Home Placement
Emergency Health Services	Laboratory and Diagnostic Services
Midwifery Services	Other social and community services and other services, as needed by the population

Regulation of virtual care provided by services under Ontario Health Teams (OHTs) is more unclear, as there is no clear billing schedule akin to the OHIP virtual care program available. This dissertation shows, through interviews with key informants, that practitioners operating under OHTs are required to use certain pre-approved "virtual care solutions" (virtual operating platforms) which are regulated by the Ontario Telemedicine Network (Ontario Telemedicine Network, 2023).

Figure 2

Ontario Health Regions (Ontario Health, 2022, p. 31)

Table 3

Ontario Health Teams per Region (MOH & MOLTC, 2022a)

Region	# of Health Teams
Central	14
East	13
North East	3
North West	4
Toronto	5
West Region	15
Total	54

In terms of health services that are typically paid for out-of-pocket or covered by third party private insurance, it seems that there is very little or no regulation in terms of virtual care provision. This dissertation engages with privately funded (out-of-pocket or third party insurance covered) practitioners in this category who are using virtual care, and it seems, at least from participant interviews, practitioners in this category do their best to abide by best industry-practices, and some may be regulated by their professional colleges.

Overall, Ontarians have come to expect that medically necessary care will be free if provided by physicians or in hospital, per Lavis's argument that the regulatory history of government funded healthcare has established such an expectation (2016, p. 21). The list of regulated health professions that have been included in government funding has only grown since the 1960s, through many regulatory and systemic changes. However, Ontario is currently in a unique position as the development of virtual care services has grown, especially during the first few years of the COVID-19 pandemic. This growth has been attributed to a combination of technological availability alongside patients and practitioners becoming accustomed to working and receiving services at home (Gray et al., 2021). Simultaneously, in order to encourage physical distancing and working from home, OHIP virtual care billing was temporarily opened completely to allow for practitioners to bill the same amount that they would normally receive for in-person care (MOH & MOLTC, 2019b). Patient expectations for OHIP covered virtualized healthcare are currently being established. New OHIP billing regulations, alongside other regulatory measures such as which platforms can be used by practitioners, have an essential role in determining patient experiences of virtualized healthcare in Ontario.

1.2 Study Objectives and Contribution

This dissertation provides a multi-genre discourse analysis that examines one topic, patient experience of virtualized healthcare. Specifically, the discourse genres of news, scientific literature, and user experience are examined. Analysis of the three discourses outlines how the topic of virtualized healthcare has become more popular. Since the pandemic, the topic has been featured quite heavily in mainstream news media and has experienced a period of accelerated uptake by Ontario patients. There has also been a significant increase in scientific literature production on virtualized healthcare over the past ten years, quantitatively demonstrated in Chapter 5. Mixed methods are used to analyse the three discourses to answer the following research questions:

RQ1: What themes are present in discourses of virtualized healthcare?

RQ2: What are the factors that affect patients' virtualized healthcare experience?

In analysing these discourses, this dissertation uncovers common themes that are discussed when it comes to a burgeoning field of virtualized healthcare scientific research, and how these themes are repeatedly conveyed to broader news audiences. Furthermore, the user experience discourse confirms that these themes are, in fact, also experienced by patients as users of virtualized healthcare. As per mixed methods guidelines outlined in the methodology section below, a direct comparison between discourses is not possible. However, triangulation is used in the conclusion of this dissertation to showcase findings to RQ1 that is concerned with the themes present in discourses of virtualized healthcare. Findings of this discourse analysis based research point towards three key overarching themes: increased access being provided by virtualized healthcare, virtualized healthcare technological affordances, and the importance of multi-stakeholders being involved throughout the continuum of virtualized healthcare.

By focusing on patient experiences of virtualized healthcare this dissertation contributes to operationalizing patient-centred methods in virtualized healthcare settings. The updated Ontario *Digital Health Playbook* lists patient centred care as a key objective for digital health provision, stating that an ideal/mature digital health system "can deliver care in a more patient-centred way by leveraging the use of digital and virtual tools" (MOH & MOLTC, 2022c). The Digital Health Playbook offers specific guidance on how patients may be centred in this modality of healthcare (for example, offering user friendly tools so that patients may self-manage their care). However, it does not provide outlines for how virtualized healthcare tools may be developed, utilised, and reviewed in order to promote positive patient (and other user) experiences. The conclusion of this dissertation answers RQ2, which is concerned with factors that affect patient experiences of virtualized healthcare, and offers insight into which aspects of healthcare experiences may do well in virtual settings.

1.3 Chapter Overview

The section directly following this introduction serves as a literature review and outlines key concepts required for understanding the remainder of this dissertation. The concepts reviewed include virtual care, patient-centred care, patient engagement, and patient experience. This section also reviews theoretical frameworks of virtualization and experience. The literature review includes a section on virtualization in healthcare settings, and a timeline of virtual care practice in Ontario. This chapter concludes with a section dedicated to health communication, specifically noting studies of health communication and news, scientific literature, and user experience.

Following the literature review is a methodology section. This chapter reviews discourse analysis and corpus linguistics methodologies. The corpus linguistics section includes discussion

of mixed methods and grounded theory used for the news discourse and scientific literature discourse analyses. Finally, the methods chapter includes a brief overview of the qualitative content analysis method used for the user experience discourse analysis.

The following three chapters outline the specific analysis tools, procedural steps, and findings from each discourse's analysis. The first analysis is of the news discourse, which takes the form of a news framing analysis. This chapter is completed by a discussion section that highlights the major themes found in the main news frames uncovered in the news discourse of virtualized healthcare. The second discourse analysis focuses on the scientific literature discourse. This analysis is presented as a science mapping analysis and concludes with a discussion of overarching themes in scientific abstracts that mention virtual care and patient experience. The final discourse analysed is the user experience discourse. This analysis concludes with a discussion of major themes found in the discourse, along with an updated definition of patient experience that focuses specifically on how patient experience may be understood in virtualized healthcare settings.

This dissertation concludes with a triangulation of the three discourse genres: news, scientific literature, and user experience. This triangulation focuses on the themes of healthcare technology innovation and affordance, the continuum of healthcare, and the appropriateness of virtualized healthcare for various healthcare interactions. Each of these themes is then developed into a corresponding recommendation that attempts to contextualise the theme in patient-centric applications.

Finally, the conclusion reflects on the major findings of this dissertation, and includes a cross-comparison with industry reports that validate the results.

2. Literature Review

This review of literature begins with a conceptual framework that outlines and defines the concepts of patient centred care, patient engagement, and patient experience. This is followed by a discussion of experience and virtualization in general, and how these phenomena may be understood in healthcare settings. Finally, virtual care is defined, along with a timeline of its development within the Ontario healthcare system.

2.1 Conceptual Framework

The conceptual framework used for this dissertation follows the patient centred care principles provided by Fooks et al. (2015), who clarify that patient centred care (PCC) comprises three parts: the overall philosophy of PCC, patient engagement (methods that solicit patient needs and preferences), and patient experiences (how patients perceive/experience their care) (Fooks et al., 2015). They insist that all three components are needed to establish good relationships in healthcare (Fooks et al., 2015). Fooks et al. recognize the Ontario Ministry of Health and Ministry of Long-Term Care's 2012 declaration to be "obsessively patient-centred," and outline the three components as key tenets to follow in pursuit of a more "patient-centred healthcare system" (2015). Further examination of these three components (outlined below) show that optimal patient experience qualities are typically aligned with patient-centred care (PCC) principles (Wolf et al., 2014), which in turn increasingly sees the method of patient engagement being used in health related innovation (e.g. Forsythe et al., 2018; Hamilton et al., 2018).

2.1.1 Patient Centred Care

The term 'patient centred healthcare/care' (PCC) was coined by Edin and Micheal Balint in 1969. At the time PCC was a new clinical method that redefined the doctor-patient relationship and approaches doctors should use to diagnose or consult on patient issues. A simple way to understand PCC is to compare it with what it is not, with the traditional contrast to illness-centred medicine (Levenstein et al., 1986, p. 26), and more contemporary contrasts to technology centred, hospital centred, or disease centred healthcare (Stewart, 2001). Essentially, in addition to trying to diagnose illness(es), PCC "deals with the non-biological aspects of the disease: even the personal, psychological and social aspects are recognized as current and important, so that the tasks for the consultation are focusing not only on disease but also on patients' illness experience" (Borghi et al., 2016, p. 39). The steps involved in PCC include understanding the patient and understanding the disease (Levenstein et al., 1986, p. 24) by communicating and partnering with the patient to focus health promotion, beyond specific conditions (Bauman et al., 2003, p. 253). Levenstein et al. (1986) developed a model to outline how both doctor and patient knowledge are important in the PCC method (Figure 3).

Figure 3

The patient-centred clinical method (Levenstein et al., 1986, p. 25)

FIGURE 1   *The patient-centred clinical method*

The desired outcome of PCC is "not only to construct 'more expert' patients, but to develop common ground with them for integrated management" (Bauman et al., 2003, p. 253-254) of healthcare between patient and practitioner. There is a misperception about PCC that its universal adoption would not be wise as some patients may not prefer this approach and may not want to take a more active role in their healthcare (Stewart, 2001). Stewart explains that "This concern rests on the misconception that being patient centred means sharing all information and all decisions. Being patient centred actually means taking into account the patient's desire for information and for sharing decision making and responding appropriately" (2001, p. 445).

Barriers to a PCC based health system include some doctors/clinicians not wanting to adopt the method, as they believe it will be difficult to implement in their practice, or that empowering/educating patients may result in patients taking risks and not "adhering to management guidelines" (Bauman et al., 2003, p. 253). Bauman et al. believe that innovations such as PCC may be more difficult to implement in a public health sector, as such methods are not products that are easily marketable and are "less clearly related to immediate health gain" (2003, p. 253). They do, however, believe that patient-centred care is still warranted, especially as a form of preventive care, and "will result in a net population health benefit" (Bauman et al., 2003, p. 254).

2.1.2 Patient Engagement

The Canadian Institute for Health Research's Strategy for Patient Outcome Research (SPOR) defines patient engagement as "occur[ing] when patients meaningfully and actively collaborate in the governance, priority setting, and conduct of research, as well as in the summarising, distributing, sharing and applying its resulting knowledge" (Manafo et al., 2018, p. 2). Patient engagement is a PCC based method that is increasingly being used in health related innovation (e.g. Forsythe et al., 2018; Hamilton et al., 2018; Barello et al., 2016). A major motivator behind patient engagement is that it can connect with patients in a more democratic way, "moving away from the health discipline paternalism," (Manafo et al., 2018, p. 2) as it incorporates patient experience as a key research object. Other potential benefits include improving patient enrollment and decreasing attrition rates within the studies that employ these methods and helping in communication of knowledge/findings to study participants and the broader community (Domecq et al., 2014, p. 6).

Barriers to adopting this method include patient frustration, fear of patient engagement as being tokenistic or "a false appearance of inclusiveness," and a fear of scope creep which is a 'theoretical concern that engaging patients in the research may include irrelevant community concerns and issues" (Domecq et al., 2014, p. 6). Domecq et al. suggest spending time to build relationships with the engaged patients, fostering mutual respect between all stakeholders, and providing explicit expectations to those involved in the study as ways of mitigating these barriers (2014, p. 6).

2.1.3 Patient Experience

Wolf et al. (2014) conduct a systematic literature review of scientific and industry sources in order to categorise the main pillars used when discussing patient experience in their inaugural *Patient Experience* journal issue. The opening paper of this journal provides the definition of patient experiences as "the sum of all interactions, shaped by an organisation's culture, that influence patient perceptions, across the continuum of care" (2014, p. 8), which reflects the majority of themes considered in other patient experience definitions. Many aspects of Wolf et al.'s (2014) consideration of patient experience are tied to the context of privatised healthcare and the consumer health industry that is found in the U.S.A. They find that patient experience is not necessarily just good for patients, but also gives health organisations a competitive advantage against other industry players. Due to this American context, some of the elements that comprise patient experience support a focus on monetary value.

Wolf et al. (2014) also present elements of patient experience that should be considered when pursuing a more democratic, social-welfare oriented healthcare system. They include considering the continuum of care, looking beyond survey results, focusing on expectations, alignment with patient-centred care principles, focusing on individualised care, and considering

more than satisfaction (Wolf et al., 2014). Analysis of these elements can be further distilled into three categories:

1. *Continuum of care* considers that patient experience occurs beyond one interaction with a care provider. Instead, it involves multiple touchpoints that a patient may have with an entire healthcare organisation or system (Wolf et al., 2014, p. 9).

2. *Centering the patient* involves considering aspects of PCC and individualised care (which is deemed "similar to patient-centred care") as well patients' direct and personal observations of whether their healthcare expectations are met (Wolf et al., 2014, p. 10).

3. *Looking beyond satisfaction* points out that many health organisations rely on surveys or quantified mass evaluations of patient satisfaction. Definitions collected by Wolf et al., caution against equating experience with satisfaction, as patient experiences are complex, involving a combination of social, emotional, and physical situations (Wolf et al., 2014, p. 10-11).

Overall these elements of the definition provided by Wolf et al. will act as the core understanding of patient experience for this dissertation.

2.2 Virtualization & Experience

Patient experience and virtual care are linked below to theoretical frameworks of experience and virtualization respectively. In this dissertation, virtualization is understood through the lens of mediatization. Mediatization is a communication studies concept that describes the transitional behaviour of a society that occurs when mediated communication (ranging throughout history from the most basic of literacy tools to virtual reality and beyond) is introduced to that society. Mediatization is similar to, yet differentiated from, the concepts of medium theory and mediation. Mediation refers to impact on the message and interaction

between senders and receivers that communication via a medium might have (Hjarvard, 2008, p. 114). Medium theory considers how different forms of mediated communication compare to each other and unmediated communication (Meyrowitz, 2019), while focusing less on the message and more on effects and "impacts on interpersonal relations [they] give rise to" (Hjarvard, 2008, p. 109). Mediatization is concerned with more than just message, effects, and impacts on interactions, and considers how media instigate social and cultural change.

Mediatization can be understood through an institutional or social constructivist lens. The institutional approach considers mediatization to be a transitional process in which media becomes an institution itself. This approach examines "the relationships between media institutions and other social institutions" (Hepp, 2013, p. 5) where "social and cultural institutions and modes of interaction are changed as a consequence of the growth of the media's influence" (Hjarvard, 2008, p. 114). The social constructivist approach regards mediation as an ongoing, everyday process that occurs between "media-communicative practices and socio-cultural change" (Hepp, 2013, p. 6). Mediatization is a context specific process of change that is intertwined with societal and cultural change (Hjarvard, 2008; Hepp, 2013).

Hepp discusses the reconciliation of the two approaches as happening in the 2010s, when many mediatization scholars (Hjarvard, 2011; Couldry, 2012; Krotz & Hepp, 2013) started to consider aspects of the "opposing" approach within their own conceptualization of mediatization (Hepp, 2013, p. 6). This more rounded approach sees mediatization as the communicative activities that occur "when individuals, institutions, and organizations use media" and when "society and culture as a whole depend on specific media," emphasising "the necessity to reflect institutions and organisations also in a social-constructive perspective" (Hepp, 2013, p. 6).

Both Hepp and Hjarvard view virtualization as a process whereby communication is mediated by certain "virtualizing" technologies. Both refer to virtualized communication as occurring in a non-physical, computerised space or environment. Hjarvard discusses how an effect of mediatization is the "virtualization of social institutions," where these institutions can be participated in by individuals regardless of location, and can be brought into private spaces or domesticated (2008). Virtualization, in this way, is both an effect and has an effect, whereby the *direct mediatization* effect sees formerly non-virtualized activities taking place in a virtual space, and the *indirect mediatization* effects include public/institutional-facing behaviours taking place in private spaces and the interplay of institutions in virtual and physical spaces (Hjarvard, 2008; italicization in original).

Hepp (2013) specifically views virtualized media communication as an example of a form of communication, or rather "the concrete patterns of communicative practices that characterise communicative figurations" (2013, p. 11), where a communicative figuration is understood almost as a network or ensemble of actors (including humans and media technologies) that are communicating with and through each other in various forms, all centred around a thematic framing. In this way, Hepp focuses on the operationalization of virtualized communication and explains how the figurations that utilise this communicative form (maybe singularly or maybe in tandem with other forms) undergo the process of mediatization. Hjarvard, on the other hand, seems to understand virtualization as a form of mediatization itself, labelled after a specific communicative activity that is enabled by specific technology.

Figure 4

Flow Chart of Mediatization Concepts

2.2.1 Experiencing the Virtual

Ollinaho points out that for mediatization scholars, virtualization is "not just a question of mediation of human activity, but that these technologically and institutionally based processes have also created novel-virtual-realities into which people can gear" (2018, p. 195). Virtualization and virtual reality, in this sense, are nested concepts, where the process of virtualization (which, as discussed above involves virtualized communication) affects those involved, the surrounding culture and society, by creating virtual reality/realities. There are different ways to approach the concept of virtual reality, two of which include phenomenology and social constructivism.

Phenomenology is a research approach that examines a phenomenon or event with the goal of describing the experience of it, and the meaning of this experience, from the point of view of those experiencing the phenomenon (Neubauer et al., 2019, p. 91). From a phenomenological approach, the "virtual" can be considered a real space, as actors who participate in virtual communicative figurations experience it coherently (Berger, 2020, p. 606). Berger points out that there are two main ways that the phenomenological approach defines the experience of virtual reality or virtual space. The first way is via Schutzian finite provinces of meaning, where parts of virtual spaces (or the online realm) should be considered as different from "the natural attitude of everyday reality" (Berger, 2020, p. 611) as they can be distinct spaces that infer distinct experiences by those who interact with them. Alternatively, there is an understanding of the virtual domain as "as an extension of the paramount reality of everyday life" (Berger, 2020, p. 611), which comprises the second way that a phenomenological approach can define experiencing the virtual, called the virtualization thesis by Berger. It seems that both

of these methods can be used together to fully grasp how virtual reality is experienced, rather than picking one over another.

Social constructivism is a research approach that considers experience as being built (and rebuilt) by social dynamics within a context of a society or culture and its many interacting actors (Conrad and Barker, 2010). Those who use the social construction approach to understand virtual space offer views that align with both the aforementioned virtualization thesis and finite provinces of meaning. For example, Boostrom references the Berger and Luckmann (1996) concept of secondary socialisation to explain how individuals become socialised in new sectors, such as virtual reality (2008, p. 5). Boostrom (2008) argues that individuals experience virtual reality based on their previous knowledge of how they experience their primary environment (assumedly "the offline world"). Thus, the virtual realm as a secondary environment, is an extension of the primary everyday environment (again, assumedly "offline" life), which echoes the tenets of the virtualization thesis. Sandu, who references constructionist sociology as an approach to understand the COVID-19 pandemic as a catalyst for the virtualization of social space, also seems to align with the virtualization thesis. "By virtualizing the social space we mean the construction of a new communication universe in the virtual space and the transfer to it of social interactions" (Sandu, 2022, p. 118). Both Sandu and Boostrom wade into discussion of virtual spaces as finite provinces of meaning. Boostrom discusses how primary and secondary environments may have distinct requirements that "make one a successful social actor" (2008, p. 5), while Sandu (2022) differentiates physical spaces and virtual social spaces due to the latter being constructed through interactions with semantic objects rather than material ones, ultimately requiring new interpretive models.

Considering both phenomenological and social constructivist approaches to virtual spaces leads to the understanding that people experience virtual spaces in both familiar and new ways. Virtual realms are considered by both approaches to be unique and distinct from everyday/offline world, therefore requiring users to experience these realms uniquely and distinctively from everyday/offline life. However, simultaneously, both phenomenology and social constructivism recognize that people do not just enter virtual realms from a vacuum, and bring with them experiences, habits, and histories collected in (and constructed by) their everyday/offline world, which they then rely on in virtual realms. Therefore, those experiencing these virtual spaces do so in ways that are both unique and as extensions of their primary worlds, although the research conducted for this dissertation points to the virtual space as an extension of a previously constructed social experience taking precedence (over more a novel or unique experience) when it comes to the study of virtualization of healthcare. This virtualization of healthcare is discussed below, after a brief review of industry and various academic definitions of virtual care.

2.2.2 Defining Virtual Care

Virtual care, or virtual care, is an industry term that is specifically being championed in Ontario to denote care delivered via telecommunication technology. As defined in a policy brief delivered by the Ontario Chamber of Commerce, virtual care "encompasses the entirety of remote and technology-driven health care solutions that can take place between a patient and health care professional (i.e., interactions via video, telephone, secure messaging, and remote monitoring)" (Kronfli, 2020, p. 3). The use of virtual care, specifically in Ontario, replaces the title of telemedicine, a term which was previously used to denote the same concept. This change can be seen in the renaming of the government funded Telemedicine Program in 2019 to the Virtual Care Program (MOH & MOLTC, 2019b), likely due to the desire to highlight

technologies beyond telephones, such as video conferencing, that are available for use within the program. This definition of virtual care includes patient-physician interactions and physician-physician interactions (2020, p. 6). These interactions include: mediated communication (by phone, video conferencing, secure messaging, or information sharing platforms), remote patient monitoring (through a range of digital devices), and store and forward telemedicine (internet-based databases that allow for health care professionals to store and/or send patient information to other health care professionals) (Kronfli, 2020, p. 6).

Another similar definition is provided by Li et al., based on a scoping review of scientific literature on virtual care. They define virtual care as encompassing "the provision of care through using advanced video conferencing technology between patients and providers remotely or using virtual reality technology to simulate care environments" (Li et al., 2021, p. 4). They go on to discuss many definitions of virtual care as a combination of mediated patient/practitioner communication (they specifically mention video conferencing and chat), remote monitoring, and use of virtual reality (for both clinical and training purposes). They specifically mention that "virtual reality is typically not defined as virtual care. Virtual reality is a tool that can support virtual care" (Li et al., 2021, p. 5).

In considering both the definitions, this dissertation will approach virtual care as the two aspects the definitions share: as a combination of mediated health-related communication and remote health data collection and monitoring. In consideration of the theoretical framework outlined above, this dissertation puts forward the term *virtualized healthcare* to reference the virtual care activities specifically associated with mediated communication, and *digital monitoring* activities to reference the remote health data collection and monitoring aspects of the definition of virtual care.

2.2.2.1 Virtualized Healthcare

The first aspect of this two part definition for virtual care, the mediated communication or *virtualized healthcare* aspect, involves the virtualization of healthcare communication activities as a form of mediatization, in that this transition has had social impacts and created virtual realities for those who participate. A virtual space is created and inhabited (even if temporarily) by virtual care users; patients and practitioners alike. Following along the lines of the virtual-as-extension/secondary socialization/'virtualization thesis,' this virtual space seems to be understood in practice primarily as an extension of the 'real' world. Pre-existing social constructs, especially those that existed in face-to-face care, seem likely to be reconstructed in virtual care settings. For this reason, following terminology put forth by both Hepp and Hjarvard, this dissertation puts forward the term *virtualized healthcare* to reference the virtual care activities specifically associated with mediated communication.

The concepts of telehealth and telemedicine are the most representative of virtualized healthcare. Telehealth and telemedicine were found by this dissertation to be regionally specific, based on frequency of use in the news framing analysis completed in Chapter 4 (see Table 4 below). Matusitz and Breen (2007) use telehealth and telemedicine interchangeably, while others understand the two terms to reference various levels of mediated health activity. Kang et al. (2022), who conducted a news analysis on the topic of telemedicine in Korea, see telemedicine as "distinct from the broader concept of telehealth, which describes 'the delivery of health care, health education, and health information services via remote technologies'" (p. 2). While they say "telemedicine specifically addresses 'the diagnosis, treatment, and monitoring of patients (including history taking and appropriate physical examination) through live, synchronous video conferencing technology'" (Kang et al., 2022, p. 2). Similarly, Shaw et al.

(2018) see telehealth as an umbrella term and note that "under the broad umbrella of telehealth, additional concepts used by federal agencies included telemedicine, 'store-and-forward' services, and m-health" (p. 609).

Table 4

Frequency of terms as a percentage all terms used in news corpus per region

Term	Canada	Australia	UK	USA
Telemedicine	26.04%	7.76%	60.51%	44.72%
Telehealth	21.66%	58.14%	12.43%	35.28%
virtual care	14.99%	0.67%	1.65%	2.85%
electronic health	14.91%	4.50%	1.83%	4.34%
eHealth	13.87%	16.28%	3.11%	0.07%
digital health	4.67%	8.33%	10.24%	9.81%
Virtual health care	1.93%	0.10%	0.00%	0.30%
mobile health	0.96%	1.05%	3.29%	0.52%
mHealth	0.30%	1.05%	1.83%	0.45%
e-Mental health	0.00%	1.05%	0.18%	0.00%
virtual healthcare	0.00%	0.19%	4.20%	0.15%

Subsequent chapters containing discourse analysis of use of these terms in popular vernacular show that telehealth and telemedicine are interchangeable terms that discuss the same virtualized healthcare activities, with one caveat being regionality. For example, in news discourses, telemedicine is used almost exclusively in the U.K. to refer to the same mediated healthcare activities that would be described as telehealth in the U.S.A. While recognizing the distinctions pointed out by Kang et al. and Shaw et al. above, this dissertation considers

telehealth and telemedicine to be interchangeable terms that represent "the use of advanced

communication technologies… that deliver care across distance" (Matusitz & Breen, 2007, p.

73).

A note of importance is that Ontario's use of the term telehealth has regional specificity.

Telehealth Ontario was a long-standing government provided phone service where citizens could

talk to a registered nurse for guidance in health-related situations. This service has since been

rebranded as Health Connect Ontario to represent the inclusion of online chat services alongside

the existing telephone hotline (Ontario, 2022). Due to this previous regional use of the term

telehealth, the government of Ontario commonly used the term telemedicine to discuss activities

that this dissertation considers telehealth or telemedicine activities (or rather, mediated health

communication activities). Additionally, the interviews collected for the user discourse analysis

chapter of this dissertation contain many instances of this regional use of the term telehealth, to

denote the government provided phone service, alongside the more broadly understood definition

of telehealth as mediated health communication.

2.2.2.2 Digital Monitoring

In contrast to *virtualized healthcare* experiences, *digital monitoring* activities (the other

half of the virtual care definition) seem to require users to develop completely new interactions

and practices with these tools that offer novel information (that of quantitative values related to

body function and health) that could not be discerned from previous experience in the primary

world. In this way, digital monitoring activities can create virtual spaces that resemble Schutzian

finite provinces of meaning as discussed above. For example, a technology such as a Fitbit

activity monitor presents its users with novel information in the form of personalised digital

health data that did not exist in the user's world previously (estimated caloric expenditure based

on heart rate and "activity zone" minutes, etc.). This new information can then be used to affect the user's existence in a virtual reality where virtual "races" can occur (in competition with other users or against oneself), among other tracked activity goals and milestones that would not have existed if not for this new digital monitoring world.

Beyond theoretical philosophising of digital monitoring, there are many research fields concerned with digital health monitoring activities and remote monitoring technology. The most representative is the field of health informatics, a field that "deals with the acquisition, transmission, processing, storage, retrieval, and use of different types of health and biomedical information" (Zheng et al., 2014, p. 1538). In this field data takes centre stage. Access to health data has typically been held by health care professionals; however, recently there has been a change towards a focus on developing information systems that prioritise consumer/patient access, driven by "the emergence of evidence based medicine and the growing awareness of the need to equalise relationships between health professionals and lay people" (Eysenbach, 2000, p. 1713). This subfield of "consumer health informatics is the branch of medical informatics that analyses consumers' needs for information: studies and implements methods of making of information accessible to consumers; and models and integrates consumers' preferences into medical information systems" (Eysenbach, 2000, p. 1713). While remote patient monitoring may seem to imply the one-way monitoring of a patient by a healthcare practitioner, it is important to note that many patients are also able to monitor their own health data in this process, and many are required to monitor and manually submit such data to their practitioner.

Zheng et al. discuss how there are two main acquisition technologies of personal health data: sensing and imaging (2014, p. 1538). Over time, technologies that acquire health information have become smaller and less obtrusive, in addition to more affordable, allowing

patients to use them outside of the clinical setting (See Figure 5). Additionally, Zheng et al. cite

innovations in internet infrastructure and wireless connectivity as catalysts for the development

of physiological measurement devices that "can provide real-time information and facilitate

timely remote intervention to acute events such as stroke, epilepsy and heart attack" (Zheng et

al., 2014, p. 1538). Examples of commonly cited digital monitoring devices such as diabetes

monitors or sleep apnoea machines are mentioned in the interviews conducted for the user

discourse analysis section of this dissertation. Participants brought up having their health data

submitted manually or automatically to their health care providers, who would then discuss the

meaning of the data in a virtualized healthcare/appointment setting. Discussions of these digital

monitoring activities are considered by this dissertation research, however, the takeaway from

these discussions are peripheral to this dissertation's focus on experiences of interpersonal

communicative acts of *virtualized healthcare*.

Figure 5

Evolution of Medical Devices for ECG Measurements (Zheng et al., 2014)

2.2.3 Virtualization and Experience in Healthcare Practice

Operationalizations of the above frameworks of virtualization are seen in the field of design and in the field of human computer interaction. In the field of design, Buccini and Padovani (2007) discuss a typology of 6 different user experience categories (or modules) based on their research of pleasure based design, emotional design, and marketing experiential theories. They summarise the categories of experience across those design sub-fields, which are found in

Table 5. These categories are not uniquely experienced, and "many times they occur at the same time, making differentiation difficult" (Buccini & Padovani, 2007, p. 502).

Table 5

Categories of Experiences (Based on Buccini & Padovani, 2007)

Categories of Experiences	Definitions
Experiences related to the senses	this category responds to appearance stimulus, touch or to product sensations, straightly related to the sensory organs and also to sexuality (p. 502)
Experiences related to the feelings	this category is very subjective, varying a lot from person to person, related to the feelings are emotional reactions originated from the use of a product (p. 502)
Social experiences	happen among individuals and are intermediated by products, and occur because of the actions of other participants and are also related to the product itself - vary according to individuals involved, technologies used, and context (p. 502)
Cognitive experiences	related to the thought and to the interpretation of the codes by the user, characteristics that might influence interpretations can include aesthetics, semantic and symbolic (p. 503)
Use experiences	this category is less subjective than others, and concerns the usability and functionality of the products (p. 503)
Motivational experiences	happens when the owning or use of a product is responsible for a certain behaviour of the user (p. 503)

The categories of experiences put forward by Buccini and Padovani are somewhat echoed in process virtualization theory, which comes from the field of human computer interaction research. Overby defines process virtualization as "the transition from a physical process to a virtual process is referred to as process virtualization" (2008, p. 278). Overby (2008) describes four categories of requirements (see Table 6) that can impact process virtualization, where the more requirements needed, the more complicated it is to virtualize a process.

Table 6

Virtualization Process Requirements (Based on Overby, 2008)

Virtualization Requirement	Definition
Sensory Requirements	Sensory experiences include tasting, seeing, hearing, smelling, and touching other process participants or objects, as well as the overall sensation that participants feel when engaging in a process, e.g., excitement, vulnerability, etc. (p. 280)
Relationship Requirements	The need for process participants to interact with one another in a social or professional context, often leading to knowledge acquisition, trust, and friendship development (p. 281)
Synchronism Requirements	The degree to which the activities that make up a process need to occur quickly with minimal delay (p. 282)
Identification and Control Requirements	ID Requirements: the degree to which the experience requires unique identification of process participants. Control requirements: the ability to exert control over/influence participant behaviour (p. 282)

Finally, the categories of experience from Buccini and Padovani can also be used to organise healthcare value proposition variables outlined by Omachonu (2019). Omachonu examines the many factors that may influence patient perception regarding the value of their healthcare and summarises value in healthcare as "the physical health and sense of well-being achieved relative to the cost" (Omachonu, 2019, p. 30). It should be noted that Omachonu's work is based in the U.S.A. where healthcare is largely privatised, and questions of value are often cost-related. However, value can also be perceived non-monetarily, with high value healthcare experiences also being based on "the right care, at the right time, to the right patient… and the right patient experience level" (Omachonu, 2019, p. 30). A summary of the healthcare value propositions (not related to cost) are outlined in Table 7.

Table 7

Healthcare Value Proposition Variables (Based on Omachonu, 2019)

Healthcare Value Propositions	Definition
Care for the 'whole person'	Factors other than a patient's condition that may cause fear or worry (ex. comprehension of diagnosis, level of emotional/practical support at home, diagnosis related financial issues, anxiety over need to change lifestyle, transportation for treatment, etc.) (p. 33)
Attention to detail	Attention to noticeable/unnoticeable, visible/invisible, spoken/unspoken, consequential and seemingly inconsequential (p. 44)
Addressing the chief complaint	Practitioner ability to understand primary reason leading patient to seek medical attention (p. 36)
Patient safety	Protecting patients from errors, injuries, accidents, and infections (p. 33)
Empathy, sensitivity, and compassion	Ability to understand and share feelings of patient (p. 36)
Care coordination	Deliberate organisation of patient care activities and sharing information among all participants (patients/caregivers/practitioners) concerned (p. 37)
The 'hassle factor'	Intrusive and seemingly irrational administrative burdens (p. 34)
Availability of information	Ability of practitioners to provide patients (whether expressing desire or not, regardless of socioeconomic or educational background) with information (p. 39)
Timeliness	The capacity to provide care quickly after a need is identified (p. 31)
Privacy, confidentiality, and security	Protection and security of health information (p. 30)
Post-discharge/follow-up	Provision of tools and/or communication to patient that will help them care for themselves (p. 37)

Note. Variables concerning monetary cost were excluded.

These value propositions are used in this dissertation as a framework for the interview script that guided participant interviews to create the user experience discourse. For these interviews, the values were simplified to the categories of administrative experiences (timeliness,

hassle factor, care-coordination, and follow-up), security experiences (patient safety, privacy, confidentiality, and security), patient/practitioner interaction experiences (care for the whole person, addressing chief complaint, empathy, sensitivity, compassion, and attention to detail), and availability of information (including before and after the experience).

2.2. Virtual Care in Ontario

Healthcare in Ontario is provincially regulated, and virtualized healthcare methods (along with preceding telemedicine methods), while recently becoming a popular political debate topic, have a historical legacy of ties to provincial funding and regulation. In Ontario, as with the rest of Canada, telemedicine has been used as a way for rural and remote patients to access healthcare, especially healthcare provided by specialists (Canadian Partnership Against Cancer, 2019, p. 5). These telemedicine sites "have been in place for decades" (Kronfli, 2020, p. 5). A brief timeline of the development of provincial telemedicine and virtual care programs is outlined below. It should be noted that the Ontario Government uses the term "Virtual Care" to reference virtualized healthcare activities in their regulatory notices.

1998 - The first telemedicine sites in Ontario are launched

- Including the NORTH Network in March 1998 funded by the Ministry of Energy, Science, and Technology (Holmes & Hart, 2009, p. 29) and sites at Sunnybrook Health Sciences Centre, Timmins, Kirkland Lake and Cochrane in April 1998 (Williams, 2013, p. 1).

2006 - Ontario Telemedicine Network (OTN) launched

- OTN represents the merger of three pre-existing regional telemedicine networks: NORTH Network (Central and Northern Ontario), CareConnect (Eastern Ontario) and VideoCare (Southwestern Ontario), (Holmes & Hart, 2009, p. 28)

2009-2014 - OTN grows

- Usage of OTN by patients grows from 27,409 visits in 2008/2009 to 221,353 visits in 2013/2014 (O'Gormon et al., 2016).

Feb 26, 2019 - "Ontario Health" created by the People's Health Care Act

- OTN brought under Ontario Health jurisdiction (The People's Health Care Act, 2019).

Aug 23, 2019 - Digital Health Playbook (by Ontario Health)

- Introduced virtual care strategy recommendations for Ontario Health Teams, highlighting virtual care as a prominent objective (MOH & MOLTC, 2022c)

Nov 15, 2019 - Ontario Virtual Care Program bulletin

- Telemedicine Program becomes Virtual Care Program, "enabling Direct-to-Patient Video Visits so that patients can receive a video visit from their location of choice (e.g. in their home on their own device) and are not required to go to a patient host site unless it is clinically or technologically necessary; and modernising virtual care compensation" (MOH & MOLTC, 2019b)

March 13, 2020 - COVID-19 becomes global pandemic

- Global pandemic status announced by the World Health Organization (WHO Director General, 2020).

March 14, 2020 - Temporary virtualized healthcare billing codes offered by OHIP

- MOH introduces temporary measures so that any physician (not just OTN physicians) can bill "for the provision of assessments of, or counselling to, insured persons by

telephone or video, or advice and information to patient representatives by telephone or video" (MOH & MOLTC, 2020)

- Previous to this, regulated health professionals had to apply to be a part of OTN in order to bill for telemedicine/virtual care appointments

2020-2021 - A growing number of patients & practitioners use virtualized healthcare

- 1.4M patient visits in 2019/20 and 2.2M visits completed in 2020/21 through the publicly funded Ontario Virtual Care Program (Government of Canada, 2022)

- "Through the temporary OHIP virtual care billing codes established in March 2020, more than 34 million additional virtual visits have been provided since the onset of the COVID-19 pandemic" (Government of Canada, 2022)

- The province announces it is working to "modernize its virtual care service offerings and models" (Government of Canada, 2022)

2021 - Ontario Health starts verifying private virtualized healthcare platform "solution providers"

- "In collaboration with the Ministry of Health, OntarioMD, and other health care stakeholders, Ontario Health has developed virtual visit video and secure messaging requirements designed for solutions to support clinical encounters with patients and interoperable health information exchange" (Ontario Health, 2021).

- First verified solution is listed as becoming verified January 31, 2021 (Ontario Health, 2022[2]

December 1, 2022 - New Virtual Care Services billing framework announced

- The temporary provisions made in March 2020 that allowed physicians to bill OHIP for virtualized healthcare are replaced with a more limited and structured framework that outlines in which situations physicians may bill for virtualized healthcare (MOH & MOLTC, 2022b)

- Establishes that virtualized healthcare services may be provided by Telephone (synchronous audio-only communication - no visualization) or Video (2-way synchronous video-conference - audio and video visualization), and that video services are only eligible for payment when performed using a Verified Video Solution (MOH & MOLTC, 2022b)

- Establishes two types of OHIP billable virtualized healthcare services

    - Limited Virtual Care Service, where no Existing/Ongoing Patient-Physician Relationship exists, and;

    - Comprehensive Virtual Care Service, where Existing/Ongoing Patient-Physician Relationship exists (MOH & MOLTC, 2022d)

- Reduces the amount that Limited Virtual Care Services can be billed for, reducing the amount billed from $80 (using the temporary codes from March 2020) to $20 for a video service and $15 for a telephone service.

From this timeline, it can be determined that the new December 2022 Virtual Care Services billing framework is not the first attempt by a governing body to regulate or standardise virtualized healthcare provided by OHIP billing physicians. However it is the first regulatory framework introduced since the widespread use of virtualized healthcare options became

popularised in Ontario since the onset of the COVID-19 pandemic. Additionally, it seems that this December 2022 update to the OHIP virtualized healthcare billing framework has had some negative funding ramifications for private virtualized healthcare platforms that had entered the space over the past few years. "Throughout the COVID-19 pandemic, there has been a proliferation of private virtual visit service providers" (Gray et al., 2021, p. 21). These types of services have been available and unregulated in Ontario for some time now, regardless of the COVID-19 pandemic. While in the past they have been slow, or have failed, to gain traction (Webster, 2016), there have now been concerns voiced about the privatisation of health in virtual spaces and what this may mean for Ontario's public healthcare system (The College of Family Physicians of Canada, 2022; Vogel 2020; Lupton, 2017).

Specifically, a type of virtualized healthcare service called "virtual care clinics" has grown, largely unregulated, in Ontario. The latest Virtual Care Program launched in December of 2022 is the first iteration of regulation for virtual care after the onset of the COVID-19 pandemic has effectively reduced the amount that physicians can bill OHIP for virtual care services provided to patients they have not met already in person (Griffin, 2022). This reduces the amount that physicians working at virtual care walk-in style clinics can make, which may impact the funding models of these virtual care walk-in style businesses that have become more popular in the wake of the pandemic. The Ontario Medical Association released a report that questioned the overall effectiveness of these virtual walk-in clinics; however, many practitioners and industry professionals believe the services provided to be of value to the province (Griffin, 2022). These new regulations have been introduced at a time where news stories have been highlighting emergency services and healthcare staffing "crises" (Bhargava, 2022; Ziafati, 2022; Hwang and Pyle, 2022), ultimately bringing attention to an increasingly politicised issue of

healthcare service availability in Ontario. Whether inopportune timing of these new regulations is the issue, or if it is virtual care walk-in clinics taking advantage of the healthcare availability situation in order to further their own businesses, the political nature of this issue warrants further examination of these services and what they ultimately can contribute to healthcare services in the province.

2.3 Health Communication

Health communication is a multidisciplinary field with many definitions. After a scoping review, Schiavo concludes that health communication is "concerned with reaching different populations and groups to exchange health-related information, ideas, and methods in order to influence, engage, empower, and support individuals, communities, health care professionals, patients, policymakers, organizations, special groups and the public, so that they will champion, introduce, adopt, or sustain a health or social behavior, practice, or policy that will ultimately improve individual, community, and public health outcomes" (Schiavo, 2013, p. 9). This definition is all-encompassing, but in short, health communication is a field that examines "communication strategies to inform and influence individual and community knowledge, attitudes and practices (KAP) with regard to health and healthcare" (Thomas, 2006, p. 1).

There are a number of key foundational frameworks that influence health communication, especially as it is a multidisciplinary field. These frameworks include theories from anthropology, sociology, medical models, marketing and social marketing, behavioural and social science, and mass media and new media (Schiavo, 2013, p. 35). The latter two fields on the list will be highlighted. Behavioural and social science-based theories include Rogers' (2003) diffusion of innovations theory as a social behavioural theory that contributes to the foundation

of health communication. Schiavo explains that this theory contributes the concept of an "early audience segmentation model, which supports the importance of looking at intended audiences as a complex puzzle of different subgroups, stages, needs, and priorities that should be considered in developing communication messages and activities" (Schiavo, 2013, p. 37). Specifically, the theory of diffusion of innovations applies to this work as virtualized healthcare is an innovation, and the narrative around it's uptake seen in the discourses analysed below does echo the early adopter through to laggard opinions people have regarding virtualized healthcare.

This dissertation focuses on virtualized healthcare, which it views as a communication medium. Therefore, media-oriented theoretical frameworks in health communication are significant to this work. There are a few media-oriented theories that are commonly referenced in health communication research, "focusing primarily on attempting to explain the process through which new media may help build community around a health or social issue, influence people's participation, share knowledge, expand one's social networks, test messages and strategies, and ultimately influence behavior and social change" (Schiavo, 2013, p. 52). One such foundational theory is agenda-setting theory (McCombs & Shaw, 1972). "Agenda-setting theory holds that ''the news media can set the agenda for public thought and discussion'' (McCombs & Reynolds, 2002, p. 1)" (Ogata Jones et al., 2006, p. 96). Agenda-setting theory has been used in health communication research in studies of health-related media campaigns, such as anti-smoking (Pierce, Dwyer, Chamberlain, Aldrich, and Shelley, 1986; as noted by Ogata Jones et al., 2006) and breast cancer awareness (Ogata Jones et al., 2006). Ogata et al. also discuss "the role of media in setting the public agenda for health care reform (Hacker, 1996), AIDS policy (Backstrom & Robins, 1998), tobacco farming diversification (Altman, Strunk, & Smith, 1999), and smoking policy (Sato, 2003)" (Ogata Jones et al., 2006, p. 97). Agenda-setting theory is

most related to the discussion in the news discourse analysis chapter, as the mass media news stories analysed covered certain aspects of virtual care more frequently than others (as discussed in the news framing analysis in the chapter below).

Ultimately, Schiavo notes that "health communication is about improving health outcomes by encouraging behavior modification and social change… It is a comprehensive approach that relies on the full understanding and participation of its intended audiences. (2013, p. 9). The study of virtualized healthcare as an act of communication aims to understand the experiences of its intended audiences (patients) and suggest best practices that may improve health outcomes of those populations that engage with the innovation/mediated form of health communication.

2.3.1 Health Communication as Discourse

A brief topic modelling analysis[1] (a method which will be described in more detail in the scientific literature discourse analysis below), and additional manual literature review was conducted on the top 2000 cited articles in *Health Communication,* the highest cited publication in its field, with 755 documents published between 2018 and 2021, and 4,200 citations in the same time period (data retrieved from Scopus.com/sources.uri on Oct 26, 2022). As can be seen in Table 8, the largest subfield of health communication research focuses on interactions between patients and practitioners or practitioners amongst each other (Thomas, 2006, p. 2). This type of interpersonal communication has been examined in face-to-face settings (Robinson, 2003;

---

[1] Topic modelling of the 2000 articles selected was conducted using MEH and Boyd's R Script for PCA (Boyd, 2020). Of the 10 factors pulled from the PCA analysis, six topics were determined to be topically grouped (three factors surrounded methods based terms, and one factor was based on publishing terms ie.erlbaum; lawrence; aspect; article; copyright). A manual analysis of the keywords used to define the six groups resulted in the topic descriptions outlined in Table 8.

Manning and Ray, 2002; Barnes, 2018), and through mediated communication, such as email

(Roter et al., 2008; Houston et al., 2003).

Table 8

Topics discussed in Health Communication

Topic	# of Articles
Doctor-patient interpersonal communication	256
Health communication about stigmatised topics	215
Media/news health communication	200
Health communication for socially spread infections	180
Health communication for minority/marginalised populations	168
Patients (mostly cancer) seeking health info online	147

These types and topics of communication comprise of research that involves the analysis of

discourse, whether researchers use discourse analysis methods or not. Discourse is defined here

as including both the "formal linguistic aspects" of communication, as well as understanding

communication as inherently involving "institutionalised patterns of knowledge that become

manifest in disciplinary structures and operate by the connection of knowledge, community, and

power" (Yazdannik et al., 2017, p. 2). Health communication, as it is a communicative act, is

discursive. Discourse analysis, in its pivotal formulation by Foucault, initially involved medical

and health discourses, as described by Lupton to include the "analyses of the power relations

inherent in such institutions in mental hospitals and medical clinics, and in societal attitudes to

human sexuality" (Lupton, 1992, p. 145).

Health communication as discourse includes both written texts and spoken interactions

(as per Lupton, 1992), and also covers the ever growing textual, audio, and visual health-related

content available on the internet. The internet has arguably become a primary source of health

communication, "supporting the increasing collaboration of healthcare professionals, patients, and organisational actors in the discursive construction of health and illness" (Hunt & Harvey, 2015, p. 135). Attention has also been paid towards health communication in the discursive area of news and mass media by discourse analyses (Lupton, 1992; Jones 2015). These forms of health communication discourse are certainly covered in the themes found to be popular in Health Communication per the brief scoping review above. Analysis of health communication discourse is as varied as the many ways, places, and topic areas that health communication may cover. This dissertation analyses three discourses of health communication, health communication in the news, in scientific literature, and in personal accounts of patient experiences.

2.3.2 Health Communication in the News

In addition to interpersonal communication, researchers examine health communication in newspapers (Lee & Basnyat, 2013; Young et al., 2017), on television news (Gearhart & Dinkel, 2016), and in online news (Gesser-Edelsburg et al., 2017). News platforms play an important role in the dissemination of health information. "How health issues and diseases are framed in the news impacts audiences' understanding of health problems and their attitudes and behaviors" (Lee & Basnyat, 2013, p. 120). Studies of health communication in the news vary from examinations of information about widespread urgent health concerns such as the contagious outbreaks of H1N1 (Lee & Basnyat, 2013) or polio (Gesser-Edelsburg et al., 2017), to information about topics that are specific to certain groups. For example, Young et al. (2017) examine social representations of cyberbullying and adolescent suicide, and Gearhart and Dinkel (2016) analyse breastfeeding information communicated via television news. Collins et al. (2017) examine antimicrobial resistance in the UK news, finding antibiotics themselves (and the

infections they treat) were "instilled with agency" (p. 251) in the news stories studied. Bailey et

al. (2021) analyse news coverage of dementia in the UK, finding that the type of reporting on

this subject is possibly problematic for people living with dementia, and their families (which is

corroborated by a news framing analysis of the same topic by Van Gorp & Vercruysse, 2012).

Herat examines differences in British and Sri Lankan news coverage of COVID-19, finding that

"Britain's priorities are centred on the economy whereas Sri Lankan newspapers focus on

educating people about the severity of COVID-19" (2020, p. 1).

2.3.3 Health Communication in Scientific Literature

The scientific research field of health communication itself is a scientific discourse. In

their introspective review of topics discussed in *Health Communication,* Kim et al. (2010)

identify the topics most frequently published by the journal's most productive authors as:

medical communication between experts and patients, organ donation, cancers (excluding breast

cancer), drug/narcotic/marijuana, and health information (p. 496). Hannawa et al. observe that

introspective analyses, which they argue have increased in in recent years (2015, p. 521), are

limited in that they tend to focus on publications submitted to Health Communication and other

journals in the field, therefore prioritising examination of work that "originates from

communication scholars… over research that was conducted by scholars from other relevant

disciplines" (Hannawa et al., 2015, p. 522). Moving beyond introspective examinations of the

field of health communication becomes key in understanding health communication in scientific

discourses, as this topic appears in many areas of research. Examples of this provided by

Hannawa et al. include psychology, sociology, and medicine (2015, p. 522). Hannawa et al.

(2015) examine peer-reviewed articles that contained the search terms *health* and *communication*

and found that the most frequented topic of study was that of "health promotion, prevention, or

campaigns," followed by "health care," and then "health information" (p. 525) with first authors predominantly coming from "the area of medicine and related fields (56.9%) and from the communication discipline (27.4%)" (p.524). Their broad definition of health communication, "interaction between at least two people regarding issues related to health" (2015, p. 524), informs their view, which showcases both news and scientific literature discourses as arenas for health communication beyond user descriptions of interpersonal health communication experienced via virtualized healthcare.

2.3.4 Health Communication and User Experience

User experience is a concept that originated in human-computer interaction (HCI) and is commonly defined as, "a person's perception and responses that result from the use or anticipated use of a product, system or service" (Schulze & Krömker, 2010 via Newton et al., 2021) User experience focuses on the perspective of the user, which is often "mismatched" with that of the designer (Norman & Ortony, 2006). Studies of health communication that reference user experiences specifically (beyond patient or practitioner experiences) are strongly related to health communication technology design and development. While interpersonal health communication is something a user may experience (whether the user is a patient or practitioner or other stakeholder), health communication studies that specifically mention user experience overwhelmingly focus on technologically mediated communication. Several methods can be used to collect user experiences, although the main methods found in healthcare communication research settings tend to be user interviews or focus groups, and questionnaires or surveys. For example, Brockmann et al. conducted interviews about user experiences with polygenic (genetic testing) reports. Vilaro et al. (2020) and Lazard et al. (2020) both used a combination of focus groups and interviews to test, develop, and modify online health communication tools (a virtual

health assistant that promotes colorectal cancer screening, and an online tobacco education resource respectively). In terms of questionnaires and surveys, research has been conducted on user experiences of health information dissemination tools, such as O'Conner et al.'s research on three versions of a dementia risk reduction website (2014), or Song et al., who surveyed user experiences of obtaining health information via the social media platform, Tiktok (2021). Questionnaires and surveys are also used to understand user experience in relation to health communication tools and their clinical effects. Van't Riet at al. (2010) examined user experience of an online physical activity promotion program in hopes of identifying demographic, psychological, and behavioural predictors of use. Kobak et al. measured a combination of clinical efficacy with two forms of self-reported user satisfaction questionnaires for a computerised cognitive behaviour therapy self-help treatment for obsessive-compulsive disorder (2015).

3. Methodology

This dissertation uses mixed methods to examine three discourses of virtualized healthcare. These three discourses can be considered as genres of health communication, and include news articles, scientific literature, and accounts of user experience. The overarching methodological framework used is discourse analysis, with the goal of using the three discourse genres (each of which represent a form of health communication) to provide a summative review of patient experience of virtualized healthcare. Below is a discussion discourse analysis, including its application to health communication, followed by an outline of methods used in this dissertation. The methodological tools used to analyse these discourses are discussed below in this chapter.

Specifically, the news and scientific literature discourses are analysed using computational methods that allow for the distillation of large text data sets. The news and scientific literature discourses are each analysed using bespoke corpus linguistics approaches. The news discourse is analysed with a combination of computational linguistics using AntConc software (quantitative), and Grounded Theory (qualitative) to conduct a mixed method news framing analysis. The scientific literature discourse combines topic modelling using Meaning Extraction Helper software (quantitative) with Grounded Theory (qualitative) to result in a mixed method scientific mapping analysis. The user experience discourse features a solely qualitative analysis, using Meyring's Qualitative Content Analysis Method.

This combination of mixed methods includes separate analyses of the three discourse genres, and ultimately allows for greater depth in illustration of results, and for comparison between themes and they ways they are discussed, depending on discourse authorship and intended audience. The inclusion of the three different discourses allows for the understanding of

patient experiences of virtualized healthcare in terms of how it is communicated by those at the forefront of research (scientific literature discourse), how it is reported on for the general public (news discourse), and ultimately how patients experience virtualized healthcare themselves (user experience discourse).

3.1 Discourse Analysis

This dissertation employs mixed methods to analyse three genres of virtual care discourse. Discourse in this sense is understood in the tradition of Foucault and Derrida, not referring only to "formal linguistic aspects" of communication, but also to the structures that both form and are formed by social interaction. The conceptual frameworks discussed in this section are linked to this understanding of discourse, since the extension and reinforcement of social structures through health communication discourses are examined in communication of knowledge among health science researchers, in mobilisation or transfer of knowledge in news journalism, and in practice (during experiences of virtualized healthcare visits).

Discourse analysis is a "broad and diverse field" that encompasses many methodological approaches (Yazdannik et al., 2017, p. 1; Biber, 2007, p. 1). At its core, discourse analysis "examines language in use" (Yazdannik et al., 2017, p. 1). Biber references Schiffrin, Tannen, and Hamilton (2001), who outline three categories of discourse analysis as:

1. The study of language use;

2. The study of linguistic structure 'beyond the sentence'; and

3. The study of social practices and ideological assumptions that are associated with language and or communication (2007, p. 1).

The third category of analysis is socio-cultural, focussing on "the broader role of texts in culture;" is not specifically focused on "understanding the linguistic forms used in [….]texts"

(Biber, 2007, p. 2). This category aligns with Yazdannik et al.'s explanation of *social linguistic analysis*, a style of discourse analysis that "gives insight into the organisation and construction of these texts and how they work to construct and organise other phenomena" (Yazdannik et al., 2017, p. 4).

The application of discourse analysis to health communication is not novel, as it has been used to examine many contexts in which health communication may take place (Vilar-Lunch, 2022; Yazdannik et al., 2017). While Babrow et al. focuses specifically on the concept of uncertainty in health communication, their work explains that health and illness "are constituted socially through discourse" (Babrow et al., 1998, p. 1). Specifically, interpersonal health communication has been examined via discourse analysis methods by Ozavci et al., who use critical discourse analysis to recommend best practices for practitioners when discussing medication with patients (2022). Vilar-Lluch also uses discourse analysis to look at interpersonal health communication, specifically focusing on the use of modal words (grey area words such as "maybe") by practitioners in varying contexts (2022). There are also examples of discourse analysis that look at specific types of interpersonal health communication such as narrative analysis (Eggly, 2022) or behavioural interactions (Baltes & Wahl, 1996). Discourse analysis has been used to understand online and mediated health communication as well. For example, Willis (2016) uses discourse analysis to examine online health communities used by people who self-manage their chronic disease symptoms, and Lawless et al., (2018) analyse discourses of dementia risk-prevention on social media. Finally, discourse analysis has been used as a framework for examining health communication through news media, such as in Ho et al. 's 2016 review of Neti Pot coverage in American news media, or Meyer et al.'s 2019 review of response comments to online CBC news articles about seasonal flu vaccines.

The discourses analysed in this dissertation represent distinct genres[2], or text types, or registers. This dissertation uses the term genre to denote the idea of a socially recognized category of discourse per Stubbs (1996). The call to account for socio-cultural context is also repeated in those fields that focus solely on genre analysis (Biel, 2017, p. 3). Stubbs explains that analysis that focuses on classification of texts into genres may not be the most important point in genre-related discourse analysis, but instead that the focus should be on "knowing how the category can make a difference to the way in which it is interpreted" (Stubbs, 1996, p. 8). Furthermore, he states that "the ability to identify and compare different genres contributes to our ability to understand them" (Stubbs, 1996, p. 8).

Comparing the themes that occur in the discourse genres of scientific literature and news articles provides a further understanding of how these two genres of health communication discourse have socio-cultural impact. Adding an analysis of user experience discourse to this understanding provides information on themes that overlap in public discourses and personal accounts of interpersonal health communication experiences via virtualized healthcare. Babrow et al. note that health communication activities can present the same information in different ways, with different effects, depending on the context (1998). Their work on uncertainty in health communication discusses how "research on medical discourse reveals the uncertainty that characterises attitudes toward [different] sources of information: our sense of their credibility, trustworthiness, and so forth" (Babrow et al., 1998). Although they focus on practitioner health

---

[2]While genres and text types can be defined individually, as they both refer to the general socially recognized categorization of discourses. Neither genre nor text type prescribes comprehensive or generally accepted categories (Stubs 1996, p. 7).

communication, Babrow et al. review how different the genres of health communication have an effect both the delivery and reception of health information.

Analysis that includes multiple discourse genres is not novel in health communication research. One category of research concerned with multiple discourse genres examines clinical impacts of different genres. Bliss and McCabe (2006) for example, examine the clinical application of six different discourse genres in the assessment of children with language disorders. They ultimately conclude that children (even those without language disorders) widely range in their abilities to understand different genres of discourse, and that "discourse is a critical aspect of intervention for functional communication, classroom discourse, and literacy" (Bliss & McCabe, 2006, p. 136). Their research identifies various genres as being best suited for learning in different settings, and simultaneously, while not saying as such in so many words, reinforces the argument that discourse genres can create and maintain socio-cultural norms.

Another area of research concerned with multiple discourse genres examines the defining characteristics of discourse genres themselves. For example, Susan Peck MacDonald uses linguistic analysis to compare the linguistic structure of scientific or academic writing and mainstream journalism on the same topic, that of hormone replacement therapy (2005). She found that information output by mainstream journalists was more likely to be "less tentative," more human-oriented, and "better suited for increasing the narrative potential or emotionality of scientific news than for raising or adjudicating questions about its validity" (MacDonald, 2005, p. 292). Her research implies that health communication discourse may take on new linguistic characteristics depending on genre. Babrow et al., reinforce this implication, citing Atkinson (1995) and Fleck (1935 and 1937), who found language to be increasingly apodictic or certain

"As one moves from journals, through textbooks and vade mecums [guides], or handbooks, to popular works" (1998, p. 2).

3.2 Corpus Linguistics

The news discourse analysis and scientific literature discourse analysis (highlighted in the next chapters) both use a corpus linguistics approach. While discourse analysis is concerned with how texts are intertwined with their socio-cultural context (in addition to language use and linguistic structure), corpus linguistic studies are concerned with language specific details (Charles et al., 2009). Biber explains that "corpus linguistic studies are generally considered to be a type of discourse analysis because they describe the use of linguistic forms in context," and that they fall under the first category of discourse analysis outlined above, that of the study of language use (2007, p. 2). Over time, corpus linguistics methods have come together with discourse analysis as there "has been some adoption of corpus techniques within certain areas of discourse analysis and a corresponding acknowledgement of the importance of discourse-level concerns within some corpus-based work" (Charles et al., 2009, p. 4). Charles et al. go on to explain that corpus linguistic-driven methods tend to take a "bottom-up" (sometimes seen as ad-hoc) approach in order to discover "detailed features of expression that play a crucial, though often hidden role" in the construction of knowledge (2009, p. 4). Charles et al. specifically mention the goal of discovering 'latent patterning' in regard to corpus linguistic studies of academic texts (2009). However, it seems logical to apply this approach to any type of discourse that is a product and re/producer of socio-cultural context. Susan Conrad sums it up best, stating that "corpus-based studies provide complex information about social and textual factors that

influence language choices, and therefore can contribute greatly to our understanding of discourse" (Conrad, 2022, p. 75).

In practice, corpus linguistic studies are characterised by four main features. Foremost, *they examine a corpus* that is "a large principled collection of naturally-occurring texts" (Conrad, 2002, p. 77). These studies employ *computer-assisted analysis techniques* that are used to *emphasise empirical analysis of language use patterns* (Conrad, 2022, p. 77). Conrad explains that while corpus linguistic studies can be sparked by institutional or casual language observations, and often "include intuitive impressions about the impact of particular language choices," the main purpose of this approach is empirical observation (2002, p. 77). "Recognizing patterns of language use necessarily entails assessing whether a phenomenon is common or unusual- a quantitative assessment" (Conrad, 2002, p. 78). Therefore, the fourth feature of corpus linguistic studies is that they *utilise both quantitative and qualitative/ interpretive techniques* (Conrad, 2022, p. 78).

Corpus linguistics, especially methods that involve computational software, have been used recently to understand health communication (Bednarek & Carr, 2019). The study of linguistic characteristics is advantageous in the study of communication in that it "uncovers repeated patterns of language use that can remain hidden by other types of analysis," "allows the rapid analysis of a large amount of data" when conducted computationally, and "is reproducible" (Bednarek & Carr, 2019, p. 499). In terms of health communication and linguistic analysis, areas of study focus on face-to-face conversational analysis (Robinson, 2003; Manning and Ray, 2002; Barnes; 2018) or mediated interactions in one-to-one settings (Roter et al., 2008), one-to-many (Briones et al., 2012), and many-to-many (Shaw et al., 206). Linguistic analysis tools have also been used to examine health communication through the news (Lee & Basnyat, 2013; Gesser-

Edelsburg et al., 2017; Young et al., 2017; Gearhart & Dinkel, 2016; Collins et al., 2017; Bailey et al., 2021; Herat et al., 2020).

3.2.1 Mixing Methods

As per Conrad's framework for corpus linguistics analysis, in this dissertation mixed methods were used to analyse both the news and scientific literature discourses. The news and scientific literature discourses were selected for this corpus linguistics analysis due to the size of data set that was available (a comparison of word counts is available in Table 9 below).

Table 9

Discourse sizes and descriptions

News Discourse	Scientific Literature Discourse	User Experience Discourse
Title and main body content from 1,198 news articles that mention specific keywords, approximately 1,000,412 words	Bibliographic and abstract content from 448 scientific publications that mention specific keywords, abstracts at approximately 122,140 words	Transcripts of 30 30-minute interviews, approximately 55,576 words

Computational methods helped to parse the two large discourses (news and scientific literature) to ultimately pinpoint common themes. Distinct computational linguistics tools were used to quantitatively assess each discourse, and grounded theory is used to qualitatively observe corpora and derive findings. Specifically, the corpus linguistic tools were used to quantitatively identify words (and surrounding contexts) of interest for further qualitative analysis. The quantitative and qualitative methods used under this framework for each discourse, or corpus, are briefly outlined in Table 10.

Table 10

Outline of methods used for corpus analysis

	News Discourse	Scientific Literature Discourse
Quantitative Method (computer assisted)	Keyword analysis and Concordance analysis	Topic Modelling and Bibliographic Coupling
Qualitative Method (interpretive)	News Frame Analysis/ Inductive Manual Coding	Inductive Manual Coding

Note. Specific methodological tools are discussed in more detail in Chapters 4 and 5.

The distinct treatments used in the corpus linguistics approach to analyse the news and scientific literature discourses can also be understood as "bespoke corpus linguistic approaches," a concept coined by Bednarek and Carr (2021, p. 133) for research projects that have project-specific questions requiring textual, content, or discourse analysis. Although both the news and scientific literature discourses were analysed using corpus linguistic methods, a direct comparison between the two discourses based on resultant quantitative findings alone is not possible, since each corpus is differently sized and has its own unique traits and considerations. As such, the resultant descriptions and themes from the analysis of each discourse were considered to provide complementary knowledge of the topic of virtual care and patient experience from multiple angles.

Use of mixed methods has become increasingly common in examining discourses in healthcare settings. Mixing methods to analyse patient experiences in different capacities is demonstrated by Wilson and Hutchinson (1991) to understand experiences of caregivers of Alzheimer's patients, and also by Annells (2006) whose research examines patient experiences of flatus while receiving nursing care. Both studies combine grounded theory (also used as a method in this dissertation) and phenomenology. Importantly, Annells focused on maintaining

discrete and separate treatments regarding the different methodological approaches used, "not only through separate data collection, but also through use of different interview styles and data analysis processes" (2006, p. 56). This separate treatment is key to avoid potential "method slurring," which was a common concern in the early 1990s regarding mixed methods (Annells, 2006). Maintaining distinction between the two corpus linguistics-based approaches used for the news discourse analysis and scientific literature discourse analysis respectively, and the separate methodological treatment of the user experience discourse utilising a third approach (Qualitative Content Analysis Method) is therefore important.

3.2.2 Grounded Theory

Operationally, both the news and scientific literature discourses are first examined using quantitative, computer assisted tools, and then qualitatively examined using inductive manual coding, as it is understood by grounded theory. Grounded theory is used as the qualitative method across each of the corpora by means of inductive manual coding. Grounded theory combines two processes, in which researchers systematically code "bits of information in the data… looking for similarities and differences within these bits to categorise and label the data" (Walker & Myrick, 2006, p. 549). The level of rigour and constant comparison between bits of coded data, which can include words, sentence fragments, full sentences, paragraphs, or beyond, varies based on whose grounded theory framework is being followed (generally researchers reference Glaser and Strauss as the two founders of grounded theory, who have both worked together, and also have their own preferences for operationalizing the method). The second process includes a period in which "the analyst does not engage in coding data per se but merely inspects the data for properties of categories, uses memos to track the analysis, and develops theoretical ideas" (Walker & Myrick, 2006, p. 548). Combining the coding process with this

second process is iterative and systematic, which ultimately allows the researcher to "construct themes, essences, descriptions, and theories" (Walker & Myrick, 2006, p. 548).

In addition to Wilson and Hutchinson (1991) and Annells (2006) discussed above, grounded theory has been used for research in many healthcare contexts. Grounded theory is frequently used to analyse patient experiences. Sinclair et al. use Strausian grounded theory to analyse terminal cancer patients' experiences and preferences of sympathy, empathy and compassion (2017). These forms of communication are found to be distinguishable from each other, which Sinclair et al. suggest should influence practice and policy reform (2017, p. 437). Poteat et al. use grounded theory to analyse interviews with transgender patients and clinicians who have provided care for transgender patients (2013). Their findings suggest that interpersonal stigma continues to function per existing theories of stigma, maintaining "systems of inequality that contribute to health disparities" (Poteat et al., 2013, p. 22).

Grounded theory is also highlighted in studies of organisational transition in healthcare settings. Clark et al. use a grounded theory approach to analyse semi-structured interviews and recordings of historical interviews to understand how organisational identities changed after the merger of two healthcare organisations that were formerly rivals (2010). Strong et al. also use grounded theory to understand organisational change. They analyse interviews with practitioners and administrators before and a year after the introduction of an electronic health record system for a multi-site medical group (Strong et al., 2014).

3.3 Qualitative Content Analysis Method

Qualitative content analysis has been used for healthcare research and is cited in many healthcare studies. This method "allows researchers to find hidden meanings in obtained data at

various stages starting with primary coding, review, and continuous verification" (Hosseini et al., 2013, p. 229). Coding involves the categorisation of slices of texts that "relate to the same central meaning" (Graneheim & Lundman, 2004, p. 106). Analysis of patient experience reports, collected through focus groups and interviews, has been completed using qualitative content analysis. For example, Hosseini et al. use this method for the analysis of participant interviews regarding the cultural implications of an epilepsy diagnosis in Iran (2013). Denison et al. (2017) use content analysis with the coding program NVivo to uncover themes from qualitative interviews with university-age students regarding their perceived barriers to STI testing. Studies have also examined practitioner experiences, such as Moßhammer et al. (2012), who pull themes of inter-practitioner cooperation from focus group transcripts, and Fatahi et al. (2010), who use content analysis to identify themes in nurse-radiographers' experiences when treating patients who do not speak the native language. Additionally, content analysis has been used to identify themes in practitioner experiences through non-interview/focus group data, such as organisational reports. Arnetz et al. demonstrate this in their (2015) analysis of in-hospital patient violence reports. Finally, content analysis has been used to identify themes in health communication focused literature reviews, such as in Wilson and Pahla's systematic review of research articles "focused on health promotion immediately before or following retirement" (2007, p. 330).

The Qualitative Content Analysis Method (QCAM), a specific procedural tool for conducting qualitative content analysis, was used in this research to analyse the user experience discourse. QCAM, as outlined by Mayring (2014), uses deductive content coding methods, by means of analysing text based content with a pre-determined coding guideline. This coding guideline is built based on a list of themes "coming from theory, previous studies, and the

interview agenda or sections of the data collection procedure" (Mayring, 2014, p. 104). Both

grounded theory and QCAM use manual coding to derive a quantitative understanding of themes

which are apparent in discourse; the qualitative content analysis method is a bit more structured

in approach. While both methods recognize the need to be oriented around the particular research

material in question, the grounded theory method allows for more inductive processes for

discovering and coding themes, while the qualitative content analysis method relies on a more

deductive coding process, as "a coding guideline has to be developed" (Mayring, 2014, p. 104)

prior to coding the research material.

　　　　While the above overview of qualitative content analysis methods in healthcare research

is certainly not a scoping review, it is interesting to note that these scientific healthcare papers

tend to minimise the explanation of methods used, rarely citing more than one supporting

framework or engaging critically with content analysis. Of the six studies mentioned above, only

three cite the methodological framework followed. Like this dissertation, Moßhammer et al.

(2012) follow Mayring's process oriented method. Fatahi et al. (2010) follow Graneheim and

Lundman (2004), and Arnetz et al. (2015) follow Thomas (2006). Thomas's prescription of

qualitative content analysis aligns with grounded theory in that it offers a general inductive

approach (2006), rather than Meyring's deductive process that focuses on building codes based

on an existing theoretical framework. The reason for this difference in approach to qualitative

content analysis is explained by Graneheim and Lundman (2004). They engage with qualitative

content analysis critically, reviewing literature and frameworks to understand how best to derive

meaning from text, and how content analysis may vary depending on research context (2004).

They highlight two principal uses of content analysis. The first is a quantitative approach, as

often seen in media research, and the second is a qualitative approach, often seen in nursing

research and education (Graneheim and Lundman, 2004, p. 105). Graneheim and Lundman do not compare inductive and deductive procedures for QCAM in their work; however they do differentiate between qualitative and quantitative approaches, with the quantitative research tradition seen to "still predominate when describing qualitative content analysis (for example, Krippendorff, 1980; Burnard, 1991; Downe Wamboldt, 1992)" (2004, p. 106).

Ultimately, in using Meyring's procedure, this dissertation follows the deductive, quantitative tradition of the more formal approach to QCAM. Utilisation of the QCAM for user experience discourse analysis as a deductive method over an inductive method such as grounded theory, or the more qualitative based content analysis methods used in nursing research and education, is due to the nature of data on experiences of virtualized healthcare. The user experience discourse was collected using a prescribed interview guide, that was based on existing scholarly theory of healthcare value propositions. The scientific literature and news discourses were collected based on article inclusion of keywords. Therefore, inductive approaches to theme discovery, such as grounded theory, make sense for these two discourses, while the more deductive approach of QCAM is suitable for analysis of the user experience discourse, where specific themes were sought out during participant interviews.

4. News Discourse

This chapter examines the news discourse of virtual care. In highlighting patient centricity, this chapter analyses how patients may come to understand virtual care through the news, beyond direct interactions with their healthcare providers. The inclusion of the news article genre is key in this dissertation, as the "mass media are the main source of scientific information for the general public" (Ruhrmann et al., 2015, p. 681). First news framing is outlined, followed by a methodological discussion and analysis. Finally, a summary of findings discusses the themes of virtual care that were highlighted in the news discourse.

In Canada during the emergent phase of the COVID-19 pandemic, virtual care activities were recommended where possible to avoid unnecessary physical contact between practitioners, administrative staff, and the public (Government of Canada, 2020). The portrayal of virtual care by the news is important, as news outlets are said to "reflect the psychological dynamics of society" (Gortner & Pennebaker, 2003, p. 583). The watershed moment that was the onset of the COVID-19 pandemic provides an opportunity to look for any changes in news framing regarding virtual care that may have occurred as a result. In order to understand what is being communicated through this news content, the rest of this section showcases a mixed methods framing analysis that combines computational linguistic analysis with grounded theory-based coding methods to identify the main news frames used in stories about virtual care, and determine whether these news frames differ pre- or post-onset of the Covid-19 pandemic.

4.1 News Framing

News framing analysis is concerned with discovering frames commonly used by journalists to describe news events. Within the fields of sociology and journalism studies,

Goffman is most often credited as the first to examine the role of framing within communication.
(Maniatopoulos et al., 2019; Touri & Koteyko, 2015). Goffman defines frames as "schemata of
interpretation that enable individuals to locate, perceive, identify and label occurrences within
their life space and their world at large" (1974, p. 464). More specifically, news framing occurs
when journalists select parts of an event or phenomenon to include in the news presentation,
which ultimately influences how issues are presented in the news (Collins et al., 2006).

News frame analysis as a methodological approach, is not considered a discourse analysis
approach, however both news frame analysis and discourse analysis are similar based on goals
and what types of data can be analysed (ie. text as discourse). Kogen notes that the methods of
news frame analysis and critical discourse analysis differ in terms of studied impact, with news
frame analysis focusing on potential audience interpretation, and CDA focusing on the
reinforcement of social and cultural norms presented in everyday discourse (2015, p. 7). This
dissertation does not employ critical discourse analysis specifically, however, it does engage
with the third category of discourse analysis presented by Biber (referenced above in the
methodology chapter) as "the study of social practices and ideological assumptions that are
associated with language and or communication" (2007, p. 1), a characteristic of discourse
analysis that is highlighted by CDA. This main difference between CDA and news framing
analysis may not be as impactful when considering the other two categories of discourse analysis
presented by Biber, including "the study of language use," and "the study of linguistic structure
'beyond the sentence'" (2007, p. 1) – as both categories are heavily considered in news framing
analyses, and are specifically considered in this news framing analysis. Ultimately, this news
frame analysis has been included as part of the larger discourse analysis in this dissertation,
based on the principle that Kogen explains: "Both frame analysis and CDA assume that a large

part of how we understand the world around us is based on the subtle and imperceptible ways we are taught to interpret language" (2015, p. 7).

Referencing healthcare, Lee and Basnyat (2013) believe "the relationship between journalism, public relations, and health communication can be examined through framing" (2013, p. 120). Echoing this, Lewis et al. suggest "that the news media play an important role in the construction of public understandings of healthcare" (2018, p. 575). News framing of healthcare events and information can influence patients' perceptions, physician behaviour, (Diedrich and Dockweiler, 2021), and even policy-makers' and health-care professionals' awareness of health-related issues, with the potential to affect regulation, litigation, research and development (Maniatopoulos et al., 2019). Ultimately, the news media can "provide a strategy through which health messages are delivered" (Maniatopoulos et al., 2019, p. 519), which may influence the public's feelings and actions regarding their own health, or the delivery of healthcare to others (Viladrich, 2019). Therefore, it is important to understand the "relevance of the media representation of new forms of healthcare, such as telemedicine, for acceptance, the development of attitudes, and the formulation of positions" (Diedrich & Dockweiler, 2021, p. 539).

News framing studies of healthcare have looked at a wide array of topics. Van Gorp and Vercruysse use an inductive framing analysis approach to understand dominant frames of dementia in Belgian news and popular media (2012). They find a major frame that focused on duality of human life as consisting of a material body and immaterial mind, where dementia negatively affects the immaterial mind and therefore has an overall impact on the quality of an affected human's life (Van Gorp & Vercruysse, 2012). Ruhrmann et al.'s (2015) research includes a framing analysis of clips from scientific television programs. They discuss four major

frames, scientific uncertainty and controversy, scientifically certain data, everyday medical risks, and conflicting scientific evidence, that each treats scientific framing evidence and the risks of molecular medicine differently (Ruhrmann et al., 2015, p. 681). More recent news framing studies of health communication include Viladrich (2019), who review articles in the New York Times for frames about who can or should receive healthcare; the contribution of news frames in British "red-top" tabloids to negative stereotypes regarding certain mental health diagnoses (Bowen et al., 2019); and how the failure of specific medical treatments is framed in daily British newspapers (Maniatopoulos et al., 2019).

4.2 News Corpus Building

The present analysis includes news articles from different regions in order to see any unique Canadian trends in treatment of virtual care in the news. News articles from Canada (CA), Australia (AU), United Kingdom (UK), and the United States of America (US) were selected, due to their similarities when it comes to healthcare and communication technologies. Each of these countries has English as an official language, which was a necessary limiting parameter of the search due to it being the only language spoken by the researcher. Additionally, each of these countries has healthcare systems that include both privatised and publicly funded healthcare (to different extents). These countries also reduced regulatory barriers to increase access to virtual care during the pandemic. All four countries are relatively well supported with internet and/or telephony services (needed for virtual care access).

News articles were included in the corpus based on inclusion of any of the search terms related to virtual care (telehealth, telemedicine, eHealth, digital health, etc.) outlined in Table 11. This discourse analysis was completed first out of the three discourse analyses, and was the

largest and most broad of all three discourse corpora. This discourse is representative of the more

broad definition of virtual care, rather than focusing on virtualized healthcare specifically. As

subsequent discourse analysis were conducted, the formulation of corpora became more nuanced

so as to focus more specifically on virtualized healthcare.

Table 11

Search terms used to create virtual care corpus

digital health	eHealth	telemedicine
digital healthcare	electronic health	virtual care
digitally enabled care	mHealth	Virtual healthcare
digitally enabled health	mobile health	virtual primary care
e-health	remote medicine	virtually enabled care
e-mental health	Telehealth	virtually enabled health

In this news discourse, the articles from the legacy newspapers were pulled from

NexisUni and web scraping was used to pull articles from *The Conversation*[3] website, therefore

limiting the corpus to the years of articles that NexisUni had on file (as *The Conversation* was

able to be fully queried since it is an entirely online and open platform). The resulting corpus

comprised 1,000,412 words across 1,198 news articles, and is depicted in Table 12. Certain

articles were excluded from the corpus in order to focus on discussions of people's experiences

with *virtualized healthcare*, as opposed to technology or data centred discussions. For example,

---

[3] *The Conversation* is an explanatory news outlet that features articles written by university affiliated academics. When health information is communicated by journalists rather than academics or scientists, it may take on new meaning, which is not specifically negative or positive (MacDonald, 2005). Content from *The Conversation* were selected in order to determine if scientific and industry journalism perspectives differ.

articles that discussed electronic health records (EHRs) were only considered for this study if the discussions centred healthcare users, as opposed to news articles on EHRs that centre technology issues, such as systems management, access, or privacy.

Table 12

Virtual care corpus characteristics

Region	Outlet	Time range of articles	No. of Articles	Word Count
CA	The Conversation	2017 – 2021	17	15,961
CA	The Globe & Mail	1984 – 2021	153	125,232
CA	The Toronto Star	1995 – 2021	144	114,649
AU	The Conversation	2011 – 2021	69	66,379
AU	The Herald Sun	1995 – 2021	124	54,791
AU	The Age	1995 – 2021	136	94,194
UK	The Conversation	2015 – 2021	18	18,248
UK	The Times	1993 – 2021	130	84,576
UK	The Independent	1993 – 2021	94	86,202
US	The Conversation	2014 – 2021	61	62,931
US	The Wall Street Journal	2017 – 2021	148	139,098
US	The New York Times	2017 – 2021	104	138,151

News articles were collected from each of the region's highest circulating left-centre and right-centre leaning newspaper outlets (June 2021), along with articles from the region's *The Conversation* online news source. The selection of legacy newspapers (which includes two newspapers per region studied) was designed to represent the "newspapers of record" across the more "centred" portion of the political spectrum. Newspapers of record are recognized as such in part due to their circulation or readership numbers (Martin & Hansen, 1996). Even as

newspapers move online, and physical circulation numbers drop (Green, 2016, p. 3), these legacy newspapers retain their popularity amongst news readers, even "in a media environment increasingly saturated with digital native news outlets" (Nelson, 2020, p. 41). The importance of this status is that these newspapers of record act as "a record keeper and community memory bank" (Martin & Hansen, 1996, p. 582), and may accurately depict public sentiments regarding virtual care within a temporal context.

While this dissertation selected publications based on circulation and readership numbers, there is recognition that these audience measurements have become somewhat outdated as newspapers have moved online (Martin & Hansen, 1996; Green, 2016) and the rise of audience data analytics has become a more common driver of news content valuation (Blanchett Neheli, 2018). The news corpus employed in this dissertation features explanatory articles from the non-profit outlet *The Conversation*. It is common in the news-industry that content strives to acquire eyeballs or clicks "with many advertisers… still more interested in clicks than counting time" spent or other engagement metrics (Blanchett Neheli, 2018). Content from non-profit news outlets, such as *The Conversation*, may potentially be unhindered by the need to attract eyeballs to entice advertiser spending.

It has also been argued that "the long-term survival of the journalism industry requires devising new non-advertising- based revenue models and replacing lost advertising revenue through other means" (Gibson, 2022). Explanatory journalism business models such as the one used by *The Conversation* may prove to be more sustainable, "as not-for-profit journalism organizations are increasingly being considered a model and antidote to some of the economic challenges facing the news business" (Hermida & Young, 2019, p. 93). Ultimately, while these two reporting styles (mainstream journalism and explanatory journalism) may differ in style and

goals, both are news media, and ultimately "play an important role in the construction of public understandings of healthcare" (Lewis et al., 2018, p. 575).

The corpus was split into sub-corpora based on publication date (pre- or post- COVID articles). While the COVID-19 pandemic is still ongoing, the sub-corpus title 'post-COVID' was so named for ease of use, to denote post-onset of COVID-19. Table 13 shows some novel findings regarding how often each region published about virtual care-related activities. For example, newspapers from the USA were most likely to publish after the onset of the COVID-19 pandemic. It was found that the UK was least likely to publish about virtual care-related activities, or at least using the original search terms, as there were just over 189 thousand words from articles on this topic. The Australian sub-corpus had the lowest words per article on average, with the American sub-corpus featuring the highest number of words per article on average (a number significantly impacted by the high average word count of the New York Times). These regional sub-corpus characteristics were ultimately determined to not have impact in terms of this thematic analysis. Despite these different characteristics, each regional sub-corpus featured the same words, with 50% of the top 20 most frequently used words across each of the regions being identical (see Table 14). In order to discover the way that each region uses these words, a news frame analysis was conducted.

Table 13

Virtual care sub corpora characteristics

Region	Total Corpus		Pre-COVID sub-corpus		Post-COVID sub-corpus	
	No. of Articles	Word Count	No. of Articles	Word Count	No. of Articles	Word Count
CA	314	255,842	241	187,929	73	67,913
AU	329	215,364	214	142,332	115	73,032
UK	242	189,026	185	130,084	57	58,942
US	313	340,180	99	106,669	214	233,511

Table 14

Top 20 most frequently occurring words per region (not including stop words)

	CAN		AUS		UK		USA	
	Rank	Freq	Rank	Freq	Rank	Freq	Rank	Freq
Words across all 4 regions								
health	1	3090	1	2503	2	1091	1	2854
say	2	2169	2	1440	1	1165	2	2839
patient	4	1811	4	971	3	1004	3	2179
can	5	1401	6	902	6	708	5	1484
care	3	2149	10	730	10	622	4	2050
but	9	973	7	884	5	710	8	1264
will	16	1027	3	1100	4	866	17	902
more	11	862	5	940	19	677	7	1316
use	13	774	11	728	9	661	10	1182
doctor	8	983	13	638	15	520	11	1105
Words across 3 regions								
people			9	801	8	671	12	1047
who	7	714			17	503	9	1190

medical	12	848	15	601			13	988
service	17	671	8	846	16	519		
be			12	682	11	603	19	871
we	14		14	625	14	531	6	1344
about	19	663	17	600			16	907
Words across 2 regions								
hospital	6	1039			13	553		
year		682			20	459		
do	15	698					15	927
one	18	669			18	489		
Words from a single region								
nhs					7	485		
system	10	971						
time					12	586		
new							14	928
need			16	601				
company							18	876
telehealth			18	598				
australian			19	595				
other							20	868
record	20	660						
mental			20	584	7			

4.3 News Frame Analysis

The method used for this analysis was based on the work of Touri and Koteyko, (2015) and Zottola et al., (2020). Essentially, computational linguistics tools were used to target statistically significant words and surrounding sentence fragments within articles that may be representative of repeating themes that ultimately build out into news frames. AntConc, a non-proprietary "corpus analysis toolkit for concordancing and text analysis" (Anthony, 2020), was

used for the computational portion of analysis, including functions such as keyword discovery

and the collocate and N-gram tools[4]. From there, the sentence fragments were manually coded

via grounded theory methods, similar to a traditional manual news frame analysis.[5]

The analysis was conducted in three stages. First, keywords were sought out in each from

both the pre-COVID and post-COVID sub corpora of articles; those words are statistically

significant compared to a larger reference corpus (per Baker, 2010; Herat, 2020; Bowen et al.,

2019; Bailey et al., 2020). The AntConc keyword tool was used to compare the news corpus to

the larger reference corpus of the 1994 written language British National Corpus (Anthony,

2021). The BNC is a large, standardised reference corpus developed at the University of Oxford,

whose written portion includes "extracts from regional and national newspapers, specialist

periodicals and journals for all ages and interests, academic books and popular fiction, published

and unpublished letters and memoranda, school and university essays, among many other kinds

of text" (British National Corpus, n.d.). Keywords that were apparent in most articles within sub-

corpus are listed in Table 15.

---

[4] Lemmatization (the grouping of different forms of the same word) of the word lists created in AntConc was based on the ANT BNC Lemma List version 4 (Anthony, 2021), which was further edited to include the term *dr* included as a lemmatization of *doctor*. A stopwords list from the NLTK's list of English Stopwords (NLTK Project, n.d.) was updated to include the term *x,* a term which was used in a number of articles as a page number.

[5] This method was used over an entirely manual content analysis due to the size of the corpus, which includes 1,198 news articles. Upon a review of health-related news studies, I found that manual coding methods were typically used to examine corpora under 400 articles (Ogbogu & Hardcastle, 2021; Viladrich, 2019; Maniatopoulos et al., 2018; Diedrich & Dockweiler, 2021; Collins et al., 2006).

Table 15

Keywords from pre-COVID and post-COVID sub corpora (compared to BNC)

Pre-Covid sub-corpus	Both Subcopora	Post-Covid sub-corpus
hospital	access	coronavirus
information	also	covid
patient	care	even
system	could	get
technology	doctors	home
	health	like
	help	make
	many	may
	medical	need
	new	pandemic
	one	services
	patients	telehealth
	people	
	time	
	use	
	would	
	year	

Corpus linguistics defines keyness as the measure of words that statistically occur more often in one corpus than another corpus (per Baker, 2010; Herat, 2020; Bowen et al., 2019; Bailey et al., 2020). Scott, who is credited with introducing the term 'key word' (1997), was concerned with finding words that could be grouped together in culturally significant ways (Gabrielatos, 2018). The goal of keyword analysis in this analysis was to find keywords that may communicate "socially important concepts" (Scott, 1997, p. 233). Touri and Koteyko (2015) state that keywords play a role in constructing frames, a concept based on Entman's suggestion

that frames are "manifested by the presence or absence of certain keywords…that provide thematically reinforcing clusters of facts or judgements" (Entman, 1993, p. 52).

Rather than focus on the top 100 keywords, which is an established practice in corpus linguistics (Zottola et al., 2020; Baker et al., 2013), this analysis extracted keywords that were apparent in the majority of articles within the subcorpus under analysis. This narrowed the list of keywords, which achieved the same goal as focusing on the top 100 keywords so that the list of keywords "affords a 'representative overview' without being overwhelming to the reader" (Zottola et al., 2020, p. 89). The choice to focus on keywords that appear in a majority of articles allowed for the ignoring of keywords that had statistical significance when compared to a reference corpus, but were only apparent in a few articles within the target corpus. For example, the term *veterans* was a keyword within one of the subcorpora, but was included in only 4 of 165 articles. One can infer that while *veterans* can be treated via telehealth, it is not a topic that news audiences will frequently see in discussions of telehealth.

In the second stage, using AntConc again, the top three collocates (those words statistically more likely to appear close to the keyword) of each keyword were identified. Then, the concordances (a set amount of characters around the keyword) of each instance where the keywords and collocates were used together were collected. These concordances were used for the rest of the inductive manual coding analysis in the second and third stages, as they showcase the use-context of the keywords and collocates. This stage pinpointed word combinations that news audiences would see together most often, and allowed for the derivation of overarching themes, called semantic sets by Touri and Koteyko (2015). The five overarching themes discovered included: access, location, services, technology, and time.

Finally, a systematic manual analysis of frames was conducted. The concordances of the five overarching themes were categorised into frame matrices, a practice developed by Van Gorp (2010) and Van Gorp and Vercruysse (2012), also used by Touri and Koteyko (2015) and Zottola et al. (2020). To complete the frame matrices, every concordance was manually categorised as *cause*, *consequence*, and *solution/action*. In this iterative process, the *issue definition* (used to title the frame matrices below) became apparent. The column of *lexical choices* consisted of the collocated words and keywords that were used most in the frame (in this analysis, the collocated words and keywords that comprise the lexical choices are **bolded** when appearing within their concordances for ease of recognition). The resulting frame matrices are displayed in the findings section.

4.4 News Frame Findings

Overall, eight frames were discovered. These eight frames fall under the overarching themes of access (x2), location (x2), time (x2), technology (x1), and services (x1). The frame matrices presented below were constructed to highlight patient and practitioner experience. Throughout each of the frames, virtual care technologies and services are also key topics, although they are generally seen as a consequence of or solution to healthcare barriers experienced by patients and practitioners. The construction of these matrices is patient/practitioner, or person-centred, by intentionally placing people as main actors, rather than technology or regulation.

The frames found under each overarching theme are outlined below. Under each frame matrix are additional ways in which these frames are used in news articles to discuss different themes or topics.

Access Frames

Pre-Covid: Increasing access to EHRs streamlines healthcare services

Cause	Consequence	Solution/action	Lexical Choices
Access increasing due to patient and practitioner uptake, tech availability, and government incentivisation	Streamlined health service provision and potential for security and privacy issues	Security issues resolved by more technology and government regulation	Access: information, patients, records

Post-Covid: Decreased access to healthcare services can be improved via virtual care

Cause	Consequence	Solution/action	Lexical Choices
Access limited by natural events, regulation, demographics, location, tech availability	Decreased access to services can lead to health complications	Increase access to healthcare via pro-virtual care regulation and/or tech innovation* *OR patient action required (travel)	Access: abortion, people, services

In the Pre-Covid sub-corpus, the main frame of access centres on electronic health records (EHRs) and how increasing access to such records, for both practitioners and patients, would result in more streamlined healthcare services.

> "…office, there is only limited access to an EHR system. "The Calgary region is behind many of the ten health-care regions in the province," he says. "I do have access…" (The Globe and Mail, Canada, Pre-Covid)

A counter-frame can be seen in the corpus, although instances of this counter-frame appearing in news publications are rare.

> "what is useful to the patient is the data that the patients themselves can measure directly. Having **access** to **information** held by the doctor is relatively unimportant…" (The Conversation, Australia, Pre-Covid)

In the Post-Covid sub-corpus, the framing of access turns to focus on accessing healthcare services, rather than EHRs. Specifically, the main frame here points towards an overall decrease in access to existing (in-person) healthcare services, largely due to the pandemic and the need for social distancing. The articles in this sub-corpus are likely to describe how this decrease in access can be aided via virtual care services and technology.

> "...and help to minimise the spread of COVID-19 in our community as **people** can **access** medical care and any medication they may need without needing to leave their home…" (The Herald Sun, Australia, Post-Covid)

Two less frequently seen, although still consistent frames that appear in the access semantic set are concerned with the healthcare access gap or abortion. Overall five percent of concordances included in the access semantic set reference the healthcare access gap. There is no clear trend in these concordances as to whether virtual care would minimise this access gap, increase the gap, or not impact the gap at all.

"Experts have said that telemedicine has also facilitated easier **access** for non-binary **people** or those in the LGBTQ+ community who find medicine exclusionary" (The Independent, UK, Post-Covid).

"...minority ethnic heritage and low economic status negatively impact whether older **people** **access** health information online. This isn't the only knock-on effect for BAME people either…" (The Conversation, UK, Post-Covid)

"Telemedicine also raises new questions of equity. Even though it promises improved **access** for **people** in rural and underserved areas, video visits require high-speed internet, which is less…" (The New York Times, US, Post-Covid)

Of the concordances examined under the access semantic set, 25 UK, 2 AU, and 16 US concordances discuss access to abortion; however some (8/25) of the UK concordance clearly discuss US abortion policy. All the concordances that reference this topic see abortion as being affected by regulatory measures, such as the government allowing, or trying to disallow tele-abortion/virtual appointments and the mailing abortion medication.

"...including Texas, Ohio and Louisiana - have pushed to close **abortion** clinics or severely curtail **access**, arguing that abortion is a nonessential procedure that ought to be delayed." (The New York Times, US, Post-Covid)

Location Frames

Pre-Covid: Virtual care technology solves hospital congestion

Cause	Consequence	Solution/action	Lexical Choices
Pre/post and in-hospital care coordination can be expensive, unorganised, inconvenient	Potential for poor treatment within hospital, or poor health outcomes due to "at-home self treatment" or no treatment	Virtual care technology allows for at-home monitoring, accessing healthcare services & records, keeping patients at home, and practitioners better informed of patient status	Hospital: general, hospital, patients

Post-Covid: Virtual care technology allows for care from home

Cause	Consequence	Solution/action	Lexical Choices
Pandemic/personal preference increase desire for in-home care	Stay at home due to pandemic relieves pressure from overwhelmed hospitals, due to personal preference = less stress on patients)	Virtual care technology allows for accessing healthcare services, for both patients & practitioners staying at home	Home: patients, people, stay

The lexical choices in the location semantic set are nearly opposites when discussing healthcare services, in that Pre-Covid concordances discuss the hospital while Post-Covid concordances discuss the home. However, in both sub corpora, regardless of location, virtual care technology is framed as a way for patients to receive care and practitioners to provide care off-site, out of hospital, or at the patient's home or location. In particular, the pre-Covid sub-corpus frames virtual care technology as allowing hospital workflows to become more streamlined.

> "Beyond easing access to care and improving patient outcomes, the virtual **hospital** at Women's College **Hospital** can also reduce avoidable hospital admissions, saving money for the health-care system" (The Globe and Mail, CA, Pre-Covid)

> "...allowing them to provide appropriate care interventions much earlier. This helps **patients** stay out of **hospital** and improve their quality of life" (The Conversation, AU, Pre-Covid)

In the Post-Covid sub-corpus, frames about location see virtual care technology as allowing patients to receive care from home, in order to still receive care during the pandemic.

> "With most of the U.S. under some kind of directive to **stay home**, these are boom times for digital doctors. Besides worried patients whose symptoms sound like Covid…" (The Wall Street Journal, US, Post-Covid)

> "...they will continue using it after this pandemic. Digital healthcare will keep **people** at **home** and therefore save lives. Ultimately, I believe, it will lead to a revolution in healthcare." (The Independent, UK, Post-Covid)

Time Frames

Pre-Covid: Virtual care tech is innovated and developed over time

Cause	Consequence	Solution/action	Lexical Choices
Tech innovation in health space is occurring, patients independently using	Health practices will change but there will also be improvements in efficiency, saving time & money	"One day" virtual care tech will solve efficiency problems in healthcare system	One: day; Time: first, patients; Year: last, million

Post-Covid: Systemic virtual care is innovated and developed over time

Cause	Consequence	Solution/action	Lexical Choices
Pro-virtual care regulation, due to pandemic but also due to innovation making virtual care tech more available	Patients & practitioners allowed to uptake virtual care en masse "for the first time"	Further regulation of virtual care services in the future ("post-pandemic")	Time: first, patients; Year: last, million

In the Pre-Covid sub-corpus, the framing of time and virtual care is typically future oriented. The concordances in this semantic set look at how new virtual care technologies are developing, the rate at which they are being researched, funded, or sought by users (mostly patients), and how they might help patients and practitioners in the future.

"He added that he believed such treatment apps might **one day** improve results for patients with psychiatric disorders." (The New York Times, US, Pre-Covid)
"While these robots do not yet care for patients, they might be replacing nurses **one day** in the not-so-distant future." (The Conversation, CA, Pre-Covid)

In the Post-Covid sub-corpus, the framing of time and virtual care focuses mostly on the present, or what has occurred since the onset of the pandemic. The concordances here look at how regulators have "allowed" for systems, practitioners, and patients to uptake virtual care services. Some of these concordances are also future oriented, looking towards "post-pandemic" virtual care regulation. Overall, the main frame here discusses how virtual care technology is available (which was still seen as developing in the Pre-Covid sub-corpus), but that its systemic use is now developing.

> "Belgium is setting up a regulatory framework for telemedicine for the **first time**, while others like the U.S. and China have loosened restrictions, at least temporarily, on Insurance." (The Wall Street Journal, US, Post-Covid)

> "...psychiatrist has been suddenly catapulted into the digital age by COVID-19. I am (for the **first time** ever) providing mental-health care over the phone and the internet." (The Globe and Mail, CA, Post-Covid)

A minor frame that is consistently brought up in the time semantic set, in both the Pre- and Post-Covid sub corpora, is that of saving time. Telehealth technology and services are seen as time savers for both patients and practitioners.

> "Phone consultations make up a significant part of our daily workload and **save time** for both doctors and patients by helping to sort the wheat from the chaff…" (The Times, UK, Pre-Covid)

> "Telemedicine is more efficient and often just as effective as an office visit. It **saves time** and effort for patients, especially those with limited mobility or who live in remote places." (The New York Times, US, Post-Covid)

Tech Frame

Pre-Covid: User uptake initiates further virtual care technology development

Cause	Consequence	Solution/Action	Lexical Choices
Patient and practitioner initiated uptake, pro-regulation, and	Affordances and efficiencies of healthcare tech, some concerns (listed	Further development needed as tech provides solution for healthcare issues	Time: real; Technology: use, also, information; New: technologies,

gov/private funding for development	below)	(mostly access related)	system, technology

Concordances that focus on the qualities and capabilities of virtual care technologies are mostly found in the Pre-Covid sub-corpus. The main frame discusses how virtual care technologies are being developed, uptaken and regulated, and then developed further. There is an approximate 50/50 split on whether the news articles presented technology as helping people, with technology as the main subject, or people using technology to help themselves and others around them, with a participant as the main subject. While some hesitant sentiments about the adoption of virtual care technology are expressed, mainly from practitioner viewpoints (including potential for inaccurate diagnoses, job loss, less connection between patients/practitioners, and questioning ability of users to successfully use tech), the overall outlook on technological acceptance is positive. It is typically posited in this frame that regulators are the gatekeeper of systemic virtual care technology implementation.

"...College of General Practitioners president Dr Bastian Seidel said doctors wanted to embrace **new technology** but Medicare did not provide rebates for electronic GP consultations." (The Herald Sun, AU, Pre-Covid)
"It has shown us that there is a lot of interest regionally in **new** medical **technologies** even though it's not easy anywhere in the world to change existing clinical…" (The Times, UK, Pre-Covid)
"Accelerate approval for **new technologies** to balance safety and efficiency- Regulators should create simpler evaluation pipeline" (The Conversation, CA, Pre-Covid)

While it does come up, rarely is technology seen as a solution to actual health diagnoses, rather it is a solution for service delivery.

> "among a surging number of companies that are using "internet of things," also known as IoT,
>
> **technology** to create **new** treatments in the health care sector." (The New York Times, US,
>
> Pre-Covid)

Finally, there is also a theme within this technology frame that problematizes the lack of uptake

or slow uptake of virtual care technology by practitioners. This frame is most likely to be found

in the Canadian newspapers, followed by the Australian newspapers.

> "... and so far there's no "clinical evidence" of better health because of **new technology**, he
>
> says. "Most people believe it will (result in better health care) but physicians want
>
> evidence…" (The Toronto Star, CA, Pre-Covid)

> "One reason the health-care industry has been so slow in adopting **information technology** to
>
> directly assist in patient care has been the absence, until very recently, of suitable computer…"
>
> (The Age, AU, Pre-Covid)

Service Frame

Cause	Consequence	Solution/Action	Lexical Choices
Pandemic, and also available technology, results in mass uptake of virtual care services (in both public and private sectors)	Comparison between in-person and virtual care services, discussion of limitations, discussion of affordances & benefits	Recommendations for extending pro-virtual care regulation and development/ improvement of services offered	Care: patients, primary, virtual; Doctors: virtual; Health: mental; Help: need, get; Services: health; make, medical, virtual care, mental; System: health; Telehealth: medicare, via, pandemic, use; Use: people, telemedicine

In the Post-Covid sub-corpus, the main frame of services is that the pandemic, alongside the availability of virtual care technology, has led to an increase in uptake of virtual care services. The focus of the service frame is on the widespread uptake of virtual care services by patients and practitioners alike. While there are discussions of virtual care services in the Pre-Covid sub-corpus, the frame is far more likely to appear in the Post-Covid sub-corpus, with 83% concordances referring to services occurring Post-Covid.

"...to existing coverage provided by an employer. Consumer demand for telemedicine and **virtual** health **care** has exploded during the pandemic. Stephen Morgan, a medical professor at Virginia Tech and chief…" (The Independent, UK, Post-Covid)
"Simon Hagens saw signs that Canada was slowly adopting **virtual** health **care**, but the country lagged behind other developed countries. Then came the pandemic and, suddenly, the…" (The Globe and Mail, CA, Post-Covid)

A minor finding in this semantic set that is not explicitly stated in the concordances, but is still apparent, is that mental health services are seen as separate from other physical health services. Mental health services are always specified as such, and the development and regulation of mental virtual care services was always mentioned specifically, as opposed to being grouped under general medical health. The topic of mental health is most frequently discussed in the Australian newspapers.

"Online platform to ease COVID mental health load - An online **mental health** hub is offering frontline healthcare workers support including telehealth sessions and virtual…" (The Herald Sun, AU, Post-Covid)
"…if you live under the Victorian lockdowns, you can get a **mental health** care plan via telehealth, even if you have not seen the GP before. Once you've got your care plan…" (The Conversation, AU, Post-Covid)

4.5 News Discourse Discussion

The majority of frames are seen in all four regions. Only two themes are noted as being "regionally heavy" in that they are more likely to be found in one region rather than others, although the major frames themselves are still found across all four regions. In particular, the theme of hesitation of technology uptake in the Canadian sub-corpus aligns with a technology counter frame, which positions practitioners as gatekeepers of virtualized healthcare service provision uptake. From the outline in the Literature Review regarding the uptake of virtual care in Ontario, this frame, which sees practitioners (at least physicians and surgeons) as gatekeepers of virtualized healthcare methods, aligns with Ontario healthcare policy being largely unregulated (leaving decision making regarding medium of communication up to practitioners) until December of 2022 (MOH & MOLTC, 2022b). This frame would likely be different if this analysis were run in the later half of 2022, as news stories revolving around the new OHIP billing rules regarding virtualized healthcare have become mainstream. In recent news, the Ontario government and the Ontario Medical Association (OMA), the representative body for physicians and surgeons in Ontario, are largely cited as the establishers of OHIP billing regulations (Casey, 2022; Winsa, 2022; Lee-Shanok 2022; Weeks, 2022). The role of gatekeeper

of virtualized healthcare (at least for physician and surgeon care) has transitioned from the practitioners themselves to government and regulatory bodies.

Less regionally specific, technological development is seen to be overwhelmingly dominant in the pre-COVID-19 sub-corpus as a discussion point in the technology-based frame of user uptake initiating further virtual care. In pre-COVID news articles, virtual care was described, more often than not, as a hobbyist activity for early adopters, leaning towards the *digital monitoring* side of the definition of virtual care provided in the literature review. It was discussed more on an individual level, with virtual care more commonly referred to as a digital monitoring technology. The articles in the post-onset of the COVID-19 pandemic sub-corpus tended to discuss virtual care more commonly as a *virtualized healthcare* service provided by practitioners, with discussion focusing more on regulation and systemic uptake. In this sub-corpus, rather than a technology frame, a service frame was more likely to be found, where user uptake was dependent on virtual care service availability, and where increase in usage would ultimately result in further examination of such services. Anecdotal findings seem to show the urgency of need for socially distanced healthcare services during the pandemic as "helping" those who may have held hesitation towards virtual care adoption.

While the differences between pre- and post-COVID sub corpora and regional sub corpora are apparent, the main news frames across the entire corpus are consistent. In all regions examined and in both pre- and post-COVID times, virtual care is overwhelmingly presented as a solution to many issues that exist in the healthcare system. Similar to Diedrich and Dockweiler's findings (2021), the majority of concordances that mention technology do so with a neutral to positive connotation. Virtual care technology is framed as a tool or service that has the ability to overstep barriers to healthcare access. The explanatory journalism sub-corpus hosts the majority

of articles arguing that those experiencing barriers may not be helped by increased virtual care services, for a variety of reasons. Overall, though, the pandemic is seen across the corpus as a defining moment that has pushed regulators, practitioners, and patients to adopt virtual care technologies in some or all aspects of their care or healthcare service. In the case of Canada and Ontario, this frame supports the true timeline of events as the swift increase of virtual care followed the onset of the pandemic followed by government de-regulation and encouragement of all participants to use such services.

Further to this positive framing of virtual care technology, a consistent theme across all frames of virtual care is that regulators are largely responsible as gatekeepers of both technological use and services. The trend of pro-virtual care regulation is apparent, with more concordances analysed reporting that virtual care services are expanding rather than being taken away. Concordances analysed under all semantic sets nod towards collaboration being required between all stakeholders, including governments, healthcare systems and practitioners, patients, and also technology and developers. Onus is placed consistently on governments and insurance providers, alongside technology developers to facilitate the development of virtual care technology and services, which hierarchically position practitioners as users alongside patients, that are "merely" consulted by developers or regulators. This division of users (practitioners/patients) versus developers and gatekeepers (government/insurance providers) also applies to responsibility to solve existing issues with virtual care technologies and services. Concerns regarding privacy and security of virtual care services are seen in the news corpus as being solvable with protection-oriented regulation and technological innovation.

This analysis presents two limitations of note: the use of the 1994 version of the British National Corpus, and the limited number of manual coders in this study, which will be discussed

more in the concluding chapter. The BNC1994 was used as a reference corpus over the more recent BNC2014 due to its availability on the AntConc website in a pre-formatted package that was compatible with the AntConc software (the BNC2014 reference corpus is not available in such a format as of yet). Additionally, the BNC1994 corpus, "despite its age" is still widely used as a reference corpus in corpus linguistics analysis (Love et al., 2017, p. 320).[6]

---

[6]The 2010 edition of *The Routledge handbook of corpus linguistics* (O'Keeffe and McCarthy), which cites the BNC1994 as a standard and widely used reference corpus, has only recently been updated, with the newer 2022 edition still referencing BNC1994, although more emphasis is placed on the 2014 edition.

5. Scientific Literature Discourse

This chapter examines the discourse of virtual care found in the scientific literature discourse. Typically, a scientific literature review is included in a dissertation as an overarching summary of scientific literature to date on a topic, before the analysis is completed. In this dissertation, the scientific literature is seen as a discourse to be analysed, and thus is included as an analysis chapter rather than as a component of the literature review section above. This dissertation considers the news and scientific literature discourses, and then patient experience interviews, in this particular order, as they range from the most public of discourses to the least public. This chapter showcases scientific literature as a key discourse where health communication regarding virtualized healthcare is located.

In scientific research in general, the number of publications is "increasing at a rapid pace and it is becoming increasingly unfeasible to remain current with everything that is being published" (Aria & Cuccurullo, 2017, p. 959). Aria and Cuccurullo quote Briner and Denyer (2012) and attribute this rapid expansion to an emphasis on "empirical contributions," which has ultimately resulted in large and fragmented research streams (2017, p. 959). The analysis below shows that research concerning patient experience and virtual care is a quickly growing field, and also points towards specific articles and publications as core representations of this field. First science mapping is outlined along with a discussion of the methodological tools used to complete the science mapping. Then, the resultant analyses based on data found using these tools follows. Finally, a summary of findings discusses what themes of virtual care were highlighted by the scientific literature discourse.

Scientific literature is an important genre when it comes to health communication. Stubbs discusses Swales' extensive analyses of the scientific research genre, specifically mentioning that

"the research article is a huge genre: there are perhaps 100 thousand research journals in the world, in science, technology and other subjects, publishing perhaps 5 million articles per year" (1996, p. 13). While not all scientific articles are about healthcare, let alone virtual care and patient experience, it is hard to ignore the potential impact of a discourse genre this large.

5.1 Science Mapping Analysis

Science mapping analysis (SMA), or bibliometric mapping analysis,

"typically consists of several components, notably a body of scientific literature, a set of scientometric and visual analytic tools, metrics, and indicators that can highlight potentially significant patterns and trends, and theories of scientific change that can guide the exploration and interpretation of visualised intellectual structures and dynamic patterns" (Chen, 2017, p. 3)

The tools used below include bibliometric analysis (for a flyover level corpus description), topic modelling (to derive the major topics presented by this corpus of articles), and bibliographic coupling (as a citation analysis method, used in this SMA to corroborate subfields of research that surround specific topics found during topic modelling). Grounded theory inductive coding is then used to qualitatively determine defining themes represented by the scientific articles listed under each of the topics.

First, a bibliometric analysis provides a structured understanding of who the most prolific scholars and institutions are, what themes are being researched, and what the "big picture" of a research field is (Aria & Cuccurullo, 2017). This is followed by a bibliometric coupling analysis. Science mapping methods can provide "representations of intellectual connections within the dynamically changing system of scientific knowledge," or rather show how authors, publications, or articles are connected to each other (Cobo et al., 2011, p. 1382). This aspect of

science mapping will be undertaken by a citation analysis, by means of a bibliometric coupling. This tool allows for the understanding of underlying author connections, which is a unique aspect of scientific or academic corpora.

Then, a topic modelling analysis is outlined. Science mapping is able to produce insights into topics of discussion within the field analysed, who is discussing which topics (and how), and which questions still remain unanswered within a field. This is commonly conducted via co-word analysis, "used to show the conceptual structure and the main concepts treated by a field" (Cobo et al., 2011, p. 1384). This dissertation utilises *topic modelling*, a computational method that uncovers underlying themes or topics in a set of documents, as well as "each document's affinities to these topics" (Nikolenko et al., 2017, p. 88). *Topic modelling* identifies "lists of words which have a high probability of co-occurrence" within a dataset, and is offered as an alternative to *keyword analysis* (Murakami et al., 2017, p. 3). Asmussen and Møller find that *topic modelling* lends itself well to literature review, especially as it requires little-to-no pre-existing knowledge of the categories of the papers within a field, and saves the high cost of time for the researcher (2019, p. 2). Following computational topic modelling, manual inductive coding methods, as outlined by grounded theory, were then used to qualitatively summarise research fields represented within the scientific publication corpus.

5.1.1 Scientific Literature Corpus Building

An exploratory review of the abstract and citation databases, Scopus and Web of Science, was initially conducted. Both Scopus and Web of Science (WOS) are considered standard within the bibliographic database product category even though both do lack coverage of the social sciences and humanities (Pranckutė, 2021; Singh et al., 2021). Manually comparing two datasets

produced with the same search terms found that while most articles were included in both bibliographic databases, Scopus included more unique articles in its search results. Scopus was ultimately selected for corpus building due to this feature, and as both Pranckutė and Singh et al., conclude that Scopus has more coverage of the humanities and social sciences, although Pranckutė mentions that this has been contested by some (2021, p. 7).

Table 16 depicts preliminary search results from key search terms believed to be frequently used by those researching patient experience and virtual care. Table 17 shows the returned document results of the search terms that were used to build the news corpus. The terms *electronic health, mHealth*, and *mobile health* were not used despite returning comparable document numbers to the search terms ultimately used (namely, *eHealth, telehealth*, and *telemedicine*). The exclusion of mHealth and mobile health was due to their use in scientific literature to point at eHealth activities conducted with mobile technology (such as cell phones and other personal internet connected devices). The term *electronic health* was excluded due to its consistent use to refer to electronic health records, which are definitely associated with digital monitoring activities. The term *virtual care* itself was included even while it lacked the same level of inclusion in scientific/published documents, due to its popularity in Ontarian vernacular and policy memos. The Scopus database categorises article sources/journals by scientific subject, where journals can categorise themselves by selecting from a pre-existing list of subjects. As displayed in Table 16, there are an average 27 subjects associated with each of the search terms presented (sources may list more than one subject), showcasing how widely this subject matter is discussed. As is typical with systematic literature reviews, the reference section of this dissertation does not include the list of articles collected for analysis, due to the number of articles collected.

Table 16

Search results from Scopus, Jan 27, 2022

Search term	# of documents	# of sources	# of subjects
patient experience	28,860	160	28
virtual care	617	153	25
eHealth	11,656	135	27
telehealth	17,006	158	27
telemedicine	55,733	154	28

Table 17

Search results for other terms (same parameters, but including all 2022)

Search Term	# of documents
electronic health	45,741
mHealth	11,184
mobile health	10,014
digital health	6,644
e-health	6,612
virtual care	953
e-mental health	540
digital healthcare	430
remote medicine	127
Virtual healthcare	95
virtual primary care	27
digitally enabled care	10
digitally enabled health	7
virtually enabled care	0
virtually enabled health	0

Data collection from Scopus was conducted on February 9, 2022. The initial boolean

search query, TITLE-ABS-KEY ("Patient Experience" AND ("telemedicine" OR "telehealth"

OR "virtual care" OR "ehealth")). The complete sample included 589 documents from Scopus,

from the first instance of these key terms occurring together in a paper being published in 1998

(See Figure 6 below) to the search date of February 9, 2022. The search was refined to exclude

any papers not finalised or "in press," and limited to journal articles written in English (for the

same reasons as discussed in the news corpus building section above), as books, book chapters,

presentation slides or other long or non-text based documents may not have abstracts that

therefore would not be available for textual corpus analysis. After these limitations, the search

returned 448 documents which were used in the final sample for analysis.

5.1.2 Bibliometric Analysis

The bibliographic data of the 448 documents was then downloaded and cleaned to create

a dataset of the titles, keywords, and abstracts of these articles and their metadata. Upon review

of the dataset, two articles did not format correctly when downloaded, and one article was a

duplicate, and therefore these three were removed. This data (now representing 445 documents)

was then loaded into Biblioshiny, a shiny/web application that interfaces with the comprehensive

science mapping analysis R-package, Bibliometrix (Aria & Cuccurullo, 2017). Biblioshiny was

run using RStudio (RStudio Team, 2019; R Core Team, 2020). Biblioshiny is a science mapping

analysis (SMA) software tool, which provides "topological and temporal representation of the

cognitive and social structure of a particular research field" (Moral-Muñoz et al., 2020, p. 1).

Moral-Muñoz et al. surveyed popular bibliometric analysis tools in 2020 and recommend

Bibliometrix/Biblioshiny for practitioners due to the platform's "extensive set of techniques implemented, and … the easiness of its interface" (Moral-Muñoz et al., 2020, p. 16).

The Biblioshiny analysis provides an initial overview of the data set. Research articles that include the search terms within the title, abstract, or keywords (authors or indexed) were first published in 1998. The number of articles per year has followed an exponential growth trend, with 2021 seeing the most publications, and trend lines forecasting an increase in 2022 (see Figure 6). The journal most published within this dataset is the Journal of Medical Internet Research, with 28 articles (see Table 18). The most cited articles within the dataset are Woods et al., 2013 (181 citations), Pasluosta et al., 2015 (162 citations), and Powell et al., 2017 (143 citations). A list of articles with 50 or more citations is provided in Table 19.

Figure 6

Annual scientific production of articles from dataset

Table 18

Most published sources of articles within dataset

Sources	Articles
Journal of Medical Internet Research	28
Telemedicine and E-Health	15
BMJ Open	14
JMIR mHealth and uHealth	13
Journal of Telemedicine and Telecare	11
BMC Health Services Research	10
International Journal of Medical Informatics	9
JMIR Research Protocols	7
Journal of Patient Experience	6
British Journal of General Practice	5
JMIR Human Factors	5
Journal of Clinical Nursing	5
Patient Education and Counselling	5
Plos One	5

Note. Journals with less than 5 articles featured in the dataset are not shown.

Table 19

Most cited articles within dataset

Article	Citations
Woods, S. S., Schwartz, E., Tuepker, A., Press, N. A., Nazi, K. M., Turvey, C. L., & Nichol, W. P. (2013). Patient experiences with full electronic access to health records and clinical notes through the My HealtheVet Personal Health Record Pilot: qualitative study. *Journal of Medical Internet research, 15*(3), e2356.	181
Pasluosta, C. F., Gassner, H., Winkler, J., Klucken, J., & Eskofier, B. M. (2015). An emerging era in the management of Parkinson's disease: wearable technologies and the internet of things. *IEEE journal of biomedical and health*	162

informatics, 19(6), 1873-1881.

Powell, Rhea E., Jeffrey M. Henstenburg, Grace Cooper, Judd E. Hollander, and Kristin L. Rising. "Patient perceptions of telehealth primary care video visits." *The Annals of Family Medicine 15,* no. 3 (2017): 225-229.   146

Nundy, Shantanu, Jonathan J. Dick, Chia-Hung Chou, Robert S. Nocon, Marshall H. Chin, and Monica E. Peek. "Mobile phone diabetes project led to improved glycemic control and net savings for Chicago plan participants." *Health Affairs 33*, no. 2 (2014): 265-272.   99

Gorin, S. S., Haggstrom, D., Han, P. K., Fairfield, K. M., Krebs, P., & Clauser, S. B. (2017). Cancer care coordination: a systematic review and meta-analysis of over 30 years of empirical studies. *Annals of Behavioral Medicine*, *51*(4), 532-546.   82

Nazi, K. M., Turvey, C. L., Klein, D. M., Hogan, T. P., & Woods, S. S. (2015). VA OpenNotes: exploring the experiences of early patient adopters with access to clinical notes. *Journal of the American Medical Informatics Association*, *22*(2), 380-389.   77

Hammersley, V., Donaghy, E., Parker, R., McNeilly, H., Atherton, H., Bikker, A., ... & McKinstry, B. (2019). Comparing the content and quality of video, telephone, and face-to-face consultations: a non-randomised, quasi-experimental, exploratory study in UK primary care. *British Journal of General Practice*, *69*(686), e595-e604.   75

Sanger, P. C., Hartzler, A., Han, S. M., Armstrong, C. A., Stewart, M. R., Lordon, R. J., ... & Evans, H. L. (2014). Patient perspectives on post-discharge surgical site infections: towards a patient-centered mobile health solution. *PloS one*, *9*(12), e114016.   72

Williams, V., Price, J., Hardinge, M., Tarassenko, L., & Farmer, A. (2014). Using a mobile health application to support self-management in COPD: a qualitative study. *British Journal of General Practice*, *64*(624), e392-e400.   70

Compen, F. R., Bisseling, E. M., Schellekens, M. P. J., Donders, R., Carlson, L., Lee, M., & Speckens, A. E. M. (2018). Face-to-face and internet-based mindfulness-based cognitive therapy compared with treatment as usual in reducing psychological distress in patients with cancer: a multicenter randomized controlled trial.*Journal of Clinical Oncology, 36*(23)*,* p. 2413-2421.   65

Wilhelmsen, M., Lillevoll, K., Risør, M. B., Høifødt, R., Johansen, M. L., Eisemann, M., & Kolstrup, N. (2013). Motivation to persist with internet-based cognitive behavioural treatment using blended care: a qualitative study. *BMC psychiatry*, *13*(1), 1-9.   63

Jones, Miren I., Sheila M. Greenfield, Emma P. Bray, Sabrina Baral-Grant, FD   62

Richard Hobbs, Roger Holder, Paul Little et al. "Patients' experiences of self-monitoring blood pressure and self-titration of medication: the TASMINH2 trial qualitative study." *British Journal of General Practice* 62, no. 595 (2012): e135-e142.

Greenhalgh, T., & Shaw, S. (2017). Understanding heart failure; explaining telehealth–a hermeneutic systematic review. *BMC cardiovascular disorders*, *17*(1), 1-16.   58

Moll, J., Rexhepi, H., Cajander, Å., Grünloh, C., Huvila, I., Hägglund, M., ... & Åhlfeldt, R. M. (2018). Patients' experiences of accessing their electronic health records: national patient survey in Sweden. *Journal of medical Internet research*, *20*(11), e9492.   54

Eriksson, L., Lindström, B., & Ekenberg, L. (2011). Patients' experiences of telerehabilitation at home after shoulder joint replacement. *Journal of telemedicine and telecare*, *17*(1), 25-30.   50

5.1.3 Topic Modelling (Co-Word Analysis)

Topic modelling is a computational method that uncovers underlying themes or topics in a set of documents, as well as "each document's affinities to these topics" (Nikolenko et al., 2017, p. 88). In 2019, topic modelling method was still relatively novel in literature reviews and categorising research papers (Asmussen & Møller, 2019). However, like Asmussen and Møller, this dissertation finds that topic modelling lends itself well to literature review, especially as it requires little or no pre-existing knowledge of the categories of the papers within a field, and saves the high cost of time for the researcher (2019, p. 2). This systematic literature review uses a tool called Meaning Extraction Helper (Boyd, 2018), which was developed based on the Meaning Extraction Method, described as "a specific type of topic modeling, [that] identifies clusters of words that tend to co-occur across a corpus of text in an automated fashion" (Currin-McCulloch et al., 2021, p. 5). Coherent themes can then be derived through the analysis of these resultant word clusters. For example, topic modelling has been used in a few studies regarding

healthcare and "the virtual." Haddouk and Gouvernet (2016) used the Meaning Extraction Method to examine scientific studies of cyberpsychology/teletherapy. Currin-McCulloch et al. (2021) used the Meaning Extraction Method to analyse online first person experiences of breast cancer survivors.

The Biblioshiny package can produce co-word analysis, deriving clusters of words that commonly co-occur and even shows the highest cited articles and "most contributing" articles (assumed to be articles that mention those words the most) that are associated with each cluster of words (Aria & Cuccurullo, 2022). This scientific mapping analysis (SMA) chose to utilise topic modelling due to its additional focus on "document's affinities to these topics" found within the corpus of documents analysed. Compared to the relatively limited results produced in co-word analysis by Biblioshiny, the topic modelling software used (Meaning Extraction Helper) was able to provide a representational value for the association of each article within the corpus with each topic uncovered. This associative value was used to uncover "most contributing" (strongest associated) articles in a more systematic way than could be determined with Biblioshiny, which were then used in tandem with the highest cited articles of the strongest associated articles to represent each uncovered topic.

Operationally, the titles, authors, index keywords, author keywords, and abstracts from each article were compiled into individual text files in order to create a corpus to use for thematic analysis. These text files were then loaded into the Meaning Extraction Helper (Boyd, 2018), and further analysed using an R script adapted from Boyd (2020), that grouped co-occurring words based on a principal components analysis. "Conceptually, one can think of a Principal Components Analysis (PCA) as a method for finding groups of correlations—in essence, finding groups of words that tend to be used together" (Boyd, 2017, p. 169). Following Boyd's process,

the PCA was set to create 10 factors or groups of words[7]. Each of these factors was characterised by an association with particular words, with the most strongly associated words (with values of 0.2 and above) becoming the descriptors of the main topic found in each factor (displayed in Table 20). Topic titles were determined by manual analysis of these strongly associated words. Each article (.txt file) was grouped based on the topics with which they were most associated with (displayed in Table 21).

Table 20

Meaning Extraction Helper produced word weights per factor (top 10 loading words)

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
covid - 0.77	qualitative - 0.63	male - 0.69	attribution - 0.93	randomize - 0.65
pandemic - 0.75	interview - 0.60	female - 0.67	license - 0.91	trial - 0.62
coronavirus - 0.68	theme - 0.50	middle - 0.67	creative - 0.90	secondary - 0.62
sars.cov - 0.61	transcribe - 0.46	age - 0.67	medium - 0.77	registration - 0.62
X2021 - 0.56	research - 0.44	adult - 0.56	under - 0.75	randomise - 0.55
survey - 0.45	semi.structure - 0.44	conclusion - 0.42	permit - 0.75	intervention - 0.49
in.person - 0.41	semi - 0.42	attitude - 0.38	distribute - 0.75	control - 0.48
X2020 - 0.36	explore - 0.41	study - 0.38	urllink - 0.74	usual - 0.45
X2019 - 0.37	structure - 0.37	result - 0.37	term - 0.67	effectiveness - 0.41
respondent - 0.37	thematic - 0.37	elderly - 0.33	common - 0.61	protocol - 0.38

Factor 6	Factor 7	Factor 8	Factor 9	Factor 10
method - 0.45	cancer - 0.48	practitioner - 0.37	mobile - 0.47	surgical - 0.44
development - 0.45	neoplasm - 0.45	provider - 0.35	monitor - 0.45	surgery - 0.42
background - 0.41	anxiety - 0.40	physician.pt* - 0.31	blood - 0.43	hospital - 0.39
train - 0.38	depress - 0.37	article - 0.30	app - 0.43	undergo - 0.31

---

[7] This number of ten was initially selected as Boyd's tutorial and R Script for using Meaning Extraction Helper start with 10 factors. After the intimal running of the script, other amounts of factors were tested, with a larger number of 15 factors seeing a split in the type of words seen in Factor 4 (words commonly found related to the copyright and more "administrative" journal language). A smaller number of factors was found to reduce the detail.

result - 0.37	oncology - 0.35	priority - 0.30	feasibility - 0.41	department - 0.29
develop - 0.37	mental - 0.305837	access - 0.298339	mhealth - 0.40	outpatient - 0.28
conclusion - 0.36	relation - 0.27	personnel - 0.29	daily - 0.39	consultation - 0.265
usability - 0.356	treatment - 0.25	relation - 0.29	application - 0.37	specialist - 0.25
engagement - 0.36	cognitive - 0.24	organization - 0.28	compliance - 0.35	efficiency - 0.23
team - 0.35	physician.pt* - 0.24	physician - 0.28	measurement - 0.34	remote - 0.23

Note. Physician.pt is short for physician.patient

Table 21

Summary of topics

Factor	Topic	Highest loading words	# of associated articles
1	Pandemic, pandemic responsive healthcare	covid, pandemic, coronavirus, sars-cov	67
2	Qualitative interviews	qualitative, interview, theme, transcribe	77
3	Participant demographic focus	male, female, middle, age	18
4	Journal/publication legal jargon	attribution, license, creative, medium	18
5	Clinical trials	randomize, trial, secondary, registration	32
6	Scientific method/operational subtitles	method, development, background, train	29
7	Diagnosis based, cancer and mental health	cancer, neoplasm, anxiety, depress	7
8	Practitioner focus	practitioner, provider, physician.patient, article	20
9	Diagnosis specific, diabetes and mHealth	mobile, monitor, blood, app	28
10	Hospital based care, aftercare	surgical, surgery, hospital, undergo	27

5.1.4 Bibliographic Coupling (Citation Analysis)

The method of bibliographic coupling was used to further understand the topics produced from topic modelling. Bibliographic coupling takes the existing corpus and creates clusters of articles that share references (Van Eck & Waltman, 2014), in order to discern similar topics, framework, methods, or background research that are similar among articles within a resulting cluster. Bibliographic coupling produces clusters of papers that share references, which may indicate that they "bear a meaningful relation to each other" (Kessler, 1963, p. 49), or "deliberate on and stress similar discussions" (Donthu et al., 2020, p. 7-8). While there are some limitations to bibliographic coupling (Zupic & Carter, 2015, discuss how there is no way to establish "the reason that a particular publication was cited"), this method is regarded as an accurate way to cluster articles and discover themes that are currently present within a field or developing at the research front (Zupic & Cater, 2015; Boyack & Klavans, 2010; Skute et al., 2019, p. 919; Donthu et al., 2021).

An important limitation of bibliographic coupling, or any citation analysis, is that in new and rapidly growing fields, shared references and co-citations are limited merely by the fact that appropriate articles to cite may not have been published. As this is the case with the field of patient experience and virtual care, the current SMA does not use bibliographic coupling for the typical reason (that of grouping articles thematically), but rather to validate that predetermined topic based groups of articles (discovered through topic modelling) are linked in some way via bibliographic references. Using just topic modelling or just bibliographic coupling individually may group articles together by chance (ie. if an article presents a reference as an oppositional framework rather than the one the article is using, or if key words are used atypically), rather

than being truly representational of a specific field or subfield. Using both methods of analysis, bibliographic coupling and topic modelling, highlights groups that not only have key words in common, but also common references. This combination, specifically for determining field(s) of research where citing previous work and frameworks is requisite practice, is a more suitable indicator of scientific fields/subfields than either method alone.

VOSviewer, "a software tool for constructing and visualising bibliometric networks" (VOSviewer, 2022) was used to create networks of articles based on shared references via bibliographic coupling. VOSviewer found shared references among articles in nine of the 10 topics. The group of articles associated with *Topic 7: Diagnosis based, cancer and mental health* (the smallest group with just seven articles) was the only group without shared references. Quantitative descriptions of the bibliographic coupling networks built from each factor discovered in the thematic analysis are available in Table 22. Columns two and three describe, respectively, how many of the total articles were found to have references in common (therefore qualifying their inclusion within the bibliographic coupling network), and how many clusters (articles with similar references) within each network were found. Columns four and five are supplementary calculations based on data produced by VOSviewer. Total link strength in VOSviewer means the "number of cited references two publications have in common" (Van Eck & Waltman, 2017, p. 4). Column seven shows the average link strength of all the networked articles. The average link strength per network was used to eliminate *Topic 3 (Participant demographic focus)*, *Topic 4 (Journal/publication legal jargon)* and *Topic 7 (Diagnosis based, cancer and mental health)* from further analysis. The articles that had the strongest association with these groups were re-sorted into the second-strongest topic with which they associated.

Table 22

Bibliographic coupling networks overview

Topic	Total articles	Networked Articles	Clusters in network	Networked articles per cluster	Avg. link strength of articles in network*
Qualitative interviews	77	52	9	5.8	6.1
Pandemic, pandemic responsive healthcare	67	34	7	4.9	4.8
Clinical trials	32	19	5	3.8	3.9
Scientific method/ operational subtitles	29	8	3	2.7	3.3
Hospital based care, aftercare	27	7	3	2.3	2
Practitioner focus	20	4	2	2.0	2.5
Diagnosis specific, diabetes and mHealth	28	6	3	2.0	2
Study participant focus	18	3	2	1.5	NA
Journal/publication legal jargon	18	6	3	2.0	NA
Diagnosis based, cancer and mental health	7	7	7	1.0	NA

Note: NA represents where the link strength of each article within the network was 1, resulting in a non-calculation from VOSviewer.

5.2 Scientific Literature Thematic Findings

Of each of the remaining five topics (renumbered Topic 1 through Topic 5 for clarity), the top three highest cited articles and the top three strongest associated ("highest contributing") articles with the key words identified during topic modelling were pulled as a representation of their associated group. A list of all articles pulled is available in the appendix. Abstracts and full papers (when available) for each set of articles were read to determine if the themes manually

interpreted from topic modelling were correct. Effectively, by using a combination of topic modelling and bibliographic coupling this method was able to reduce the amount of manual reading from 448 articles to 36 articles.

Overall findings indicate that the highest cited articles tended to be published slightly earlier than those articles strongest associated with the key words found during topic modelling. The highest cited articles across all the groups below were published between 2009-2020 with the average publication year of 2015, while the strongest associated articles across all groups were published between 2011-2021, with the average publication year of 2019. This finding seems logical in that articles published earlier have had more time to accumulate citations.

The reason for strongest associated articles not necessarily having the highest citation rates within a given topic is ultimately due to probability. An overly simplified way of exemplifying this would be to think about the clustering of items in a common refrigerator. Topic modelling may find categories consisting of sauces, produce, meat, etc. The "sauce" category may be most represented by the "Franks red hot sauce" (as the branding, put that … on everything, indicates it is a sauce that can be used on, well, everything), however it may or may not be the oldest sauce in the fridge. If there were 20 sauces and/or condiments in your fridge, there is a 1/20 chance that the Franks would be the oldest. This would be the same with the articles in any of the MEH defined topics. The strongest associated articles may be the oldest articles associated with their topic, however this probability (of being the strongest associated as well as the oldest/higher cited) ultimately a low.

Topic 1: Patient satisfaction with virtualized healthcare during pandemic

The first group of research articles is defined by key words associated with the COVID-19 pandemic: covid, pandemic, coronavirus, sars-cov, survey, in-person, respondent,

epidemiology, delivery, virtual, video, examination, etc. Further analysis notes that not all

articles in this group were published after the onset of the pandemic (Powell et al., 2017;

Bradbury et al., 2016; Powell et al., 2018), although the articles that had the highest association

with this group were all published after March 2020 and specifically mention the pandemic in

their titles (Stifani et al., 2021; Ruelos et al., 2021; Adams et al., 2021). A secondary overarching

theme in this group of articles is the use of surveys and semi-structured interviews to understand

patient satisfaction with mediated visits with their (mostly primary) healthcare practitioners. All

the highest cited articles in the group (Powell et al., 2017; Bradbury et al., 2016; Imlach et al.,

2020; Powell et al., 2018), and the strongest associated articles in the group (Stifani et al., 2021;

Ruelos et al., 2021; Adams et al., 2021) reference patient experience or patient satisfaction as at

least one of their units of research.

The pandemic poses a unique opportunity to study patient reception of video/phone

appointments with their healthcare practitioners, as areas around the world that are able to

coordinate such services for patients have done so in order to practise social distancing. It seems

logical that studies that were able to prioritise examining virtual interactions (such as virtualized

healthcare appointments) using virtual methods (such as virtual interviews and online surveys)

may be represented more than other research on virtualized healthcare such as clinical studies or

user tests which traditionally require more face-to-face interaction with participants. This "over-

representation" is the likely reason why this research topic and these methodologies are more

strongly associated with pandemic themed keywords.

Topic 2: Virtualized health communication tools

The highest loading words that represent this group of articles (practitioner, provider,

physician-patient, article, priority, access, personnel, relation, organization, physician, journal)

originally point towards a practitioner focus upon first glance. However, after manual analysis of the top cited articles (Woods et al., 2013; Cox et al., 2011, Salisbury et al., 2015) and strongest associated articles in the group (Heyer et al., 2021; Drossman et al., 2021; Ong et al., 2019), it becomes clear that patients were still a key part of the narrative - as they should be considering patient experience was a required term to be included in this SLR. Two of the selected articles are about patients using virtual care tools such as an electronic access point to their health care records (Woods et al., 2013) or a self monitoring tool for palliative care patients (Cox et al., 2011). Two of the selected articles examine aspects that could improve success (or act as barriers) to positive virtualized healthcare experiences for patients (Salisbury et al., 2015; Heyer et al., 2021). One of the selected articles is about a practitioner-specialist focused communication tool (Ong et al., 2019), and the final is a systematic literature review on the effects of certain styles of patient-practitioner communication (Drossman et al., 2021). Each of these articles, while remaining centred on patients, do tend to highlight (if not focus on) practitioner experience. Additionally, the articles in this group are all health communication oriented, highlighting how virtualized healthcare technology plays a role in patient-practitioner (Woods et al., 2013; Cox et al., 2011, Salisbury et al., 2015; Heyer et al., 2021; Drossman et al., 2021) or practitioner-practitioner (Ong et al., 2019) communication. A potential reason for the high practitioner theme of the high loading words is due to the articles in this group including practitioner experience as a unit of research, rather than focusing on patient experience (which the other groups are largely centred on).

Topic 3: Patient experiences of digital monitoring tools for self-management

The key words that characterise this group of articles include: mobile, monitor, blood, app, feasibility, mhealth, daily, application, compliance, measurement, adherence, pressure,

agent, smartphone. The initial manual thematic analysis of these words indicates this group is centred on mobile digital monitoring tools used for managing an assortment of blood-based conditions. Of the highest cited articles in the group (Pasluosta et al., 2015; Nundy et al., 2014; Nazi et al., 2014) and the strongest associated articles with this topic (Buis et al., 2020; Cho et al., 2019; and Johnson et al., 2019), four examine mobile based digital monitoring tools for managing blood-associated conditions such as diabetes (Nundy et al., 2014); HIV (Cho et al., 2019); sickle cell disease (Johnson et al., 2019) and hypertension (Buis et al., 2020). The remaining two articles are concerned with a mobile digital monitoring tool for managing Parkinsons (Pasluosta et al., 2015), and utilisation of an online portal for Veterans to access clinical notes from their healthcare visits (Nazi et al., 2014).

As was seen in previous groups analysed, the articles that do not necessarily fit perfectly with the theme outlined in the topic modelling phase do tend to be the highest cited articles in the group (rather than the strongest associated). Further manual analysis was conducted to unveil why these seemingly outlying articles associated strongest with this group rather than other groups. No consistent trend of methods used throughout the group could be found. However, all the selected articles are about digital monitoring technologies, their affordances (do they do what they are intended to do: improve symptoms, medication adherence, predict diagnoses, etc.), and patient experience (not only satisfaction/ perceived value adds, but also impact on symptoms and daily life) using them. It is interesting that the research questions and findings of these articles tend to inquire about a spectrum of patient experiences, rather than focusing on just patient satisfaction, as seen in Topic 1 above, or symptom improvement, as seen in Topic 5 below. Articles in this group are more inclined to showcase patient experience as more than just

satisfaction or improvement of symptoms, but a total of all parts, as per the original definition of patient experience outlined in the introduction of this dissertation (Wolf et al., 2014).

Topic 4: Patient experiences of virtualized healthcare for post-operative or follow-up care

This group of articles is characterised by the words: surgical, surgery, hospital, undergo, department, outpatient, consultation, specialist, efficiency, remote, site, complication, follow-up. Manual thematic analysis of the highest cited articles (Hammersley et al., 2019; Sanger et al., 2014; Compen et al., 2018) and strongest associated articles (Price et al., 2017; Maurice et al., 2020; Compen et al., 2018) determined that the themes of post-operative and follow-up care are overarching. In general, the articles in this topic look at tools for specific demographics of patients, categorising by the type of surgery they had (colorectal cancer surgery (Price et al., 2017), bariatric surgery (Maurice et al., 2020), or categorising by diagnosis (cancer patients (Compen et al., 2018), patients with surgical site infections (Sanger et al., 2014)). Only one article reviews virtualized healthcare regarding follow up visits in general primary care (Hammersley et al., 2019). While most articles focus on virtualized healthcare services, such as video visits (Price et al., 2017; Maurice et al., 2020; Hammersley et al., 2019) or messaging with practitioners (Price et al., 2017; Compen et al., 2018), one of the articles chosen to represent the topic is about digital monitoring technologies, specifically monitoring apps (Sanger et al., 2014). All articles examined look at patient experience and satisfaction with the virtual care tool they were using, along with impact on patient symptoms and/or lifestyle.

Topic 5: Methods-based groups of articles

This topic combines the qualitative interviews and clinical trial topics into a larger general topic themed by method. The qualitative interview topic is characterised by words having to do with qualitative interview methods, such as: qualitative, interview, theme,

transcribe, research, semi-structure, semi, explore, structure, thematic, support, content, analysis, semistructure, self-management. Further manual thematic analysis of the highest cited articles in this group (Williams et al., 2014; Wilhelmsen et al., 2013; Jones et al., 2012) and articles strongest associated with the topic (Casey et al., 2014; Javanparast et al., 2021; Terp et al., 2021) seem to represent a sub-theme of patient experiences with mHealth (mobile health) tools and self-monitoring apps. This is not a strict rule, as one of the strongest associated articles (Javanprast et al., 2021) examined patient experiences of virtualized healthcare services provided by practitioners. These services specified telephone and video visits, along with remote monitoring- perhaps pointing to why this article was more strongly associated with this group rather than Topic 1 (as this study also highlighted use of virtual care during COVID-19).

The second topic characterised by methods key words examines clinical trials, and highlights articles that conducted randomised controlled trials/pilot studies of various virtual care technologies. The key words that define this group include: randomize, trial, secondary, registration, randomise, intervention, control, usual, effectiveness, protocol, baseline, multicenter, medication. The highest cited articles in this group include Paul et al., 2014; Jennings et al., 2009; and Yount et al., 2014, while the strongest associated articles are O'Neil et al., 2011; Claes et al., 2020; and Argawal et al., 2019. The articles selected to represent this group focus on diagnosis-specific groups and combine analysis of patient experience and satisfaction with potential clinical impact on symptoms that any virtual care interventions may have. These articles represent a mix of virtualized healthcare services for patients to communicate with practitioners (Paul et a., 2014; Jennings et al., 2009; O'Neil et al., 2011; Argawal et al., 2019) or others with similar diagnoses (Jennings et al., 2009), with more mHealth

style tools for self-monitoring (Yount et al., 2014) or self-management (Jennings et al., 2009; Argawal et al., 2019; Claes et al., 2020).

5.3 Scientific Discourse Discussion

Topic modelling was reasonably effective at deriving thematic trends. The bibliographic coupling analysis was able to determine some common references within most of the topics uncovered by topic modelling. As the bibliographic coupling analysis was not able to identify all articles associated with each factor, it can be assumed that a core group of researchers talking about specific topics does not exist in this field. Rather the theoretical frameworks and commonly cited references are fairly diverse within the articles associated with each group. This analysis was originally conducted in reverse (bibliographic clustering analysis and then topic modelling), in which a one-to-one or unique set of themes would not neatly map on to bibliographic coupled groups of articles. This therefore showed that sharing references is not a be-all-end-all in terms of looking for sub fields or streams of research. It was the combination of the topic modelling and bibliographic coupling approaches, especially the computational tools used, that allowed for science mapping analysis to uncover the pertinent publications, authors, articles, and topics that best represent the burgeoning field of research concerned with patient experience and virtual care.

Beyond the effectiveness of the science mapping method tools used above, this section highlights themes discussed in the scientific literature discourse of virtual care and patient experience. This discourse was specifically built to highlight patient experience by including a required "patient experience" key term in the original boolean Scopus query. Even with this parameter included, at least one major topic found in the discourse was centred on practitioner

experiences. This finding points toward virtual care, both virtualized healthcare and digital monitoring, as a multi-stakeholder activity. Unlike the news discourse, the scientific literature discourse focuses on patients, practitioners, and other administrators who may be directly involved in virtual care. The news discourse also features regulators such as insurance providers and governing bodies in addition to the stakeholders featured in the scientific literature discourses.

A reason for this focus on users of virtual care methods, rather than regulators as in the news discourse, may be due to an overall thematic focus on technological affordances throughout all of the topics uncovered in this discourse. Topics 1 focuses specifically on virtualized healthcare experiences and Topic 3 has a singular focus on digital monitoring activities. Beyond these two topics, the remainder of topics all include studies that focus on either a virtualized healthcare technology or a digital monitoring technology. Technological affordances discussed in this discourse include health communication or information access, symptom improvement, medication adherence, or even predicting diagnoses. Many of these affordances are discussed as indicators of success of newly developed or developing digital monitoring technologies. Affordances of virtualized healthcare technologies are, at least in this discourse, discussed less in terms of measurements of success and more so in terms of experiences.

Per the patient experience centred conceptual framework of this dissertation, and Wolf et al.'s (2014) definition of the concept, patient experience must take into account more than just patient satisfaction. As a measurement of success of virtualized healthcare, patient satisfaction is only used exclusively in Topic 1. As previously mentioned in the findings section of this chapter, this may be due to research in this topic capitalising on findings that were easy to collect during the onset of the pandemic. Arguably, measuring patient satisfaction on a predetermined scale can

be a simplified process compared to understanding a spectrum of patient experiences based on a sum of interactions during a complete healthcare process, or over the course of a user study of a particular healthcare technology. Compared to the news discourse, the scientific literature discourse features patient experience more heavily, as the literature search was designed in such a way to highlight this topic. However, even with the specific patient experience inclusion parameters, this discourse does return to discussions of virtual care being a multi-stakeholder process and affordances of virtual care technologies. These consistencies, along with the continued separation of virtualized healthcare and digital monitoring activities (each study reviewed in this discourse only dealt with one activity or the other), begin to shape the core themes and discussions held in discourses about patient experiences and virtualized healthcare.

6. User Experience Discourse

A cornerstone framework of this dissertation is patient-centricity. Therefore, the inclusion of user experience discourse as a genre is essential for developing an understanding of virtualized healthcare and patient experience. This chapter showcases how patients experience virtualized healthcare directly through interpersonal interactions with their healthcare providers and surrounding healthcare systems. Additionally, this dissertation recognizes practitioners as users of virtualized healthcare methods and includes their experiences to provide further context about this form of healthcare delivery. This section first outlines the approach used to collect and analyse user experience discourse. Then, themes found within the discourse will be outlined. Finally, a summary of findings will discuss what aspects of virtual care experiences may be categorised based on existing frameworks.

6.1 Informant Recruitment

Two types of informants were recruited for this stage: patients and practitioners. A non-random, convenience sample of informants were recruited for 30-minute virtual interviews via e-cold calling, word of mouth, and the snowballing method. These methods of recruitment were used due to limited opportunities to recruit in-person because of the COVID-19 pandemic. The snowballing method worked particularly well to recruit participants in a "Zoom-fatigued" world, as personal recommendations from colleagues, friends and family members who had already been interviewed seemed to impart a sense of reassurance on new recruits. Practitioner participants included both physicians (general practitioners and specialists) and allied health practitioners (those who work in other regulated health professions). Patient participants were

recruited based on having at least one experience with virtual care. All informants were over the age of 18 years old, and most lived and received care in Ontario (with the exception of one practitioner and one patient who received care or practised in another province).

Ultimately 15 patients and 15 practitioners were recruited for interviews, as theoretical saturation (understood by Glaser and Strauss as "the point in data collection when no additional issues or insights emerge from data and all relevant conceptual categories have been identified, explored, and exhausted" (Hennink et al., 2017)) was reached at this point. An iterative process, "whereby researchers are concurrently sampling, collecting data, and analyzing data" (Hennink et al., 2017) was used for determining the saturation point. This iterative process was made easier by the use of a structured coding guide, and the overall prescriptive nature of Qualitative Content Analysis Method, as will be outlined below.

Aside from the word of mouth/snowball method, one strategic decision in terms of the participant pool was made. It was discovered after the first 10 patient interviews that the informant pool was mostly made of women, so male informants were specifically recruited. Anecdotally, it was much easier to recruit women than men for this interview process, as most men asked had not had any healthcare experiences over the pandemic when virtual appointments were commonplace (which aligns with the old trope that men do not go to the doctor, (Tudiver & Talbot, 1999)).

Overall the age demographic was fairly broad (ranging from 22 to 68, with some patient informants discussing their experiences as caregivers for patients over the age of 90). Creating an informant pool based on stratified socio-economic class was not a priority, and therefore this section may not be as diverse as possible especially when it comes to discussions of equitable access (which was found in the news frame analysis as an important factor to consider when it

comes to access and virtual care research). Nevertheless, a diverse range of opinions when it comes to technology, healthcare and virtual care experience was offered by the recruited informants. Further research as a continuance of this research program will include the recruitment of a more diverse informant pool, including more socio-economic diversity, and the targeting of other equity seeking groups.

6.2 Data Wrangling

Interviews were conducted and recorded via Zoom or telephone, depending on the informant's preference. Interviews lasted approximately 20 to 30 minutes. The interviews were semi-guided, and questions were asked based on an interview script. Including how their virtual care experience(s) occurred in relation to the categories outlined regarding Omachonu's value proposition (listed above), informants were also asked:

- What about their experience with virtual care they valued or disliked;

- How their experience with virtual care compared with previous healthcare experiences (virtual or otherwise);

- If they would have chosen a virtual care solution before the onset of the COVID-19 pandemic, and if they will continue to use virtual care solutions "after the pandemic", and;

- How the internet or internet connected technology has changed healthcare for themselves (or for their patients).

The audio of the interview recordings was uploaded to Trint, an online platform that uses automated speech recognition and natural language processing to convert speech to text (Trint,

2022). Txt files of each interview were then downloaded from the Trint platform and cleaned to remove any identifying information (including informant names, informant "ailments," practitioner names and clinics). At this time multiple computational analysis tools (keyword analysis, sentiment analysis, and PCA topic modelling) were tested on the corpus of interview text. No results of substance were identified, likely due to the small size of the corpus, which is, at only 55,576 words, approximately 45% of the size of the scientific research discourse and 5% of the news discourse. After this initial exploratory phase, the txt files were uploaded to Nvivo (QSR International Pty Ltd., 2020) for qualitative content analysis.

For the Qualitative Content Analysis Method, Mayring (2014) argues that creation and consistent use of a coding guideline is a central requirement for content analysis, as text should not be "interpreted off the cuff" (p. 48). Using such a guideline contributes "to the intersubjectivity of the procedure" (Mayring, 2014, p. 40). The coding guideline for this dissertation was developed based on a combination of Omachonu's health value proposition variables and the main themes discovered in the corpus linguistics analyses of the scientific literature and news discourses (technological affordances, multiple stakeholders, and access). In the coding guideline, Omachonu's health value propositions are italicized, with their definitions following in brackets. Aligning with Mayring's procedural prescription (2014, p. 61), coding of the first three interview transcripts was completed as a trial run, and the coding guideline was revisited to adjust the coding rules where necessary. As such, the initial code of "multiple stakeholders" was removed, due to all informants discussing interactive virtualized healthcare, so the code itself would be redundant in that discussions all revolved around experiences that featured more than one stakeholder or informant. A more relevant code of "location" was added.

The final coding guideline used is available in Table 23 below, with a summary of total segments

coded in each coding category available in Table 24 and Figure 7 below.
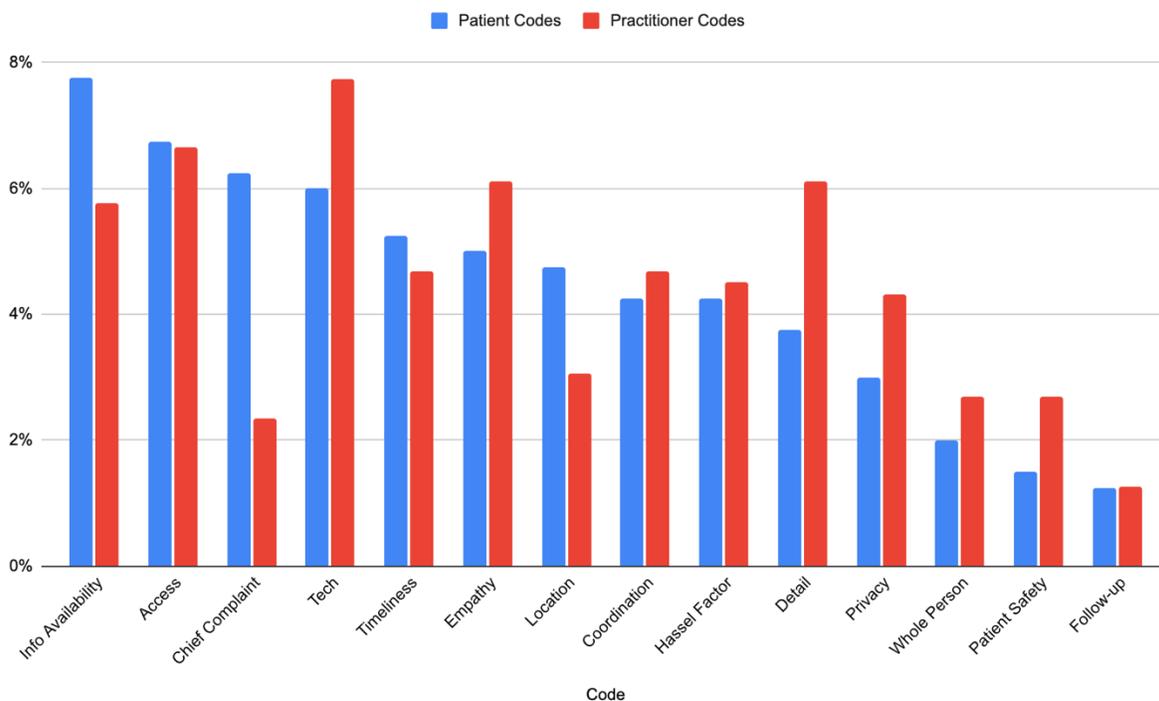
Table 23

Coding guideline

Code	Description
Access	attention to overcoming an existing or potential barrier to access healthcare: example location, demographic, scheduling, etc.
Location	Points where user is accessing or providing healthcare (in a typical environment such as office or hospital, or home/mobile environment)
Tech	Any discussion of technological affordances
Chief Complaint	Practitioner ability to understand primary reason leading patient to seek medical attention
Coordination	*Care coordination* (Deliberate organisation of patient care activities and sharing information among all participants (patients/caregivers/practitioners) concerned)
Detail	*Attention to detail* (Attention to noticeable/noticeable, visible/invisible, spoken/unspoken, consequential and seemingly inconsequential)
Empathy	*Empathy, sensitivity, and compassion* (Ability to understand and share feelings of patient)
Follow-up	*Post-discharge/follow-up* (Provision of tools and/or communication to patient that will help them care for themselves)
Hassle Factor	*The 'hassle factor'* (Intrusive and seemingly irrational administrative burdens)
Info Availability	*Availability of information* (Ability of practitioners to provide patients, whether expressing desire or not, regardless of socioeconomic or educational background) with information
Patient Safety	*Patient safety* (Protecting patients from errors, injuries, accidents, and infections)
Privacy	*Privacy, confidentiality, and security* (Protection and security of health information)
Timeliness	*Timeliness* (The capacity to provide care quickly after a need is identified)
Whole Person	*Care for the 'whole person'* (Factors other than a patient's condition that may cause fear or worry. Ex. comprehension of diagnosis, level of emotional/practical support at home, diagnosis related financial issues, anxiety over need to change lifestyle, transportation for treatment, etc.)

Table 24

Total segments coded in each coding category

Code	Times coded in patient interviews	Times coded in practitioner interviews
1. Access	27	37
2. Chief Complaint	25	13
3. Coordination	17	26
4. Detail	15	34
5. Empathy	20	34
6. Follow-up	5	7
7. Hassel Factor	17	25
8. Info Availability	31	32
9. Location	19	17
10. Patient Safety	6	15
11. Privacy	12	24
12. Tech	24	43
13. Timeliness	21	26
14. Whole Person	8	15

Figure 7

Percentage of total segments coded in each coding category by Patient/Practitioner interviewees

6.3 User Experience Discourse Themes

Representations of each of the codes from the coding guideline are seen in all of the transcripts. This analysis of user experience discourse provides findings of what themes are consistent across multiple accounts of personal experiences of virtualized healthcare. These themes, that will be further outlined in their own sections below, include:

- Modality of Interaction
- Continuum of Care
- Technological affordances

To determine themes, codes were first roughly grouped together based on how often they were cross-coded with each other. Table 25 depicts a matrix of cross-coding that where higher

cross-coded instances were grouped to determine the first two themes of *Modality of Interaction* (Chief Complaint through to Whole Person), and Continuum of Care (Coordination, Follow-Up, and Info Availability). The only outliers to this grouping technique were the segments under the code Patient Safety, as they were most often (6 times) cross-coded with the Hassle-Factor code. Upon further review, these segments frequently referred to the hassle of having to wait in a waiting room, with patient concerns of safety regarding catching an airborne illness from someone else in the waiting room. As a lack of in-person waiting room is definitely an associated value add to virtualized healthcare, it did not specifically reference mediated care experiences (rather, discussed a timely, context-based fear of being in closed, indoor spaces with other potentially sick people), and therefore the segments coded as patient safety were grouped based on their second highest weighting association, with those other codes in the *Modality of Interaction* theme.

Text segments found to fall under the theme of *Modality of Interaction* include those segments coded under the Omachonu based value propositions of chief complaint, attention to detail, empathy, patient safety, and whole person. The value propositions in this category vary in terms of virtualization requirements, depending on interaction requirements, as will be displayed in Figure 9 in the *Modality of Interaction* section below.

Text segments under the theme of *Continuum of Care* come from the value proposition codes of care coordination, follow-up, and info availability. The value propositions in this category feature lower virtualization requirements, meaning they are generally understood to benefit from the virtualization process. This was noted to occur once technologies and systems that allow for virtualized healthcare were established, and the user learning curve is accommodated.

Table 25

Matrix of instances where segments were cross-coded

	Chief Complaint	Detail	Empathy	Patient Safety	Whole Person	Coordination	Follow-up	Info Availability
Chief Complaint	38	11	2	2	3	3	2	1
Detail	11	49	11	2	8	3	2	2
Empathy	2	11	54	2	13	1	1	3
Patient Safety	2	2	2	21	3	2	0	1
Whole Person	3	8	13	3	23	0	0	0
Coordination	3	3	1	2	0	43	6	10
Follow-up	2	2	1	0	0	6	12	2
Info Availability	1	2	3	1	0	10	2	63

Codes which were ultimately grouped under the theme of *Technological Affordances* were a bit harder to tease out. Segments coded under Hassle Factor and Privacy both were found to be most frequently cross-coded with the more overarching code of Tech (as can be seen in Table 26). Segments under the Timeliness code were most cross-coded with Chief Complaint, which upon further review encompassed discussions more centred around practitioners being able to diagnose or address health specific issues rather than virtualized healthcare centred discussion. Qualitative review of the segments under these three codes revealed discussions that were more likely to exemplify instances of how the technological aspect of virtualized healthcare affected patient (or practitioner) experiences, or rather, in terms of the technological affordances of virtualized healthcare technologies.

Table 26

Matrix of Instances where segments were cross coded (Tech Affordances)

	Hassle Factor	Privacy	Timeliness
Tech	10	6	4
Hassle Factor	42	0	5
Privacy	0	36	2
Timeliness	5	2	47
Chief Complaint	1	0	6
Detail	2	0	1
Empathy	3	0	4
Whole Person	0	0	0
Patient Safety	6	1	1
Follow-up	0	0	2
Coordination	7	1	5
Info Availability	4	1	3

Technological affordances are understood here as qualities of virtualized healthcare that are associated distinctly with technology (such as technological difficulties or data safety), rather than the qualities of technology that determine how well a previously live activity translates to a virtualized setting. For example, both patients and practitioners were largely concerned with technology's "ability" to accurately convey visual and emotional details during the patient/ provider interaction. Discussions such as this tended to fall back on the topic of modality appropriateness (as discussed in the first theme of Modality of Interaction) rather than what technology can actually afford its users.

Table 27 and Figure 8 (both below) outline the number of instances that the codes were applied under each of the three themes, calculated as a percentage compared against the total

amount of codes per practitioner or patient interviews, with the codes of access, location, and tech pulled out (as these three codes were found to be used in more of an overarching sense, with no specific association to any of the three themes above). Overall patients and practitioners discussed the three themes in relatively similar amounts, with *Modality of Interaction* being the most discussed theme. Practitioners were less likely to discuss aspects of the *Continuum of Care* theme compared to patients. This is explained by their position as one point within a patient's continuum of care, which would also involve other practitioners and healthcare administrators.

Figure 8

Percentage of codes per informant type, by theme

Table 27

Overall Amount of Coded Segments per Coding Category

Code	Times coded in patient interviews	% of all patient codes	Times coded in practitioner interviews	% of all practitioner codes
Overarching Codes				
Tech	24	6.00%	43	7.73%
Access	27	6.75%	37	6.65%
Location	19	4.75%	17	3.06%
Modality of Interaction				
Chief Complaint	25	6.25%	13	2.34%
Detail	15	3.75%	34	6.12%
Patient Safety	6	1.50%	15	2.70%
Whole Person	8	2.00%	15	2.70%
Empathy	20	5.00%	34	6.12%
Total Modality of Interaction	74	18.50%	111	19.96%
Continuum of Care				
Coordination	17	4.25%	26	4.68%
Follow-up	5	1.25%	7	1.26%
Info Availability	31	7.75%	32	5.76%
Total Continuum of Care	53	13.25%	65	11.69%
Tech Affordances				
Hassle Factor	17	4.25%	25	4.50%
Privacy	12	3.00%	24	4.32%
Timeliness	21	5.25%	26	4.68%
Total Tech Affordances	50	12.50%	75	13.49%

Additionally, the sub-theme of mobile collection of and access to digital health data was discussed by multiple informants. This theme will also be briefly expanded further below.

6.3.1 Modality of Interaction

The theme of virtualized healthcare being appropriate for certain types of healthcare interactions over other types is consistent among both patients and practitioners. Certain aspects of healthcare, especially those requiring physical touch on the part of a practitioner, were deemed unsuitable for virtualized healthcare. Specifically, practitioners felt that their ability to examine and/or diagnose internal issues was limited by virtualized healthcare methods. Practitioners and patients also found that measures of strength and ability (such as patients being able to raise their arms against resistance) were also unsuitable for virtualized healthcare. Ultimately, all informants stated in some form that there was not a 100% replacement for in-person physical internal assessment or examination.

"I think the level of care I got felt simpler. I mean. I guess the thing, the ailment I had, it didn't really require a lot of physical examination. I guess like it wasn't in previous times when I've seen a doctor or when I've had a sore back or something to that effect, you know, the doctors had checked my muscles or bones and all that kind of stuff. And I and the thing that I had didn't require that. So I would have if I had more of a physical ailment, that would have required a physical examination." (Patient Interview)

"Well, I can't really assess your knees or your hips and kind of so I'd say like the exercise was, was still challenging to do virtually also to for certain clients, depending on their body awareness, it can be super helpful to be able to do hands on like kind of give feedback to be like, No, I need your hip to be here or can you do this? And you just can't do that through Zoom." (Practitioner Interview)

"Like, for example, she was, you know, trying to assess whether I had weakness on one side or the other. So she said, lift up your right, right arm with your left arm. Try to push it down. Well, that assumes that I have normal left strength in my left arm. Right. And so I thought, well, how substandard is this? Like, this is kind of ridiculous, because if I can push it down, does that mean I have a weak right arm?" (Patient Interview)

"Nothing will replace physical assessment. Nothing will replace physical treatment, even counselling. There's so much benefit to having someone there too. And even safety reasons." (Practitioner Interview)

"I guess the only problem with that I've seen so far is that sometimes when the clients decide whether or not they want to come into clinic, we don't really have a very effective triage system. So they might want to discuss a breast or a rash or something that it's really a waste of our time to do it by phone. But they may have booked a phone visit, not realising that that requires an in clinic visit." (Practitioner Interview)

Beyond this, modality of virtualized healthcare was also discussed. Between patients and practitioners, while there is a hard line understanding of when a healthcare interaction should take place in person (namely, something requiring internal examination), there is a varying degree of opinion of what modalities are appropriate for which types of healthcare interactions. For example, the benefits and barriers of telephone versus video conference versus in–person care were often brought up. For healthcare activities that may not require physical touch, many patients and practitioners discussed how visual modalities such as video conferencing were

adequate means of interaction in certain situations.

> "You know, sometimes the lighting wasn't great. Um, I think it's in dermatology. It's better to see things in three dimensions rather than two. But without having the photos, it would have been really difficult those first three months if I was only relying on the phone call." (Practitioner Interview)

> "It's like sometimes questions are sufficient, you know, whereas, like, other times in person is like very important and I still think should be like advocated for. When you want to see a doctor in person, you should be able to do that. But if you can do it over the phone or over Skype or Zoom, like, why not?" (Patient Interview)

> "I would agree with that. I think that even having a video option might have been helpful as opposed to just the phone. It's not that I didn't get any value out of it, but definitely still having that lingering fear after the call where I have an experience that when I had someone see in person, you know, I'll feel a little more confident that they're on the same page as you. Whereas over the phone, when they don't have that visual, it's more. You don't know if you're relaying the information correctly. It's kind of on you to paint that picture. Whereas in person, they could just look at you and make their own judgement call." (Patient Interview)

Phone calls were deemed acceptable, or even preferred, in some instances where examination was not required. However, when external examinations were required (specifically, for example, in dermatology), a visual medium such as photo or video was needed for appropriate care. Virtualized healthcare methods were preferred by all for handling administrative activities

typically involved with physical examinations or typical healthcare appointments, such as prescription renewal and following-up on test results. A visualisation of the types of healthcare discussed by informants, and their suitability for virtualization, is available in Figure 9.

Figure 9

Suitability of virtualization of healthcare activities

In addition to physical examination, modality of healthcare was discussed in terms of ability to convey empathy, sensitivity and compassion. When discussing being able to convey empathy and connect with patients emotionally, practitioner and patient preference is consistently for in-person care, especially when needing to convey more sensitive information.

"I mean, there are so many things you get from an in-person interaction in terms of, like, fully understanding a chief complaint, like from someone's body posture or facial expression, how anxious they are, like how nervous they are about what's going on. And then you kind of like showing them empathy and building rapport like that is obviously way more achievable in person." (Practitioner Interview)

" Like you're not going to have a sensitive conversation if you can avoid it over an iPad. Right. Because there's so much about that human connection in the nonverbal and the comfort and all that that's really, really important." (Practitioner Interview)

"So specifically in terms of the Accutane patients, I thought it was difficult to assess people's affect or mood through a phone call. There were a couple of occasions where parents called me back to say, I have to correct what my child told you. They're very depressed right now or they're very unhappy right now. Without seeing the person in front of me. It was hard to determine how much of that might have been due to just pandemic restrictions in general versus their skin" (Practitioner Interview)

"So I don't know, I just think in person like you are able to develop a better connection with your therapist, like they can better read your emotional response, like your facial expressions or just like things like that that are more important. That setting is kind of like a barrier to online." (Patient Interview)

"I never physically saw them …or the interactions that I had with my doctor was over as it wasn't Zoom… And so I guess with the video there was a little bit more of a personal openness

to it, for lack of a better word. But I didn't feel good about both situations, but I felt that that

may have been doctor specific." (Patient Interview)

This is not an all encompassing rule however, as at least one practitioner expressed that

virtualized healthcare may afford patients the comfort of receiving care in their own "safe

space."

"And as far as like that rapport piece or that like connection, vulnerability, emotions, I do

think it's unchanged might be a good question for patients, but I even think there's this sense of

comfort in being and wherever they are that a lot of these patients are having their

appointments at home and there's some comfort there. And so I don't think any of my patients

are any more reserved being at home or less likely to emote and share their actual feelings

because they're in an even safer place than this, like foreign clinical environments. So I do

think that full, full person care is still there, like diagnosis, but also. Full emotional health, I

think is still being addressed virtually. There's even more comfort in that. I'm in my place. I'm

in my safe space so I can say anything that I want. No one's hearing me through the wall. No

one's seen me in the waiting room as I'm crying as I leave my appointment. So I think it hasn't

changed. And it might even be better." (Practitioner Interview)

In situations where in-person care was not an option, such as during the early days of the

COVID-19 pandemic, practitioners expressed that knowing their patient before a virtual

interaction helped with establishing and maintaining sympathy, an emotional connection, or even

trust.

> "Like if you actually know the patient, you can, you know, if able to see them, you can get clues from that and look at the rashes with the camera and those kinds of things. And you can you get to you pick up on some of the nonverbal cues and the tone of voice and the way they say things. Again, it helps to know the patient's right" (Practitioner Interview)

Another, more emotional than physical factor that was considered by both patients and practitioners is personality. Both patients and practitioners recognized that "some people are just not virtual people." According to both patients and practitioners, variance in patient preference should be taken into account by practitioners when scheduling virtualized or in-person care if possible.

> "Like some people, yeah, they're just in person, type of person. They are. They want to see you face to face and they don't. I get the impression they feel things aren't dealt with adequately if it's just over the phone, you know, to me it seems like the same outcome for them. They prefer to come in, in-person." (Practitioner Interview)

> "That could be just mean because I am not a telephone person. I am a visual person. So I, I found that with, with, especially with the specialist, you had to be prepared, really, really prepared with all the questions." (Patient Interview)

Finally, an interesting point regarding face masks was brought up in some interviews. Many of the informants turned to virtualized healthcare due to the COVID-19 pandemic, which also saw the rise in use of face masks as a means to curb viral transmission. When it comes to empathy or establishing an emotional connection, face masks can be a barrier. However, in virtualized healthcare settings, especially those conducted via video conference, masks are not

worn, giving this modality of care an empathy advantage over in-person care where masks are required.

> "I think one thing that was interesting because I had met this practitioner during COVID so in-person, we were in masks then, we weren't on the video. So I was actually able to see her expressions and everything much more. Which is actually an interesting thing. I didn't really even think about that before either. So yes, it would have been very different." (Patient Interview)

> "And then obviously not wearing a mask, it's much easier to communicate and like facial expressions and all that. You can read them, they can read you. So it does make providing education a lot easier" (Practitioner Interview)

While not specifically named as such, the theme of hybrid care (a combination of in-person and virtualized healthcare) was frequently brought up by both patients and practitioners. Some patients discussed having appointments where the physical components of the exam were done in-person, and history-taking and assessment were completed virtually. Another practitioner described how they rely more on external lab results (bloodwork at specific sites, at home glucose monitors, blood pressure measurements done in local pharmacies) than on physical examination so even less has to be done in-person between the practitioner and patient. Overall, informants all agreed that they saw a hybrid approach to healthcare being optimal in the future.

6.3.2 Continuum of Care

The value propositions of care coordination, post-discharge/follow-up, and availability of information were commonly discussed in concert with the multiple, more administrative touchpoints that patients have over all their interactions with the continuum of care. The continuum of care, as outlined in the literature review is understood as occurring beyond one interaction with a care provider but rather, as involving multiple touchpoints that a patient may have with an entire healthcare organisation or system (Wolf et al., 2014, p. 9). When patients were speaking of these administrative value propositions, they most commonly were discussing the ability of practitioners to forward prescriptions directly to pharmacies, referrals to virtual appointments with specialists, and having practitioners tele-triaging their symptoms. The majority of patients found that aspects of their healthcare experience were simplified by moving these interactions to virtual methods. Patient interviews disclosed how virtualized healthcare can potentially relieve administrative burden from patients, in that health information and necessary documents are made available via app or email, and therefore always on hand so long as the patient has access to a smartphone or internet connected device.

> "I really liked it because I like that it was all centralised in the app. It wasn't that I was handed a piece of paper and then I had to go fish around my bag for it later. Like I knew exactly where I could find all the information. And if I was going back to get something covered by insurance, I knew like the time date and notes from the appointment were right there. So as somebody who struggles to keep track of stuff, I really appreciated the convenience of it all being together and accessible to me at any time." (Patient Interview)

> "Prepping for my annual physical. So while I could not see a person… I was able to ask for everything I wanted, checked over the phone with her, where she then sent her requisition for bloodwork. I guess she faxed off a copy for an ultrasound. That sort of stuff is all taken care of without me having to go in and see her and then do all of that and then come back, you know, for the results. So. I liked that experience." (Patient Interview)

> "With Maple[8], it's like a whole team. So, like, you have to wait for someone. And then like, because I was having issues getting the one value, like every time I messaged it was like a different person. So … much more frustrating I would say." (Patient Interview)

Depending on the patient, virtualized healthcare can also add additional barriers to receiving care. For example, as seen in the last quote above, some patients experienced frustration when having to repeat their symptom history to multiple practitioners in virtual walk-in clinic settings. This, however, may be more indicative of the walk-in clinic setting rather than virtualized healthcare, as many patients who use walk-in services in real life experience similar frustrations.

The sentiments of virtualized healthcare facilitating health-oriented administrative activities are generally echoed by practitioners. Care coordination, especially when it comes to paperwork, can be easier to navigate when digitised. Furthermore, practitioners found that following up with patients, and providing them with health-results oriented information or just

---

[8] Maple is a virtual walk-in clinic, self-defined as offering "access to over 25 specialties, including dermatology, mole mapping, endocrinology, mental health therapy, psychotherapy, general health assessments, and much more" (Maple, n.d.)

checking in to see how recovery is going was facilitated by virtualized healthcare.

> " I like that we can send them forms. You know, they…can read about a procedure or read about a consent form before they arrive." (Practitioner Interview)

> "Like if I have someone who is doing like a knee rehab and I see them maybe once a week to kind of touch beat them, maybe like the other one online is actually pretty good because then I get to say, Hey, how you doing? Get to see where their home environment is. And more importantly is if I give them at home exercise program, if I can see them doing it at all. I find that they're much more compliant to actually follow up with it because now there's no excuse." (Practitioner Interview)

One downside of this digitisation is that using digital tools (even just the phone) for some care coordination activities, such as checking-in with patients or health counselling, was not always covered by OHIP pre-pandemic.

> But one thing you have to understand about the health care system, pre-pandemic is all unpaid, so your 100% liability, you don't get paid a dime. So you're spending a couple of hours at the end of your work day, sometimes answering phone calls, and there is absolutely zero payment to do that. But I did it because it's the right thing to do." (Practitioner Interview)

An additional interview with an expert informant on this topic suggests that the question of including more modalities of communication in care coordination was on its way to the bargaining table when it came to physicians and billing OHIP before the onset of the COVID-19

pandemic. However, the structure for this has yet to be finalised, and is still a concern of practitioners.

6.3.3 Technological Affordances

Many discussions with informants centred around which technological affordances are offered in virtualized healthcare settings. Specific aspects of virtualized healthcare were more often discussed as technological affordances than other value propositions, which tended to cover which form of technology was best suited for which tasks. The technological affordances categorised below are more oriented around the value propositions of timeliness, privacy/security/confidentiality, and the "hassle factor."

Timeliness, that of "the capacity to provide care quickly after a need is identified" (Omachonu, 2019, p. 31), was generally considered by patients to involve not only the time with the practitioner, but also the time spent setting up an appointment, getting to the appointment, and any follow up activities involved (which points again towards the patient experience of healthcare involving a continuum of care). In the interviews, most patients discussed experiences of virtualized healthcare with their regular healthcare practitioners (family doctors, people they would have seen before the pandemic for healthcare needs). Some patients discussed experiences with so-called "virtual care walk-in clinics," which are paid mobile or web applications that can be covered by third party health insurance that follow a "walk-in clinic" model, in which the patient does not have one family doctor or touchpoint. Timeliness was considered to be a strongpoint of these virtual care clinics by those who discussed them, as these applications tend to offer same day appointments, rather than requiring the patient to book in advance, a practice common with family physicians and specialists.

"Like I know I got the same thing done at both and that was I had to book the MGP employment like two months in advance, like I already had one so I could just ask for the thing that was missed. Whereas like the one I use Maple and I got like the same day like and then it was like trying to figure out what it was. I was like, just like in a coffee shop. I was like trying to figure out what I needed, how I could do it. And then, like that hour in a coffee shop, I like did the online virtual requesting a thing. And then like I was able to book a bloodwork appointment and like for the same day. So like it was so fast." (Patient Interview)

"I logged on and it was just like, okay, if you're ready to take an appointment right now, it'll be like 5 minutes or something like that, if I remember correctly….And one of the main reasons that I like the virtual health care is I'm not having to go to a waiting room like, first of all, to book an appointment like probably two weeks and then go sit in the waiting room around a bunch of sick people for like 2 hours and then finally go in." (Patient Interview)

For those who experienced virtualized healthcare with their pre-existing healthcare providers (not a virtual clinic), timeliness was discussed as having the same, if not more barriers that were experienced in previous non-virtualized healthcare. Some informants found that accessing their family care physician required more steps than before. For example, having to call to book a telephone appointment, where before doctors may have been able to have a quick conversation/consult during the initial call.

"So one was just renewing a prescription and it didn't require a physical exam. And so it was perfect. It was just over the phone. I did have to book an appointment to speak on the phone. I couldn't speak with my doctor right away, which is something new that was new to get used to.

It was efficient. I didn't have to go in and see her. She didn't need a physical, physical exam. So that was a good experience." (Patient Interview)

"It was the follow up, but I did have to book that appointment and I was sort of being the squeaky wheel situation. I had to call the office a number of times to find up, find out how long it would be before that paperwork would be filled out. I think I think I had to call two or three times to find out when it would be filled out and sent to the ministry." (Patient Interview)

"So I guess generally I would say it felt like there was more steps, a kind of using tell you know this after hours teller or telemedicine thing then I was definitely when I was making appointments with my doctor or even when I was making, you know, phone appointments with my doctor." (Patient Interview)

For practitioners, a range of opinions was seen in terms of timeliness. Some practitioners found virtualized healthcare to take more time, especially when accessing visual elements of the visit such as photo or video, as opposed to examining an external symptom in person. Some practitioners found virtualized healthcare to save time, as in person care typically involves more steps, such as getting the patient "in and out of the room." These opinions are based on practitioners' experiences of their own time, rather than patients' time. When considering patient perspective, practitioners recognized that patients definitely saved commuting time with virtualized healthcare methods.

"I think there's just a value to people as long as, again, it's not there's not a transportation barrier like, you know, it's just eating too much of their time and I'm only doing 20 minutes and took them 2 hours to get here back." (Practitioner Interview)

The hassle factor of virtualized healthcare was more likely to be discussed by practitioners as increased due to potential for technical difficulties, while patients saw the hassle factor of virtualized healthcare as decreased compared to in-person care, due to the ability to stay at home for their care. Themes of technology failing or issues with patients navigating technologies such as Zoom or online appointment systems were brought up more often in practitioner interviews than in patient interviews. It makes sense that practitioners would have more experiences with technological difficulties as they were/are seeing multiple patients in virtualized settings daily, giving them more opportunity to experience such difficulties. Patient experience with these sorts of issues would be more limited.

"We found it pretty challenging in terms of some clients kind of learned to pretty quickly how to use Zoom but others like learning how to mute themselves or unmute themselves or how to turn on their video or if they couldn't hear everyone. So that there was quite a few challenges we found with the virtual care for groups, and it took a few tons of running groups to figure out how to communicate well to clients beforehand, make sure they kind of had the resources to kind of learn a little bit about Zoom, but then also to us learning like how do we explain when it's a computer versus a tablet versus an iPad versus a phone?" (Practitioner Interview)

"There all are, again, technical issues. Some people are unable to turn off their video, turn off their sound, kind of cross hearing things, hearing things and people's backgrounds that are

> going on. So that always came up, which was very interesting. But actually, no, not huge
>
> challenges. It was more just kind of getting them used to using the technology." (Practitioner
>
> Interview)

While some patients did discuss "technical difficulty" themed hassle factors, the most common

theme to appear was the hassle of the in-person waiting room. Patients found that there was less

hassle with virtualized healthcare as it saved them from having to sit and wait at the physical

doctor's location, which many associated with having to be in close contact with potentially sick

or "germy" people.

> "If I had my choice. Um, again… I can get away with not having to go in there germ infested
>
> place, maybe I would, wouldn't, you know, like convenient for me. But again, it depends what
>
> I'm talking about. Like if I have something I have to get the doctor to look at. And I don't think
>
> you can look at things on the screen." (Patient Interview)

> "So I don't really want to be in a crowded doctor's office with other people who may be sick
>
> during this time period. So using my case, mostly access in my physician or the group of
>
> physicians by phone has been better." (Patient Interview)

When it comes to privacy, security, and confidentiality a somewhat interesting theme was

discovered. Both patients and practitioners did consider data privacy or security of virtual care in

terms of technology.

"I don't feel like maybe because there was a comfort level with doing video after so long. And what we were talking about wasn't like, you know, super, like, vulnerable, I guess, like it was. So maybe that's a difference. I don't know. It was yeah. I didn't really even think about the security." (Patient Interview)

"It doesn't seem to be a concern. It seems to be more a concern that they feel more comfortable just see me in person. But in terms of the security aspect and things, that doesn't seem to be an issue." (Practitioner Interview)

Concerns from both types of informants around privacy did not orient around these topics. Patients and practitioners were all more likely to discuss themes of if a patient's location was private or secure when interacting with practitioners virtually.

"I think, you know, if I had had roommates or if I had to do a phone call with my doctor and a coffee or a class in my classroom or, let's say a university setting that probably wouldn't work as well. But I think we have the ability you know, we work from home. My family, we have we are privileged to have a house and space in that house to quiet phone calls. So I think privacy from that perspective has not been a worry. But I could see how it could be for other people." (Patient Interview)

"I didn't worry about confidentiality. The only thing about telehealth or I guess virtual health is it is on the patient to find a private place to talk, which can sometimes be difficult for people

that live with families or roommates. Like you can't always go outside in the middle of winter." (Patient Interview)

"That actually was something that was a concern for me. So some of my patients I see, they live in shelter and there's no privacy for them to participate in a zoom, for instance. So they had to come in and see me. Privacy was a big thing, especially if they were talking about something that was very… personal, which usually you do kind of get down to that nitty gritty with people. So privacy was a big thing." (Practitioner Interview)

"The other kind of benefits around privacy and this is feedback that we also receive directly from patients and caregivers is that by so I've described the in-person version of this, we go room to room and sometimes I met, we were standing in the hallways and discussing patients. Now there's an iPad with a patient in the room." (Practitioner Interview)

Another central theme of discussion about technological affordances, similar to findings from other discourses examined in this dissertation, was that of access. The most discussed technological capability of virtualized healthcare was that of patients being able to communicate with their practitioners regardless of location. Overall, all informants discussed some aspect of virtualized healthcare that either hindered or helped to overcome access to healthcare. Generally, virtualized healthcare is seen to overcome barriers created by certain mental or physical disabilities, barriers created by location of practitioners or patients, barriers due to time management/scheduling and transportation, and even barriers created by winter weather.

Physical/Mental Barriers (overcome by virtual care)

"So when I think about social determinants of health, virtual medicine does allow people who have barriers such as transportation or physical barriers to access care." (Practitioner Interview)

"But with my dad's situation, I probably would have requested [virtual care] because I'm my dad. I mean, we are very lucky that our family doctor does home visits as well, but not many doctors don't. So this is the only way, actually, for someone like my dad." (Patient Interview)

Location Barriers (overcome by virtual care, mostly)

"One of the reasons why I'll never go back [to in-person only care] is that I'm now seeing patients that are far away from where I am. So I had a practice in the GTA, so I was just seeing patients in the GTA. Legally, I can only treat patients in Ontario, but my, my scope within Ontario of patients that are in Thunder Bay and Sudbury and Ottawa and London and Haliburton, and they're all over the place." (Practitioner Interview)

"And I guess like another benefit when I think of therapy specifically is like therapies are in such high demand. And so doing it online like allows you to access like therapies in different regions… I'm from the GTA like in Toronto and like there's such high demand in that area. So it's like if there's therapies in like Mississauga or like another city that's available, it allows me to connect with them and not have to drive. So that's definitely a huge benefit. So yeah, I just like the convenience, the bigger availability of therapies you can connect to." (Patient Interview)

Scheduling and Transportation barriers (overcome by virtual care)

"I would have patients that could only have appointments in the evening. So I used to work for nights a week on Saturdays. And now with virtual care, it's so much more accessible. So I'll see my patients on their lunch hour. I'll see them before they head to work after work, Bluetooth during their commute. You know, they're on the subway, they're on the go train, they're having an appointment. And so it's just so much more accessible." (Practitioner interview)
"Knowing that I physically don't have to go somewhere to see a doctor for an ailment that is relatively, I guess, for lack of a better word, mild might encourage me to seek out care, like in an alternative scenario. Maybe I wouldn't have gone at all if I knew to spend the hour transiting to a physical location" (Patient Interview)

Winter/weather barriers (overcome by virtual care)

"They're (virtual care appointments) good for certain situations. I mean, she's elderly. You can avoid going into too many visits, you know, all kinds of things in the winter, you know, falls are so much easier. Like lots of things. It's just convenient." (Patient Interview)
"So some of my like, you know, in the winter, some of my patients who use electric scooters and things like that, they're kind of afraid to go in the winter because they can get stuck in the snow or things like that." (Practitioner Interview)

Virtualized healthcare is seen as being limited by technology access disparities, and language abilities. An interesting anecdotal point to note is that many patients discussed access issues that

they could foresee others experiencing, not that they experienced themselves. This may point towards a culture of social welfare, or one where universal access to healthcare is seen as important, if not a priority.

Equal access to technology barriers (limiting virtual care)

"Only, of course, like with everything you have to have equality. Like, you know, everyone needs to have this available to them. You can't just say we're having this system where we're going whole hog in the direction of Tokyo. And then no one has either a cell phone or a phone or a computer." (Patient Interview)
"I would definitely say the majority would not be able to use an online booking system. Either they don't have a computer, they don't speak the language, they're not tech literate enough to do that and so forth. So a CHC targets a demographic that isn't well-educated, you know, tech savvy, your average sort of we target clients who are disadvantaged in many ways, including poverty, language, language barriers, new immigrants and so forth." (Practitioner Interview)

Language barriers (limiting virtual care)

"I think if you have someone who has English as a second language… it can be harder to navigate. And when you're seeing the person, even when the English is not very good, you can tell from looking at their face and whether they understand you can draw, you do things. But when you're on the phone, you really… are limited." (Practitioner Interview)
"She ended up getting the surgery and is doing okay, but dealing with it in interpreter especially… it seemed when I was trying to explain things to her, there was a lot of

interpretation difficulties, especially over the phone. And I did see her in person just last week

after she'd had her surgery and things are doing fine. But she seemed to feel much better

talking to me in person" (Practitioner Interview)

6.3.4 Digital Health Data

Most interviews revolved around the experience of virtualized healthcare as opposed to

digital monitoring activities or store-and-forward medicine. Digital data regarding health did

come up in interviews, and opinions tended towards increasing access to such data for both

patients and practitioners. Both patients and practitioners celebrated digital storage of healthcare

related documents, as this digital storage increased ease of access. In cases where such storage

was not completely celebrated, it was consistently due to users wanting even more or easier

access to these documents. For example, patients tended to value access to their own health

records, and in some cases, were even upset when such records were not made available to them:

"You know, they should use this kind of stuff [digital EMR access]. We should be able to.

Everyone has cell phones, so you should be able to get in there and get our information."

(Patient interview)

In the case of digital monitoring, one practitioner disclosed a personal story of having their own

practitioner being able to read their blood glucose numbers, as:

> "because of technology, [informant] can just plug my insulin pump into my computer and all my blood sugars get and everything gets uploaded. And so they're [informant's practitioner] able to like basically see everything they need to see while they're talking with me."
>
> (Practitioner Interview)

This discussion of health data and remote monitoring was still centred around virtualized healthcare. In other cases, health data was seen as a tool that has yet to be fully integrated into healthcare. One practitioner discussed this specifically.

> "I love the idea of being able to generate a report with all my diabetics and think, okay, this one didn't get this vaccine like this. The power of the data is, first of all, not realised yet enormously potentially powerful in a good way. But we're still in the in-between stage where we spend enormous amounts of time on our keyboards without necessarily getting all the benefits of big data and other improvements that will take time to realise."

Overall, while digital health data and remote monitoring was not a central theme, the opinions expressed in interviews saw it as a valuable asset that was definitely related to virtual care. However, the separation of the two activities of virtualized healthcare and digital health monitoring is reinforced due to the trend of informants discussing health data as secondary to their mediated interactions when it comes to virtual care experiences.

6.4 User Experience Discourse Discussion

The themes discovered in this discourse outline the major concerns and issues that patients may experience when interacting with their healthcare providers and surrounding

healthcare systems in virtualized healthcare settings. Several of the themes found in the user experience discourse, such as technological affordances or communication access, were also seen in the news and scientific literature discourses. These themes, along with the specific findings from the user experience discourse (modality appropriateness, interactions with the continuum of care, technological affordances, accessibility, and to a lesser extent digital health data tracking) can be re-oriented to update the definition of patient experience (as defined by Wolf et al. in the Literature review) in relation to virtual care settings. The definition of patient experience as defined by Wolf et al. in the Literature Review consists of three parts:

- *Continuum of care* sees patient experience as occurring beyond one interaction with a care provider but rather, as involving multiple touchpoints that a patient may have with an entire healthcare organisation or system (Wolf et al., 2014).

- *Centring the patient* involves considering aspects of PCC and individualised care (which is deemed "similar to patient-centred care") as well as if patients' direct and personal observations of whether their healthcare expectations are met (Wolf et al., 2014).

- *Looking beyond satisfaction* points out that many health organisations rely on surveys or quantified mass evaluations of patient satisfaction. Definitions collected by Wolf et al., caution against equating experience with satisfaction, as patient experiences are complex, involving a combination of social, emotional, and physical situations (Wolf et al., 2014).

When it comes to understanding patient experiences with a specific focus on virtualized healthcare, new elements of this definition should be considered. *Centring the patient* sees the patient as the unit of analysis. As disclosed in the news and scientific literature discourse, there are many stakeholders involved in virtualized healthcare, but in a patient-centred care delivery format, as found in the user experience discourse, *patient preference for modality* of healthcare

should be taken into consideration. Practitioners have experience in which aspects of healthcare can be delivered in certain ways; however, not all patients feel comfortable in virtual settings. Additionally, it has been noted that some practitioners do not feel comfortable practising certain elements of their jobs in virtual settings, which may ultimately affect the patient experience as well. Understanding that healthcare is "teamwork" between patients, practitioners, and other stakeholders involved (as one practitioner so eloquently put it) is key to virtualized healthcare experiences, and to centre the patient within this team of virtualized healthcare users is key in creating a positive virtualized patient care experience. This multi-stakeholder aspect of virtualized healthcare was seen across the news and scientific literature discourses as well.

The second element of patient experience, that of *looking beyond user satisfaction* is measurement method, which needs to consider more than quantitative survey numbers en masse. According to the user experience themes discussed above, there are many values that can be affected when healthcare moves into a virtualized setting. Values that look beyond user satisfaction were also discussed in the scientific literature discourse. Experiences of these values will be unique to every patient, based on their preferences and healthcare needs. Understanding which of these interaction categories can be easily virtualized and which need to remain in person may aid in setting patient expectations. Understanding which interaction categories should be set in a virtual or in-person setting can also add a variety in how patient experience may be measured beyond satisfaction (various computational methods, for example, may apply better in virtualized settings).

The final element of patient experience is understanding the entire *continuum of care* as a research setting. Examining the multiple touchpoints across the continuum of care becomes increasingly important if the future of healthcare is assumed to be hybrid. Some touchpoints may

be virtual, and some may be in-person. Being sure to remember that healthcare can be offered in a combination of modalities, and that not all may be direct synchronous interactions with healthcare providers is key when considering the entire patient experience. An increased consideration to systemic and administrative design will be key in developing and maintaining positive patient experiences in virtualized healthcare.

To elaborate on the definition put forth by Wolf et al. in *Patient Experience* ("the sum of all interactions, shaped by an organisation's culture, that influence patient perceptions, across the continuum of care" (2014, p. 8)), this dissertation based on user experience discourse findings offers the definition of patient experience in virtualized healthcare as: the sum of all in-person, virtualized, and asynchronous interactions, that influence patient perceptions, across all modalities offered in a continuum of care.

7. Conclusion

This dissertation concludes with a triangulation of the three discourse genres: news, scientific literature, and user experience. The triangulation focuses on thematic consistencies throughout each of the discourses examined. Between the three discourses thematic consistencies can be derived that are then developed into evidence-based recommendations that should be considered implementing or developing patient-centric virtualized healthcare technology and systems. These foundations of these recommendations are proven to not only be observed in user experience discourse, but also in ways that researchers and the public discuss issues and concepts of virtualized healthcare. The three recommendations are:

1. Engage patients in healthcare innovation,

2. View healthcare as a hybrid patient-centric network, and,

3. Understand that virtualization requirements of healthcare interactions vary.

The recommendations identified in this dissertation are intended to act as a guiding hand in the use and innovation of virtualized healthcare technology and systems. Future research may see these recommendations developed into design principles of virtualized healthcare. "Design principles are created to codify and formalize design knowledge so that innovative, archival practices may be communicated and used to advance design science and solve future design problems…" (Fu et al., 2015, p. 1). Ku and Lupton argue that design thinking is an essential part of healthcare delivery, as "health care problems often involve ambiguity and uncertainty" (Ku & Lupton, 2020, p. 7).

The Ontario healthcare system, as with other healthcare systems, is experiencing a period of growth and regulation when it comes to virtualized healthcare. Those who are in positions of power when it comes to the choice to employ virtualized healthcare technology and systems

(practitioners and policy makers) should consider the three recommendations offered as they are based on evidentiary themes that appear in multiple public-facing and patient-opinion based discourses about virtual care and patient experiences. It is important to note that the design of virtualized healthcare technologies or systems does not occur in a vacuum. The Ontario healthcare system is constantly re-iterating, with new organisational systems and processes emerging from existing systems and processes. In relation to design theory, this building on existing foundations is understood as path dependency. Path dependency "is seen as a process that has the property of staying on a particular path," where "past decisions and contingent events pre-determine what further steps may be taken" (Hanger-Kopp et al., 2022, p. 2). This concept pairs well with Hughes's technological momentum, which he defines specifically in the case of large technological systems as being the inertia, or "mass of technical, organizational, and attitudinal components [that] tends to maintain their steady growth and direction" (Hughes, 2004, p. 460). A key takeaway from the concepts of path dependency and technological momentum is that technology and systems that are built based on existing structures are likely to reproduce similar results, and "diminish the range of likely alternatives" (Hanger-Kopp et al., 2022, p. 2). The pragmatic use (including iterative testing) of the offered recommendations will allow for the "path" or "momentum" to inch towards a virtualized healthcare system that does not simply include technology to access the same style of healthcare services as before, but also creates a more patient-centric virtualized healthcare system that is considerate of the entire patient experience.

The three recommendations (engaging patients in healthcare innovation, understanding that healthcare as a hybrid patient-centric network, and that virtualization requirements of healthcare interactions vary) are practice-based ways of thinking about how healthcare can

become virtualized, and what affects the potential virtualization of healthcare, particularly in a patient-centric focused healthcare system. Aspects of patient centricity are an important differentiator here, as the virtualization of healthcare could also be designed in, perhaps, technology centred, hospital centred, or disease centred healthcare, which are oftentimes seen as oppositional to patient centred care, as discussed by Stewart, (2001). Additionally, virtualization of care that is patient-centric should be differentiated from virtualization of care that is practitioner-centric, which can often be difficult as practitioners are likely to be more frequent users of virtualized healthcare.

Each of the recommendations, along with their theoretical foundations and practical implications, are further discussed below, after a brief discussion of triangulation of data.

7.1 Triangulation

In that the three discourse analyses were completed separately, based on different frameworks and different corpora building parameters, a direct one-to-one comparison of themes based on a singular overarching linguistic or topic modelling analysis is not feasible. Instead, triangulation of the findings from the analyses of the three discourses provides an outline of topics that are most likely to come up in virtual care discussions. Triangulation includes the "combinations and comparisons of multiple data sources, data collection and analysis procedures, research methods, investigators, and inferences that occur at the end of a study" (Teddlie & Tashakkori 2009, p. 27). The main benefits of triangulating data collected from mixed methods include that of convergent validation (focusing on agreements among findings from different methods), analytic density (contextualising data and results), and illustration (making dry data feel more 'alive') (Fielding 2012, 127). "Triangulation (both theoretical and

methodological) and mixed approach designs are increasingly accepted in nursing and health-focussed research" (Annells, 2006, p. 59).

The news frames discovered in the news discourse analysis, the research topics from the science literature discourse analysis, and the themes from the user experience discourse analysis are summarised here for convenience:

News Frames:

- Virtual care technology solves hospital congestion/allows for care from home

- Increasing access to EHRs streamlines healthcare

- Virtual care can increase access to healthcare services

- User uptake initiates further virtual care technology development

- Virtual care availability increases uptake, result in further study

Scientific Research Topics:

- Virtualized health communication tools

- Patient satisfaction with virtualized healthcare during pandemic

- Patient experiences of digital monitoring tools for self-management

- Patient experiences of virtualized healthcare for post-operative or follow-up care

User Experience Themes:

- Appropriateness of Modalities of Interaction

- Interactions with the Continuum of Care

- Technological affordances and Access

- Digital health data

Between the three discourses thematic consistencies can be derived. The first overarching theme is seen in discussions of healthcare technology innovation, specifically discussions of

what new and innovative healthcare technologies can afford patients, practitioners, and other users. The second overarching theme addresses the continuum of care and the multiple ways in which patients interact with their healthcare providers. The third overarching theme focuses on the appropriateness of virtualized healthcare for various uses, which was the focus of discussion in the User Experience Discourse section on Modality of Interaction. These themes represent categories of activities that are simultaneously affected when healthcare becomes virtualized healthcare, and what affects the potential virtualization of healthcare. The themes are proven to not only be observed through in user experience discourse, but also in how researchers and the public discuss issues and concepts relating to virtualized healthcare. Each theme corresponds to a recommendation that attempts to contextualise the theme in patient-centric applications. These recommendation (engage patients in healthcare innovation, view healthcare as a hybrid patient-centric network, and understanding that virtualization requirements of healthcare activities vary) are each discussed below.

7.2 Recommendation 1: Engage patients in healthcare innovation

An overarching theme of innovation and development of virtual care technology and systems is seen in all three discourses analysed by this dissertation. Themes of patient experience of healthcare technology and accompanying systems as a measurement of good innovation or design were consistently repeated in the scientific discourse. Both the news and user experience discourse saw themes of calls for the re-innovation or re-design of healthcare technologies and systems based on real-world use and societal needs. All three discourses saw patients, or other users involved in the design or re-design of healthcare technology. Recommendation 1 posits that patient engagement in healthcare innovation is key in the design of virtualized healthcare. The Canadian Institute for Health Research's Strategy for Patient Oriented Research (SPOR) defines

patient engagement as "occur[ing] when patients meaningfully and actively collaborate in the governance, priority setting, and conduct of research, as well as in the summarising, distributing, sharing and applying its resulting knowledge" (Manafo et al., 2018, p. 2). In practice, Recommendation 1 is already a guideline recommended by and followed in health innovation research (e.g. Forsythe et al., 2018; Hamilton et al., 2018; Barello et al., 2016), with many healthcare technologies and systems development or management teams including patient advisory committees or similar involvement. In practice, Recommendation 1 should continue to be the precedent in healthcare innovation.

An additional note where Recommendation 1 should be considered in practice is with the inclusion of technologies in healthcare activities that have not been specifically designed for healthcare. For example, at the beginning of the COVID-19 pandemic, many practitioners turned to technologies such as Zoom or Facetime to communicate with their patients. The user experience and scientific discourses both include discussion of how patients experienced these ad-hoc, bootstrapped methods of communication in virtualized healthcare. The examination of these patient experiences and implementation of use practices based on resultant findings serves as a demonstration of how patient engagement may occur in the innovation of technology or systems that may not have originally been designed with healthcare in mind.

Theoretically, Recommendation 1 links to scholarship on technological innovation being socially and technologically informed, specifically when it comes to technological affordances. Involving patients in the design of healthcare technology is a very direct, on-the-nose, example of how technology is in part socially constructed. Social construction of technology is a research approach that considers everything as being built (and rebuilt) by social dynamics within a context of a society or culture and its many interacting actors (Conrad & Barker, 2010). Social

construction is often discussed in opposition to technological determinism, that "perceives technological development as an autonomous force, completely independent of social constraints" (Smith & Marx, 1994, p. 2). Healthcare technology is simultaneously socially constructed and technologically determined. It is socially constructed in that healthcare technology and systems are developed within a specific social context to fulfil the needs of patients and, ultimately, society. It is technologically determined in that the development of healthcare technology is reliant on existing understanding of healthcare technology and healthcare systems, per Heilbroner's definition of technological determinism that argues "the development of the technology of production seems bounded by the constraints of knowledge and capability" (Smith & Marx, 1994, p. 59).

The concepts of social construction and technological determinism have not been reconciled formally; however, there are frameworks that tend to marry the two approaches. Smith and Marx offer a definition of soft technological determinism, which portrays technological change as "driv[ing] social change but at the same time respond[ing] discriminatingly to social pressures" (Smith & Marx, 1994, p. 2). Under the banner-head of "in between" technological determinism and social construction of technology lives the concept of technological affordances. Technological affordances are understood to be the "attributes of both the object and the actor" (Gaver, 1991, p. 79). Alternatively, Hutchby (2001) offers the definition of affordances as "not things which impose themselves upon human actions with, around, or via that [technology]. But they do set limits on what it is possible to do with, around, or via the [technology]" (p. 543). Affordance is considered by Gaver to be a powerful concept "for thinking about technologies because it focuses on the interaction between technologies and the people who will use them" (1991, p. 80). Gaver expands on previous definitions for affordances,

citing J. J. Gibson (1979; 1872) as focusing on visual affordances, and suggesting tactile and sound affordances should also be considered. This is certainly true in considering the various modalities of interaction that patients have within a hybrid network of healthcare.

Recommendation 1, engaging patients in healthcare innovation, is seen throughout the discussion of technological affordances across all three discourses. In practice, patient involvement in the innovation of virtualized healthcare technology and systems was seen most often in relation to the concept of technological affordances, or what virtualized healthcare technology can do for patients/how patients use such technology. The specific technological affordances highlighted in the three discourses include: access (in all discourses), service delivery (news and user experience discourses), and medical outcomes (scientific discourse).

The technological affordance of access can be seen as being a result of innovation due to social need and also based on technological capability. Access is generally seen across all discourses as being increased due to virtualized healthcare. O'Gorman and Hogenbirk (2016) echo these findings in their own research and discuss how virtual care methods can reduce barriers for these regions, while still acknowledging that access to all is a complex task. The news corpus specifically discusses how gaps in access to healthcare tend to affect specific populations. Overall five percent of concordances included in the access semantic set reference the healthcare access gap. While there is no clear trend in these concordances as to whether virtualized healthcare would minimise this access gap, increase the gap, or not impact the gap at all, the call to action to improve access to healthcare based on societal need (society driving innovation) is clear. On the more technological deterministic (tech driving innovation) side, the affordance of access is seen across all three discourses as expanding, due to a leveraging of

existing information systems/information technology, which is a trend that is occurring in many countries globally (Haddad et al. in Wickramasinghe & Schaffer, 2018, p. 143).

Beyond the most discussed affordance of access, there is also discussion of service delivery affordances and medical outcome affordances. In the news discourse, technological affordances are rarely seen as medical outcome solutions to actual health diagnoses. Rather, affordances are largely considered as solutions for healthcare service delivery. This trend of virtualized healthcare technology affording solutions for service delivery is also seen in the user experience discourse. The user discourse specifically exemplifies societal need through patient engagement methods. In the user discourse, patients were engaged via interviews, which they participated in willingly in order to contribute to the understanding of patient experience of virtualized healthcare, with the hopes that their contribution to this dissertation would (in some capacity) help improve the services they experienced.

The scientific literature discourse also discusses access as an affordance, but offers medical outcomes as a technological affordance of virtualized healthcare methods. This discourse highlights success measures of virtual care tools via user testing, patient opinion, and in clinical trial settings. Overall, these measures are used not only to discuss patient experience, but also to determine whether a particular virtualized healthcare intervention had a positive effect on medical outcomes for patients, hospitals, or health systems. The discussions in the scientific discourse demonstrate patient engagement most specifically, with all articles in the corpus discussing in some capacity how patients may access healthcare through virtual care methods, and to varying extents, their experiences of those activities.

7.3 Recommendation 2: View healthcare as a hybrid patient centric network

The theme of Continuum of Care apparent in all three discourses is typically seen in discussions of multiple, increasingly networked users or stakeholders involved across the continuum of care. As mentioned in Chapter 6, the continuum of care formally is understood as healthcare involving multiple touchpoints that a patient may have with an entire healthcare organisation or system (Wolf et al., 2014). Understanding healthcare as a continuum of care improved upon thinking of healthcare as a series of disjointed singular interactions between a patient and assorted healthcare practitioners and administrators. Considering healthcare practitioners, administrators, and even technological objects can now be connected via the internet, how a patient's health experience is understood can be further developed.

Design Recommendation 2 posits that the continuum of care should be considered as a hybrid (virtual and "in-person") network of healthcare, with the patient positioned at the centre of this network. Beyond the typically referenced diagnostic care (patient has a problem, sees doctor, receives treatment), there are many other ways that patients engage with their own physical and mental health, for example, preventative care, social welfare, or even elements of general "wellness" improvement. Patients have potential access to a variety of healthcare services, practitioners, and technologies. Many of these access points can be networked via the internet, thus creating a network of healthcare where all paths link back to the patient in some way. The beginnings of understanding healthcare as a patient centric network as opposed to a continuum can be seen in the user experience discourse. Patient informants discussed how their family doctors were able to access data from various health data monitoring devices (blood sugar monitors, CPAP machines), and discussed this data during virtualized appointments. Furthermore, practitioner informants discussed how online platforms allowed for patients to

access health counselling information such as recommended supplements (from a nutritionist informant), or rehabilitation exercise regimes (from an occupational therapist informant). These examples demonstrate how the concept of a network of healthcare surrounding the patient made up of various people, technologies, and ways that they link together is already seen in Ontario today.

The practical implication of this recommendation lies in consideration of making accommodations for incoming and outgoing data about the patient via some sort of internet connection. When designing virtualized healthcare services or technologies, attention must be paid to ensure that such services or technologies do not become siloed operations. In Ontario, health networks are already set in place, so there is some path dependency (much like in Recommendation 1) which may privilege certain forms of data or certain virtualized communication methods/platforms. New technologies are always being developed (as seen in the scientific discourse), and adopted by patients (as seen in the news discourse), so accommodating new ways of understanding patients' health and communicating to them about it is necessary. Those creating policy about health data silo-ing and sharing have a key role to play and it is imperative to consider the power that data frameworks can have in a network of healthcare.

The concept of a hybrid network of healthcare featuring the patient at the centre demonstrates how healthcare demonstrates theoretical frameworks of networked communication. The patient-centric hybrid healthcare network exemplifies Latour's Actor Network Theory (ANT), and Ekbia and Nardi's concept of heteromation to certain extents. ANT is understood as "an array of relations in which humans and technology are not only reciprocally interdependent, but also symmetrically relevant" (Orlikowski & Scott, 2008, p. 456). Design Recommendation 2 privileges the patient (a human) over the other components of a network of healthcare (human or

technological), and therefore does not fit perfectly with the "symmetrically relevant" aspect of ANT. The concept of heteromation (Ekbia & Nardi, 2012; 2014) also sees humans and technology connected in a network, where users (or in this case patients) play a key part in value production alongside technology. Heteromation involves user labour creating value for "outside" enterprises, or rather stakeholders that are outside of the user group. For example, patients who wear Fitbits to monitor their health and activity levels could be seen as labourers who are creating data that is then used by Fitbit/Google en masse as a source of value. Heteromation is not a perfect fit as a framework for understanding patient-centric healthcare networks that involve multiple consumer technologies/platforms operating alongside publicly funded platforms and a combination of publicly and privately funded healthcare practitioners. The patient does have to participate actively in their own healthcare when they are at the centre of their own healthcare network, which could be understood as a form of labour. Ultimately heteromation, where users create value within the network for an external owner group, is not a key characteristic of a patient-centric healthcare network (especially one operating in a somewhat publicly funded capacity, such as in Ontario).

Recommendation 2 aligns best with Hepp's (whose theories of mediatization are discussed in the Literature Review) construct of a communicative figuration, or a network of actors (which is differentiated from ANT). These actors, including humans and media technologies, communicate with and through each other in various forms, all centred around a thematic framing. Figure 10 shows how elements of a hybrid continuum of care map directly to the instances of a communicative figuration as outlined by Hepp.

Figure 10

Communicative figuration components (visualised based on Hepp, 2013)

In terms of the constellation of actors, in the news discourse specifically, the stakeholders discussed not only including patients and practitioners, but also regulators, administrators, insurers, governments, caregivers, loved ones, and more. The scientific literature discourse was more specifically oriented towards the concept of patient experience. Even with this stipulation built into the original corpus-building search terms, results show discussions of multiple stakeholders, namely both patients and practitioners, along with those researchers involved in developing new virtualized health communication tools. Research Topic 2 in particular (virtualized health communication tools) highlights practitioner experiences and discusses virtual care technologies as affording the interaction and communication between patients and practitioners. The user experience discourse frequently discusses patients (and caregivers), practitioners (family doctors, specialists, and allied health practitioners), and healthcare administrators. Overall, the constellation of actors not only includes the conventional healthcare

patients, practitioners, administrators, and regulators commonly seen across the "in-person" continuum of care, but also extend out to include technology workers (such as IT departments or healthcare oriented software companies and start-ups, per discussions in the news discourse), and researchers (if one introspectively considers the scientific literature discourse). Furthermore, technology itself can be identified as an active, albeit sometimes asynchronous, member of the constellation of actors on the hybrid continuum of care. All these actors are brought together under the thematic framing of health. More specifically, if we centre the patient within this constellation, the thematic framing could then be further concentrated to a specific patient's health.

The forms of communication are aligned with the concept of modality of interaction found in the user experience discourse. These communicative forms, or modalities of interaction, are apparent in all three discourses, and are typically seen in discussions of digitally accessible synchronous or non-synchronous health-related interactions. Virtualized healthcare, in this regard, would be seen more as synchronous interaction, while the other portion of the virtual care definition, that of digital remote monitoring could fit with either synchronous or asynchronous interaction, depending on if the monitoring is live or if it consists of accessing previously collected health data. In terms of mediatization, Hepp (2013) views virtualized media communication as an example of a form of communication. Hepp's concept of communicative figurations incorporates all forms of communication (digital or not) that may be conducted by a constellation of actors, so long as it is framed by the same theme (a patient's healthcare).

To use Hepp's conceptual framework, forms of synchronous and asynchronous non-digital communication should be considered alongside virtual care communicative forms. This adds further options to the modalities of interaction discussed in the User Discourse Experience

section. Forms of synchronous communication include in-person interpersonal communication, mediated health communication, and live remote monitoring. Asynchronous communication forms discussed in the discourses include digital health data storage and access, digital health information access, and non-digital health information access. Table 28 shows examples of these categories of communicative forms. Non-digital communicative forms were less likely to be discussed directly in the three discourses of virtualized healthcare. They were only apparent when acting as a comparison for digital forms of communication. Typically, this comparison saw the communication form of paper media as "less than" its digital counterpart, especially in discussions of prescriptions, next appointment booking slips, or take-home health-related information.

Table 28

Examples of communicative forms in a hybrid continuum of care

	Digital	Non-Digital
Synchronous	Virtualized healthcare, Live remote monitoring (mHealth)	In-person Care
Asynchronous	EHR access, Store & Forward telemedicine[9]	Paper prescriptions, appointment booking slips, take home health information

The media ensemble, especially from a patient's perspective, may include virtualized healthcare or digital monitoring technology, as discussed in all three of the discourses. Finally, patients may interact with forms of non-digital media, for example in the forms of paper prescriptions, recovery instructions, or other health-oriented, paper-based material. The three

---

[9] Store and forward telemedicine is an aspect of virtual care, understood as internet-based databases that allow for health care professionals to store and/or send patient information to other health care professionals

discourses of virtual care all champion digital versions of these non-digital media, in that they then become more accessible, at least for those with computer or smartphone access, and in-so-long as practitioners are appropriately compensated for digital communication activities.

7.4 Recommendation 3: Virtualize-ability of healthcare interactions vary

The various digital or non-digital, synchronous or asynchronous communicative forms above represent examples of ways that patients may experience a network of healthcare. The user experience discourse chapter reviewed the appropriateness of virtualization of some of the healthcare activities listed in Table 28, concluding that internal examination interactions were better suited for in-person care, while administrative interactions (prescription renewal, results follow ups, etc.) were better suited for virtualized healthcare, with external examination interactions and counselling interactions falling somewhere between the two. The practical implications of these findings can be understood as Recommendation 3: Virtualize-ability of healthcare interactions vary. Practitioners must work with their patients, or at least with knowledge of patient experience, to decide which healthcare interactions should be conducted virtually and which should remain in-person. In practice, the following categories of interactions may act as a guiding framework for which healthcare activities may do well in virtual environments. These categories are originally based on the categories of interactions discussed in Table 28 above, and are then related to Overby's virtualization requirements and Buccini and Padovani's categories of experiences, concepts originally discussed in the literature review. Theoretical implications of Recommendation 3, seen in each of the sections below, include an expansion of these two frameworks, with a specific application to healthcare experiences.

Figure 11

Categories of Experiences and Virtualization Requirements

Figure 11 shows how the virtualization requirements (Overby) relate to the categories of

experiences (Buccini & Padovani) and are ultimately categorised as "digital synchronous," "non-

digital synchronous" and "asynchronous" interactions. The three categories of interaction

represent the forms of communication that patients may have with the hybrid healthcare network,

according to the findings of the user experience discourse. In practice, asynchronous interactions

are easiest to virtualize (with the lowest virtualization requirements overall), non-digital

synchronous activities are the hardest to virtualize (with the highest virtualization requirements overall), and digital synchronous activities fall somewhere in the middle. Specific examples of these three categories are outlined in sections below.

Each of the interaction types engages more than one category of experience, which follows Buccini and Padovani's understanding that experience categories are seldom experienced on their own. It should be noted that Overby's constructs of relationship and synchronism requirements for process virtualization are involved in all aspects of virtualized healthcare. Each category of interaction has a different level of relationship or synchronism requirement. Relationship requirements are defined as "the need for process participants to interact with one another in a social or professional context, often leading to knowledge acquisition, trust, and friendship development" (2008, p. 281). In healthcare, interaction between patient and practitioner, or patient and administrator is required, whether it is synchronous interaction that directly connects users interpersonally, or asynchronous interaction that may see users interact with information previously created and/or stored by another user (for example, patients reviewing an email from a practitioner outlining rehabilitation exercises). Findings from this dissertation about relationship requirements have already been validated by new industry regulation. Specifically, the user discourse shows practitioners believe they are more effective at treating patients better if they already have an existing relationship with that patient. This aligns with the new Virtual Care Program billing framework (MOH & MOLTC, 2022d) that privileges virtual care appointments with patients that have been seen in-person over the past two years.

7.4.1 Non-digital Synchronous Interactions

Non-digital synchronous interactions rely on sensory experiences and have a high sensory requirement when it comes to process virtualization. This category includes the

healthcare value propositions that are typically considered as core aspects of a traditional doctor's appointment, such as addressing the chief complaint as well as the more emotional interactions that involve empathy/sensitivity/compassion. It is the only category of interactions that involves sensory experiences, defined by Buccini and Padonavi (2007) as those experiences related to sensory organs. The findings of this dissertation show that the more sense experiences needed in a patient's interaction with a point along the continuum of care, the higher the virtualization requirement, and the more complicated it is to successfully support this kind of healthcare in virtualized settings. For example, healthcare interactions that require physical touch (such as palpating a person for lumps or bumps) would be extremely complicated to virtualize, as originally discussed in the user discourse analysis.

The synchronism and relationship requirements associated with non-digital synchronous interactions point towards these types of interactions demanding instant feedback for a practitioner to be able to accurately assess a patient's health, therefore implying a high synchronism requirement level. Additionally, this type of interaction can be said to have a high relationship requirement, as a non-digital synchronous interaction along the continuum of care is inherently a social experience, needing the involvement of both a patient and practitioner.

7.4.2 Digital Synchronous Interactions

Digital synchronous interactions represent live interactions with the healthcare continuum via virtualized healthcare. This category of interactions is one that has lower levels of virtualization requirements than those of non-digital synchronous interactions. While digital synchronous interactions involve sensory experiences, the nature of commonly available technology limits these sensory experiences to those of audio and visual interactions. Digital synchronous interactions are therefore mainly associated with *use experiences*, which Buccini

and Padonavi (2007) define as useability or function of a product. Virtualization of these use experiences in a hybrid continuum of care involve high levels of synchronism requirements and relationship requirements due to the synchronous nature of the forms of communication associated with tech-based interactions. The lower virtualization requirements in this category of interaction compared to non-digital synchronous interactions are especially apparent once technologies and systems that allow for virtualized healthcare are established. For example, in the user experience discourse, use experiences associated with "virtual walk-in clinics" were considered to be more streamlined, accessible, and timely when compared with use experiences associated with regular healthcare providers who pivoted to virtualized healthcare at the start of the COVID-19 pandemic. The juxtaposition of the two opinions makes sense as "virtual care walk-in clinics" are designed with user experience in mind, while pre-existing healthcare providers had to transition from in-person modalities to virtual modalities fairly quickly, with little time for design or planning of patients' use experience.

Additionally, an element of Identification (ID) requirement ("the degree to which the experience requires unique identification of process participants" (Overby, 2008, p. 282)) is associated with this category of interaction. The healthcare system in Ontario requires patients to identify themselves using official forms of ID in most contexts. For example, when checking in at a doctor's office one is often required to present a provincially issued health card. Such identification methods have yet to be replicated in virtualized healthcare contexts in such a standardised fashion. As virtualized healthcare platforms become more regulated in Ontario this element of ID requirement may become more prominent. However, this ID requirement is lowered in situations where practitioners and patients have an existing relationship. This category of digital synchronous interactions was discussed by practitioner informants in the user

experience discourse as being heavily reliant on pre-existing relationships. Therefore, a balance between ID requirements and relationship requirements should be considered when virtualizing care activities.

7.4.3 Asynchronous Interactions

Asynchronous interactions have the lowest synchronism and relationship requirements of the three categories of interaction and are seen throughout all of the discourses as being improved by the virtualization process or "going digital." This category of interactions is associated with the more administrative or managerial work that patients, practitioners, and administrators execute in the background of live/synchronous healthcare interactions. Virtualizing this type of interaction can potentially relieve users of the more administrative burdens such as "storing" and "forwarding" patients' healthcare information and follow-up needs. For example, in the user experience discourse both patients and practitioners celebrated digital storage of healthcare related documents, as this digital storage increased ease of access. In cases where such storage was not completely celebrated, it was consistently due to users wanting even more or easier access to these documents.

In the user experience discourse, practitioners found that following up with patients and providing them with health-oriented information (for example, bloodwork results, or a recovery exercise regime) was facilitated by virtual care, as it does not necessarily have to be a live interaction. Consideration of data collected from digital monitoring activities may be easily included in this category of interaction. For example, patient blood pressure data can be taken at pharmacies and uploaded to a centralised data hub for practitioners to review. Monitoring of this sort may ultimately encourage patients to improve their health. This is an example of Overby's control requirement, which is defined as "the ability to exert control over/influence participant

behaviour" (Overby, 2008, p. 282). Overby groups control and ID requirements together, but this dissertation chooses to see them as separate requirements of process virtualization.

7.5 Concluding Reflections

Across the three discourses of virtualized healthcare numerous and wide-ranging topics are seen. As examples of public-facing health communication, news and scientific literature discourses further these ideas to broad audiences (those consuming news about virtual care, or published scientific research on virtual care and patient experience). This communication may ultimately inform knowledge, attitudes, and practices regarding health and healthcare. The user experience discourse echoes the findings in the first two discourses, acting, per triangulation methodology, as a third point of convergent validation.

The research for this dissertation did include limitations: Namely, single person coding of all three discourse corpora, there being limited demographics recruited for the patient experience interviews, and the limitations that inherently occur when corpora are created based on different search and cleaning parameters.

In terms of number of coders, this research saw one coder review: the concordances in the news frame analysis, the selected abstracts in the science mapping analysis, and all of the patient experience interviews. I contend that human error and bias is mitigated to a certain extent in both the science mapping and news frame analyses due to the initial stages of analysis relying on computational methods. Touri and Koteyko note that in their news frame analysis method, as the key words or central ideas are empirically extracted via computational software, the subjectivity that is usually associated with human judgement is removed (2015, p. 605). This same technique was used explicitly in this dissertation's news frame analysis, and a similar logic

can be applied to the science mapping analysis, in that the abstracts selected for qualitative analysis were done so based on a quantitative-based standardized process. Additionally, for all three analyses, the coding process was iterative, which allowed for the development and review of codebooks that were applied systematically in each of the discourse corpora.

Recruitment for the patient experience interviews was executed via cold-emailing and the snowball method. While other recruitment methods such as posters were considered, they were ultimately disregarded as the optimal places to put such posters (namely, health clinic waiting rooms) are protected by their administrative staff in order to preserve the anonymity of their patients and to allow for patients to feel comfortable in these spaces. The snowball method did prove to be successful in recruiting participants for the patient experience interviews, however recruiting patients with diverse backgrounds and lived experience was difficult. In that certain populations were inaccessible (such as, for example, patients experiencing houselessness), mitigation tactics included recruiting practitioners with diverse patients who were able to report on the common pain points or preferences of their diverse patient lists (patients experiencing houselessness, patients who do not speak English, etc.). This mitigation was not a complete solve, as lived experience cannot be fully explained through pain points.

Finally, this dissertation is methodologically diverse in the collection and analysis of the three different discourses. Both the news and science literature corpora were created using different key words and the patient experience interviews were conducted using an interview script that featured questions based on Omachonu's healthcare value propositions. Additionally, each of these corpora were compiled over different timelines, and ended up being different sizes. While it may produce more reproducible findings, a direct comparison between corpora using one overarching analysis method is not possible due to their differing sizes and, specifically,

their compilation being based on different keywords. Ultimately, undertaking the three discourse analyses followed the parameters of sequential triangulation, a strategy that sees each analysis performed one after another, and, with the results of each analysis informing the one that follows (Teddlie & Tashakkori, 2003). This strategy allowed for the final discourse, that of the patient experience interviews, to be based on the most amount of information, which allowed for more targeted and strategic interviews.

Beyond validation of findings, the methodology used in this dissertation that includes separate analyses of the three discourse genres, allows for in depth illustration of results and a comparison between themes and the ways they are discussed, depending on discourse authorship and intended audience. The inclusion of the three different discourses allows for the understanding of patient experiences of virtualized healthcare in terms of how it is communicated by those at the forefront of research (scientific literature discourse), how it is reported on and communicated to the general public (news discourse), and ultimately how patients experience virtualized healthcare themselves (user experience discourse). Consideration of other discourses would build out context and may more clearly illustrate how patients experience virtualized healthcare.

Originally, social media discourse was considered for this dissertation. However, it was not included due to the very broad scope, and due to this discourse's data being less accessible than the final three discourses selected for analysis. Regulatory or policy discourse on virtualized healthcare in Ontario would also be helpful in rounding out this dissertation. However, as the culminating "first draft" regulation for virtual care was only released in December of 2022, the bulk of this discourse was published too late for inclusion in analysis. Further research may

consider social media discourses and/or policy discourses in order to expand the understanding of this topic.

This dissertation offers the novel term *virtualized healthcare* to reference the virtual care activities specifically associated with mediated communication, as opposed to digital health monitoring activities which are more oriented around data collection, storage, and retrieval. The distinction between these two activities is rarely considered in the news or scientific literature discourses, as both activities are grouped under the heading of virtual care. Interestingly, in the user experience discourse, interview participants needed to be prompted to discuss digital health monitoring activities under the virtual care banner, with most focusing on their experiences with virtualized healthcare specifically. Whether it is named as such, virtualized healthcare activities are found in each of the discourses analysed in this dissertation to involve the three major themes of technological innovation and affordances, appropriateness of modality of interaction, and patient interactions with the continuum or network of healthcare. The three recommendations for patient-centric virtualized healthcare developed from these themes are offered by this dissertation as a set of initial recommendations, intended for testing and development in future research programs.

Aspects of the discovered themes and recommendations are validated by two documents put out by locally respected organisations, University Health Network (UHN), and Health Excellence Canada (HEC), as well as by the new OHIP virtual care billing regulations. Both documents, and the new regulations, were published in 2022, indicating congruent research being conducted by industry working groups and this dissertation. Validation of this dissertation's findings can be seen in three aspects: networking care provision around a patient,

that not all healthcare activities are appropriate for virtualization, and focusing on patient-centricity while adopting virtualized healthcare.

The first aspect of validation, networking care provision around a patient, is discussed by both UHN and HEC in two aspects: care coordination and team-based care. In terms of care coordination, UHN suggests that the use of virtual care can be leveraged "to minimize the need for repeat in-person visits," which may involve the "coordination of clinic visits, diagnostic studies and therapeutics" (2022). HEC goes a bit further to encourage the development of virtual care specific strategies "to ensure that continuity of care is maintained for virtual visits," requiring "informational continuity between patients and providers and between different providers (for example primary care and specialists), such as recording information from virtual visits in shared EHRs" (2022). Team-based care involving the incorporation of multidisciplinary care teams (including primary care practitioners, specialists, and allied health practitioners) is understood by both UHN and HEC to be a major affordance of virtual care technology and systems. The networking of both people and information around a patient's health can be seen in this dissertation's "Recommendation 2" that suggests the consideration of healthcare as a patient-centric network.

The coordination of this network (involving people/practitioners, information, and technology) is currently the responsibility of the patient, as many actors within this network do not speak to each other. The patient does have to actively participate in their own healthcare when they are at the centre of their own healthcare network, which could be understood as a form of labour. As new technology and systems are introduced into patients' healthcare networks, the responsibility of understanding how to use these technologies and systems becomes additional labour for the patient. New healthcare technologies and systems require

eHealth literacy skills, or rather "the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge, gained to addressing or solving a health problem" (Monkman et al., 2015, p. 358), which could potentially challenge virtual care patients. HEC understands this concern, and seems to address it, placing the onus on health leaders (regulators and practitioners), rather than on patients, to "develop a strategy" for ensuring continuity of care between all actors involved in virtual care. This follows the understanding that patient-centred care does not necessarily require that patients be active in their own care, but that it "tak[es] into account the patient's desire for information and for sharing decision making and responding appropriately" (Stewart, 2001, p. 445). If HEC's recommendations are followed, it becomes a regulatory responsibility (of healthcare providers: practitioners, teams, and systems) to ensure a patient's health-related information and data are available to practitioners and administrators as necessary, giving patients access to this information should they desire it.

A second point of validation of this dissertation is the finding that some healthcare activities are more appropriate for virtualization, as seen in UHN's clinical guidelines for virtual care, based on recommendations from their Virtual Care Clinic Advisory Panel. They state that some patient encounters may be suitable for virtual care (Table 29), which are categorically similar to those discussed in the modality of interaction section in the user experience discourse analysis (shown in a reprise of Figure 9 below).

Table 29

Patient encounters appropriate for virtual care, based on UHN clinical guidelines for virtual care (UHN, 2022)

Assessment, consultation, diagnosis, and treatment of conditions that are manageable through virtual care, including outpatient rehabilitation

Review of laboratory results, pathology, imaging, and consultant reports

Assessment, planning and coordination of in-person diagnostic and therapeutic care

Chronic disease monitoring and follow-up

Review of patient monitoring, patient-reported outcome and experience measures

Counselling

Patient and family education

Research study visits, referral for clinical trial eligibility

Figure 9

Suitability of virtualization of healthcare activities

The new virtual care program put forth by OHIP and the Ministry of Health and Ministry of Long Term Care requires practitioners to use their own judgement about when virtual care methods are appropriate (in terms of physical examination) (MOH & MOLTC, 2022d). Research conducted for dissertation states that practitioners should not only use their own judgement, but also consult their patients about whether or not virtual care methods are appropriate for certain encounters/activities. However, this dissertation's "Recommendation 3" also offers a practical guiding framework that may be useful for practitioners to help determine which elements of healthcare can or should be virtualized given current widely-adopted technology capabilities. Overall, while not all elements of healthcare are in position to be virtualized, there are definitely some aspects that are seen, by patient and practitioner users, to be improved in virtual settings. From the value propositions classified in the *asynchronous interactions* category faring best to those in the *non-digital synchronous interactions* category being deemed inappropriate for virtual modalities, a range of requirements must be taken into account when healthcare activities are being considered for virtualization.

The third point of validation is that of focusing on patient-centricity when adopting virtualized healthcare methods. Patient-centred care is considered to be an important inclusion of care in Ontario, or at the very least something to strive for. The three resources that validate the research findings of this dissertation share this sentiment, although the level to which they engage patients in developing their virtual care guidelines is not specifically discussed in any of them. HEC's report is the most forthcoming, stating that their 19 participant working group included patients among other stakeholders. UHN's document is accompanied by a statement of commitment to working with patient partners. HEC's guiding principles for practising virtual care prescribe shared decision-making between patients and practitioners/staff for care decisions,

including the modality in which patients receive care (2022). UHN's guiding principles for virtual care specifically state that "patient preference regarding virtual or in-person care must always be considered," and that this shared decision-making process must also "establish the most effective modality (e.g., telephone or videoconference)" (2022). Both of these guiding principles reinforce the more patient-centric aspects of this dissertation, that posits practitioners should privilege patient preference regarding modality of care when it comes to deciding on what aspects of a potentially hybrid care journey should be virtual and which should be in-person.

This dissertation has examined a watershed moment in virtualized healthcare uptake in Ontario, due to the Ministry of Health creating temporary "COVID-19 pandemic allowance" for all physicians to bill for virtual care (MOH & MOLTC, 2019b). Understanding the most consistent themes communicated regarding virtualized healthcare is helpful in a "post-COVID-19" context in Ontario, especially as the pandemic period of unregulated use of virtual care by Ontarians comes to a close with the introduction of virtual care billing practices (MOH & MOLTC, 2022b). Overall, the validation of findings in this dissertation not only shows how the analysis of the three health communication discourses is a useful and accurate practice in thematic discovery, but also shows the timeliness of this project. The themes discovered in the discourse analyses are applied to practical recommendations (that require further evaluation and development in future research), as well as supported through foundational theory. The results of this dissertation align with the goal of health communication, that is improving "health outcomes by encouraging behavior modification and social change… [relying] on the full understanding and participation of its intended audiences." (Schiavo, 2013, p. 9). This analysis highlighted experiences of its intended audiences (patients) and developed an initial set of best practices that aim to improve health outcomes of those populations that engage with virtualized healthcare.

Through analysis of virtual care discourses, this dissertation provides an overarching review of patient experiences of virtualized healthcare and ultimately offers a guide to possible future innovation in patient-centric virtual care practices and networks.

8. References

alPHa. (n.d.). Milestones and History: History of Public Health Units in Ontario. *Association of Public Health Agencies.*https://www.alphaweb.org/page/milestones

Annells, M. (2006). Triangulation of qualitative approaches: Hermeneutical phenomenology and grounded theory. *Journal of Advanced Nursing*, *56*(1), 55–61. https://doi.org/10.1111/j.1365-2648.2006.03979.x

Anthony, L. (2021). Index of /resources/wordlists. *Lawrence Anthony's Website.* Retrieved from: http://www.laurenceanthony.net/resources/wordlists/

Anthony, L. (2020). AntConc (Version 3.5.9) [Computer Software]. Tokyo, Japan: Waseda University. Available from https://www.laurenceanthony.net/software

Aria, M., & Cuccurullo, C. (2017) bibliometrix: An R-tool for comprehensive science mapping analysis. Journal of Informetrics, 11(4), 959-975.

Aria, M., & Cuccurullo, C. (2022). Science Mapping Analysis with bibliometrix R-package: an example. Bibliometrix. https://bibliometrix.org/documents/bibliometrix_Report.html

Arnetz, J. E., Hamblin, L., Essenmacher, L., Upfal, M. J., Ager, J., & Luborsky, M. (2015). Understanding patient-to-worker violence in hospitals: A qualitative analysis of documented incident reports. *Journal of Advanced Nursing*, *71*(2), 338–348. https://doi.org/10.1111/jan.12494

Asmussen, C. B., & Møller, C. (2019). Smart literature review: A practical topic modelling approach to exploratory literature review. *Journal of Big Data*, *6*(1), 93. https://doi.org/10.1186/s40537-019-0255-7

Atkinson, P. (1995). *Medical talk and medical work.* London, England/Thousand Oaks, CA: Sage.

Atkinson, P. (2010). The curious case of the kitchen computer: products and non-products in design history. *Journal of Design History*, *23*(2), 163-179.

Australian Government Department of Health. (2021). Providing health care remotely during COVID-19. *Australian Government Department of Health.* Retrieved from: https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-advice-for-the-health-and-disability-sector/providing-health-care-remotely-during-covid-19

Baarsma, M. E., Claassen, S. A., van der Horst, H. E., Hovius, J. W., & Sanders, J. M. (2022). Knowing the entire story – a focus group study on patient experiences with chronic Lyme-associated symptoms (chronic Lyme disease). *BMC Primary Care*, *23*(1), 139. https://doi.org/10.1186/s12875-022-01736-5

Babrow, A. S., Kasch, C. R., & Ford, L. A. (1998). The Many Meanings of Uncertainty in Illness: Toward a Systematic Accounting. *Health Communication*, *10*(1), 1–23. https://doi.org/10.1207/s15327027hc1001_1

Bagnara, S., & Smith, G. C. (Eds.). (2006). Designers and Users: Two Perspectives on Emotion and Design. In *Theories and Practice in Interaction Design* (0 ed., pp. 125–138). CRC Press. https://doi.org/10.1201/9781482269536-15

Bailey, A., Dening, T., & Harvey, K. (2021). Battles and breakthroughs: Representations of dementia in the British press. *Ageing & Society*, *41*(2), 362–376. https://doi.org/10.1017/S0144686X19001120

Baltes, M. M., & Wahl, H.-W. (1996). Patterns of Communication in Old Age: The Dependence-Support and Independence-Ignore Script. *Health Communication*, *8*(3), 217. https://doi.org/10.1207/s15327027hc0803_3

Baker, P. (2016). 'The question is, how cruel is it?' Keywords, Fox Hunting and the House of Commons. In D. Archer (Ed.) *What's in a Word-list?* (pp. 145-156). Routledge.

Baker, P. (2010). Sociolinguistics and corpus linguistics. Edinburgh: Edinburgh University Press.

Baldos, J., and Szymczak, A. (2022). Ohip Dental Coverage and Free Dental Care Ontario in 2022. *Smile Care Dental.* https://www.smilecaredental.ca/blog/ohip-dental-coverage-free-dental-care-ontario-2021

Barello, S., Triberti, S., Graffigna, G., Libreri, C., Serino, S., Hibbard, J., & Riva, G. (2016). eHealth for Patient Engagement: A Systematic Review. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.02013

Barnes, R. K. (2018). Preliminaries to treatment recommendations in UK primary care: a vehicle for shared decision making?. Health Communication, 33(11), 1366-1376.

Bauman, A. E., Fardy, H. J., & Harris, P. G. (2003). Getting it right: Why bother with patient-centred care? *Medical Journal of Australia*, *179*(5), 253–256. https://doi.org/10.5694/j.1326-5377.2003.tb05532.x

Bednarek, M., & Carr, G. (2021). Computer-assisted digital text analysis for journalism and communications research: Introducing corpus linguistic techniques that do not require programming. *Media International Australia*, *181*(1), 131–151. https://doi.org/10.1177/1329878X20947124

Berger, V. (2020). Phenomenology of Online Spaces: Interpreting Late Modern Spatialities. *Human Studies*, *43*(4), 603–626. https://doi.org/10.1007/s10746-020-09545-4

Bhargava, I. (2022, Aug 12). As Ontario sees staffing shortages amid a health-care crisis, London's emergency services are no different. *CBC News.* https://www.cbc.ca/news/canada/london/ontario-health-care-crisis-london-1.6548165

Biel, Ł. (2017). Genre analysis and translation. In *The Routledge Handbook of Translation Studies and Linguistics*. Routledge.

Bill 74, The People's Health Care Act, Parliament 42, Session 1, Ontario, 2019. https://www.ontario.ca/laws/statute/s19005 Bliss, L. S., & McCabe, A. (2006). Comparison of Discourse Genres: Clinical Implications. Contemporary Issues in Communication Science and Disorders, 33(Fall), 126–167. https://doi.org/10.1044/cicsd_33_F_126

Blanchett Neheli, N. (2018). News by numbers: The evolution of analytics in journalism. *Digital Journalism, 6*(8), 1041-1051.

Boostrom, Jr., R. E. (2008). The Social Construction of Virtual Reality and the Stigmatized Identity of the Newbie. *Journal For Virtual Worlds Research*, *1*(2). https://doi.org/10.4101/jvwr.v1i2.302

Borghi, L., Galli, F., and Vegni, E. (2016). The Patient-Centered Medicine as the Theoretical Framework for Patient Engagement. In Graffigna, G (Ed.) *Promoting Patient Engagement and Participation for Effective Healthcare Reform* (pp. 25-39). IGI Global.

Bowen, M., Kinderman, P., & Cooke, A. (2019). Stigma: A linguistic analysis of the UK red-top tabloids press' representation of schizophrenia. *Perspectives in Public Health*, *139*(3), 147–152. https://doi.org/10.1177/1757913919835858

Boyack, K. W., and Klavans, R. (2010). Co-Citation Analysis, Bibliographic Coupling, and

    Direct Citation: Which Citation Approach Represents the Research Front Most Accurately?

    Journal of the American Society for Information Science and Technology, 61(12), 2389–

    2404.

Boyd, R. L. (2017). Psychological text analysis in the digital humanities. In *Data analytics in*

    digital humanities (pp. 161-189). Springer, Cham.

Boyd, R. L. (2018). MEH: Meaning Extraction Helper (Version 2.2.03) [Software]. Available

    from https://www.ryanboyd.io/software/meh

Boyd, R. L. (2020). PCA Template for MEM.R. *Meaning Extraction Helper.*

    https://www.ryanboyd.io/software/meh/Supplemental/PCA-Template-for-MEM.R

Briones, R., Nan, X., Madden, K., & Waks, L. (2012). When vaccines go viral: an analysis of

    HPV vaccine coverage on YouTube. Health communication, 27(5), 478-485.

British National Corpus (n.d.). What is the BNC? *British National Corpus.* Retrieved from:

    http://www.natcorp.ox.ac.uk/corpus/index.xml?ID=intro

Brockman, D. G., Petronio, L., Dron, J. S., Kwon, B. C., Vosburg, T., Nip, L., Tang, A.,

    O'Reilly, M., Lennon, N., Wong, B., Ng, K., Huang, K. H., Fahed, A. C., & Khera, A. V.

    (2021). Design and user experience testing of a polygenic score report: A qualitative study

    of prospective users. *BMC Medical Genomics*, *14*, 238. https://doi.org/10.1186/s12920-021-

    01056-0

Browne, P. L. (2000). *Unsafe practices: Restructuring and privatization in Ontario health care*

    (p. 175). Ottawa: Canadian Centre for Policy Alternatives.

Buccini, M., & Padovani, S. (2007). Typology of the experiences. *Proceedings of the 2007*

    Conference on Designing Pleasurable Products and Interfaces, 495–

504.https://doi.org/10.1145/1314161.1314211Asmussen, C. B., & Møller, C. (2019). Smart literature review: A practical topic modelling approach to exploratory literature review. *Journal of Big Data*, *6*(1), 93. https://doi.org/10.1186/s40537-019-0255-7Biber, D. (2007). Discourse on the move: Using corpus analysis to describe discourse structure (Vol. 28). John Benjamins Publishing

Canadian Partnership Against Cancer. (2019). *Virtual Care in Canada: Environmental Scan*. Canadian Partnership Against Cancer. https://s22457.pcdn.co/wp-content/uploads/2019/09/Virtual-Care-Environmental-Scan-EN.pdf

Casey, L. (2022, Oct 24). Ontario and its doctors reach virtual-care billing deal, but only for specialists. *CTV News Toronto*. https://toronto.ctvnews.ca/ontario-and-its-doctors-reach-virtual-care-billing-deal-but-only-for-specialists-1.6119763

Charles, M., Pecorari, D., & Hunston, S. (Eds.). (2009). *Academic writing: At the interface of corpus and discourse*. Continuum.

Chen, C. (2017). Science Mapping: A Systematic Review of the Literature. *Journal of Data and Information Science*, *2*(2), 1–40. https://doi.org/10.1515/jdis-2017-0006

Clark, S. M., Gioia, D. A., Ketchen, D. J., & Thomas, J. B. (2010). Transitional Identity as a Facilitator of Organizational Identity Change during a Merger. *Administrative Science Quarterly*, *55*(3), 397–438. https://doi.org/10.2189/asqu.2010.55.3.397

Cobo, M. j., López-Herrera, A. g., Herrera-Viedma, E., & Herrera, F. (2011). Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the American Society for Information Science and Technology*, *62*(7), 1382–1402. https://doi.org/10.1002/asi.21525

Collins, P. A., Abelson, J., Pyman, H., & Lavis, J. N. (2006). Are we expecting too much from print media? An analysis of newspaper coverage of the 2002 Canadian healthcare reform debate. *Social Science & Medicine*, *63*(1), 89–102. https://doi.org/10.1016/j.socscimed.2005.12.012

Conrad, S. (2002). Corpus Linguistic Approaches For Discourse Analysis. Annual Review of Applied Linguistics, 22, 75–95.

Conrad, P., & Barker, K. K. (2010). The Social Construction of Illness: Key Insights and Policy Implications. *Journal of Health and Social Behavior*, *51*(1_suppl), S67–S79. https://doi.org/10.1177/0022146510383495

Currin-McCulloch, J., Stanton, A., Boyd, R., Neaves, M., & Jones, B. (2021). Understanding breast cancer survivors' information-seeking behaviours and overall experiences: A comparison of themes derived from social media posts and focus groups. *Psychology & Health*, *36*(7), 810–827. https://doi.org/10.1080/08870446.2020.1792903

Dan, V., & Rauter, D. (2021). Explanatory Reporting in Video Format: Contrasting Perceptions to Those of Conventional News. *Journalism Practice*, 1–22. https://doi.org/10.1080/17512786.2021.1966644

DeClerq, K. (Dec 1, 2022). New virtual care fees come into effect today in Ontario. Over 12K people signed a petition to reverse it. *CTV News Toronto.*https://toronto.ctvnews.ca/new-virtual-care-fees-come-into-effect-today-in-ontario-over-12k-people-signed-a-petition-to-reverse-it-1.6176980

Denison, H. J., Bromhead, C., Grainger, R., Dennison, E. M., & Jutel, A. (2017). Barriers to sexually transmitted infection testing in New Zealand: A qualitative study. *Australian and*

New Zealand Journal of Public Health, *41*(4), 432–437. https://doi.org/10.1111/1753-6405.12680

Department of Health and Social Care and Hancock, M. (2021, March 18). Matt Hancock has spoken about the impact of technology on healthcare providers' ability to respond to COVID-19 – and the vital role it will play in the future. *Gov.UK.* Retrieved from: https://www.gov.uk/government/news/health-secretary-driving-digital-in-the-nhs

Diedrich, L., & Dockweiler, C. (2021). Media representation of telemedicine in the German medical journal "Deutsches Ärzteblatt": An acceptance-theoretical analysis. *Journal of Public Health*, *29*(3), 533–540. https://doi.org/10.1007/s10389-019-01158-1

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., and Lim, W. M. (2021). Hto conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research, 133*, 285-296. https://doi.org/10.1016/j.jbusres.2021.04.070.

Donthu, N., Kumar, S., and Pattnaik, D. (2020). Forty-five years of journal of business research: A bibliometric analysis. *Journal of Business Research,* 109, 1-14.

Eggly, S. (2002). Physician-Patient Co-Construction of Illness Narratives in the Medical Interview. *Health Communication*, *14*(3), 339–360. https://doi.org/10.1207/S15327027HC1403_3

Ekbia, H., & Nardi, B. A. (2012). Inverse instrumentality: How technologies objectify patients and players. In *Materiality and Organizing: Social Interaction in a Technological World* (pp. 157–175). OUP Oxford.

Ekbia, H., & Nardi, B. (2014). Heteromation and its (dis) contents: The invisible division of labor between humans and machines. First Monday, 19(6).

Entman, R. M. (1993). Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication*, *43*(4), 51–58.

Eysenbach, G. (2000). Recent advances: Consumer health informatics. *BMJ*, *320*(7251), 1713–1716. https://doi.org/10.1136/bmj.320.7251.1713

Fatahi, N., Mattsson, B., Lundgren, S. M., & Hellström, M. (2010). Nurse radiographers' experiences of communication with patients who do not speak the native language. *Journal of Advanced Nursing*, *66*(4), 774–783. https://doi.org/10.1111/j.1365-2648.2009.05236.x

FCC (2020). 2020 Broadband Deployment Report. *Federal Communications Commission.* Retrieved from: https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2020-broadband-deployment-report

Fielding, N. G. (2012). Triangulation and mixed methods designs: Data integration with new research technologies. *Journal of mixed methods research*, *6*(2), 124-136.

Fooks, C., Obarski, G., & Hylmar, L. H. and S. (2015). The Patient Experience in Ontario 2020: What Is Possible? *HealthcarePapers*, *14*(4). https://www.longwoods.com/content/24339/the-patient-experience-in-ontario-2020-what-is-possible-

Forde, K. R. (2007). Discovering the Explanatory Report in American Newspapers. *Journalism Practice*, 1(2), 227–244.

Forsythe, L., Heckert, A., Margolis, M. K., Schrandt, S., & Frank, L. (2018). Methods and impact of engagement in research, from theory to practice and back again: Early findings from the Patient-Centered Outcomes Research Institute. *Quality of Life Research*, *27*(1), 17–31. https://doi.org/10.1007/s11136-017-1581-x

Free, C., Phillips, G., Galli, L., Watson, L., Felix, L., Edwards, P., Patel, V., & Haines, A. (2013). The Effectiveness of Mobile-Health Technology-Based Health Behaviour Change or Disease Management Interventions for Health Care Consumers: A Systematic Review. *PLoS Medicine*, *10*(1), e1001362. https://doi.org/10.1371/journal.pmed.1001362

Fu, K. K., Yang, M. C., & Wood, K. L. (2015, August). Design principles: The foundation of design. In *International design engineering technical conferences and computers and information in engineering conference* (Vol. 57175, p. V007T06A034). American Society of Mechanical Engineers.

Gaver, W. W. (1991). Technology affordances. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems Reaching through Technology - CHI '91*, 79–84. https://doi.org/10.1145/108844.108856

Gearhart, S., & Dinkel, D. (2016). Mother knows breast: A content analysis of breastfeeding in television network news. Health communication, 31(7), 884-891.

Gesser-Edelsburg, A., Walter, N., & Shir-Raz, Y. (2017). The "new public" and the "good ol'press": Evaluating online news sources during the 2013 polio outbreak in Israel. Health Communication, 32(2), 169-179.

Gibson, K. (2022). Addressing deficits with crowdfunded journalism. *Facts & Frictions: Emerging Debates, Pedagogies and Practices in Contemporary Journalism, (1)*2, 42-59.

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Harvard University Press.

Government of Canada. (2019). Canada's Health Care System. *Government of Canada.* https://www.canada.ca/en/health-canada/services/health-care-system/reports-publications/health-care-system/canada.html

Government of Canada. (2020). COVID-19 pandemic guidance for the health care sector. *Canada.ca.* Retrieved from: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/covid-19-pandemic-guidance-health-care-sector.html

Government of Canada. (2022). Ontario's Virtual Care Streamlined Action Plan. *Government of Canada.* https://www.canada.ca/en/health-canada/corporate/transparency/health-agreements/bilateral-agreement-pan-canadian-virtual-care-priorities-covid-19/action-plan-ontario.html

Gray, C., Mason, J., & Loshak, H. (2021). An Overview of Direct-to-Patient Virtual Visits in Canada. *Canadian Journal of Health Technologies*, *1*(6). https://doi.org/10.51731/cjht.2021.80

Green, A. (2016). Audience Measurement in the Data Age.*Ipsos Views.*

Griffin, T. (Dec 16, 2022). Virtual walk-in clinics may contribute more strain to health-care system, OMA finds. *CBC News.* https://www.cbc.ca/news/canada/toronto/virtual-care-health-crisis-ontario-1.6688245

Haddouk, L., & Gouvernet, B. (2016). Cybertherapy: A scientific model? A text mining analysis of published abstracts. *Annual Review of CyberTherapy and Telemedicine*, *14*, 30–36.

Hamilton, C. B., Hoens, A. M., Backman, C. L., McKinnon, A. M., McQuitty, S., English, K., & Li, L. C. (2018). An empirically based conceptual framework for fostering meaningful patient engagement in research. *Health Expectations*, *21*(1), 396–406. https://doi.org/10.1111/hex.12635

Hanger-Kopp, S., Thaler, T., Seebauer, S., Schinko, T., & Clar, C. (2022). Defining and operationalizing path dependency for the development and monitoring of adaptation pathways. *Global Environmental Change*, *72*, 102425.

Hannawa, A. F., García-Jiménez, L., Candrian, C., Rossmann, C., & Schulz, P. J. (2015). Identifying the field of health communication. *Journal of health communication, 20*(5), 521-530.

Harrington, N. G. (2015). *Health communication: theory, method, and application.* Routledge.

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017). Code saturation versus meaning saturation: how many interviews are enough?. *Qualitative health research*, *27*(4), 591-608.

Hepp, A. (2013). The communicative figurations of mediatized worlds: Mediatization research in times of the 'mediation of everything.' *European Journal of Communication*, *28*(6), 615–629. https://doi.org/10.1177/0267323113501148

Herat, M. (2020). "I feel like death on legs": COVID-19 isolation and mental health. *Social Sciences & Humanities Open*, 2(1), 100042. https://doi.org/10.1016/j.ssaho.2020.100042

Heritage, J., & Robinson, J. D. (2006). The Structure of Patients' Presenting Concerns: Physicians' Opening Questions. *Health Communication*, *19*(2), 89–102. https://doi.org/10.1207/s15327027hc1902_1

Hermida, A., & Young, M. L. (2019). From peripheral to integral? A digital-born journalism not for profit in a time of crises. *Media and Communication*, *7*(4), 92-102.

Hjarvard, S. (2008). The mediatization of society: A theory of the media as agents of social and cultural change. *Nordicom Review*, *29*(2), 102–131.https://doi.org/10.1515/nor-2017-0181

Ho, E. Y., Cady, K. A., & Robles, J. S. (2016). A Case Study of the Neti Pot's Rise, Americanization, and Rupture as Integrative Medicine in U.S. Media Discourse. *Health Communication*, *31*(10), 1181–1192. https://doi.org/10.1080/10410236.2015.1047145

Holmes, M., & Hart, A. (2009). Longwoods E-health Library: Profile: Ed Brown and the Development of the Ontario Telemedicine Network. *Healthcare Quarterly*, *12*(4), 28–31. https://doi.org/10.12927/hcq.2013.21123

Horton, Eleanor S. (2007) Neoliberalism and the Australian Healthcare System (Factory). In Proceedings 2007 Conference of the Philosophy of Education Society of Australasia, Wellington, New Zealand.

Hosseini, N., Sharif, F., Ahmadi, F., & Zare, M. (2013). Patients' perception of epilepsy and threat to self-identity: A qualitative approach. *Epilepsy & Behavior*, *29*(1), 228–233. https://doi.org/10.1016/j.yebeh.2013.06.003

Houston, T. K., Sands, D. Z., Nash, B. R., & Ford, D. E. (2003). Experiences of physicians who frequently use e-mail with patients. Health communication, 15(4), 515-525.

Hudak, J. (2016, February 24). Shining light on explanatory journalism's impact on media, democracy, and society. Brookings. https://www.brookings.edu/blog/fixgov/2016/02/24/shining-light-on-explanatory-journalisms-impact-on-media-democracy-and-society/

Hughes, T. P. (2005). *Human-built world: How to think about technology and culture*. University of Chicago Press.

Hutchby, I. (2001). Technologies, Texts and Affordances. *Sociology*, *35*(2), 441–456. https://doi.org/10.1177/S0038038501000219

Hunt, D., & Harvey, K. (2015). Health communication and corpus linguistics: using corpus tools to analyse eating disorder discourse online. In *Corpora and discourse studies: Integrating discourse and corpora (*pp. 134-154). London: Palgrave Macmillan

Hwang, L. and Pyle, A. (2022, Dec 19). Opinion: Don't blame family doctors for the current health care crisis. *The Globe and Mail.* https://www.theglobeandmail.com/opinion/article-dont-blame-family-doctors-for-the-current-health-care-crisis/

Jones, R. H. (2015). Discourse and health communication. In Tannen D., Hamilton, E. H., and Schiffrin, D. (Eds.) *The handbook of discourse analysis,* p. 841-857.

Kang, A. W., Walton, M., Hoadley, A., Delacuesta, C., Hurley, L., & Martin, R. (2021). Patient experiences with the transition to telephone counseling during the covid-19 pandemic. *Healthcare (Switzerland)*, *9*(6). https://doi.org/10.3390/healthcare9060663

Kessler, M. (1963). An experimental study of bibliographic coupling between technical papers (Corresp.). *IEEE Transactions on Information Theory*, 9(1), 49-51. doi: 10.1109/TIT.1963.1057800.

Kim, J. N., Park, S. C., Yoo, S. W., & Shen, H. (2010). Mapping health communication scholarship: Breadth, depth, and agenda of published research in health communication. *Health communication, 25*(6-7), 487-503.

Kobak, K. A., Greist, R., Jacobi, D. M., Levy-Mack, H., & Greist, J. H. (2015). Computer-assisted cognitive behavior therapy for obsessive-compulsive disorder: A randomized trial on the impact of lay vs. professional coaching. *Annals of General Psychiatry*, *14*(1), 10. https://doi.org/10.1186/s12991-015-0048-0

Kogen, L. (2015). Not up for debate: U.S. news coverage of hunger in Africa*. The International Communication Gazette, 77*(1): 3-23.

Kronfli, C. (2020). *Realizing the Full Potential of Virtual Care in Ontario.* Ontario Chamber of Commerce. https://occ.ca/wp-content/uploads/COVID19-Policy-Brief-Virtual-Care-final.pdf

Ku, B., & Lupton, E. (2022). *Health design thinking: creating products and services for better health*. MIT Press.

Kumar, S., Nilsen, W. J., Abernethy, A., Atienza, A., Patrick, K., Pavel, M., Riley, W. T., Shar, A., Spring, B., Spruijt-Metz, D., Hedeker, D., Honavar, V., Kravitz, R., Lefebvre, R. C., Mohr, D. C., Murphy, S. A., Quinn, C., Shusterman, V., & Swendeman, D. (2013). Mobile Health Technology Evaluation. *American Journal of Preventive Medicine*, *45*(2), 228–236. https://doi.org/10.1016/j.amepre.2013.03.017

Lavis, J. (2016). *Ontario's health system: Key insights for engaged citizens, professionals and policymakers*. McMaster Health Forum. https://www.mcmasterforum.org/docs/default-source/ohs-book/two-pages-per-sheet/ch1_introduction-and-overview-2-page-ohs.pdf?sfvrsn=c8ab55d5_5

Lawless, M., Augoustinos, M., & LeCouteur, A. (2018). Dementia on Facebook: Requesting information and advice about dementia risk-prevention on social media. *Discourse, Context & Media*, *25*, 44–51. https://doi.org/10.1016/j.dcm.2018.01.011

Lazard, A. J., Pikowski, J., Horrell, L., Ross, J. C., Noar, S. M., & Sutfin, E. L. (2020). Adolescents' and Young Adults' Aesthetics and Functionality Preferences for Online Tobacco Education. *Journal of Cancer Education*, *35*(2), 373–379. https://doi.org/10.1007/s13187-019-1475-4

Lee, S. T., & Basnyat, I. (2013). From press release to news: mapping the framing of the 2009 H1N1 A influenza pandemic. Health Communication, 28(2), 119-132.

Lee, B. M., & Ouyang, J. (2014). Intelligent Healthcare Service by using Collaborations between IoT Personal Health Devices. *BSBT 2014*. https://doi.org/10.14257/ijbsbt.2014.6.1.17

Lee-Shanok, P. (2022, Dec 25). Is virtual care a cure for Canada's battered health-care system? *CBC News*. https://www.cbc.ca/news/health/provinces-virtual-health-care-panacea-1.6696009

Levenstein, J. H., Mccracken, E. C., Mcwhinney, I. R., Stewart, M. A., & Brown, J. B. (1986). The Patient-Centred Clinical Method. 1. A Model for the Doctor-Patient Interaction in Family Medicine. *Family Practice*, *3*(1), 24–30. https://doi.org/10.1093/fampra/3.1.24

Lewis, S., Collyer, F., Willis, K., Harley, K., Marcus, K., Calnan, M., & Gabe, J. (2018). Healthcare in the news media: The privileging of private over public. *Journal of Sociology*, *54*(4), 574–590. https://doi.org/10.1177/1440783317733324

Li, C. (Zhirui), Borycki, E. M., & Kushniruk, A. W. (2021). Connecting the World of Healthcare Virtually: A Scoping Review on Virtual Care Delivery. *Healthcare*, *9*(10), 1325. https://doi.org/10.3390/healthcare9101325

Love, R., Dembry, C., Hardie, A., Brezina, V., & McEnery, T. (2017). The Spoken BNC2014: Designing and building a spoken corpus of everyday conversations. *International Journal of Corpus Linguistics*, *22*(3), 319-344.

Lupton, A. (2017). Controversial for-fee service connects Ontario doctors and patients via video chat. *CBC News*. https://www.cbc.ca/news/canada/london/maple-health-online-doctor-visits-1.4194285

Lupton, D. (1992). Discourse analysis: A new methodology for understanding the ideologies of health and illness. *Australian journal of public health, 16*(2), 145-150.

MacDonald, S. P. (2005). The language of journalism in treatments of hormone replacement news. Written Communication, 22(3), 275-297.

Manafo, E., Petermann, L., Mason-Lai, P., & Vandall-Walker, V. (2018). Patient engagement in Canada: A scoping review of the 'how' and 'what' of patient engagement in health research. *Health Research Policy and Systems*, *16*(1), 5. https://doi.org/10.1186/s12961-018-0282-4

Maniatopoulos, G., Hopkins, C., Joyce, T. J., & Brittain, K. (2019). Framing the failure of medical implants: Media representations of the ASR hip replacements in the UK. *Health Expectations : An International Journal of Public Participation in Health Care and Health Policy*, *22*(3), 518–527. https://doi.org/10.1111/hex.12877

Manning, P., & Ray, G. B. (2002). Setting the agenda: An analysis of negotiation strategies in clinical talk. Health Communication, 14(4), 451-473.

Manoff, M. (2020). The Stuff of Bits: An Essay on the Materialities of Information by Paul Dourish (review). *Technology and Culture*, *61*(4), 955–956. https://doi.org/10.7551/mitpress/10999.001.0001

Maple. (n.d.). How it works. *maple.* https://www.getmaple.ca/for-you-family/how-it-works/?utm_term=&gad_source=1&utm_content=&utm_campaign=20713321583&gclid=CjwKCAiAvoqsBhB9EiwA9XTWGYt9D1Tbs3Pxgc83zQasmsubx4KBIxdvMRIRjhJOETVc7UQho9EMbhoCO6kQAvD_BwE

Martin, S., & Hansen, K. A. (1996). Examining the "virtual"; publication as a "newspaper of record". *Communication Law and Policy*, *1*(4), 579-594

Matusitz, J., & Breen, G. M. (2007). Telemedicine: its effects on health communication. *Health communication*, 21(1), 73-83.

Mayring, P. (2014). *Qualitative Content Analysis: Theoretical foundation, basic procedures, and software solution*. Klagenfurt, Austria.

McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly, 36*(2), 176-187.

Meyer, S. B., Violette, R., Aggarwal, R., Simeoni, M., MacDougall, H., & Waite, N. (2019). Vaccine hesitancy and Web 2.0: Exploring how attitudes and beliefs about influenza vaccination are exchanged in online threaded user comments. *Vaccine*, *37*(13), 1769–1774. https://doi.org/10.1016/j.vaccine.2019.02.028

Meyrowitz, J. (2019). Medium theory. *The International Encyclopedia of Media Literacy.* https://doi.org/10.1002/9781118978238.ieml0136

MOH & MOLTC. (2017). Ontario Health Insurance Plan: OHIP Bulletins. *Government of Ontario.* https://www.health.gov.on.ca/en/pro/programs/ohip/bulletins/11000/bul11167.aspx

MOH & MOLTC. (2018a). Health Workforce Planning Branch: Regulated Health Professions. *Government of Ontario.* https://www.health.gov.on.ca/en/pro/programs/hhrsd/about/regulated_professions.aspx

MOH & MOLTC. (2018b). Excellent Care for All: Telemedicine - Improving access to care through technology. *Government of Ontario.* https://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/pri_telemedecine.aspx

MOH & MOLTC. (2019a). *Ontario Health Teams: Guidance for Health Care Providers and Organizations.* Ontario Ministry of Health and Ministry of Long Term Care. https://health.gov.on.ca/en/pro/programs/connectedcare/oht/docs/guidance_doc_en.pdf

MOH & MOLTC. (2019b). INFOBulletin: Virtual Care Program - Billing Amendments to Enable Direct-to-Patient Video Visits and Modernize Virtual Care Compensation. Government of Ontario. https://www.health.gov.on.ca/en/pro/programs/ohip/bulletins/4000/bul4731.aspx

MOH & MOLTC. (2020). INFOBulletin: Changes to the Schedule of Benefits for Physician Services (Schedule) in response to COVID-19 influenza pandemic effective March 14, 2020. *Government of Ontario.* https://www.health.gov.on.ca/en/pro/programs/ohip/bulletins/4000/bul4745.aspx

MOH & MOLTC. (2022a). Ontario Health Teams. *Government of Ontario.* https://health.gov.on.ca/en/pro/programs/connectedcare/oht/#:~:text=What%20are%20Ontario%20Health%20Teams,care%20to%20a%20defined%20population

MOH & MOLTC. (2022b). Virtual Care 2: Terms and Conditions: An overview of select new payment rules and processes relevant to new Virtual Care Services (effective December 1, 2022). *Government of Ontario.* https://www.health.gov.on.ca/en/pro/programs/ohip/billing_briefs/virtual_care_services_tc.aspx?utm_source=sfmc&utm_medium=email&utm_campaign=News+Alert+Board+Chair+Virtual+Care+Update&utm_term=Terms+and+conditions%3a+an+overview+of+select+new+payment+rules+and+processes+relevant+to+new+virtual+care+services+(effective+Dec.+1%2c+2022)&utm_id=309593&sfmc_id=7560996

MOH & MOLTC. (2022c). Ontario Health Teams: Digital Health Playbook. *Government of Ontario.* https://health.gov.on.ca/en/pro/programs/connectedcare/oht/docs/dig_health_playbook_en.pdf

MOH & MOLTC. (2022d). Virtual Care 1: Comprehensive and Limited Virtual Care Services: An introduction to new OHIP Virtual Care Services and fee codes. *Government of Ontario.* https://www.health.gov.on.ca/en/pro/programs/ohip/billing_briefs/virtual_care_services.aspx?utm_source=sfmc&utm_medium=email&utm_campaign=News+Alert+Board+Chair+Virtual+Care+Update&utm_term=Comprehensive+and+limited+virtual+care+services%3a+an+introduction+to+new+OHIP+virtual+care+services+and+fee+codes&utm_id=309593&sfmc_id=7560996

Monkman, H., Griffith, J., & Kushniruk, A. W. (2015). Evidence-based Heuristics for Evaluating Demands on eHealth Literacy and Usability in a Mobile Consumer Health Application. *MedInfo*, *358*, 358-362.

Moral-Muñoz, José A.; Herrera-Viedma, Enrique; Santisteban-Espejo, Antonio; Cobo, Manuel J. (2020). "Software tools for conducting bibliometric analysis in science: An up-to-date review". El profesional de la información, 29(1), e290103.

Moßhammer, D., Natanzon, I., Manske, I., Grutschkowski, P., & Rieger, M. A. (2012). Die Kooperation zwischen Haus- und Betriebsärzten in Deutschland: Wo befinden sich Defizite und Barrieren?: Eine qualitative Analyse anhand von Fokusgruppeninterviews. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*, *106*(9), 639–648. https://doi.org/10.1016/j.zefq.2011.09.027

Murakami, A., Thompson, P., Hunston, S., & Vajn, D. (2017). 'What is this corpus about?': Using topic modelling to explore a specialised corpus. *Corpora*, *12*(2), 243–277. https://doi.org/10.3366/cor.2017.0118

Nelson, J. L. (2020). The enduring popularity of legacy journalism: An analysis of online audience data. *Media and Communication*, *8*(2), 40-50.

Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives on Medical Education*, *8*(2), 90–97. https://doi.org/10.1007/s40037-019-0509-2

Newton, A. S., March, S., Gehring, N. D., Rowe, A. K., & Radomski, A. D. (2021). Establishing a Working Definition of User Experience for eHealth Interventions of Self-reported User Experience Measures With eHealth Researchers and Adolescents: Scoping Review. *Journal of medical Internet research*, *23*(12), e25012.

Nikolenko, S. I., Koltcov, S., & Koltsova, O. (2017). Topic modelling for qualitative studies. *Journal of Information Science*, *43*(1), 88–102. https://doi.org/10.1177/0165551515617393

NLTK Project (n.d.). NLTK Corpora. Natural Language Tool Kit. Retrieved from: https://www.nltk.org/nltk_data/

O'Connor, E., Farrow, M., & Hatherly, C. (2014). Randomized Comparison of Mobile and Web-Tools to Provide Dementia Risk Reduction Education: Use, Engagement and Participant Satisfaction. *JMIR Mental Health*, *1*(1), e4. https://doi.org/10.2196/mental.3654

O'Gorman, L. D., Hogenbirk, J. C., & Warry, W. (2016). Clinical telemedicine utilization in Ontario over the Ontario telemedicine network. *Telemedicine and e-Health, 22*(6), 473-479. https://www.liebertpub.com/doi/10.1089/tmj.2015.0166

O'Gorman, L. D., & Hogenbirk, J. C. (2015). Driving Distance to Telemedicine Units in

Northern Ontario as a Measure of Potential Access to Healthcare. *Telemedicine and E-

Health*, *22*(4), 269–275. https://doi.org/10.1089/tmj.2015.0133

Ogata Jones, K., Denham, B. E., & Springston, J. K. (2006). Effects of mass and interpersonal

communication on breast cancer screening: Advancing agenda-setting theory in health

contexts. *Journal of Applied Communication Research, 34*(1), 94-113.

Ojo, A., Guntuku, S. C., Zheng, M., Beidas, R. S., & Ranney, M. L. (2021). How Health Care

Workers Wield Influence Through Twitter Hashtags: Retrospective Cross-sectional Study of

the Gun Violence and COVID-19 Public Health Crises. *JMIR Public Health and

Surveillance*, *7*(1), e24562. https://doi.org/10.2196/24562

Ollinaho, O. I. (2018). Virtualization of the life-world. *Human Studies*, *41*(2), 193–209.

https://doi.org/10.1007/s10746-017-9455-3

Omachonu, V. K. (2018). *Healthcare Value Proposition: Creating a Culture of Excellence in

Patient Experience*. CRC Press.

Ontario. (2022). Ontario Launches New Tool to Connect People to Nurses and Other Health

Services from Anywhere at Any Time. *Government of Ontario Newsroom.*

https://news.ontario.ca/en/release/1002095/ontario-launches-new-tool-to-connect-people-to-

nurses-and-other-health-services-from-anywhere-at-any-time

Ontario Health. (2021). Virtual Visits Verification for Solution Providers: Frequently asked

Questions. *Ontario Health.* https://www.ontariohealth.ca/sites/ontariohealth/files/2022-

10/virtual-verification-process-hsp-faq.pdf

Ontario Health. (2022ꜞ). *Annual Business Plan 2022-23*.

https://www.ontariohealth.ca/sites/ontariohealth/files/2022-05/OHBusinessPlan22_23.pdf

Ontario Health. (2022₂). Verified Solutions List for Virtual Visits. *Ontario Health.*
https://www.ontariohealth.ca/system-planning/digital-standards/virtual-visits-
verification/verified-solutions-list

Ontario Telemedicine Network. (2023). Meeting Priority Population Needs Through Virtual
Care. OTN. https://otn.ca/providers/ohts/

Orlikowski, W. J., & Scott, S. V. (2008). 10 sociomateriality: challenging the separation of
technology, work and organization. The academy of management annals, 2(1), 433-474.

OSOT. (2022). Health Care in Canada - the role of federal and provincial governments. *Ontario
Society of Occupational Therapists.*
https://www.osot.on.ca/OSOT/Advocacy/Health_Policy_in_Ontario/OSOT/Advocacy_Page
s/Health_Policy_in_Ontario.aspx?hkey=07e19c16-fa68-4e4a-9ac3-86655d7519f6

Overby, E. (2008). Process Virtualization Theory and the Impact of Information Technology.
Organization Science, *19*(2), 277–291. https://doi.org/10.1287/orsc.1070.0316

Ozavci, G., Bucknall, T., Woodward-Kron, R., Hughes, C., Jorm, C., & Manias, E. (2022).
Towards patient-centred communication in the management of older patients' medications
across transitions of care: A focused ethnographic study. *Journal of Clinical Nursing*,
31(21–22), 3235–3249. https://doi.org/10.1111/jocn.16162

Pojanapunya, P., & Todd, R. W. (2018). Log-likelihood and odds ratio: Keyness statistics for
different purposes of keyword analysis. *Corpus Linguistics and Linguistic Theory*, *14*(1),
133-167.

Policy lab on the appropriate use of virtual care in a primary care setting. (2022). What we
Heard: Results of a Policy Lab on the Appropriate Use of Virtual Care in a Primary Care

Setting. *Health Excellence Canada.*

https://www.healthcareexcellence.ca/media/rr2ctlt4/20220412_virtualcarepolicylab_en.pdf

Poteat, T., German, D., & Kerrigan, D. (2013). Managing uncertainty: A grounded theory of

stigma in transgender health care encounters. *Social Science & Medicine*, *84*, 22–29.

https://doi.org/10.1016/j.socscimed.2013.02.019

Pranckutė, R. (2021). Web of Science (WoS) and Scopus: The Titans of Bibliographic

Information in Today's Academic World. *Publications, 9*(1), 12.

https://www.mdpi.com/2304-6775/9/1/12

QSR International Pty Ltd. (2020) NVivo (released in March 2020),

https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

R Core Team (2020). R: A language and environment for statistical computing. R Foundation for

Statistical Computing, Vienna, Austria. https://www.R-project.org/.

R Studio Team (2019). RStudio: Integrated Development for R. RStudio, Inc., Boston, MA URL

http://www.rstudio.com/.

Robinson, J. D. (2003). An interactional structure of medical activities during acute visits and its

implications for patients' participation. Health Communication, 15(1), 27-59.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Roter, D. L., Larson, S., Sands, D. Z., Ford, D. E., & Houston, T. (2008). Can e-mail messages

between patients and physicians be patient-centered?. Health communication, 23(1), 80-86.

Ruhrmann, G., Guenther, L., Kessler, S. H., & Milde, J. (2015). Frames of scientific evidence:

How journalists represent the (un)certainty of molecular medicine in science television

programs. Public Understanding of Science (Bristol, England), 24(6), 681-696.

https://doi.org/10.1177/0963662513510643

Sandu, A. (2020). Pandemic—Catalyst of the Virtualization of the Social Space. *Postmodern Openings*, *11*(1Sup2), 115–140. https://doi.org/10.18662/po/11.1sup2/146

Sawyer, E. (2006). *Guarding Canada's Health System: The History of the Canadian Healthcare Association 1931 to 2006.* Ottawa, Canada: The Canadian Healthcare Association Press.

Schiavo, R. (2013). *Health communication: From theory to practice (Vol. 217).* John Wiley & Sons.

Schulze, K., & Krömker, H. (2010, August). A framework to measure user experience of interactive online products. In Proceedings of the 7th international conference on methods and techniques in behavioral research (pp. 1-5).

Schweitzer, J., & Synowiec, C. (2012). The Economics of eHealth and mHealth. *Journal of Health Communication*, *17*(sup1), 73–81. https://doi.org/10.1080/10810730.2011.649158

Shaw, J., Jamieson, T., Agarwal, P., Griffin, B., Wong, I., & Bhatia, R. S. (2018). Virtual care policy recommendations for patient-centred primary care: Findings of a consensus policy dialogue using a nominal group technique. *Journal of Telemedicine and Telecare*, *24*(9), 608–615. https://doi.org/10.1177/1357633X17730444

Shaw, B. R., Hawkins, R., McTavish, F., Pingree, S., & Gustafson, D. H. (2006). Effects of insightful disclosure within computer mediated support groups on women with breast cancer. Health communication, 19(2), 133-142.

Sinclair, S., Beamer, K., Hack, T. F., McClement, S., Raffin Bouchal, S., Chochinov, H. M., & Hagen, N. A. (2017). Sympathy, empathy, and compassion: A grounded theory study of palliative care patients' understandings, experiences, and preferences. *Palliative Medicine*, *31*(5), 437–447. https://doi.org/10.1177/0269216316663499

Singh, V.K., Singh, P., Karmakar, M., Leta, J., and Mayr, P. (2021). The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. *Scientometrics 126*, 5113–5142. https://link.springer.com/article/10.1007/s11192-021-03948-5

Skute, I., Zalewska-Kurek, K., Hatak, I. and de Weerd-Nederhof, P. (2019). Mapping the field: a bibliometric analysis of the literature on university–industry collaborations. *J Technol Transf,44*, 916–947.

Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the American Society for Information Science (pre-1986) 24*(4), 265.

Smith, M. R., & Marx, L. (Eds.). (1994). *Does technology drive history?: The dilemma of technological determinism*. Mit Press.

Song, S., Zhao, Y. C., Yao, X., Ba, Z., & Zhu, Q. (2021). Short video apps as a health information source: An investigation of affordances, user experience and users' intention to continue the use of TikTok. *Internet Research*, *31*(6), 2120–2142. https://doi.org/10.1108/INTR-10-2020-0593

Stewart, M. (2001). Towards a global definition of patient centred care: The patient should be the judge of patient centred care. *BMJ*, *322*(7284), 444–445. https://doi.org/10.1136/bmj.322.7284.444

Street, R. L. (2003). Mediated consumer–provider communication in cancer care: The empowering potential of new technologies. *Patient Education and Counseling*, *50*(1), 99–104. https://doi.org/10.1016/S0738-3991(03)00089-2

Strong, D. M., Johnson, S. A., Tulu, B., Trudel, J., Volkoff, O., Pelletier, L. R., Bar-On, I., & Garber, L. (2014). A Theory of Organization-EHR Affordance Actualization. *Journal of the Association for Information Systems*, *15*(2), 53–85.

Stubbs, M. (1996). Text and corpus analysis: Computer-assisted studies of language and culture (p. 158). Oxford: Blackwell.

Sun, N., & Rau, P.-L. P. (2015). The acceptance of personal health devices among patients with chronic conditions. *International Journal of Medical Informatics*, *84*(4), 288–297. https://doi.org/10.1. 016/j.ijmedinf.2015.01.002

Teddlie, C., & Tashakkori, A. (2009). *Foundations of Mixed Methods Research. Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*. Los Angeles, CA: Sage.

Telehealth.HHS.Gov. (2021). Telehealth and COVID-19. *TELEHEALTH.HHS.GOV.* Retrieved from: https://telehealth.hhs.gov/patients/telehealth-during-the-covid-19-emergency?gclid=CjwKCAjw8cCGBhB6EiwAgOReyyZyrdllruh4WKhir5srHAS7jg_Weqy ITllF2voL7I2cIPjUlgJIshoC0rIQAvD_BwE

The College of Family Physicians of Canada (2022). *Buying Access Will Cost You: The unintended consequences of for-profit virtual care.* www.cfpc.ca/CFPC/media/Resources/Health-Policy/Corporatization-of-Care.pdf

Thomas, R. (2006). *Health communication.* Springer. https://doi.org/10.1007/b136859

Touri, M., & Koteyko, N. (2015). Using corpus linguistic software in the extraction of news frames: Towards a dynamic process of frame analysis in journalistic texts. *International Journal of Social Research Methodology*, *18*(6), 601–616. https://doi.org/10.1080/13645579.2014.929878

Trint. (2022). Our Technology. *Trint*

.https://trint.com/technology?tid=636951fdad7a860008616a1d

Tudiver, F., & Talbot, Y. (1999). Why don't men seek help? Family physicians' perspectives on

help-seeking behavior in men. *Journal of Family practice*, *48*, 47-52.

UHN Virtual Care Clinic Advisory Panel. (2022). Clinical guiding principles for virtual care.

University Healthcare Network.

https://www.uhn.ca/corporate/AboutUHN/Virtual_Care/Pages/clinical_guiding_principles.a

spx

Van Eck, N.J., & Waltman, L. (2014). Visualizing bibliometric networks. In Y. Ding, R.

Rousseau, & D. Wolfram (Eds.), Measuring scholarly impact: Methods and practice (pp.

285–320). Springer. Preprint: https://www.vosviewer.com/publications

Van Gorp, B. (2010). Strategies to take subjectivity out of framing analysis. In D'Angelo, P. &

Kuypers, J. (Eds.), *Doing news framing analysis: Empirical and theoretical perspectives*

(pp. 84–109). Routledge.

Van Gorp, B., and Vercruysse, T. (2012). Frames and counter-frames giving meaning to

dementia: A framing analysis of media content. *Social Science & Medicine 74*, 1274–1281.

Van 't Riet, J., Crutzen, R., & De Vries, H. (2010). Investigating Predictors of Visiting, Using,

and Revisiting an Online Health-Communication Program: A Longitudinal Study. *Journal*

of Medical Internet Research, *12*(3), e37. https://doi.org/10.2196/jmir.1345

Viladrich, A. (2019). "We Cannot Let Them Die": Undocumented Immigrants and Media

Framing of Health Deservingness in the United States. *Qualitative Health Research*, *29*(10),

1447–1460. https://doi.org/10.1177/1049732319830426

Vilar-Lluch, S. (2022). Representing Behavioral Pathology: The Importance of Modality in

Medical Descriptions of Conduct, ADHD as Case Study. *Health Communication*, *0*(0), 1–9.

https://doi.org/10.1080/10410236.2022.2129649

Vilaro, M. J., Wilson-Howard, D. S., Griffin, L. N., Tavassoli, F., Zalake, M. S., Lok, B. C.,

Modave, F. P., George, T. J., Carek, P. J., & Krieger, J. L. (2020). Tailoring virtual human-

delivered interventions: A digital intervention promoting colorectal cancer screening for

Black women. *Psycho-Oncology*, *29*(12), 2048–2056. https://doi.org/10.1002/pon.5538

Vogel, L (2020). Canada has long way to go on virtual care. *Canadian Medical Association*

Journal 192 (9) E227-E228. https://www.cmaj.ca/content/192/9/E227

VOSviewer. (2022). Home. *VOSviewer: Visualizing Scientific Landscapes.*

https://www.vosviewer.com/

Walker, D., & Myrick, F. (2006). Grounded Theory: An Exploration of Process and Procedure.

Qualitative Health Research, *16*(4), 547–559. https://doi.org/10.1177/1049732305285972

Webster, P. (2016). Private telehealth foray into public system. *Canadian Medical Association*

Journal 188 (10) E209. https://www.cmaj.ca/content/188/10/E209

Weeks, C. (2022, Oct 7). Changes to virtual care billing in Ontario raise concerns over health

care access. *The Globe and Mail.* https://www.theglobeandmail.com/canada/article-changes-

to-virtual-care-billing-in-ontario-raise-concerns-accessing/

WHO Director General (2020). WHO Director-General's opening remarks at the media briefing

on COVID-19 - 11 March 2020. World Health Organization. https://www.who.int/director-

general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-

covid-19---11-march-2020

Willis, E. (2016). Patients' self-efficacy within online health communities: Facilitating chronic disease self-management behaviors through peer education. *Health Communication*, *31*(3), 299–307. https://doi.org/10.1080/10410236.2014.950019

Wilson, D. M., & Palha, P. (2007). A Systematic Review of Published Research Articles on Health Promotion at Retirement. *Journal of Nursing Scholarship*, *39*(4), 330–337. https://doi.org/10.1111/j.1547-5069.2007.00189.x

Wilson, H., & Hutchinson, S. (1991). Triangulation of Qualitative Methods: Heideggerian Hermeneutics and Grounded Theory. *Qualitative Health Research*, *1*(2), 263–276. https://doi.org/10.1177/104973239100100206

Winsa, P. (2022, Oct 18). Why Ontario is reducing doctors' payments for one-off virtual appointments. And what it could mean for your health care. *The Toronto Star*.https://www.thestar.com/news/gta/2022/10/18/why-ontario-is-reducing-doctors-payments-for-one-off-virtual-appointments-and-what-it-could-mean-for-your-health-care.html

Wolf, J., Niederhauser, V., Marshburn, D., & LaVela, S. (2014). Defining Patient Experience. *Patient Experience Journal*, *1*(1), 7–19. https://doi.org/10.35680/2372-0247.1004

Yazdannik, A., Yousefy, A., & Mohammadi, S. (2017). Discourse analysis: A useful methodology for health-care system researchers. Journal of Education and Health Promotion, 6, 111. https://doi.org/10.4103/jehp.jehp_124_15

Young, R., Subramanian, R., Miles, S., Hinnant, A., & Andsager, J. L. (2017). Social representation of cyberbullying and adolescent suicide: A mixed-method analysis of news stories. Health communication, 32(9), 1082-1092.

Zheng, Y.-L., Ding, X.-R., Poon, C. C. Y., Lo, B. P. L., Zhang, H., Zhou, X.-L., Yang, G.-Z., Zhao, N., & Zhang, Y.-T. (2014). Unobtrusive Sensing and Wearable Devices for Health Informatics. *IEEE Transactions on Biomedical Engineering*, *61*(5), 1538–1554. https://doi.org/10.1109/TBME.2014.2309951

Ziafati, N. (2022, Aug 9). Ontario hospital closing ER once again due to ongoing staff shortages. *CTV News Toronto.* https://toronto.ctvnews.ca/ontario-hospital-closing-er-once-again-due-to-ongoing-staff-shortages-1.6019778

Zottola, A., Atanasova, D., Cardwell, E., Forrester, J., & Stevens, C. (2020). Framing nitrogen pollution in the British press: 1984–2018. *Discourse & Communication*, 14(1), 84–103. https://doi.org/10.1177/1750481319876772

Zupic, I., and Čater, T. (2015).Bibliometric Methods in Management and Organization. *Organizational Research Methods, (18)*3, 429-472.