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Protecting Freedom of Thought and Public Health in a Pandemic

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Key Points

→ Safeguarding the public's safety and well-being during an infectious disease outbreak is challenging and requires the sharing of timely, accurate information to minimize the risk of acquiring and transmitting disease.

→ During the COVID-19 global pandemic, the World Health Organization (WHO) and governments in Canada used social media to protect the public by disseminating information about the virus's risk and to explain public health and social measures. However, social media also amplified messages of misinformation and accelerated their spread.

→ As Canada updates its pandemic readiness infrastructure in response to its experience with COVID-19, the right to freedom of thought offers a framework for establishing objective standards for public health infrastructure and processes in a pandemic.

Introduction

At the outset of the COVID-19 pandemic, governments worldwide implemented emergency powers to minimize harms from a novel and deadly coronavirus spread by pre-symptomatic cases in populations lacking pre-existing immunity (Bedford et al. 2020). The rapidity with which public health and social measures were implemented in Canada[1] meant that officials were simultaneously interpreting scientific evidence, making risk management decisions, and communicating with the public. Canadian chief public health officers became household names while presenting public health and social measures during peaks of COVID-19 and then stressing the imperative for immunization (Lowe et al. 2022).[2]

Unlike previous pandemics, the COVID-19 public health crisis occurred in an "infodemic"[3] with social media

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1 Within four weeks of the first death from COVID-19, the federal government implemented international border controls including screening, advisories, restrictions banning non-essential travel, and quarantine and isolation orders, while provincial and territorial governments imposed social distancing, stay-at-home directives, masking mandates, and school and business closures (McCoy et al. 2020).

2 One provincial chief medical officer of health attracted beatific attention from journalistic hagiographers (see Porter 2020).

3 The WHO was so concerned about the high levels of misinformation circulating on the topic of the virus and the disease that it coined the term *infodemic* to describe the situation in February 2020, even before declaring COVID-19 to be a pandemic. See Tedros (2020).

About the Authors

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platforms[4] accelerating, amplifying and adding to the volume of circulating information. While potential benefits of social media were observed (Depoux et al. 2020; Yigitcanlar et al. 2020), many harmful effects were also observed. When grievances about government overreach boiled over and led "freedom convoy" protestors to encamp in Ottawa and elsewhere in Canada for three weeks, social media platforms allowed "hate speech, propaganda, conspiracy theories, and lies to spread farther, faster, and cheaper than ever before" (Rouleau 2023, 29). In his *Report of the Public Inquiry into the 2022 Public Order Emergency*, Commissioner Paul Rouleau wrote that "false beliefs that COVID-19 vaccines manipulate DNA, social media feeds rife with homophobic or racist content, and inaccurate reporting of important events all featured in the evidence" before him (ibid.). The health toll to Canadians caused by misinformation was certainly higher, although the magnitude remains unquantified. Today, nearly four years later, the widespread availability of artificial intelligence (AI) tools holds both the potential to exacerbate the harms of misinformation and better means of combatting it.

It is a human right to hold opinions and ideas without interference as well as to develop and form opinions by reasoning. This right imposes a positive obligation on governments to counteract mis- and disinformation (Alegre 2017). While individuals are free to think as they please, misinformation can affect freedom of thought by distorting health risks and undermining Canadians' competencies to reason through complex information, develop sound opinions, and support beliefs and behaviours that keep them safe. Freedom of thought provides a novel lens to assess and determine the obligations of governments in Canada to provide scientific communications to the public that accord with best available evidentiary and epistemic standards.

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4   Including blogs and micro-blogs (e.g., Blogger, Twitter), social networking sites (e.g., Facebook, LinkedIn), media-sharing sites (e.g., YouTube, SlideShare) and wikis (e.g., Wikipedia) (Giustini et al. 2018).

Social Media and COVID-19

In a pandemic, slowing viral transmission requires substantial changes in behaviour, and individuals are expected to assist in mitigating disease spread by adopting behaviours that minimize risks of acquiring and transmitting disease (Driedger, Maier and Jardine 2021). There are many ways in which social media[5] has been shown to support individuals and governments in meeting that goal. As the COVID-19 pandemic unfolded, social media served to inform people about the pandemic's existence, and many would have been forewarned (Van Bavel et al. 2020). In Australia, social media analytics provided an efficient approach to assessing public attitudes; guided interventions, and decisions; and informed the public about health measures and restrictions through effective use of government social media channels (Yigitcanlar et al. 2020).

The many consequences of health misinformation include the increase of misleading or incorrect interpretations of available evidence, negative impacts on mental health, misallocation of health resources, and an increase in vaccination hesitancy (Tasnim, Hossain and Mazumder 2020; Razai et al. 2021; Borges do Nascimento et al. 2022). The spread of false or misleading information through social media can change disease transmission patterns (Lewandowsky, Ecker and Cook 2017; Kim, Fast and Markuzon 2019). Pandemics provide fertile ground for misinformation as an abundance of information is curated and disseminated quickly, sometimes without time for close reflection (Marecos et al. 2023). Other examples of misinformation about COVID-19 that proliferated on social media include:

→ **Public health and social measures:** There was widespread misinformation about public health and social measures such as contact tracing, social distancing and stay-at-home directives. It included conspiracy theories that these measures were designed to "control" the population. Misinformation distorted people's risk perception of the virus (Krause et al. 2020),

and perception of risk is linked to preventive health behaviours (Dryhurst et al. 2020).

→ **Severity and spread of COVID-19:** Misinformation downplayed the disease severity, claiming that the threat posed by the virus, SARS-CoV-2, was exaggerated, and that the disease posed no more danger to the public than seasonal influenza. In the United Kingdom, at least 50 cellphone towers were burned in response to the conspiracy theory that the 5G cellular network was causing or exacerbating COVID-19 symptoms (BBC 2020). Belief in the 5G conspiracy has been linked to violent intentions (Jolley and Paterson 2020). The 2020 film *Plandemic*, an interview with a former virologist and conspiracy theorist, had millions of views and became one of the most widespread examples of COVID-19 misinformation, with its false suggestions that mask wearing "activates" SARS-CoV-2 (Cook et al. 2020).

→ **Treatment:** Much misinformation circulated about how to prevent and treat COVID-19. For example, false claims circulated that certain unapproved medicinal products, including hydroxychloroquine and ivermectin, and even some non-medical products, such as injected disinfectants and herbal remedies, could prevent or cure the disease. Other fake "cures" included gargling with lemon or salt water and bleach self-injection (WHO 2022). Misinformation about the effectiveness of masks caused confusion and controversy and substantial public pushback (Hornik et al. 2021).

→ **Vaccines:** Building on many decades of unwarranted suspicion, false claims circulated about the safety and efficacy of vaccines, with conspiracy theories spreading about nefarious motives behind vaccine development and distribution (Razai et al. 2021).

A study of the spread of health-care information was undertaken by collecting social media posted by Canadians during two weeks at the beginning of the COVID-19 pandemic (Bridgman et al. 2020). Those investigators found that exposure to social media was associated with misperceptions regarding basic facts about COVID-19. Those misperceptions were, in turn, associated with lower compliance with social-distancing measures. The investigators were thus able to link from misinformation circulating on social media to

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5   While misinformation can be shared through any media, social media are the focus here because of the volume of sharing and speed of transmission.

behaviours and attitudes that potentially magnify the harmful effects of COVID-19 (ibid.). Belief in conspiracies about SARS-CoV-2 was associated with greater propensity to reject information from expert authorities (Uscinski et al. 2020).

What Does the Canadian Public Think?

Various studies highlight the need for clear, consistent and transparent public health messaging from trustworthy sources. Importantly, the preferred source of COVID-19 information among Canadians was government communication, which emphasizes the importance of consistency of messaging across platforms. In one study, investigators identified that the preferred source of COVID-19 information among the 55 Canadians they interviewed was the Canadian government and that almost all of these participants thought it helpful for the government to use social media and news media for future risk communication, highlighting the importance of consistency across platforms (Theivendrampillai et al. 2023). International investigators found that young people actively consume and produce information from social media, shaping their attitudes, beliefs and behaviour (Volkmer 2021).

Canadian investigators who conducted town hall focus groups in Vancouver, Winnipeg and Saint John between June 2008 and May 2009 to explore the public's perceptions of restrictive measures in an influenza pandemic found that two recommendations emerged: one, create an environment for compliance through communication rather than enforcement, and two, establish the delineation between individual rights, community values and the greater good (Smith et al. 2012). In another Canadian study involving 10 online focus groups, each based in a different Canadian location, with 89 participants in total, the researchers found that participants identified inconsistency and lack of transparency in public health messaging as problematic and sought evidence-based information presented by a trustworthy source (Fullerton et al. 2022).

The substantial potential for sampling bias in online COVID-19 research and survey research in general provides the context for interpreting all research findings from this source (Joyal-Desmarais et al. 2022).

AI and Public Health

Scale changes a system's behaviours in many ways, including by adding emergent behaviours. The techniques used to attempt to manage a system under such scaling must be reconsidered. AI will have a large effect on how people seek health care and other cognitive services in the years to come. Since ChatGPT's launch in November 2022, chatbots trained for medical triage have ranked higher than doctors in published studies. For example, a study from University of California San Diego found that licensed health care professionals preferred ChatGPT's responses over physician responses to questions posted in an online forum "in 78.6%…of the 585 evaluations" (Ayers et al. 2023) and rated the chatbot's responses as higher in both quality and empathy (ibid.). According to one of the study's researchers, AI "will be a game changer for medicine in its ability to lighten workloads while simultaneously improving quality for patients" (Sisson 2023). Another study aimed to assess the accuracy and comprehensiveness of responses from two different versions of chatbots to medical questions developed by physicians; the researchers concluded the "chatbot-generated answers displayed high accuracy and completeness scores across various specialties, question types, and difficulty levels" but called for further development to improve the tools' reliability and robustness before integrating them into medical practice (Goodman et al. 2023).

Although the results of these early studies can not be generalized to the broad clinical setting, the productivity and personalization increases that AI models may potentially offer over purely human service delivery models for both health-care organizations and their patients are a driver of interest in AI development for health care. AI interfaces could similarly positively affect public health and pandemic preparedness, opening opportunities for counselling and triage at scale, anywhere, any time. Investigators and the WHO (2020b) are already addressing technological and ethical considerations in deploying AI to combat COVID-19 misinformation on social media (Cartwright et al. 2023). Health officials

must monitor online discourse, to trace the spread of misinformation, especially on social media. The ways in which AI enables the rampant production of mis- and disinformation for delivery in a customized and persuasive way, exploiting all cognitive biases at scale, are among the challenges present and growing. Privacy, bias, accuracy, the potential for over-reliance on AI, and security are some of the major areas in which problems need to be addressed before AI systems can be operated at scale in health care. Nonetheless, AI's potential benefits to the stretched public health system will drive continued efforts to overcome these challenges.

Modernizing Health Communications to Prepare for the Next Zoonotic Threat

In our digital age, misinformation takes less work and intelligence to create than to correct, and spreads faster than the efforts to clean it up (Vosoughi, Roy and Aral 2018). One key lesson from COVID-19 is the urgent necessity to take multisectoral actions to combat health misinformation. These actions include the development of legal frameworks, the implementation of communication strategies, and the design of elementary and secondary school and university curricula that aim to enhance risk literacy, digital literacy and health literacy. Communication strategies must incorporate best practices in effective health communication during a pandemic, namely, clarity, consistency and reliability (Finset et al. 2020; Zarocostas 2020; Nan et al. 2022).

Prior to the COVID-19 pandemic, the Canadian Pandemic Influenza Preparedness Task Group highlighted the importance of communications in its planning guidance for the health sector: "At each stage of the pandemic, providing accurate, credible and timely information — through the right message, delivered at the right time by the right person to the right audience — can help protect the public's health, save lives and minimize social and economic disruption"

(Henry 2018, 1). Along with social media, AI will alter our informational world in unpredictable ways. Given that existing communications plans were developed in far different informational environments, it is evident that they require immediate modernization. This update should incorporate the many lessons learned during COVID-19, with explicit reference to the roles of social media and the potential uses of AI.

Counteracting misinformation requires a multi-faceted approach, including fact-checking services, algorithm adjustments on social media platforms, and public health campaigns to promote evidence-based recommendations. Such efforts must be based on the latest scientific understanding being created through stakeholder engagement within formalized institutional processes (Fan, Glassman and Guzman 2023). To encourage informed decisions, communications must be accurate and accessible (delivered in multiple languages and to the right stakeholder groups) yet not coercive or manipulative. The adoption of strategies such as enhancing risk, digital and health literacy, along with routinely implementing fact-checking and misinformation-reporting tools on social media platforms, can supplement the capacities of existing public health communications platforms.

As *The Lancet*'s editors wrote in the early days of the pandemic, "There may be no way to prevent a COVID-19 pandemic in this globalised time, but verified information is the most effective prevention against the disease of panic" (*The Lancet* 2020). While many are calling for regulatory or other restrictions on AI, an immediate and practical modernization enhancement can be found by adopting standards to validate and communicate the source of materials before publishing them, and by specifically labelling AI- versus human-generated text and images. Examples of how to communicate this information already exist, such as the guidelines developed by the Canadian Broadcasting Corporation (Fenlon 2023) and *The Globe and Mail* (Frehner 2023).

Protecting Freedom of Thought and Public Health During a Pandemic

At the beginning of the pandemic, the WHO (2020a) and the Joint United Nations Programme on HIV/AIDS (2020) affirmed the need for a rights-based approach to COVID-19, including principles of "involving and empowering affected communities; combatting stigma and discrimination; protecting privacy; avoiding the criminalization of people who breach public health restrictions or risk transmitting SARS-CoV-2; and addressing social inequities that shape vulnerability to the virus, limit access to health services, and render certain communities disproportionately affected and unable to follow public health recommendations" (Mykhalovskiy 2020, 976). In Canada, the Canadian Human Rights Commission[6] and the Ontario Human Rights Commission[7] issued policy statements articulating similar affirmations.

Freedom of thought is the human right to hold opinions and ideas without interference and includes the right to develop and form opinions by reasoning (Alegre 2017). Misinformation does not necessarily limit this freedom, as individuals still can think and believe what they choose. But misinformation disrupts the process of free opinion formation by generating a signal-to-noise problem, where accurate information is drowned out. Furthermore, it exploits common human cognitive biases, making incorrect information seem far more compelling, especially when fear or disgust responses have been activated. Misinformation therefore affects freedom of thought by ultimately distorting health risks and undermines people's ability to effectively and efficiently reason through complex information, develop sound opinions, and support beliefs and behaviours that keep individuals and the public safe. Misinformation also reduces the ability of groups to settle on an accurate fact base from which to form consensus, owing to the dilution effect and by creating layers of emotional responses that impair judgment.

The United Nations Special Rapporteur on freedom of religion or belief identifies four attributes of the right to freedom of thought[8]: freedom not to reveal one's thoughts; freedom from punishment for one's thoughts (real or inferred); protection from impermissible alteration of thought; fostering of an enabling environment for free thought (Bublitz 2014; Ligthart et al. 2022). The right to freedom of thought offers a framework for establishing objective standards for risk management in a pandemic. The attribute of fostering an enabling environment for freedom of thought (Bublitz 2023) places a positive obligation on the government to provide the public with best available evidence and epistemic standards of risk assessment.

Canadian governments were caught flat-footed at the outbreak of COVID-19 (Levy 2021)[9] and two successive federal ministers of health have committed to national reviews of Canada's response to COVID-19.[10] One area of deficiency highlighted in the auditor general's *COVID-19 Pandemic: Report 8 — Pandemic Preparedness, Surveillance, and Border Control Measures* was the Public Health Agency of Canada (PHAC) risk assessment processes (Office of the Auditor General of Canada 2021, sections 8.81–8.84). In response, PHAC committed to reviewing "its process to promote credible and timely risk assessments to guide public health responses to limit the spread of infectious diseases that can cause a pandemic, as set out in its pandemic response plans and guidance," as the report had recommended (ibid., section 8.85).[11] The most pressing work to be addressed includes the objective assessment of

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6   See www.chrc-ccdp.gc.ca/en/resources/inequality-amplified-covid-19-crisis.

7   See www.ohrc.on.ca/en/policy-statement-human-rights-based-approach-managing-covid-19-pandemic.

8   See UN General Assembly (2021).

9   Canada's Chief Public Health Officer Dr. Theresa Tam spoke candidly about this in an interview with the Canadian Press that was widely reported: "'(The COVID-19 pandemic) is one of the most teachable moments, I think, in our collective lifetimes,' she said. Although Canada and other countries may have been good at 'ratcheting up response' to the crisis, it's become clear that 'prevention and preparedness' needs more attention. 'There's much more investment when…the house is on fire and putting out the fire than there is to build the fire stations and get prepared and get rehearsed ahead of time, even for a rare event,' Tam said" (Ireland 2022).

10   In April 2021, the federal health minister at the time, Patty Hajdu, said that a "full investigation" was warranted and required at an "appropriate time" (Aiello 2021). In September 2022, the then health minister Jean-Yves Duclos also stated that there should be a broad-based review of how the COVID-19 pandemic was handled (McCharles 2022).

11   PHAC stated that the recommended review would be "completed by December 2022, recognizing that timelines for this review are dependent on the federal government and its partners' available capacity to dedicate to this work, given the ongoing COVID19 pandemic" (Office of the Auditor General of Canada 2021, section 8.85).

strengths and weaknesses of the federal, provincial and territorial public health response plan for biological events (McNeill and Topping 2018) in COVID-19, from the perspective of complex global catastrophic risks governance (Kreienkamp and Pegram 2020), and determining how to more effectively institutionalize Canadian science advisory bodies and ensure rapid mobilization of well-coordinated and independent advice in future pandemics (Bdeir, Hossain and Crawford 2013; Bhatia, Allin and Di Ruggiero 2023; Ammirato, Linzalone and Felicetti 2021).

Conclusion

Governments are duty-bound to protect and promote their citizens' health, safety and human rights during a pandemic. Fostering an enabling environment for free thought places a positive obligation on governments to provide the public with best available evidence and epistemic standards. There is clear need to modernize systems designed to prepare and respond to pandemic threats, including surveillance systems to detect pathogens; data collection and modelling capacity to track their spread; and communication systems for public health guidance. As Canada modernizes its pandemic preparedness infrastructure in light of COVID-19, social media and AI, scientific approaches to risk assessment and risk communication provide objective frameworks that are consistent with the right to freedom of thought.

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