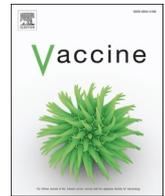


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Understanding COVID-19 vaccine hesitancy in Canada

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ABSTRACT

While Canada has had relatively high vaccination rates against COVID-19, specifically during earlier waves of the pandemic, vaccine hesitancy has continued to serve as a significant barrier to adequate protection against the virus and, more recently, booster vaccine uptake. This paper explores the processes underlying Canadians' perceptions of COVID-19 vaccines and their decisions to take or refuse them, as well as how public policy and health messaging about vaccination has influenced vaccination attitudes and behaviors. Our focus group interviews with 18 vaccinated and unvaccinated adult Canadians conducted during October 2021 reveal that, in some respects, COVID-19 vaccine hesitancy conforms to prior knowledge about some of the factors that affect vaccine attitudes (e.g., the influence of known medical providers) but deviates from current theoretical frameworks regarding general vaccine hesitancy. Specifically, these frameworks emphasize a lack of scientific knowledge and literacy ("knowledge deficit" accounts) or individuals' inability to incorporate rational risk perceptions into initial emotional responses to vaccines ("emotionality/irrationality" accounts). In contrast to the knowledge deficit account, we find that expressions of COVID-19 vaccine hesitancy were most frequently associated with an information surplus or inability to prioritize information from multiple and often contradictory sources. Furthermore, top-down pro-vaccination messaging often triggered significant pushback against what participants perceived as moral shaming of the unvaccinated. Our findings demonstrate the necessity for a new framework to understand and address vaccine hesitancy. A better theoretical account of vaccine hesitancy has important implications for future vaccination efforts, specifically within the context of new variants and low booster vaccination rates in Canada.

1. Introduction

As of October 2022, 84.2% of the Canadian population aged 5 years and over had received at least two doses of a COVID-19 vaccine [1]. While Canada's high vaccination rate is cause for optimism, there are signals of vaccine skepticism among the population. Various explanations have been offered for this hesitancy, but it is largely speculative [2–4].

This paper addresses three questions: What factors influence individuals' decisions to take or refuse a COVID-19 vaccine? Do the

reasons for COVID-19 vaccine hesitancy correspond to those associated with other forms of vaccine hesitancy? And finally, how does public policy and public health messaging about COVID-19 vaccines affect vaccination attitudes and behaviors? We draw on focus group interviews conducted during October 2021 with vaccinated and unvaccinated Canadian adults with different degrees of hesitancy to shed light on these questions. By examining the factors that influence COVID-19 vaccine attitudes and behaviors, we examine whether past lessons about vaccine hesitancy can be applied to the present pandemic and how current efforts to encourage greater COVID-19 vaccination, especially against new

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variants, might be tailored or adjusted to increase uptake.

2. Background

2.1. Definitions

There is no universally accepted definition of vaccine hesitancy. Some authors assert that vaccine hesitancy is distinct from anti-vaccination or vaccine opposition [5–7]. In contrast, others link the two concepts and define vaccine hesitancy as “strong opposition to vaccination” [8–11]. Notably, definitions of vaccine hesitancy have been developed primarily to capture parental decisions to refuse or delay their children’s vaccination against preventable diseases like polio, measles, and diphtheria [12–15]. However, with the advent of COVID-19, much greater attention has been paid to the “refusal, delay, or acceptance with doubts about [more general] vaccine usefulness and safety” for adults and children alike [16, p. 991; italics added].

In the current paper, we adopt this more expansive definition of vaccine hesitancy that moves beyond simply opposition or outright refusal. This includes the World Health Organization’s “3 Cs” model, which conceptualizes vaccine hesitancy in terms of three intersecting categories of determinants: confidence (trust in vaccine safety and effectiveness), complacency (perception of risk associated with a vaccine-preventable disease), and convenience (accessibility and availability of vaccines) [17]. These factors intersect to influence an individual’s attitude to vaccination, which is expressed in a variety of behaviors including information-seeking and prioritization, reliance recommendations from authorities, and explicit vaccine decisions.

2.2. Theoretical frameworks

Just as there is no single definition of vaccine hesitancy, there are multiple overlapping schools of thought regarding the causes of vaccine hesitancy. Some scholars assert that vaccine hesitancy is the result of ignorance and disinformation, or that it can be attributed to a generalized “knowledge deficit” which contributes to a susceptibility to false information or outright anti-vaccination messaging [18–21]. For example, Kricorian, Civen and Equils (2021) found that Americans who reported the belief that COVID-19 vaccines are unsafe were more likely to believe mis- and dis-information (e.g., that vaccines can change an individual’s DNA) [21]. The authors assert that these beliefs are associated with an inability to understand scientific language or determine which sources of health information are trustworthy. Similarly, other scholars use the term “infodemic” to describe the abundance of often conflicting information people are exposed to during a pandemic [17] and recommend health literacy to counter vaccine hesitancy [19].

Others attribute vaccine hesitancy to emotional responses and irrationality [10,22–24]. Gavaruzzi and colleagues (2021) examined how parental emotions influence their expressions of vaccine hesitancy and decision-making regarding the vaccination status of their children. They found that parents who demonstrated higher emotional competence (i.e., the ability to understand the source of one’s own emotions) were less likely to express concerns about vaccine safety [22]. In another study, Tomljenovic and colleagues (2019) found that conspiratorial beliefs and low vaccine uptake rates were associated with a range of specific emotions towards vaccination including anger, fear, anxiety, and disgust [24]. Proponents of theories that link vaccine hesitancy to emotionality or irrationality often point to a tendency on the part of those who are vaccine hesitant to act on their feelings about vaccination rather than an informed understanding of risk.

In contrast to the claims of the standard accounts of vaccine hesitancy, an increasing number of scholars argue that vaccine hesitancy cannot be attributed to a single factor such as scientific ignorance or misunderstanding [25]. Instead, attitudes about and behaviors towards vaccines are conceptualized as a complex decision-making process, with vaccine hesitancy often expressed by even the most well-informed

individuals [26]. Within this framework, socio-cultural context is key to understanding vaccine decision-making [27], and scholars point to a variety of environmental, interpersonal, and institutional factors that can be implicated: relationships with healthcare providers; social norms; policies; interaction with media; perceptions of vaccine efficacy and safety; feelings regarding disease susceptibility; socioeconomic status; health literacy; and past experiences with vaccines [28].

More recently, the influence of social capital or professional networks on vaccine hesitancy has been highlighted. For example, Wong and Kohler (2020) explored the impact of social capital on COVID-19 vaccine acceptance [29]. They note that the interests and concerns of vulnerable or marginalized populations with respect to vaccines may be addressed by focusing on three subtypes of social capital: bonding (i.e., encouraging virtual communications to preserve pre-existing social networks), linking (i.e., ensuring accessibility of vaccine services and information for all), and bridging (i.e., enhancing solidarity between high- and low-risk groups). Additionally, drawing on Bourdieu’s social capital theory [30], Attwell et al. (2018) highlight how members of communities with high bonding social capital tend to display more homogenous vaccine-related decisions and attitudes [31]. Similarly, Bernado and Ocampo’s (2022) research reveal the importance of social ties. They found that the decision to vaccinate was most strongly influenced by bonding social capital or involvement in community life [32].

At the institutional level, other factors may also be in play. Perceptions of vaccine safety, efficacy, or necessity are shaped within the context of the contemporary “risk society”: there is a constant sense of vulnerability to the uncertainty of modern science and technology and subsequent increasing distrust in authorities; and yet, individuals must nonetheless choose which authorities they will follow in their assessment of the risks and benefits of vaccination [33–35]. The role of affective polarization on vaccine behaviors have been shown to be important during the COVID-19 pandemic, especially partisan elite messaging and authoritative appeals [36–37]. Together, these factors interact in unique ways in individuals to determine their vaccine attitudes [38].

In this paper, we follow the critical view held by some researchers that health behavior cannot be attributed to simple causal theories due to the complex influence of the social world on decision-making [39–40]. We adopt a more dynamic framework of vaccine hesitancy than the standard theories of knowledge deficit or irrationality and emotionality.

3. Methods

3.1. Study population

Our findings are based on focus groups with 18 adult participants: 13 women and 5 men. Table 1 displays the key sociodemographic characteristics of the participants along with their vaccination status at the time of the focus groups. The participants were between the ages of 26 and 68, with a mean age of 44. All were born in Canada and self-identified as either White (67%) or Indigenous (33%). They hailed from six provinces representing Eastern, Central, and Western Canada, with most of the participants residing in Ontario. Participants were geographically dispersed across both rural and urban areas. Ten of the female participants and none of the male participants had at least one child. Half of the participants were low-income (with annual incomes of less than \$30,000). Most of the participants had at least a high school degree. Pseudonyms are assigned to participants to preserve confidentiality.

Focus group participants were selected based on their self-identified vaccination status and attitudes in a national survey of COVID-19 experiences, and who agreed on the survey to participate in follow-up focus groups. A total of four focus groups were conducted, each lasting between 60 and 67 min, with a mean length of 64 min. Group 1 consisted of six individuals who had indicated on the survey that they

Table 1
Sociodemographic characteristics and vaccination status of focus group participants.

Pseudonym	Age	Sex	Race/Ethnicity	Province	Education	Low Income Status	Received a COVID19 vaccine?
Group 1							
Callie	36	F	Indigenous	BC	Some college	Yes	No
Frances	43	F	White	NB	HS degree	Yes	No
Miranda	68	F	White	ON	Less than HS	No	No
Robert	44	M	White	MB	HS degree	Yes	No
Rebecca	52	F	Indigenous	AB	Some college	Yes	No
Tim	64	M	Indigenous	ON	Some college	Yes	Yes*
Group 2							
Sandra	58	F	White	SK	HS degree	No	Yes
Martin	53	M	White	ON	Some college	Yes	Yes
Kayla	63	F	White	ON	HS degree	Yes	Yes
Sophie	49	F	Indigenous	ON	HS degree	No	Yes
Ruth	60	F	White	ON	Less than HS	No	Yes
Andrea	26	F	White	ON	Some college	Yes	Yes
Groups 3 & 4							
Maria	30	F	White	ON	Bachelor's degree	No	Yes
Jacob	26	M	White	QC	Some college	No	No
Anne	26	F	White	ON	Bachelor's degree	No	No
Nancy	26	F	Indigenous	ON	HS degree	Yes	No
John	31	M	White	AB	Bachelor's degree	Yes	No
Diana	28	F	Indigenous	AB	Bachelor's degree	Yes	Yes

*Participant was unvaccinated at the time of the survey but subsequently received a COVID-19 vaccine just prior to the focus group.

would either not get vaccinated at all or would wait a while before deciding; one had been vaccinated just prior to the focus group. Group 2 consisted of six individuals who were vaccinated at the time of the survey. Half of these participants indicated that they were “extremely hesitant” about receiving a COVID-19 vaccine but ultimately chose to get vaccinated nonetheless. Finally, Groups 3 and 4 consisted of young adults (under the age of 35) with mixed vaccination statuses. The composition of the focus groups was determined based on their vaccination status (as reported on the survey) and age. For instance, during earlier waves of the pandemic, young adults were less likely to get vaccinated [8]. As such, we explicitly wanted to explore the COVID-19 vaccine attitudes and behaviors of this age group.

The focus groups were conducted in English virtually through Zoom by a third-party Canadian-based research company with extensive experience in social science survey research. The focus group moderator was a qualitative researcher trained in Zoom facilitation and familiar with the focus group questions. The same moderator facilitated all four focus groups. The focus groups were completed over several weeks during October 2021. Participants were asked open-ended questions about their perceptions of COVID-19 vaccines; where they received or sought out information about COVID-19 vaccines; what factors influenced their decision-making about COVID-19 vaccine acceptance or refusal; and what might convince them to get vaccinated if they had not done so already.

3.2. Data coding & analysis strategy

Focus group audio recordings were transcribed verbatim, then coded using an inductive approach and analyzed using MaxQDA software [41]. The first stage involved open coding of the transcripts. Recurrent phenomena were then identified and open codes were categorized into higher-order codes, focusing on sources of information about the pandemic and/or COVID-19 vaccines, confidence in COVID-19 vaccines, reactions to one's own or others' vaccination decisions, responses to government public health measures, and perceptions of pro-vaccine messaging. This process was followed by axial coding, in which higher-order codes were linked to create a storyline about how these factors shaped participants' attitudes about and behavior towards COVID-19 vaccines.

4. Results

Our focus group data revealed numerous themes in Canadians' perceptions of COVID-19 vaccines and their expressions of vaccine hesitancy including: a sense of overwhelm due to the abundance of information about vaccines at people's disposal; feelings of resentment towards and pushback against official messaging and campaigns that invoke morally charged appeals to encourage vaccination; unresolved concerns about vaccine safety and efficacy; the salience of anecdotal evidence; and the impact of vaccine advice from known medical professionals.

4.1. Too much information

While we were unable to examine the accuracy of the information about the COVID-19 pandemic and vaccines that participants in our study had at their disposal, the results suggest that contrary to the traditional knowledge deficit framework, participants were paying attention to information from mainstream, credible sources. Table 2 depicts the sources from which participants drew their COVID-19 related information. Most participants, regardless of vaccination status, obtained their information from official government sources (e.g., Public Health Agency of Canada) and mainstream media outlets (e.g., CBC or Global News) as opposed to non-mainstream media sources.

The few participants who listened to alternative media sources did not rely on them exclusively. For instance, Nancy, an unvaccinated 26-year-old who said that she has no intentions of getting a COVID-19 vaccine in the future, listens to “mainstream news” and official Government of Canada sources such as Health Canada. Yet, she also follows alternative sources. Likewise, 44-year-old Robert, who is also unvaccinated, says that his friend shares with him information obtained from alternative media sources. On the few occasions when Robert sought information from such sources himself, he found the information credible and validating of his concerns over government propaganda and over-reach. However, information from alternative media sources is not exclusively associated with anti-vaccine attitudes, as exemplified by the report from one participant who became *more convinced* of the safety of COVID-19 vaccines after exposure to this media:

I...like finding out [information] from different sources...I actually spoke with a gentleman online. He was being interviewed and I got into the interview. He is one of the guinea pigs. He actually tried seven different vaccines...and he had no side effects to any of them.

Table 2
Sources of Information Regarding COVID-19 Pandemic and/or Vaccines by Vaccination Status.

Source	Examples	Number of Participants Who Mentioned Source		
		Unvaccinated (N = 10)	Vaccinated (N = 8)	Total (N = 18)
Official government sources	Health Canada; United Nations; World Health Organization; city public health department	1	5	6
Mainstream news outlets	CBC; CTV News; Global; APTN News; CNN; MSNBC	5	3	8
Non-mainstream media sources	Truthers; High Wire; News Guard; streaming talk shows or podcasts	2	1	3
Search engines	Google	1	2	3
Medical professionals or organizations	Own physician; public physicians (e.g., Dr. Fauci); health associations (e.g., Arthritis Society)	4	5	9
Friends or family	sister; mother; daughter; friends (in-person and virtual)	3	5	8
Social media	F Line; Facebook; Twitter;	5	4	9

Note. Numbers do not add up to totals in each column because participants can mention multiple sources.

When you hear someone like that who's gone through all the different vaccines or about seven different ones, including some that didn't come out well, you kind of think, OK, there's got to be some safety there because otherwise this guy... wouldn't be alive. (Martin, 53-year-old, vaccinated)

Participants also drew on information from healthcare professionals, friends, and family to inform themselves about the pandemic and COVID-19 vaccines. Opinions about vaccines and second-hand accounts from family and friends regarding side effects were frequently mentioned by both vaccinated and unvaccinated participants. Some participants took this information "with a grain of salt", noting that such sources were more "sensational" than factual.

Participants often presented the information they had received from friends and family with caveats about its accuracy or trustworthiness. Kayla, a vaccinated 63-year-old, noted that when she was trying to decide whether to get vaccinated, she felt that there were "just too many stories going around and it was confusing." What ultimately convinced her to get the vaccine was not the information she received but the fact that she contracted COVID-19 and "did not want to go through" the experience again if she could avoid it. Anne, an unvaccinated 26-year-old woman, said that the "hardest part" about the decision-making process was that "I don't know what's rumour and what's not." This inability to evaluate the accuracy of anecdotal evidence contributed to her decision to delay vaccination until she felt she could properly "sift through what's ... fake news and what's real news."

Overall, the participants expressed a sense of being overwhelmed by the sheer quantity of information about COVID-19 that they received daily. They did not feel that public information on COVID-19 vaccines was hard to find or esoteric, but rather that it could be conflicting, sensational, untrustworthy, and hard to keep up with. Thus, a central factor influencing participants' vaccine decision-making process was not a lack of information or an inability to interpret it but a struggle with the selection of authorities or information to rely on. The task of sorting through an abundance of conflicting information often caused participants who were already hesitant to further delay vaccination until they felt more confidence in the safety of vaccines.

4.2. Pushback against official messaging & moral appeals

Half of the unvaccinated participants said that they found the COVID-19 vaccine campaigns patronizing or alienating and expressed resentment towards the institutions recommending vaccines. Nancy felt that pro-vaccine messaging was "condescending ... they act like they know better than you." Similarly, Anne called the messaging "passive aggressive." Phrases such as "aggressive" "pushy and exclusive" and "pressuring people too much" were also used by other unvaccinated participants when describing their reactions to official public health messaging about COVID-19 vaccines. Some unvaccinated participants further explained that the messaging made them feel shamed and

separated them socially and morally from the vaccinated population. For example, 43-year-old Frances noted that "[media encouraging vaccination] makes people who aren't vaccinated feel or look like outsiders or outcasts... there's people who are being singled out because of [not being vaccinated]... [it's] a form of discrimination".

Although such interpretations of official COVID-19 vaccine messaging did not harden all of the unvaccinated participants against taking a COVID-19 vaccine, a handful of them did interpret vaccination rejection as a form of resistance. For instance, Anne talked about vaccine messaging from both official (i.e., governmental) and more general media sources and how they turned her against COVID-19 vaccine uptake:

From the start, I was ... pro-vaccine. But ... it was actually when it became such a push [and] ... I started to feel like I didn't have a choice or I was going to be penalized [for not being vaccinated that I became more hesitant] ... I find that it's... passive aggressive ... The message that comes across is: 'don't be selfish, vaccinate to save others.' I don't like that ... It's a message like I was cornered, ... not feeling like I have a choice ... that honestly makes me push back against [getting vaccinated] ... I just don't feel like I can make a decision that's best for me. And I'm not trying to be selfish, and that's where I get frustrated with ... the media messages ... I want to make the best decision for me, and I don't think I'm being selfish by choosing, at this point, not to get the vaccine.

Notably, while some vaccinated participants offered critiques of pro-vaccine campaigns, unvaccinated participants were much more likely to express a negative reaction to them, invoking perceptions of alienation, discrimination, coercion, and backlash against what they perceived to be morally charged messaging about their own failures or recklessness. Interestingly, none of the participants said that the messaging moved them closer toward vaccine acceptance.

4.3. Questioning COVID-19 vaccine safety

Despite evidence supporting their efficacy and safety participants were skeptical of or lacked confidence in COVID-19 vaccines. Much of this skepticism stemmed from the rapid pace at which the vaccines were being developed and rolled out. Seven of the participants (of which five were unvaccinated) believed that the vaccines were distributed too quickly, causing doubts about their safety. According to Andrea, a vaccinated 26-year-old, the testing and distribution of COVID-19 vaccines were "rushed." Anne was blunter in her assessment, stating that she does not "trust any vaccine until it's been out there for a few years." Five participants (Jacob, Martin, Rebecca, Frances, and Callie) felt like those receiving COVID-19 vaccines were being used as "guinea pigs" or "test subjects" because scientists "didn't do any experimentation on [the

vaccines] at all” before rolling them out.

Another common theme amongst parents specifically was concerns about the fact that at the time of the focus groups, the vaccines had not yet been approved for children under 11. Children’s ineligible to receive a COVID-19 vaccine at the time caused parents to question the government’s prioritization of vaccination efforts, and in turn, vaccine safety. Callie, a 36-year-old unvaccinated mother of two, stated that she did not “see the point of ... getting vaccinated if my children aren’t going to be getting vaccinated.” For Callie, the omission of children from the COVID-19 vaccination campaign at the time made her question officials’ motives for the pro-vaccination messaging. After all, if the vaccines are safe, then why would children not be included? However, when asked whether the availability of a vaccine for children under 11 would change her opinion, Callie said that she would not want her children to get vaccinated right away because she “would rather not have them testing on my children until they know more [about the] long-term [side] effects.”

4.4. The impact of anecdotes

All 18 participants, regardless of vaccination status, expressed some level of concern about vaccine efficacy and safety, owing in large part to anecdotal evidence from a variety of sources, including people in their social networks, about negative side effects. Amongst the unvaccinated, stories about vaccine side effects abounded. Callie reported that she had seen “horror stories” about COVID-19 vaccines on social media. Nancy talked about how “in the Ottawa news ... there was a guy who had a vaccine injury, and his doctor won’t speak to him anymore.” Further reinforcing Nancy’s COVID-19 vaccine hesitancy is her knowledge of people within her personal network who had adverse reactions to the vaccine (e.g., a collapsed lung and temporary paralysis). She emphasized how these “very serious injuries” frightened her, especially because they had impacted “the younger population ... where COVID doesn’t really affect [them] too much.” These anecdotes not only contributed to her distrust in medical professionals, whom she believed “suppressed a lot of the data” about vaccines from the public, but also contributed to her risk-benefit assessment.

Four unvaccinated participants noted that concerns about COVID-19 vaccines, triggered after hearing anecdotal evidence, contributed to their subsequent decision to delay or decline vaccination. For example, 26-year-old Jacob and 43-year-old Frances said that others’ negative experiences, including anecdotes from strangers, were influential in their decisions to remain unvaccinated. Anne also recalled:

My sister had terrible side effects, vomiting for two days [after getting vaccinated] ..., and seeing AstraZeneca already been taken off the market because of very serious side effects ... I don’t know what’s rumour and what’s not and to me I don’t want to ... jeopardize [my health].

Concerns over side effects such as those expressed above were common amongst the unvaccinated participants. Although some admitted that the stories they heard could be untrue or exaggerated, the chance of any of the anecdotes being true was enough to cause them to delay or decline vaccination altogether.

Anecdotes about COVID-19 vaccine side effects or injuries also influenced the attitudes and behaviors of vaccinated participants, contributing to their concerns about vaccine safety and their initial hesitancy. First- or second-hand stories about people “dying [after] getting the shot” or having severe side effects were recounted by several of the participants who were initially hesitant about the COVID-19 vaccines. For example, the severe adverse side effects of Martin’s neighbor gave him pause initially, and Andrea felt “iffy” about getting vaccinated because she had a friend who “got ... the needle ... and then he still got COVID.” She speculated that perhaps “he got COVID from ... the shot.” Additionally, anecdotes shared on social media exerted a particularly strong influence on a few of the participants. Maria, a

vaccinated 30-year-old, said that while she felt the COVID-19 vaccines were “somewhat safe,” she had “notched [them] down in [her] confidence levels [because she had been] ... seeing so many anti-vaxxers ... [on] Facebook ... [that] sort of accidentally [had] gotten into [her] head a little bit.” Participants’ descriptions of the impact of anecdotal evidence and social media messaging further supports the idea that inability to confidently prioritize information is a significant barrier to confident vaccine acceptance, even amongst those who had already been vaccinated.

4.5. Health professionals’ advice as the deciding factor

We found that information and/or advice from known medical providers is also influential for COVID-19 vaccination decision-making. Two groups of participants cited a health professional’s advice as the crucial factor in their decision-making.

In the first group, medical advice led to a decision to get vaccinated for participants who had previously expressed vaccine hesitancy (ranging from hesitant to extremely hesitant). For example, 49-year-old Sophie recalled that she did not “feel confident in making a decision about a vaccine” until she spoke to her pharmacist. She had been worried about having an anaphylactic reaction, but “he talked to [her] about it ... and said, it’s okay now, they did studies, and you should be okay,” so she “finally did it” (got vaccinated). Ruth, a vaccinated 60-year-old, noted that the tipping point in her decision-making process was receiving additional information and encouragement from the Arthritis Society. She had subscribed to their e-mail listserv and one of their messages stated that she “should get the vaccine for [her] safety ... and well-being ... , so [she] got it.” A third participant, Kayla, had contracted COVID-19 and was unsure whether the vaccine was necessary, but when her doctor told her that it “wouldn’t hurt to go and get it anyway,” she decided to do so. Likewise, Tim, a 64-year-old man, was hesitant about getting the vaccine and “waited [a] long” time, but finally decided to do it after his cardiologist told him that the potential health complications from contracting COVID-19 would be much worse than any side effects from the vaccines. Before getting vaccinated, Martin had been hospitalized for an unrelated injury and was subsequently receiving home aftercare. His caregivers “really wanted [him]” to get vaccinated, otherwise he would have “lost [his] home care worker.” Because of this, he decided to get the vaccine.

In the second group, participants were *dissuaded* from vaccination by healthcare professionals and were unvaccinated at the time of focus groups. Rebecca received conflicting information from medical professionals. Right before the pandemic she had undergone two years of radiation treatment for cancer. Her “family doctor said it would be ... safe” for her to get vaccinated, but two of her oncologists “agreed that [she was at] a high risk of getting COVID, but ... a higher risk of getting sick or worse from the shots.” Ultimately, she followed the information given by her oncologists because they were more involved with her care than her family doctor. Callie was especially worried about potential side effects from vaccines. Yet, when she tried to discuss this with her doctor, the doctor was not able to tell her what side effects she could expect from the vaccine given her underlying health conditions of arthritis and scoliosis. The doctor told Callie that she could get vaccinated, but that “with [her] conditions” she would likely “have a bad reaction”. This information left her “on the fence” about getting vaccinated.

These participants regarded their doctors’ advice as informed and important, relying on the medical professional closest to them for their COVID-19 vaccine decision-making process. Participants actively sought out advice from trusted sources to make informed risk calculations and delayed or resisted vaccination because of the authority they accorded to their medical professionals’ guidance. This was ultimately a double-edged sword: in some cases, medical professionals successfully encouraged vaccination, but in others, expressions of vaccine hesitancy from doctors themselves exacerbated participants’ concerns about vaccines.

Either way, however, participants who sought out medical advice demonstrated intentionality and careful deliberation in their vaccine risk–benefit calculations.

5. Discussion

Insight drawn from the focus group discussions both echoes some of the literature on vaccine hesitancy while highlighting the unique circumstances of the COVID-19 pandemic. Below, we summarize and discuss four key findings, situating them within the prior literature on vaccine hesitancy more generally and COVID-19 vaccine hesitancy specifically. While the fact that all participants were either White or Indigenous necessarily limits the generalizability of the study, our findings nonetheless provide important insight into the sources and impacts of Canadians' hesitancy towards COVID-19 vaccines.

First, our findings do not support the emphasis knowledge deficit theorists place on individuals' lack of media literacy or susceptibility to mis- and dis-information regarding vaccine hesitancy. Participants expressing vaccine hesitancy were aware of the prevalence of fake news and actively sought out what they deemed to be more credible sources. Most participants referred primarily to reputable, regulated, or official news sources for their information on COVID-19 vaccines rather than non-mainstream media sources [42]. Yet, the excess information participants were bombarded with meant that they struggled with the challenging task of distinguishing trustworthy from dubious claims about vaccination. This indicates that it is not first-order knowledge about vaccines that is in deficit, but instead second-order knowledge regarding how to evaluate this information surplus. Future studies of vaccine hesitancy should move beyond evaluations of first-order knowledge about vaccines towards an exploration of second-order knowledge, or how individuals prioritize and evaluate the information they receive.

Second, our findings are at odds with the putative link between vaccine hesitancy and emotionality or irrationality. Theorists who subscribe to these accounts mainly attribute vaccine hesitancy or resistance to an inability to reason about vaccines or challenge their own negative emotional reactions to vaccines, attitudes they regard as especially prevalent amongst parents [22–24]. The participants in the study, including many of the parents, provided clear, rational arguments for their vaccine skepticism. They were able to reflect on their initial emotional responses and demonstrated an evolving understanding of vaccine safety and efficacy. Participants' ability to explain their resistance, incorporating a variety of evidence from many different sources, runs counter to the hypothesis that vaccine hesitancy derives from an impulsive or rigid emotional response.

Third, our finding confirms previous scholars' assertions that the specific strategies that official agents use to promote vaccination can significantly influence vaccine resistance [43]. In the case of the COVID-19 pandemic, perceptions of tone in governmental pro-vaccine media campaigns were especially influential, pushing the unvaccinated further towards vaccine resistance and in none of the cases encouraging participants towards vaccine acceptance. The pushback against messages that were perceived to be shaming or blaming the unvaccinated imply that emotional appeals may be ineffective [44], especially when coupled with the highly politicized nature of the COVID-19 public health measures (masking, vaccination, etc.). Capurro et al. (2022) and Dreidger et al. (2023) and found that COVID-19 vaccine communications in Canada emphasized the safety of vaccines overall and failed to address concerns unique to COVID-19 vaccines, specifically public discomfort regarding the new mRNA platforms and the rapid production of these new vaccines [45–46]. Our findings concur that the novelty of COVID-19 vaccines elicited unique concerns about vaccine safety unlike the concerns associated with older and more established vaccines. Communications that failed to target these concerns should not have been expected to effectively counter COVID-19 vaccine hesitancy.

Lastly, we confirmed prior findings that known medical providers are

often the most trusted source regarding vaccination and can strongly affect vaccine attitudes [13,16]. These findings indicate that pro-vaccination efforts and education should perhaps rely on healthcare providers themselves, and that future research examining vaccine hesitancy within the medical community might be useful for improving COVID-19 and other vaccination campaigns. By better understanding and addressing the concerns of healthcare providers, they will in turn be better equipped to inform their patients about COVID-19 vaccines, mitigate fears about negative side effects, and encourage pro-vaccine behaviours.

6. Conclusion

In an age of unprecedented access to information, addressing vaccine hesitancy will require new frameworks that move beyond those that emphasize a knowledge deficit or emotionality/irrationality arguments. Our focus group data partly reinforces established findings about vaccine hesitancy but also highlights unique aspects of the COVID-19 context. Participants' uncertainty regarding COVID-19 vaccines was not due to media or health illiteracy, a lack of information, or the result of a stubborn adherence to an initial, emotional response. Instead, hesitancy was grounded in an information surplus and an uncertainty about how to weight diverse information sources. The important question is not if individuals have the information they need at their disposal, but whether the source of the information is deemed trustworthy and increases confidence in vaccines. Investigating this question will require incorporating a social perspective, especially the presence or absence of trust between vaccine hesitant individuals and medical or scientific authorities.

Our findings suggest that attempts to explain vaccine hesitancy in terms of limited information about vaccines or impulsive and emotional decision-making does not capture important relational factors that impact what counts as vaccine “knowledge.” These findings are especially important within the contemporary Canadian context. Booster vaccines may continue to be necessary, particularly if more dramatic changes in the virus reduce the effectiveness of the current versions. Pandemic fatigue [47] will exacerbate vaccine complacency, and we will require new strategies to increase vaccination rates. Imagination and compassion will be necessary to break through the cacophony of information and morally charged messaging [48] to enable Canadians to confidently evaluate and balance risk in these uncertain times.

All authors attest they meet the ICMJE criteria for authorship.

Declaration of Competing Interest

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Data availability

The data that has been used is confidential.

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