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“They’re trying to bribe you and taking away your freedoms”: COVID-19 vaccine hesitancy in communities with traditionally low vaccination rates



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ABSTRACT

Vaccination is an essential public health intervention to control the COVID-19 pandemic. A minority of Canadians, however, remain hesitant about COVID-19 vaccines, while others outright refuse them. We conducted focus groups to gauge perceptions and attitudes towards COVID-19 vaccines in people who live in a region with historically low rates of childhood vaccination. Participants discussed their perception of COVID-19 vaccines and their intention to get vaccinated, and the low rate of COVID-19 vaccine uptake in Manitoba’s Southern Health Region compared to other regions in Canada. We identified three drivers of vaccine hesitancy: (1) risk perceptions about COVID-19 and the vaccines developed to protect against it, (2) religious and conservative views; and (3) distrust in government and science. Participant proposed recommendations for improving communication and uptake of the COVID-19 vaccines included: public health messages emphasising the benefits of vaccination; addressing the community’s specific concerns and dispelling misinformation; highlighting vaccine safety; and emphasising vaccination as a desirable behaviour from a religious perspective. Understanding the specific anxieties elicited by COVID-19 vaccines in areas with low childhood immunization rates can inform risk communication strategies tailored to increase vaccination in these specific regions. This study adds important information on potential reasons for vaccine hesitancy in areas with historically low rates of childhood vaccination, and provides important lessons learned for future emergencies in terms of vaccine hesitancy drivers and effective risk communication to increase vaccine uptake.

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1. Introduction

Vaccination has been a pivotal intervention to control the COVID-19 pandemic. In Canada, vaccinations started in mid-December 2020, with provinces and territories immunizing priority groups first and progressively opening up eligibility. In general, Canadians have been eager to accept the COVID-19 vaccine [1], and by the end of March 2022 81.2% of the Canadian population and 39.5% of children between 5 and 11 years old had received two doses of the COVID-19 vaccine, [2]. However, a minority of Canadi-

ans remain hesitant about the COVID-19 vaccines, while others outright refuse them [3,4].

Vaccine uptake for routine immunizations has been historically influenced by factors such as sociodemographic characteristics [5,6], religious and political beliefs [7], and risk perceptions and trust [8,9]. COVID-19 concerns have been expressed on the novelty of the disease and the vaccine [10]. There is a growing body of literature examining vaccine hesitancy related to COVID-19 vaccines [7,10–12]. However, drivers of COVID-19 vaccine hesitancy among communities with traditionally low vaccination rates remain understudied. In this study, we examine perceptions and attitudes towards the COVID-19 vaccines and views about provincial vaccine uptake incentives among residents in an area with traditionally low vaccination rates, Manitoba’s Southern Health Region (SHR) [13]. Understanding the drivers of vaccine hesitancy in such

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regions can inform risk communication efforts to address people's concerns and promote trust in immunization programs.

2. Background

2.1. Vaccine hesitancy

Despite the success of immunization programs in reducing the threat of vaccine preventable diseases [14], some individuals can be hesitant for reasons that can vary across time, place, context, and vaccine [15]. Vaccine hesitancy moves beyond pro- or anti-vaccine attitudes to recognize a broad spectrum of beliefs and associated behaviors that reflect complex and evolving perceptions towards vaccines [15]. For example, a person can delay vaccination, accept immunization reluctantly, refuse some or all vaccines, or accept certain vaccines over others [15].

An individual could be vaccine hesitant for many reasons. Growing distrust in traditional institutions including government, science, media, and experts [15–19], has become prevalent within (but not limited to) right-wing and conservative political ideologies [20,21]. This may also reflect a predominant neoliberal worldview that is more averse to government-led activities and frames health as a strictly private domain [15,22]. Additionally, distrust of authority can induce resistance to actions recommended by those authorities [23]. Resistance can further increase when recommended actions become mandated, as people may perceive them as violating personal rights and autonomy [24]. People's religious beliefs may also prompt them to distrust vaccines, and religious leaders may hold considerable influence in promoting opposition to vaccines and distrust of secular authorities [11,25,26]. Last, people may reject routine immunizations based on information sources and associated risk perceptions such as concerns about potential side-effects and vaccine ingredients [27], too many vaccines given in infancy [28], or a misbelief that vaccine-preventable diseases pose little to no risk [29].

Health Canada approved the first COVID-19 vaccines (Pfizer and Moderna) in December 2020, with AstraZeneca approved in February 2021 [30]. The introduction of these novel vaccines sparked many historical vaccine hesitant concerns [12,31]. COVID-19 vaccine hesitance also had important political implications. Right-wing and conservative political ideologies and parties have tended to have more concerns about COVID-19 vaccines and distrust of pandemic-related science [32,33]. Common core beliefs to conservative ideologies have challenged immunization efforts on a variety of fronts: vaccines being in conflict with ethical individualism; criticism of mandates for violating personal liberties; and the disruption of economic life and 'traditional' social behaviour due to vaccine policies [32]. For example, some religious communities in Ontario protested restrictions on church attendance, and sued the provincial government arguing it infringed upon their freedom of religion and assembly [34]. Those who hold conservative, right-wing worldviews may have been more likely to believe in conspiracy theories [35] and more likely to refuse vaccination [36]. Religious beliefs have also fueled skepticism of scientific endeavors and aversion to COVID-19 immunization [33].

Vaccine hesitance during the pandemic has also been driven by apprehension about the quick development and delivery of the vaccine [37]. New vaccines, with mRNA technology being used for the first time on a mass scale, prompted fears about potential side-effects that could have been missed during expedited clinical trials [38]. Finally, people's perception of the severity of COVID-19 as being similar to the common cold or seasonal influenza may have influenced questions on the need for wide-scale mandated immunization [39].

2.2. Case study: Manitoba's Southern health region

The Southern Health Region (SHR) is a jurisdiction in the south-eastern corner of the Canadian province of Manitoba with historically lower childhood immunization rates. In 2017 the SHR routine childhood immunization rate was 69.5% [13,40], while the province's average 80.4% [41] and the national average was 90% [42]. The SHR is largely rural, agricultural, and contains numerous small towns and a handful of small cities (the largest of which, Steinbach, had a 2021 population of 17,806). It serves approximately 200,000 residents out of the province's population of 1.4 million. The Region's population has diversified in recent years, yet its dominant religion is Christian Mennonites who settled in the 1870s and were given land and some autonomy from state institutions [43]. The SHR has also seen a recent increase in immigration from Russia and Eastern European countries that uphold deep religious beliefs and traditions [44].

After Manitoba's relatively mild first wave of the COVID-19 pandemic (March–April 2020), a second wave stretching from October 2020 to January 2021 proved to be much more widespread and deadly [45]. For example, the small city of Steinbach in the SHR attained the highest COVID-19 test-positivity rate per 100,000 people in Canada at 40% in November 2020 along with a regional spike in COVID-related deaths [46,47]. The provincial government implemented full lockdown restrictions in the province to attempt to contain the spread of infection. These restrictions triggered protests in various communities of the SHR. Protestors decried the restrictions as a violation of their individual freedom, and believed the threat of the virus was minimal [48].

In 2021, reports of vaccination coverage showed that the SHR was consistently falling behind the provincial average. By March 2022, 80% of eligible Manitobans had received two doses of a COVID-19 vaccine [49], but the rate in SHR was lower at almost 63% (with some more localized areas below 50%) [49,50]. Daily counts of COVID-19 infections in SHR often rivalled or exceeded those of the Winnipeg capital Region despite having only a quarter of the population. These disparities in SHR were often highlighted by provincial leaders, media, and health authorities, as an outlier in the fight against COVID-19 in Manitoba [47,51].

In this study, which is part of a broader research project on risk communication of COVID-19 (blinded), we examined the attitudes and perceptions of COVID-19 vaccines among residents of the SHR region, as well as their thoughts on the different provincial incentives to encourage uptake of COVID-19 vaccines, and why vaccine uptake is low in their region. Understanding the reasons for vaccine hesitancy and vaccine refusal in areas with historically low rates of childhood vaccination is crucial for developing communication strategies tailored to the specific concerns of these particular populations, both to increase COVID-19 and childhood vaccine uptake and to inform vaccination programs in future public health emergencies.

3. Methods

This study is part of a wider research project on COVID-19 management strategies across Canada that includes different populations [52]. In this paper we focus on participants from Manitoba's Southern Health Region (SHR). We conducted online focus groups of 6 to 8 people in June–July 2021 with residents of the SHR region area over 18 years of age. Participants were recruited through a market research firm using ads posted on Facebook and random digit dialing. Facebook ads (see Fig. 1) were posted for four weeks. Initially we posted ads for two weeks focusing on recruiting residents of the SHR regardless of their vaccination status, which allowed us to get participants with different attitudes towards vac-



Fig. 1. Recruitment Facebook ads.

ination, but who live in an area with historically low childhood immunization rates. To increase the number of vaccine hesitant participants, we then posted new ads for two more weeks specifically targeting people who were unsure or unlikely to get a COVID-

19 vaccine and supplemented these ads with random-digit-dialing in the area.

Focus groups were gender-segregated and age-segregated (18–34, 35–54 and 55 +) and conducted via Zoom. Our focus group guide included questions regarding participants' general perceptions of COVID-19, their assessment of public health guidelines, and what type and sources of information they relied on or preferred. Participants were also asked about their perceptions of COVID-19 vaccines and whether or not they intended to get immunized. Conversations typically lasted two hours, and participants received a CAD \$70 honorarium. Focus groups were moderated by trained facilitators, with the lead researcher attending but off camera to avoid influencing discussions. All focus groups were recorded, transcribed verbatim, and audio-verified for accuracy. To identify participants in the transcripts, we used the name participants provided consent for use.

We uploaded the transcripts to the qualitative analysis software NVivo12 for coding and analysis. We developed initial codes for opinions regarding implementation of public health guidelines, compliance with infection prevention measures, information seeking behaviour and trust, and attitudes towards immunization in general and specifically the COVID-19 vaccines. We followed an open coding process, which allowed for new codes to emerge during the coding process [53]. Two team members coded the transcripts, and two coding tests were performed with a third member of the research team to ensure inter-coder reliability. Our Kappa coefficient score was 0.85. Ethics approval was obtained from (blinded) and (blinded).

4. Findings

We conducted six gender- and age-segregated focus groups, and one mixed focus group of people who declared themselves vaccine hesitant or unsure, for a total of 52 SHR residents (see Table 1). While we aimed to recruit both vaccine accepting and vaccine hesitant individuals, most of our participants were vaccine accepting. At times, Facebook users left comments on our recruitment ads expressing distrust, not wanting to be judged, misrepresented, or subject to propaganda. Some also distrusted university researchers, who they perceived as an extension of government power. For example:

They want to know how they can convince people to take the shots. Don't Do It! \$70 or \$7 million - it's not worth it (Facebook Comment 1, June 2, 2021).

Every-one knows vaccines are out there if they want one they will get one . . . why the propaganda??? (Facebook Comment 2, June 9, 2021).

So you need to submit a questionnaire to see if you qualify to talk about the jabs? And then if you make the cut and you're considered a prime target for a 2 h one sided government funded brainwashing session you get an award at the end? I thought Canada has already spent enough money on one sided propaganda. Pretty sure every-one knows what the government thinks about how "safe" this is (Facebook Comment 3, June 22, 2021).

In our focus groups, the majority of participants expressed being in favour of childhood immunizations (i.e., measles, mumps, rubella, pertussis, etc.) (52%, $n = 27$). However, not all participants were in favour of all vaccines, such as the influenza vaccine, or described themselves as "vaccine-lazy" (Christine, 55 +) if the vaccines were not easily accessible. Most participants (73%, $N = 38/52$) had received at least one dose ($n = 33$) or had already booked an appointment ($n = 5$) to receive a COVID-19 vaccine. Others, however, were hesitant and not sure whether they would get it or wait (13.5%, $n = 7$). Some participants (13.5%, $n = 7$) refused all vaccines. All participants discussed their reasons for vaccine hesitancy/re-

Table 1
Socioeconomic and demographic characteristics of participants, N = 52.

Characteristic	Count (%)
Gender	
Male	26 (50)
Female	26 (50)
Age Group (years)	
18 to 24	5 (9.6)
25 to 30	11 (21.2)
31 to 34	5 (9.6)
35 to 40	4 (7.7)
41 to 48	8 (15.4)
49 to 54	3 (5.8)
55 to 60	6 (11.5)
61 to 68	8 (15.4)
69 or older	2 (3.8)
Marital Status	
Single (Never Married)	7 (13.5)
Married or Common Law	44 (84.6)
Divorced, Separated, or Widowed	1 (1.9)
Number of Children Under 18 years in Household	
0	32 (61.5)
1	5 (9.6)
2	9 (17.3)
3	3 (5.8)
More than 3	3 (5.8)
Education	
Incomplete high school	1 (1.9)
High school	9 (17.3)
Some college/university	11 (21.2)
College/university degree	31 (59.6)
Income (SCAN)	
Under \$50,000	7 (13.5)
\$50,000 to \$74,999	12 (23.1)
\$75,000 to \$99,000	13 (25)
\$100,000 to \$149,000	11 (21.2)
Over \$150,000	7 (13.5)
Don't know	2 (3.8)
Race (based on self-identification)	
White	51 (98.1)
Metis	1 (1.9)

fusal by drawing on either their experiences or the experiences from friends and family. Participants also discussed their views on low COVID-19 vaccination rates in the SHR. Based on their comments we identified three main drivers of vaccine hesitancy: (1) concerns about vaccine safety, (2) religious and conservative views; and (3) distrust in government and science. Participants also recommended means for improving communication and uptake of the COVID-19 vaccine in the SHR.

4.1. Perceptions of vaccine safety and risk of disease

For most participants, vaccine uptake depended on their perceptions of vaccine safety and personal infection risk. This led many to believe COVID-19 vaccines were unsafe and/or the risk posed by a vaccine was higher than the risk of serious infection.

The novelty of the COVID-19 vaccines and uncertainty about potential long-term side effects were some of the reasons participants were hesitant or opposed to the vaccine. Some participants referred to personal experiences and anecdotes about adverse effects of the vaccine, which they believed to be under-reported. For example, Christa (35–54) was up to date with routine vaccines but opposed the COVID-19 vaccine because of claims she had found on websites: “I don’t trust them. They’ve had 4,600 deaths already reported to it and over 2 million adverse events [...] Already here in Manitoba I do believe that there’s been 24 people who have died after receiving the vaccine.” This participant emphasized that she trusts personal narratives more than government messages:

I’ve seen a lot of stuff on these COVID-19 adverse effects [web] sites and personal testimonies of people and to me personal testimonies backed up with pictures and documentation and evidence is a lot stronger than some government saying something that’s happening [...] To read some of the reports is actually pretty scary.

Participants expressing concern about vaccine safety often referred to dangerous side effects published in the Vaccine Adverse Event Reporting System (VAERS), an online reporting system in the United States to self-report adverse events. In Canada, vaccine adverse events can be reported to local public health units or physicians, but these events need external verification and assessment to be counted in the system. This lack of a systematic online self-reporting system in Canada was identified as a major deficiency in having confidence in the Canadian vaccine safety system, by some participants. Many of these participants could cite unverified VAERS COVID-19 vaccine safety statistics from the US but not Canada. Other participants expressed hesitancy about the COVID-19 vaccine due to reports of a rare but serious blood clot condition linked to the AstraZeneca vaccine. Two Canadian provinces, Alberta and Ontario, halted vaccination with AstraZeneca in May 2021 [54], however over 150,000 Canadians received at least one dose of this vaccine [55]. Brenda (55 +), for example, explained that she “could have got an AstraZeneca at one of the pharmacies. We had our appointment for back in April and just decided to wait because of the blood clot thing.”

The vaccines’ novelty as well as the fast pace at which it was developed and approved heightened the perception of risk. Some participants described the COVID-19 vaccine research and approval process as being rushed, and they were concerned about potential long-term side effects of the vaccines. Katherina (18–35), for example, said that “I don’t think there has been enough time on [the COVID-19 vaccine] to get it to where it needs to be.” When asked how much time is needed, she stated “minimum two years, I would prefer five.” Others echoed this opinion, calling the vaccines “an experiment” and arguing there is not enough research to “see if there are any reactions that occurred” and “whether it’s effective or not” (Bruce 55 +).

Some participants expressed concern about the mRNA technology used in the COVID-19 vaccines, based on misconceptions of their mode of action. Carl (55 +), for example, said “mRNA, and it goes all the way back to the 60 s, was used in experiments on animals to alter genetics, and then all the animals died.” Other participants also worried about mRNA technology, stating that “it’s not a vaccine, it’s a gene treatment” (Peter, 18–35) and “if you agree to it and get it, you’re a lab rat and there’s no way that anyone knows what’s going to happen” (Bart, 55 +). This belief was paired with the perception of information being purposefully hidden or suppressed: “You’re given one side of the issue, and anybody who tries to talk about the other side, the side effects, where this came from, what it was used for, you’ll get shut down real fast” (Bart, 55 +).

Many participants decided not to get the vaccine because they did not consider themselves to be at risk of severe infection. Some of these participants referred to their healthy lifestyles, for example: “I take the vitamins. I exercise. I eat well. I do all those things. I don’t feel like I’m at a real danger if I’m not vaccinated” (Lisa, 35–40). Another participant similarly expressed, “I take vitamin D every day, I supplement it and I stay physically active, fit. I exercise lots. I’m not terribly worried about getting sick” (Chris, 18–35). This low perception of personal risk was also related to the notion that COVID-19 is not a serious disease and affects mostly elderly people “who often are sick anyways for some reason or another” (Chris, 18–35). For example:

My feeling about vaccine is if there's emergency approval there should be an emergency, and the biggest emergency is with people in vulnerable groups, and they should definitely have the option and I'm sure many people appreciate the opportunity to be more protected (Jeannie, 35–54).

I think they can go around, offer it to senior people or people with a bad immune system (...) but not to the majority of the population whose immune system is much stronger, much more effective than the vaccine, and then the pushing becomes very suspicious, I think (Jonatan, 18–35).

One participant considered that the risk of COVID-19 had been exaggerated, saying that “this whole COVID thing I find to be actually really ridiculous” (Katherina, 18–35). She also considered the disease to be unavoidable and explained that she did not understand “why they were shutting down a whole world over a virus (...) it's a virus, it's going to spread.” Many participants assessed their risk as low and considered some restrictions as nonsensical for a rural community. For example, the warning against gathering with people in private residences and to instead choose open spaces, such as parks, did not make sense to them because they live in farming communities with abundant open space.

4.2. Religious beliefs

The SHR has a population that is mostly conservative Christian and is popularly known as Manitoba's Bible-belt [56]. Many participants believed that vaccine hesitancy in the region may be due to strong conservative and religious beliefs. Participants referred to close-knit religious groups in the SHR, such as Mennonites, as being the most vaccine hesitant and not following public health restrictions and guidelines. For example, Brenda (55 +) said “I'm really disappointed with people,” referring to religious minorities, “a lot of the Hutterites and Mennonites wear the mask here [below the nose] so they can still breathe.”¹ She also referred to her “super religious Catholic” mother-in-law, who “watches a lot of online church services from the [United] States [...] they were very anti-vaccine, talking about stem cells, fetus stem cells, all that crap.” Another participant described conservative religious groups as choosing to remain isolated and not sharing a responsibility to protect the rest of the community:

They often home school and don't have a lot of contact with other people outside of their own group. It's much like any other isolated group with their own language and culture [...] So maybe a lot of those families and groups feel outside of the system. Maybe they don't feel connected to our communities (Christine, 55 +).

Another participant referred to how some religious people believe that COVID-19 is not real even if they experience the disease themselves, pointing to a cognitive dissonance. She recalled working for a couple in her church “and they are both anti-maskers.” The couple contracted COVID-19 but they remained convinced the pandemic is a hoax. For this participant it was surprising that “somebody that did contract COVID-19 and is a Christian anti-vaxxer still didn't believe and thought it was just a really bad flu” (Oassis, 18–34).

Prevalent anti-vaccination attitudes and COVID-19 denialism in the SHR led two participants who had received or were about to receive the COVID-19 vaccine to hide their actions from friends/

relatives. These participants chose not to disclose their vaccination status/intentions to avoid being judged:

My wife's family is very anti-vaccination and she's never been that way but just because she's so close to them she's more hesitant. To keep the peace, I said I would hold off [getting vaccinated] until she was comfortable with the idea. [...] I don't think we will get disowned but they don't know yet that we're both going to be vaccinated. (Bryan, 18–35)

Not necessarily disowning but I got my first shot in late May as soon as I was eligible, but to this day I have told like four people because where I am, kind of the rural area, there's a lot of vaccine hesitancy. [...] The few people that I've told have all tried talking to me and like, ‘Why would you do that?’ etc. and I've been told, ‘DON'T GET YOUR SECOND SHOT!’ because they're worried about it I guess (Josiah, 18–35)

Despite criticizing religious-based COVID-19 denialism, some participants also disapproved of how the provincial government had addressed religious communities for not getting vaccinated. A participant said that then Manitoba Premier Pallister “almost mocked the Christian community in a way, and I think that has put an ill connotation on it for a lot of people [who say] this politician is making fun and singling us out” (Kelly, 18–34). She also argued that it would be better to keep politics and religion out of the vaccination debate.

4.3. Distrust in government and science

Many participants linked low vaccination rates in the SHR to distrust in government and scientists. A participant referred to friends and family who oppose the vaccines because of fear the government is “just going to get worse; they're never actually going to give us our freedom back” (Linda, 18–35). One participant considered the COVID-19 vaccine program a government intrusion on private lives:

There are a lot of people really pushing me to do it. I find that really odd because all this vaccine mania that's going on really doesn't make me feel better about things. All you hear is about pushing for this vaccine and it's never been this way before (Bruce 55+)

Another participant also distrusted the government, saying “there hasn't been a whole lot of transparency about it” and “there is no data” on vaccine safety (Carl, 55+). Further, the vaccine had not led to the lifting of restrictions, which he perceived as the government lying about the vaccine:

[P]eople have been hospitalized for side effects, and I know people who have had serious side effects, and I know a lot of people who actually regret getting it because the government by their own numbers said they would lift the restrictions if we hit this number or whatever number and that hasn't happened [...] Initially they said, this would give you immunity, it doesn't give you immunity.

Safety concerns often led to government distrust, particularly in relation to the AstraZeneca vaccine. One participant explained that the government's decision to administer it, despite other countries rejecting that vaccine, made her think that Canadian authorities are “being less cautious than other countries” (Linda, 18–34). Other participants expressed similar views:

What really turned my nose at AstraZeneca was finding out that their vials have been rejected from all these different countries, and then surprisingly Canada took them. That put a little scare

¹ Our participants live in predominantly Christian conservative communities therefore their views do not reflect those of SHR residents that might live on Hutterite colonies where our ads may not have been seen and where there was evidence of Colony leadership working alongside public health when there were outbreaks in Hutterite communities.

in my heart. If all these other countries aren't taking it, why are we taking it? (Oassis, 18–34).

My sister had the AstraZeneca shot and as soon as she heard that she couldn't get it again for her second dose and would have to be stuck getting one of the mRNA vaccines, she felt trapped. "This is what I was told I had to get, this is what I got and now you're telling me I can't get it anymore!" (Yves, 18–34).

The changes in vaccine guidelines were another source of distrust. One participant explained that when the government "started to talk about vaccine mixing, that made me a little bit more sceptical" (Jordan, 18–34). For this participant the new guideline seemed improvised and suspicious: "it feels like it's kinda off the cuff. 'Well, this is what we have now so we're going to do it' [...] I don't know if I totally trust that the provincial government has put the same rigour [as other countries] into this." A similar view was expressed by another participant who was puzzled by messages changing the length of the interval between doses:

First, we were supposed to get our second dose like 8–10 weeks after the first dose, but then they started saying 'no, everyone get your first dose and we don't care when you get the second dose.' I don't get that. Why wouldn't you do what the medication says? When you get a prescription there are clear instructions on dosing. That's what you're supposed to do. Don't start changing it as its going. That was disturbing to me (Christine, 35–54).

Another participant described losing trust in the government when she still had to comply with restrictions after getting two doses. When meeting friends, she expressed frustration that "even though we are all double-dosed we're not supposed to see each other inside. I don't understand why that would be" (Wendy, 35–54).

Other participants expressed suspicion of the seemingly exclusive focus on vaccines – "the vaccine [is] the whole solution" (Jeanne, 35–54), instead of alternative effective treatments. One participant referred to unproven treatments and criticized health authorities for not promoting them: "[they] don't want to discuss why they're not using Ivermectin and Hydroxychloroquine" (Bart, 55 +). According to this participant, "people who have had COVID and recovered have a natural immunity and don't need shots. None of this stuff is discussed." They concluded that people who publicly discuss these topics are "shut down or censored." Another participant distrusted the pharmaceutical companies producing the vaccines and argued that "Pfizer and Moderna are getting \$28 bucks a shot, with no risk, basically no oversight and it doesn't bode well" (Peter, 18–34). He also argued in favour of unproven therapies, which he said were not further explored due to economic interests:

[T]hey haven't allowed anybody to look into Fluvoxamine and Ivermectin and Hydrochloroquine and all these things that could help and have many studies showing that they do a great job of treating and preventing COVID. You can't research them, the NIH won't allow it, the FDA won't approve any of it, because Ivermectin is next to free, it's out of patent, nobody can make money on it anymore.

In June–July 2021, many Canadian provinces were discussing proof of vaccination to access non-essential services, and some, like Manitoba were offering incentives (e.g. a lottery for those 18 and older, scholarships for youth aged 12–17). Many participants deplored feeling they had no choice but to vaccinate, which they saw as a violation of their individual freedoms. One participant explained that she was hesitant "because I'm feeling bullied into it now or bribed or coerced" (Lisa, 35–54). A similar view was

expressed by Margaret (35–54), who said that vaccine passports would be discriminatory: "That's taking away my rights. So that's a huge problem. The whole coercion and bribery stuff is not working for me." Other participants added that since vaccination is voluntary in Canada, the COVID-19 vaccine should remain a personal choice:

First, they're trying to bribe you and then they are taking away your freedoms and things like that [...] If there's a serious threat and there's a good solution to the threat, anybody in their right mind would jump at that, but we're seeing exactly the opposite, we're seeing a relatively low threat with a potentially very harmful vaccine (Blake, 18–34).

4.4. Participants' recommendations

Some participants criticized public health messages as "pushing [vaccine hesitant people] further away" (Kally, 18–35). A participant explained that public health messages "need to be more tactful and more careful about how they act towards the people who are hesitant" and instead of trying to persuade unvaccinated people to get the vaccine, "just listen to the people that are hesitant, and ask, 'What's your concern?'" (Josiah, 18–35).

Two participants pointed out that retired doctors are trusted in the community and are not perceived as having economic interests influencing their recommendations, and thus public health should ask them to do more public service announcements on vaccination. One participant explained that a group of retired physicians in southern Manitoba had done "vaccine question and answer nights to try and break through and get people to say 'these are actually people I trust and I should believe them'" (Jordan, 18–35) and another person added that they had heard local physicians talking in the radio and "they did a great job of not having a shaming or blaming stance when providing facts to debunk the misinformation" (Bryan, 18–35).

Some participants considered that vaccine incentives could give vaccine-hesitant people a reason to get vaccinated without having to agree with the vaccine: "If it gives them an 'out' where they've always been against [the vaccine] and then it's like 'oh but well I'll lose out on this money if I don't'" (Kally, 18–35). Yet, most participants recommended avoiding vaccine incentives explaining that these could backfire. One person explained that giving away money "makes these Christian anti-vaxxers that much more suspicious. Because if it's such a good thing, why do you need to pay me to take it? And if you're paying my church to tell me to take it, that's a huge red flag" (Linda, 18–35). This was echoed by another participant who qualified incentives as "a horrible misstep" (Bryan, 18–35). They worried that incentives could lead vaccine-hesitant people to ask "are you trying to buy me off? What are you trying to pull pal? What kind of salesman are you?" and thus further erode trust. One participant explained that "the amount is part of the issue too (...) If you're going to buy somebody, they have a price, and \$100,000 or \$25,000 for a child [the amounts being offered by the province] is probably not the amount that they need to just throw away their belief system" (Matthew, 18–35).

5. Discussion and conclusion

Our study revealed several insights into the COVID-19 perceptions and attitudes among residents of an area with traditionally low vaccination rates. First, concerns over vaccine safety were the most common factor in participant apprehensions about COVID-19 vaccines, a concern that resonated amongst both vaccine acceptors and refusers. Participants had concerns over the 'rushed' process of vaccine development and testing. These findings sup-

port previous studies that reported similar apprehensions during the COVID-19 pandemic among general populations [37,38].

Second, participants identified religious beliefs and cultural practices of conservative religious groups as relevant drivers of vaccine hesitancy in many members of the region, which supports previous findings [11,25]. Many participants expressed frustration with local religious groups who do not comply with public health guidelines, but also noted Christian leaders were influencing the wider population to not follow preventive measures.

Third, participants explained that most residents of the SHR strongly distrust in government and science. This politicization of science and vaccination programs is a well-known driver of vaccine hesitancy [cf. [19,32,33]]. Many participants believed that elected officials and public health authorities were intentionally not communicating candidly about the vaccines. Other participants expressed conspiratorial beliefs and referred to economic interests behind the vaccination program. Some participants viewed vaccination requirements as a violation of their individual freedoms.

Participants recommended authorities should listen to people's concerns before condemning them. This recommendation aligns with a dialogical model of risk communication, which fosters trust and cooperation through discourse [57]. Participants also recommended showing respect for religious constituencies and emphasizing that religious beliefs can coexist with scientific knowledge. Finally, most participants were very critical of vaccine incentives, which can erode trust.

Vaccine hesitancy in regions with traditionally low vaccination rates can be driven by various sociocultural factors. Risk communicators must, therefore, be clear about the need for vaccination and reduce ambiguity. Risk messages should address the community's specific concerns and dispel misinformation about vaccines and unproven therapies. Risk messages should also be transparent regarding vaccine side-effects and persistent uncertainties but highlight that – despite these uncertainties – vaccines pose a lower risk than COVID-19 infection. Public health officials and political leaders should be careful to not erode trust by criticizing religious beliefs and shaming communities for low vaccination rates. Instead, there should be collaboration and exchange with local experts/spokespeople, and there must be confidence that the spokespeople genuinely care for the community. This communication model moves away from centralized messaging campaigns from spokespeople in urban centers broadly speaking to a large population; risk messages should emphasise that vaccines carry less risks than infection, the importance of vaccination to protect vulnerable populations, and should also come from trusted and credible local spokespeople, such as doctors and religious leaders.

This study has four main limitations. First, the majority of our participants were not vaccine hesitant. Although our recruitment aimed to find vaccine hesitant individuals, it proved to be challenging, with many individuals expressing distrust, not wanting to be judged, misrepresented, or subject to propaganda, and feeling that that university researchers are an extension of government power. This resulted in a strong selection bias, as only people who generally accept vaccines agreed to participate. However, our focus group participants mentioned being part of larger networks of friends and family members that were reluctant to accept the vaccines, and our participants shared those perspectives in focus groups. While these second-hand accounts are limited by participants choosing what to share, they still provided some relevant perspectives on the topic. A second limitation is the size of our sample. While our study provides rich qualitative data, further research could be done with a bigger sample. Third, we conducted these focus groups before the COVID-19 Omicron variant. This variant led to the highest hospitalization rates in Canada since the onset of the pandemic [58], however official narratives described

it as less deadly than other variants [59]. This narrative of decreased risk may have fuelled a false sense of individual safety and influenced vaccine-hesitant people in low-vaccination areas to remain unvaccinated. Finally, since our study, there has been increasing polarization in Canada on public health restrictions, including vaccines. This was evident in the so called “freedom protests” and mass demonstrations in the spring of 2022 that occurred in select Canadian cities as well as blockades at major Canada/United States borders, with sister “freedom protests” sparking in New Zealand, Australia, and other countries [60]. This polarization in Canada may have influenced the views expressed by our participants. Nonetheless, the occurrence of these “freedom protests” further amplify the need for timely risk communication in communities with historical vaccine concerns and the need to leverage locally trusted sources over centralized top-down messaging to circumvent the development of distrust and subsequent divisiveness. This study adds important information on potential reasons for vaccine hesitancy in areas with historically low rates of childhood vaccination, and provides important lessons learned for future emergencies in terms of vaccine hesitancy drivers and effective risk communication to increase vaccine uptake.

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7. Ethics approval

Approval for this research was granted by the University of Manitoba Research Ethics Board (Reference number: H2020:510, Linked with H2020:164) and through Ryerson University Research Ethics Board (REB 2020-445).

8. Consent to participate

All participants gave informed consent to participate in this study, where publication was identified as one form of dissemination. Information and Study Consent Forms available upon request.

Data availability

Data will be made available on request.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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