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A qualitative investigation of facilitators and barriers to accessing COVID-19 vaccines among Racialized and Indigenous Peoples in Canada

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ABSTRACT

Structural and systemic inequalities can contribute to susceptibility to COVID-19 disease and limited access to vaccines. Recognizing that Racialized and Indigenous Peoples may experience unique barriers to COVID-19 vaccination, this study explored early COVID-19 vaccine accessibility, including barriers and potential solutions to vaccine access, for these communities in Canada. We conducted semi-structured interviews about challenges to accessing COVID-19 vaccination with Racialized and Indigenous Peoples, including linguistic minorities and newcomers, in Spring 2021, just as COVID-19 vaccines were becoming more widely available in Canada. Participants were purposely selected from respondents to a Canadian national online survey. Three researchers analyzed the interviews for emergent themes using a descriptive content analysis approach in NVivo. At the time of the interview, interview participants (N = 27) intended to receive (n = 15) or had received (n = 11) at least one vaccine dose, or did not state their status (n = 1). Participants described multiple barriers to COVID-19 vaccination that they personally experienced and/or anticipated they or others could experience – including technology requirements, language barriers, lack of identification documentation, and travel challenges – as well as related solutions. These were organized into three broad categories: 1) COVID-19 disease and vaccination information, 2) vaccination booking procedures, and 3) vaccination sites. These structural and systemic barriers during the initial months of vaccine rollout substantially restricted participants' COVID-19 vaccination access, even when they were eager to get vaccinated, and should be addressed early in vaccine rollouts to facilitate optimal uptake for everyone everywhere

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Introduction

Vaccination is recognized as one of the most effective tools for reducing the negative health effects of the COVID-19 pandemic. Recognizing the increased risks from COVID-19 for Racialized and Indigenous Peoples, national and international advisory groups (e.g., Canada's National Advisory Committee on Immunization, Pan American Health Organization) recommended early distribution of COVID-19 vaccines in these communities.^{1–6} Unfortunately, many of the structural and systemic factors that contributed to the increased susceptibility of these diverse communities to COVID-19 disease (e.g., poverty, crowded housing, employment as essential workers, reliance on public transportation, discrimination)^{1,2,7–17} also limited their access to healthcare, including vaccination.^{12,18–25}

Surveillance has not consistently captured data on the racialized identity or ethnicity of those receiving COVID-19 vaccination,^{26,27} making it difficult to examine inequalities in vaccination access within and across such communities.^{20,28,29} There are some limited data available, including a July 2021

Canadian survey that found lower self-reported vaccination levels among 'visible minorities' (33.6%) compared with those who were not 'visible minorities' (49.5%).³⁰ This survey also found higher vaccination levels among First Nations and Métis Peoples (the two most populous of Canada's three groups of Indigenous Peoples) (52.5%) than non-Indigenous people (45.1%). However, it is notable that this survey excluded First Nations Peoples living on reserve, as well as Inuit Peoples (Canada's other population of Indigenous Peoples). Research from a later time period (January 2022) in Australia found that considerably fewer Aboriginal and Torres Strait Islanders were fully vaccinated (73.2%) compared to the national average (92.3%), although this disparity varied substantially by location.³¹ In the United States (based on data from 38 of 50 states), as of April 2022, only 57% of Black people had received at least one vaccination dose, compared to 63% of white people, 65% of Hispanic people, and 85% of Asian people.³²

Research on disparities in vaccine uptake for Racialized and Indigenous Peoples within and outside Canada is often theorized through the lens of vaccine hesitancy.^{33–37} Vaccine

hesitancy is the refusal or delayed acceptance of available vaccination services because of personal attitudes or concerns regarding vaccination; relevant interventions often focus on addressing these concerns through refuting myths and public health education activities.^{35,37–44} Yet, a focus on personal vaccine hesitant attitudes ignores the important issue of whether vaccines were materially accessible to those who wanted to receive them.

COVID-19 vaccination access and experiences remain considerably less researched than vaccination intentions. However, early research from Canada and abroad found structural obstacles like inflexible work schedules and inconsistent access to technology for booking appointments, unreliable transportation to vaccination sites, and the absence of trusted healthcare providers to discuss COVID-19 vaccination (e.g., due to physician shortages or discrimination from healthcare staff) created disparities with vaccine access for Racialized Peoples.^{45–49} Individuals without legal immigration status experienced disadvantage as governments required official identification to access vaccines, restricted their eligibility to public vaccination sites (versus private general practices, which typically offered lower wait times), or charged vaccination fees depending on length of stay.^{50,51} People living with disabilities experienced a lack of appropriate accommodations and support in vaccination centers.⁵² Insufficient access to and unfamiliarity with healthcare systems have hindered (non-COVID) vaccine access and health care for newcomers, as did the absence of culturally appropriate care.^{25,53–57} Without awareness of these structural obstacles, vaccination access barriers may be mistaken for vaccine hesitancy or personal choice.⁵⁸

These barriers are especially true for those experiencing marginalization at multiple demographic locations in addition to race and ethnicity (e.g., geographic location, age, etc.), which is generally not accounted for in the data.³² Intersectionality offers an important theoretical lens to consider the marginalizing consequences of intersecting structural inequalities associated with socio-demographic locations (e.g., racialized identity, socio-economic status, and health status) that create barriers to accessing vaccination and contextualize group-based differences in vaccine uptake.^{59–61}

This study explored barriers and respective solutions to COVID-19 vaccine access among people who self-identify with one or more Racialized groups (Arab, Black, East Asian, Latin American, South Asian, and West Asian) or Indigenous identities (First Nations, Métis, and Inuit Peoples within Canada). We were especially attentive to barriers for those with intersecting marginalized identities (e.g., as linguistic minorities and newcomers).

Materials and methods

Study design and participants

We conducted semi-structured interviews with Racialized and Indigenous Peoples in Canada in Spring 2021. Interviews aimed to explore participant perspectives on booking and attending COVID-19 vaccination appointments, with particular attention to experienced and/or anticipated challenges, and potential strategies to facilitate vaccination access. We used

a qualitative approach to gain insight into the types of barriers, challenges, and facilitators to vaccination access.

We purposefully selected participants from respondents to a national online survey that assessed perceptions and intentions toward COVID-19 and routine vaccination during the COVID-19 pandemic,⁶² facilitated by a well-established national polling firm.⁶³ Of the 5028 respondents who completed the initial survey, 257 agreed to be contacted for an interview and met the inclusion criteria for this study, which required respondents to be an adult (≥ 18 years) who identified as a Racialized or Indigenous person currently residing in Canada. When selecting participants, we aimed to include diversity based on their survey responses, with regard to: Racialized identity (excluding white/Caucasian), First Nations/Métis/Inuit identity, first language, newcomer status (migration within the last 5 years), gender, age, province, geography (urban or rural), COVID-19 vaccination intention, education, and health status (including chronic conditions). We also made efforts, when possible, to recruit those with marginalized socio-demographic locations (e.g., lower incomes, education, and/or employment) and self-identified healthcare access challenges (e.g., no primary care provider), as reported in the online survey.

We developed our research protocol, interview guide, and manuscript in consultation with and reviewed by researchers and research partners from Racialized and Indigenous communities. Finally, we drew on the diverse expertise of the coauthors in the areas of nursing, public health, medical anthropology, health communications, and research involving underserved community partners to inform study design and interpretation.

Study procedures

We recruited potential participants by e-mail invitations between April and June 2021, followed by an online consent form in English⁶⁴ or French.⁶⁵ Interviews were conducted by telephone or over a virtual teleconference platform (Zoom). Interviews lasted 30 to 60 minutes and were audio recorded with consent. Participants received a \$40 gift card.

Analysis

Three researchers analyzed the data in NVivo 12 (QSR International, Burlington, MA) using a descriptive content analysis approach, guided by a critical research paradigm.^{66,67} Although analysis was informed by potential barriers previously identified in vaccine literature, the initial coding was inductive and remained close to the data. We subsequently organized these codes into emergent categories. Each transcript was coded by at least two researchers. We solicited feedback from policy and community research partners, including Racialized and Indigenous community members, on interpretation of results. Feedback from these community members agreed with what we identified, but vastly enhanced our interpretation and discussion. Analysis was conducted concurrently with recruitment and data collection to enable us to ensure that we included the intended diversity.

Ethics approval

The University of Alberta Research Ethics Board has approved the study protocol (Project # Pro00102401).

Results

We invited 49 survey respondents to participate in an interview, from which 27 consented to and completed an interview in English ($n = 23$) or French ($n = 4$), resulting in a sample of diverse identities and perspectives. Participants were identified as Racialized ($n = 17$) (Arab, Black, East Asian, Latin American, South Asian, West Asian, or Racialized – ethnicity missing) or Indigenous ($n = 10$) (First Nations, Métis, or Indigenous without further identification with a specific community) from six provinces. An invited survey respondent identified as Inuit but did not complete an interview. To respectfully acknowledge Indigenous participants, we specify First Nations or Métis identities when possible and known, and use ‘Indigenous’ when specification cannot be made (colonization has separated many Indigenous Peoples from their communities and nations). Of the 11 Racialized participants born outside Canada, 8 had migrated to Canada within the past 5 years. Participants were diverse across gender identities and age (Table 1)

Given that interviews occurred a few months into the vaccine rollout in Canada, 11 participants had received at least one vaccination dose, whereas 15 participants were either waiting for their appointment date or eligibility. One participant spoke positively of the vaccine without mentioning her vaccine intention or status. Even if they were previously hesitant, at the time of interview all participants reported either having received vaccination or indicated intent to be vaccinated. Still, participants discussed multiple barriers (Table 2) that they experienced, anticipated they might experience, and/or believed that others from their communities could experience accessing COVID-19 vaccination, and offered relevant solutions (Table 3). During data coding, we grouped responses into three categories: 1) COVID-19 disease and vaccination information, 2) vaccination booking procedures, and 3) vaccination sites. These delineated the barriers and solutions emphasized or mentioned frequently by participants, or which offered unique insights that speak to intersecting inequalities from racialization, socio-economic status, language, (dis)ability, immigration, and age.

COVID-19 disease and vaccination information

Barriers

Participants described how Canadian COVID-19 public health information is disseminated in ways that require specific resources or skills (e.g., language, literacy, technology). They noted that most informational materials were only available in English or French (Canada’s official languages) and often contained unfamiliar medical terminology (e.g., adverse events, antigens), especially for linguistic minorities and those with limited literacy. Participants also mentioned that staying informed about COVID-19 and vaccination required consistent access to technology (e.g., the internet, television) and

literacy that may be limited for individuals experiencing poverty, living in remote locations and reserves, and the elderly.

Solutions

To enhance accessibility of this information, participants recommended adopting communication through media appropriate for diverse populations. For those with lower literacy and linguistic minorities, messaging should use simple language (e.g., reduce medical jargon) and offer translations of important information, including in Indigenous languages. Participants suggested collaborating with respected community members (e.g., Indigenous governance leadership, direct service providers, ethnic community leaders) when developing and disseminating COVID-19 communication to build trust and relatability of messaging. They advocated for multi-faceted direct communication media to increase audience reach, such as personal technology (e.g., smartphone apps, text messages, e-mails, phone calls), community-based media (e.g., local radio and newsletters), and mass audience sources (e.g., television, internet, newspaper). Participants also encouraged the adoption of voting and census awareness strategies (e.g., targeted mailouts) and mobile outreach sessions that bring this information directly to communities.

COVID-19 vaccination booking procedures

Barriers

Participants expressed concerns about challenges when booking vaccination appointments through the available options at the time of interview (e.g., provincial health websites and phone services). They mentioned the technology required to book an appointment (e.g., computers, phones), lengthy wait queues due to initial appointment competition resulting from limited vaccine supply, and related costs of internet data and phone minutes made it difficult for low-income, geographically remote, or elderly individuals to secure appointments. Lack of translation services and guidance for nonstandard situations were additional obstacles for linguistic minorities and newcomers. Nonstandard situations included individuals without required identification (e.g., provincial health cards), who relocated provinces between doses (vaccine rollout procedures were province-specific), or had precarious immigration status (e.g., undocumented individuals, international students). It also included incidents requiring multiple appointments for people with different eligibility or requiring different vaccines.

Solutions

Recognizing these booking obstacles, participants recommended mobile appointment scheduling outreach services that book in-person without requiring technology (e.g., vaccination vans), more guidance for individuals with non-standard situations, and the recruitment of multilingual health representatives. To address wait queues and decrease the personal effort required to secure an appointment, participants endorsed the adoption of technology resources (e.g., smartphone apps, provincial waitlists) that notify individuals of eligibility and permit appointment pre-registering.

Table 1. Participant characteristics (N = 27).

	Indigenous participants (N=10), n (%)	Racialized participants (N=17), n (%)	Total (N=27), n (%)
Indigenous Identity			10 (37)
First Nation	2 (20)		
Métis	6 (60)		
Not specified	2 (20)		
Racialized Identity			17 (63)
Arab		1 (6)	
Black		2 (12)	
East Asian		2 (12)	
Latin American		3 (18)	
South Asian		7 (41)	
West Asian		1 (6)	
Ethnicity missing		1 (6)	
Migration status			
Born in Canada (referred to as Turtle Island by Canadian Indigenous communities)	10 (100)	6 (35)	16 (59)
Migrated more than 5 years ago	0 (0)	3 (18)	3 (11)
Newcomers to Canada (migrated less than 5 years ago)	0 (0)	8 (47)	8 (30)
Gender			
Man	3 (30)	7 (41)	10 (37)
Woman	6 (60)	10 (59)	16 (59)
Man and gender nonconforming	1 (10)	0 (0)	1 (4)
Language of interview			
English	7 (70)	16 (94)	23 (85)
French	3 (30)	1 (6)	4 (15)
Age			
<20	0 (0)	2 (12)	2 (7)
20-29	0 (0)	3 (18)	3 (11)
30-39	4 (40)	5 (29)	9 (33)
40-49	2 (20)	6 (35)	8 (30)
50-59	1 (10)	1 (6)	2 (7)
60-69	1 (10)	0 (0)	1 (4)
≥70	2 (20)	0 (0)	2 (7)
Province			
Alberta	0 (0)	3 (18)	3 (11)
British Columbia	2 (20)	4 (24)	6 (22)
Manitoba	2 (20)	2 (12)	4 (16)
Ontario	3 (30)	5 (29)	8 (30)
Quebec	2 (20)	3 (18)	5 (19)
Saskatchewan	1 (10)	0 (0)	1 (4)
Geographic location			
Rural	3 (30)	0 (0)	3 (11)
Urban	7 (70)	17 (100)	24 (89)
Education			
More than a bachelor's degree	1 (10)	4 (24)	5 (19)
University certificate or diploma	3 (30)	2 (12)	5 (19)
Non-university certificate or diploma	4 (40)	4 (24)	8 (30)
High school or less	2 (20)	4 (24)	6 (22)
Missing	0 (0)	3 (18)	3 (11)

COVID-19 vaccination sites

Barriers

Participants described difficulties accessing and navigating vaccination locations. They indicated challenges traveling to vaccine clinics with public transportation, lengthy travel time for people in remote locations, and additional expenses from employment time loss and childcare. Travel challenges also restricted access to any pop-up clinics with drop-in appointments because initial vaccine supply was limited and could run out before they arrived. Gaps in infrastructure and accommodations – including wheelchair ramps, onsite childcare, and

diverse communication materials (e.g., nonvisual or translated) – created obstacles for people with accessibility needs, parents, and linguistic minorities. Additionally, participants raised concerns about police or security presence at vaccination sites, particularly for those with prior experiences of mistreatment and discrimination by health or police authorities.

Solutions

Participants advocated for expanding and diversifying vaccination sites and availability. They proposed increasing the number of sites to reduce travel distance and appointment

Table 2. Categories and quotes arising from interviews with Racialized and Indigenous Peoples regarding strategies to reduce barriers to COVID-19 vaccine access.

Theme	Representative Quotes from participants (using pseudonyms)
Information about COVID-19 disease and vaccination	<p>"[Y]our language, lack of familiarity you know with the whole system here, with all these websites, and those – not everyone is computer literate or reads the news. I still think that when it comes to this very like critical topic, going beyond internet is a better choice. Like really old school hardcopy documents" (Adam, West Asian, ON)</p> <p>"[A] lot of their information is like "visit our website," but like we're missing a huge population that can't visit our website. Like, it's something I take for granted. I can Google anything, so can my kids, but like a lot of people I work with [as a social service provider] or a lot of people in the community, they don't have that privilege and I think that's forgotten" (Susan, Métis, MB)</p> <p>"Literacy is another big issue [...] to simplify complicated scientific and medical terminology into something that could be translated and understood was very, very difficult and there aren't necessarily words in [Indigenous] language[s] to describe some of the concepts that we were talking about" (Tanya, First Nations, ON)</p>
COVID-19 vaccination booking procedures	<p>"I mean, if they have a phone or Internet, it's a little bit easier. But getting to some people who may be vulnerable and only use mail [...] I assume more out of the elderly population, who [...] may not be engaged in the Internet or social media, and may not answer their phone so much. They might be hard to get a hold of" (Keith, Métis, BC)</p> <p>"Well, first of all, the vaccine is not open for everyone. You need your health card, that's the complication for a lot of people I know. A lot of people [are] working without a work permit, so they cannot apply for a health card. And that's just crazy to me, like everybody should be able to register" (Tomás, Latin American, BC, newcomer)</p> <p>"Sometimes I just go and check it, [and] they're all booked up [...] So, either I have to wait, basically until everybody above me is done, or every day, you know, I go to refresh this page, internet page, to be able to get an appointment. [...] I can feel that it clearly will be a competition" (Adam, West Asian, ON)</p> <p>"I was hoping, um yeah, I should have done three [appointments] together, [...] my daughter got hers sometime in April, and then I got mine in May, and then my son got it sometime in May [...] you know they don't want us to catch [COVID], why make us go three times. We should just call one time and got everyone got the shots" (Jennifer, East Asian, BC, single mother)</p>
COVID-19 vaccination sites	<p>"[U]rban Indigenous were one of the priority populations after remote Indigenous [...] But it was still difficult sometimes to get an appointment locally, and I do know of some urban Indigenous people that had to go to a town an hour away, or that was the soonest they could book" (Tanya, First Nations, ON)</p> <p>"But then what about like the single moms or the people who can't afford bus fare to get to [a vaccination center], like then what? And we're promoting "don't go in a car with somebody you don't live with," so like what are you going to do, walk downtown to Winnipeg? Like it's not even safe, right?" (Susan, Métis, MB)</p> <p>"There's this new thing with allowing only one person in stores or go get your vaccine by yourself, or whatever so lots of single parents are [...] shamed for having to bring their kid or saying like I need help. [...] If you bring your kid with you into a store to go get your vaccine, like if I went to Superstore with my children, I'm definitely going to get dirty looks" (Susan, Métis, MB)</p> <p>"The police is just going to scare people away [...] You involve them in the whole vaccine thing and that's just trouble. It's just, they're shooting – the health care system's shooting themselves in the foot" (Justin, Indigenous – not specified, ON)</p>

Table 3. Categories and quotes arising from interviews with Racialized and Indigenous Peoples regarding barriers to COVID-19 vaccine access.

Theme	Representative Quotes from participants (using pseudonyms)
Information about COVID-19 disease and vaccination	<p>"For Indigenous People it's all about relationships, and not relationships over video or media. You know, going to a First Nation reserve and actually hosting something, not just putting out pamphlets or posting something on social media [...] and putting the onus on everyone else to read the information. It just shows a different level of, I guess, respect when you take that time. And I know we're living in a pandemic and that it's probably not advised to have those type of conversations necessarily and that it will take a lot of work. But I mean ideally, that would be the best situation, I think" (Denise, Métis, SK)</p> <p>"[W]e need clear, concise information least amount of like extra words as possible and make it as like low grade as we can, and that's just so everyone can understand, and be mindful of people's understanding and education" (Susan, Métis, MB)</p> <p>"[H]aving the information in other languages [beyond English and French], that could be a good idea, especially online as that's probably not very difficult to do. [...] I also liked that when they have the press conferences and announcements, they always have someone with sign language" (Maria, Latin American, AB)</p> <p>"[W]e did a lot of work trying to reach Elders, and radio was a medium that they use frequently to get information, but access to translators was very very difficult. I mean, we made it a priority, and it happened, and we were able to translate on the radio and have materials translated. I mean even provincial and federal governments are pumping out information in like [...] really common languages, but they weren't pumping it out Ojibwe, you know and that took a lot of advocacy [to have that happen]" (Tanya, First Nations, ON)</p>
COVID-19 vaccination booking procedures	<p>"[I]f they could make it something like voting, like a voting ballot. They sent you ballots at home. [...] maybe based on again it could be postal code or last name, I don't know if they could stamp tickets or ballots or something to the mailbox [...] Like, "It is your turn now, you have one week, for example, to come and do the vaccination. If you don't, then you will go to the end of the lineup" or something" (Adam, West Asian, ON)</p> <p>"[T]rying to get different languages [beyond English and French] for people to like talk to over the phone for booking the appointment because language could be a barrier for them" (Abdulla, Racialized – ethnicity missing, ON)</p> <p>"If we could pre-book or coordinate, I don't know some sort of provincial kind of registry or something, that might be nice?" (Keith, Métis, BC)</p> <p>"They could have like in-person appointments for the technologically lacking people, to make an in-person appointment. Or just maybe have the vaccines as they go, like they don't need an appointment" (Rohan, South Asian, BC)</p>
COVID-19 vaccination sites	<p>I think the vaccination in [the] community definitely was reassuring for people. Many communities had like blessing ceremonies or things like that when the vaccine arrived in the community. Some places had [...] you know that -so they're monitoring your physical health for 15- or 20-minutes post vaccination, but they [also] had elders available to sort of monitor your spiritual health or smudging available, that kind of thing that, you know, when you're surrounded by people you trust" (Tanya, First Nations, ON)</p> <p>"Maybe we need mobile vaccinations at some point when we're trying to get to the vulnerable population. Like they have mobile crisis units and parking lots where they can do medical care, maybe as part of that they could offer vaccinations as well" (Denise, Métis, SK)</p> <p>"Community centers, libraries, you know these offices that are closed down, you can turn them into a makeshift injection place for COVID quite easily. So whatever it takes to get those all the neighborhoods, get it done. [...] I think there's public health nurses that are out there walking the beat, that are actually doing injections right there on the sidewalk kind of thing" (Ed, First Nations, BC)</p> <p>"[P]eople with physical disabilities, for example, would have trouble going there. [...] So maybe they could get vaccinated at their place if someone comes in, like injects a shot to them, that could be another concern too" (Abdulla, Racialized – ethnicity missing, ON)</p>

competition, and including non-traditional spaces (e.g., community centers, libraries, religious centers) to provide more familiar and accessible options. They recommended increasing mobile and “in-house” vaccination outreach services to facilitate vaccination for marginalized, high-risk, and less mobile communities (e.g., senior and assisted living facilities, shelters, workplaces with high COVID-19 exposure), and transportation assistance for those without vehicles or living remotely. To accommodate non-standard schedules or when advance scheduling was unachievable, they suggested having sites with 24-hour and drop-in availability. They also advocated for culturally appropriate sites that respond to client needs and provide safer spaces, through offering translators, eliminating/limiting police presence, permitting smudging ceremonies, and having ethnically diverse healthcare workers provide vaccines.

Discussion

Although there is evidence of COVID-19 vaccine hesitancy among some Racialized and Indigenous communities,^{33–35, 68–70} study participants expressed vaccine accepting intentions and behaviors but reported substantial social and structural barriers throughout the process of learning about, booking, and receiving a COVID-19 vaccine. These barriers can make access difficult even when people actively seek out vaccinations. Our results suggest these barriers are most acutely experienced by those who represent intersecting marginalized identities (e.g., First Nations seniors, Racialized linguistic minorities) and those with non-standard situations (e.g., international students, anyone without a healthcare card). This is consistent with other studies within and outside Canada,^{19,25,61,71} suggesting the need for support efforts to address inequities within localized communities.

Inaccessible information about COVID-19 disease and vaccination poses a significant barrier to vaccination access. Public health communication often adopts a “one size fits all” model, that may only be understood by individuals with particular resources and lived experiences,^{22,68,72} while being less accessible to linguistic minorities, those with literacy limitations, and individuals with experiences as colonized and Racialized peoples. This is particularly true for those whose traditional healthcare communication supports were negatively impacted by pandemic protocols that restricted companion attendance at vaccine appointments.⁷³ Ameliorative informational strategies must go beyond “deficit model solutions” that focus on information quantity, and ensure messaging is physically, cognitively, and culturally accessible.^{22,72,74}

Confusing, inaccessible, and unresponsive scheduling procedures also impede uptake. Presumptions about resource access (e.g., language, literacy, technology, identification) and immigration status built into booking requirements restrict access to vaccination appointments. Reducing the individual effort, resources, and risks involved in securing vaccine appointments increases accessibility, as evidenced by the success of Boston’s GOTVax initiative, which drew on voter engagement strategies to inform, schedule, and vaccinate low-income and Racialized communities through outreach and pop-up clinics.⁷⁵

Vaccination campaigns are undermined when vaccination sites are not accessible to everyone, due to geographical inconvenience, infrastructure, or discrimination. Discrimination against Racialized, Indigenous, immigrant, and linguistic minority communities negatively impact healthcare.^{21,76,77} There is an urgent need to establish accessible and culturally safe care that endeavors to dismantle power inequities, while addressing the impacts of lived histories of past and current injustices on healthcare access.^{21,78}

Some vaccination site strategies proposed by participants were adopted in early equity-driven vaccine initiatives, such as the pop-up vaccination clinics for farm workers in California^{50,79} and multiple First Nations- and Métis-led vaccine clinics in Canada (e.g., the Métis Nation of Alberta, the Manitoba Métis Federation, the Millbrook First Nation in Nova Scotia).^{80–82} These community-driven initiatives often minimized police/security presence, eliminated identification and residency requirements, provided mobile and “in-house” vaccination, and offered population-specific vaccination sites.

Although local nonprofit and community organizations may tailor strategies for the communities they serve, they have limited resources and authority and cannot sufficiently remedy the substantial social and structural barriers identified by interview participants. Some Canadian provincial health authorities also provided more diverse vaccination sites (e.g., walk-in, drive-through, and pop-ups) as they phased out mass vaccination centers.^{83,84} However, these were secondary considerations offered to address remaining gaps after traditional mass vaccination, rather than prioritized efforts at the onset of vaccine rollout. The above strategies and others based on insights of under-served communities and those working with these communities need to be adopted early in vaccine rollout and continued throughout vaccine campaigns to inform more equitable vaccine access if there is to be a reduction in disease-severity among those exposed to circulating viruses while trying to overcome barriers to vaccination.

Over the course of the pandemic, many barriers identified in this study have remained or worsened, with most vaccine services being reduced after the initial push to deliver the primary vaccine series (typically 1–2 doses). There is a pressing need to develop ongoing tactics and support for localized efforts to ensure access to any recommended and/or required future booster doses during the pandemic and in the years to come.⁸⁵

Our findings are essential for informing more equitable access to COVID-19 vaccines, other vaccines, and healthcare generally. We recognize that experiences of systematic oppression differ across ethnocultural, Racialized, and Indigenous groups, and across communities depending on their relationship with dominant ethnic groups and imperial or colonial nation states. Although our study focused on the Canadian context, our findings show the vaccine access implications of power relations that exist in white-dominated and colonial nations. Discrimination has long been a barrier to health care for Racialized and Indigenous communities.^{23,48,49,77,86} The significance of culturally appropriate health care is also a repeated theme for Indigenous Peoples for COVID-19 vaccines,^{87,88} non-

COVID vaccines,^{72,89,90} and healthcare more generally.^{21,36,91–95} Findings from our study and previous research suggest the barriers and facilitators identified in this study reflect power relations that will continue shaping vaccine access and intentions for years to come.

Limitations

This study utilized rapid recruitment through a sub-sample of online panel survey respondents. Despite recruiting diverse participants, our sample excluded some of the most marginalized peoples in Canada unable to access the initial survey (e.g., those who are institutionalized, unhoused, undocumented, lack internet access, do not speak English or French). Three participants helped mitigate that limitation by discussing their work with highly marginalized populations, including substance users, women experiencing domestic violence, and remote First Nations communities. We were unable to recruit participants from Canada's territories and Atlantic provinces, which had unique COVID-19 policies and vaccination rollouts. Additionally, many participants had not received vaccination at the time of the interview because of eligibility restrictions during early vaccine rollouts and spoke to potential rather than experienced barriers, informed by experiences accessing other healthcare and essential services.

Although we identified diverse barriers and potential solutions, our research findings are not generalizable to the population, exhaustive, or transferable to all underserved communities in emergency situations. Furthermore, given the study's objective, we primarily invited survey respondents who indicated a positive COVID-19 vaccination intention. It is possible that individuals not intending to receive a vaccine may experience additional barriers; at the same time, it is understandable that identified barriers may contribute to hesitancy. Finally, results from this study demonstrate challenges and facilitators to accessing COVID-19 vaccines early in vaccine rollout that may inform future research into how to improve vaccine accessibility over the long term.

Conclusion

Priority recommendations and decentralized initiatives during national vaccination campaigns give the appearance that everyone can access healthcare services, making it easy to blame individuals or particular groups for not being vaccinated. However, our findings reveal that access barriers may substantially limit access to vaccination information, booking procedures, and site locations for under-served communities, especially for those experiencing intersecting structural inequalities. Priority needs to be given to facilitating access for marginalized and underserved populations early in vaccine rollout, and particularly those experiencing intersecting disadvantages who are often disproportionately impacted by public health crises.

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Author contributions

LA and TM contributed to the design of the study; acquisition, analysis, and interpretation of data; and drafting and critical revision of the manuscript. ED contributed to the conception and design of the study, acquisition and interpretation of data, and critical revision of the manuscript. FL contributed to the acquisition and interpretation of data, and critical revision of the manuscript. MD, KB, NM, and JG contributed to the conception and design of the study, interpretation of data, and critically revised the manuscript. SEM contributed to the conception and design of the study; acquisition, analysis, and interpretation of data; and drafting and critical revision of the manuscript. All authors approved the final version and are accountable for the work.

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