

1 Title Page

2

3 **Submission Title**

4 “Informing Efforts Beyond Tailored Promotional Campaigns by Understanding Contextual Factors  
5 Shaping Vaccine Hesitancy Among Equity-Deserving Populations in Canada: An Exploratory  
6 Qualitative Study”

7 Accepted 26/09/23

8 International journal of Equity in Health

9

10 **Authors**

11 • Lena G. Nascimento, University of Waterloo, Waterloo, Canada [mhgodinh@uwaterloo.ca](mailto:mhgodinh@uwaterloo.ca)

12 → Lead Author

13 • Ève Dubé, Institut National de Santé Publique du Québec, Québec City, Canada

14 [eve.dube@inspq.qc.ca](mailto:eve.dube@inspq.qc.ca)

15 • Kathleen E. Burns, University of Waterloo, Waterloo, Canada [katie.burns@uwaterloo.ca](mailto:katie.burns@uwaterloo.ca)

16 • Patrick Brown, University of Amsterdam, Amsterdam, The Netherlands [p.r.brown@uva.nl](mailto:p.r.brown@uva.nl)

17 • Michael Calnan, University of Kent, Canterbury, UK [m.w.calnan@kent.ac.uk](mailto:m.w.calnan@kent.ac.uk)

18 • Paul R. Ward, Torrens University, Adelaide, Australia [paul.ward@torrens.edu.au](mailto:paul.ward@torrens.edu.au)

19 • Eric Filice, Unity Health Toronto, Toronto, Canada [efilice@uwaterloo.ca](mailto:efilice@uwaterloo.ca)

20 • Hoda Herati, University of Waterloo, Waterloo, Canada [hoda.herati@uwaterloo.ca](mailto:hoda.herati@uwaterloo.ca)

21 • Nnenna A.U. Ike, University of Waterloo, Waterloo, Canada [nauike@uwaterloo.ca](mailto:nauike@uwaterloo.ca)

22 • Bobbi Rotolo, University of Waterloo, Waterloo, Canada [brotolo@uwaterloo.ca](mailto:brotolo@uwaterloo.ca)

23 • Samantha B. Meyer, University of Waterloo, Waterloo, Canada  
24 [samantha.meyer@uwaterloo.ca](mailto:samantha.meyer@uwaterloo.ca) → Corresponding Author

25

26 **Abstract**

27 Background: Vaccine hesitancy exists on a continuum ranging between complete adherence and  
28 complete refusal due to doubts or concerns within a heterogeneous group of individuals. Despite  
29 widespread acknowledgement of the contextual factors influencing attitudes and beliefs shaping  
30 COVID-19 vaccine hesitancy, qualitative research with equity-deserving groups, accounting for  
31 unique lived experiences, remains a gap in the literature. We aim to identify and begin to  
32 understand and document the unique contextual factors shaping hesitancy by equity-deserving  
33 groups as it relates to relationships with government and health authorities.

34 Methods: Participants were recruited and interviewed between Aug-Dec 2021. Semi-structured  
35 interviews using a convergent interviewing technique were conducted with individuals from the  
36 general population, as well as individuals who identify as First Nations, Métis, or Inuit, members  
37 of the LGBT2SQ+ community, low-income Canadians, Black Canadians, and newcomers.  
38 Interviews were audio recorded and transcribed by a team of researchers. Memos were written  
39 following interviews and used to complement the thematic analysis of the interview data.  
40 Themes are presented in the results section.

41 Results: The rationale for hesitancy among equity-deserving groups is consistent with literature  
42 documenting hesitancy in the general population. Contextual factors surrounding equity-  
43 deserving groups' attitudes and beliefs, however, are unique and relate to a history of

44 oppression, discrimination, and genocide. We identified factors unique to subgroups; for  
45 example, religious or fatalistic beliefs among participant who identify as FNMI, fear associated  
46 with lack of testing and speed of vaccines' production among participants who identify as FNMI,  
47 Black, and LGBT2SQ+, distrust of the healthcare system for LGBT2SQ+ and Black Canadians, and  
48 distrust of the government and opposition to vaccine mandates for participating who identify as  
49 LGBT2SQ+, low-income, FNMI, or Black Canadian. Newcomers stood out as very trusting of the  
50 government and accepting of COVID-19 vaccination.

51 Conclusions: While our data on vaccine hesitancy largely mirror concerns reported in the vast  
52 body of literature citing rationale for COVID-19 hesitancy in high-income countries, the  
53 contextual factors identified in our work point to the need for wider systemic change. Our results  
54 may be used to support efforts, beyond tailored promotion campaigns, to support the confident  
55 acceptance of vaccines for COVID-19 and the acceptance of novel vaccines as future infectious  
56 diseases emerge.

57

58 **Keywords**

59 COVID-19, Equity-Deserving Groups, Marginalized groups, Canada, Vaccine Hesitancy, Contextual  
60 Factors, Promotional Campaigns, Vaccine Confidence, Qualitative.

61

62

63

64

65

66

67

68

69

## 70 **Background**

71 Canada's first COVID-19 case was confirmed on January 23, 2020, in Toronto, Ontario (1,2). In  
72 response, government officials called upon the public to trust and accept measures to mitigate  
73 the risk of COVID-19 spread. One such measure was vaccination, the uptake of which is complex  
74 and multifactorial (3). Vaccine hesitancy (VH), a long-studied phenomenon particularly as it  
75 relates to childhood vaccination, became a critical consideration and concern for the  
76 management of COVID-19 in Canada and elsewhere, with the World Health Organization (WHO)  
77 naming VH one of the top ten threats to global health in 2019 (4). Within the present paper, we  
78 conceptualize VH as existing on a continuum ranging between complete adherence and complete  
79 refusal due to doubts or concerns within a heterogeneous group of individuals who may be  
80 influenced by a combination of cognitive, emotional, cultural, social, spiritual, and political  
81 factors (5–7). Within these extremes, there is a varying period of delay in acceptance or refusal  
82 of vaccination, despite vaccines being readily available to the public (8). Central to the present  
83 work, hesitancy is influenced by the historical, political, and sociocultural contexts in which  
84 vaccination occurs (7). Furthermore, hesitancy is vaccine dependent; for example, there has been  
85 criticism that public health messaging around COVID-19 vaccines resembled those aiming at  
86 reducing VH for routine immunization and, as a result, did not sufficiently address the constant  
87 changes to COVID-19 vaccine recommendations (9). As such, across the population, attitudes and

88 beliefs regarding vaccination, and thus strategies to promote vaccination, will vary considerably  
89 – and even more so given the novelty of the COVID-19 vaccine.

90 COVID-19 VH in high-income countries is well documented and has been associated with a  
91 number of factors, including the absence of a recent history of influenza vaccination, lower  
92 perceived risk of contracting COVID-19, reduced fear of COVID-19 disease, lower perceived  
93 COVID-19 disease severity, absence of a chronic medical condition, belief that vaccines are not  
94 safe/effective, concerns with the speed in which COVID-19 vaccines were developed, exposure  
95 to misinformation about COVID-19, and public concerns over the safety of vaccines (10–12).  
96 Alternatively, factors associated with vaccine uptake include motivation to protect oneself or  
97 others, trust in government, belief that the vaccine is safe and has a low risk of adverse effects,  
98 availability of sufficient information about COVID-19 vaccination, greater perceived risk of  
99 COVID-19 to others (but not a risk to oneself), being of older age, and previously receiving an  
100 influenza vaccine (13,14).

101 Over the last few years, the research community has generated a vast body of literature  
102 regarding COVID-19 VH as it relates to equity-deserving groups. Equity-deserving has been  
103 defined as “a group of people who, because of systemic discrimination, face barriers that prevent  
104 them from having the same access to the resources and opportunities that are available to other  
105 members of society, and that are necessary for them to attain just outcomes” (15). Within  
106 Canada, the location of the present study, nonwhite (racialized) individuals have been  
107 documented to be less likely than white individuals to receive the COVID-19 vaccine (16). Being  
108 indigenous, black, multiracial or a visible minority has been associated with a lower intention to  
109 get vaccinated (16,17). This finding is consistent within high-income countries; for example,

110 research has found an association between individuals who identify as Black, Indigenous, BIPOC  
111 or as part of the LGBTQ+ community and VH (18,19). Furthermore, in terms of VH, individuals  
112 who immigrated to Canada (compared to Canadian-born individuals) and individuals of lower  
113 socioeconomic status have been found to be more hesitant toward COVID-19 vaccines (16,20).  
114 Despite progress made in understanding contextual factors influencing attitudes and beliefs  
115 shaping COVID-19 vaccine VH in equity-deserving groups (20), research to date has  
116 predominantly relied on survey-based study models (19). The present study draws on interviews  
117 to understand the lived experiences of vulnerable populations (21) disproportionately impacted  
118 by the COVID-19 pandemic (22–26) and whose voices are predominantly absent from public  
119 health efforts relating to pandemic preparedness (27). The need to increase the representation  
120 of equity-deserving groups in public health research is necessary not only to inform and drive  
121 vaccination efforts with hopes to increase COVID-19 vaccination uptake among equity-deserving  
122 groups but also to reduce health disparities and get one step closer toward achieving health  
123 equity.

124 Given that attitudes and beliefs can influence behavior, government and public health have  
125 worked to tailor public health messaging to promote vaccine uptake in diverse communities.  
126 However, as we will discuss, the unique contextual factors, as they relate to equity-deserving  
127 populations' relationships with government and health authorities in the past, will require  
128 interventions that go beyond tailored vaccine promotion efforts. Indeed, typical promotional  
129 materials have been criticized as not addressing specific anxieties elicited by the novel vaccines  
130 (9), no less among populations whereby VH is influenced by the historical, political, and  
131 sociocultural contexts (7). Herein, we aim to investigate and document demographic and

132 contextual factors that underly VH within equity-deserving populations. We focus on these  
133 populations for two reasons: 1. They have been historically marginalized by government  
134 organizations, including healthcare services, and thus less likely to trust, and thus accept,  
135 government interventions (e.g., see history) ((28)); and/or 2. They have been disproportionately  
136 impacted by COVID-19 in Canada (29), rendering vaccination critical for health equity (30). Our  
137 results may be used to support efforts, beyond tailored promotion campaigns, to support the  
138 confident acceptance of vaccines for COVID-19 but perhaps more importantly, the acceptance of  
139 novel vaccines as future infectious diseases emerge.

140

## 141 **Methods**

142 The data presented herein are part of a larger research project investigating the acceptance of  
143 COVID-19 countermeasures in Canada. Here, we specifically focus on data collected from  
144 participants who self-identified as belonging to an equity-deserving group regarding their  
145 perspectives on COVID-19 vaccination.

146 Semi-structured interviews (n=56) were conducted with individuals aged 18+ between August  
147 and December 2021. In addition to the general population (n=19), we specifically sampled  
148 subpopulations of equity-deserving populations, including First Nations, Métis, or Inuit (n=7),  
149 LGBT2SQ+ (n=5), low-income Canadians (less than \$40,000 annually; n=8), Black Canadians (n=7),  
150 and newcomers (less than 5 years living in Canada; n=10). We acknowledge that each of the  
151 subgroups is unique from one another due to differences in shared experiences, cultural beliefs,  
152 and practices, which is important given that VH is specific to groups and communities. This,  
153 however, does not mean there are no similarities across subgroups. Additionally, we

154 acknowledge that within each of the subgroups, there is diversity across participants, and as such,  
155 we do not intend to use our findings for generalization. Participants were recruited through  
156 Leger, Canada’s largest and most representative research marketing firm, to gain representation  
157 from harder-to-reach populations. Leger recruited potential participants and provided contact  
158 information to the research team to obtain consent to participate and schedule the interviews.  
159 Participants for our sample size were collected until we reached saturation of themes (31).  
160 We used a convergent interviewing technique (32) via telephone or a virtual platform (Cisco  
161 Webex, Zoom or Microsoft Teams), depending on the preference of the participant. Convergent  
162 in-depth interviews are characterized by a structured process and unstructured content.  
163 Interviews are embedded within a process of design and analysis so that subsequent interviews  
164 can build on reflective opportunities from former interviews. This specific interview technique  
165 allows for the analysis of interview data to overlap with the collection of that data, and unlike  
166 other interview techniques, it is time-efficient, emergent, and data-driven (32). **This approach**  
167 **allowed us to continue data collection until a point where themes were saturated while also**  
168 **ensuring that we explored novel insights relevant to the research aim.** For the present paper, we  
169 focus on interview questions specifically investigating COVID-19 countermeasures pertaining to  
170 vaccination behaviors. Namely, we asked, “Have you been vaccinated against COVID-19?”, “If  
171 yes, what was your experience, if no, why not?”, “If periodic boosters end up being  
172 recommended (e.g., on a bi, semi or annual basis) do you intend to get them? Why/why not?”,  
173 “What are your thoughts about the use of legal mandates by governments to increase  
174 vaccination?”, “How has the prospect or actual implementation of vaccine mandates influenced  
175 your views on vaccination or your decision to get vaccinated?”. Given the role of contextual



176 factors in VH, participants were also asked to respond to sociodemographic questions and  
177 vaccine status. Interviews were conducted by six researchers with the goal of having congruence  
178 in social identity between participants and the interviewer, though this was not possible across  
179 all participating subgroups.

180 Interviews were audio recorded and transcribed by an agency abiding by a confidentiality  
181 agreement. Following interviews, memos were written by each researcher to document  
182 elements of the data meaningful to the project aims. Memos served as a record of the  
183 researcher's initial thoughts on each interview for the purpose of communicating the analytic  
184 progress to the team and for recall later down the process of analysis. All six interviewers listened  
185 to audio files and prepared memos based on their respective assigned subgroup interviews.  
186 Following this procedure, one researcher led the remainder of the analysis, with ongoing input  
187 from the team. Initial coding involved staying close to the data and remaining open to exploring  
188 all findings relevant to the aim of the interviews. Initial coding, coded by author <removed for  
189 blind review>, involved systematically working through the entire dataset, giving full and equal  
190 attention to every data point. For this exploratory phase, we were open to coding all data before  
191 determining what was or was not meaningful to the analysis (33). In vivo codes (the participants'  
192 own words) were used to help preserve participants' meanings of their views and actions.  
193 Focused coding involved taking earlier codes that continually reappeared and using them to  
194 organize large amounts of the data into meaningful themes and was used to re-examine the  
195 initial codes to determine their adequacy and conceptual strength in meeting the research aim.  
196 Focused coding was less open-ended and more directed and conceptual, based on themes  
197 relevant to their dataset (e.g., coverage of themes relevant to the aim). Within our process of

198 moving from initial to focused coding, we were intentionally attentive to data relevant to the aim  
199 of the paper; that is, we were not focused on the most common themes but rather, those that  
200 were meaningful.

201 Ethics approval was obtained by <removed for blind peer review>. All participants provided  
202 written or oral consent for the recording and use of quotes in publications. Pseudonyms have  
203 been used to maintain anonymity.

204

## 205 **Results**

206 Our results provide timely insight into the sociodemographic factors associated with VH at a time  
207 in Canada when there were four COVID-19 vaccines authorized for public use (Pfizer-BioNtech,  
208 Moderna, Jansen, and AstraZeneca) and enough vaccine supply for the completion of primary  
209 series (1st and 2nd doses) for eligible individuals. The period of data collection also coincided  
210 with all provinces and the Yukon territory introducing vaccine passports (34). Furthermore,  
211 information on vaccines' side effects (common and rare), as well as recommendations/guidelines  
212 to populations (i.e., permissible to interchange between authorized COVID-19 vaccines in a two-  
213 dose primary series, long-term care residents and seniors living in other congregate settings are  
214 recommended to receive their booster dose, and AstraZeneca vaccine use is recommended in  
215 younger adults, among others) was also available to the public at this time period (35,36).

216 All participants but one selected English (over French) as the primary language. Participants  
217 represented all provinces except for NL and NS, with higher representation in ON and AB. Ages  
218 ranged from 18-75, with half aged 25-44 years. Most participants were female (n=36), with 19

219 males and one individual identified as nonbinary. Most participants (n=20) reported earning  
220 between \$20,000-\$59,000.

221 Table 1 summarizes acceptance of vaccination across subgroups at the time of the interviews. Of  
222 all participants (n=56), 51 individuals received their 1st and 2nd doses. Five individuals in total  
223 (n= 2 Black Canadians, n=1 FNMI and n=2 or low-income) reported nonvaccinated status. Of all  
224 participants, eight reported getting the vaccine either because it was mandated or because they  
225 felt pressured by their families to receive their vaccine. Two participants expressed a reluctance  
226 to accept booster shots or being reluctant to consider the possibility of annual vaccination. Last,  
227 at the time the interviews were conducted, no participant had yet received their booster (3<sup>rd</sup>  
228 dose) vaccine.

229 Table 1. Vaccine Acceptance by Subgroup for Participants in the Sample

Population Sub-Groups	Have not received the vaccine	Have received one or two doses
Black Canadians (n=7)	2	5
FNMI (n=7)	1	6
LGBT2SQ+ (n=5)	0	5
Low-Income (n=8)	2	6
Newcomers (n=10)	0	10
General Population (n=19)	0	19
Total (n=56)	5	51

230  
231 The following section of this paper showcases findings from our data. Acronyms to categorize  
232 equity-deserving groups and the general population were used, such as general population (GP),  
233 Black Canadians (BC), LGBT2SQ+ (LGBT2SQ+), First Nations, Métis, and Inuit (FNMI), Low Income  
234 (LI), and Newcomer (N).

235 [Vaccine Hesitancy across the population](#)

236 We present data below to underscore that in many ways, the rationale for hesitancy among  
237 participants who identify as members of equity-deserving groups is consistent with what is  
238 already documented regarding hesitancy across the general population.

239 Participants explained their own VH (in general and COVID-19 related) in terms of the following  
240 key themes:

- 241 - Beliefs of resiliency/immunity;
- 242 - Vaccination history;
- 243 - Low perceived vulnerability based on others' experiences;
- 244 - Perceived risk of severe adverse reactions/vaccine safety (exacerbated by reported  
245 adverse reactions);
- 246 - Lack of understanding of the vaccine's mechanisms
- 247 - Perceptions of fast development/administration;
- 248 - Availability of several brand options of COVID-19 vaccines;
- 249 - Perceived lack of need, effectiveness, and purpose for the COVID-19 vaccines;
- 250 - Absence/presence of previous vaccination, and
- 251 - Lack of trust in the government.

252 For instance, the following quote demonstrates how participants who reported vaccine  
253 acceptance in the past were more accepting of COVID-19 vaccination, suggesting that receiving  
254 routine vaccines may be a factor in COVID-19 vaccine acceptance.

255 *"I didn't really pause and agonize over it a great deal of time. I kept getting vaccines all my*  
256 *life. I went to receive them since I was a child, and I wish I had confidence in them, and I didn't*  
257 *see why they should be any different."* – 75+, Woman, LI4

258 On the contrary, a participant (35-44, Woman, N1) questioned the value of the vaccine as they  
259 kept “(...) hearing about new variants coming and then new restrictions and lockdown and  
260 everything (...)”. This led them to doubt the need for vaccines, since in their perspective was that  
261 “even those who are double vaccinated still have to keep all the rules of social distancing (...)”.

262 A lack of understanding of how vaccines work, which may have resulted in a perception of severe  
263 vaccine side effects, is evident by the following quote:

264 *“I don't want something in my body that could change my DNA or my genetic material. That*  
265 *is very important to me as a woman who can produce offspring. I don't want my genetics, my*  
266 *DNA [messed] with. That's important to me.” – 25-34, Woman, FNMI7*

267 Perceived political agendas behind vaccination campaigns were seen as shaping individuals’ by  
268 undermining the level of trust in the vaccines. Relatedly, trust in the government was seen as an  
269 influencing factor of VH, with lower trust in the government seemingly increasing VH and higher  
270 trust in the government seemingly decreasing VH. For instance, despite receiving both vaccine  
271 doses, a participant (25-34, Woman, GP10) disclosed with us the process of “(...) going back and  
272 forth because [they] don't really trust the government in a lot of things”. Their delay in receiving  
273 a vaccine demonstrates their hesitancy.

#### 274 Vaccine compliance vs vaccine acceptance across the general population

275 While most participants were vaccinated, VH was still present, with vaccine hesitant participants  
276 only getting vaccinated either because it was mandated of them or because they felt pressured  
277 by their families to do so. Among those who were against vaccine mandates, we identified the  
278 following key themes:

- 279 - Lack of autonomy;

- 280 - Government control, and  
281 - Violation of citizens' rights and freedoms.

282 For instance, a participant (18-24, Man, LI7) describes the consequences of not following the  
283 mandate (e.g., receiving a fine, not allowed to enter certain establishments) as a form of  
284 "punishment". For this participant "(...) to punish somebody for not taking something that they  
285 know is a risk to them with a hundred percent certainty that there's that possibility, it's morally  
286 and ethically wrong". This quote illustrates the perspective that vaccine mandates run counter  
287 to freedom of choice and autonomy.

288 In contrast, some participants acknowledged that mandates are important and necessary in some  
289 contexts, such as grocery stores, medical offices/hospitals, and the military. Responsibility for  
290 others within the community (social responsibility) versus personal freedoms (personal choice)  
291 was also discussed in relation to vaccine mandates.

292 *"I can remember when I went to school, and the big emphasis was on positioning like a scale*  
293 *of rights on one side and responsibilities on the other. If you had the right, you had a*  
294 *responsibility. If you had a responsibility, then you should have an equal weight. But now*  
295 *people seem to be so focused on the right, they forget about responsibility."* – 75+, Woman,

296 LI4

### 297 Contextual factors surrounding equity-deserving groups' attitudes and beliefs

298 In the section that follows, we present contextual factors surrounding equity-deserving groups'  
299 attitudes and beliefs that are more unique to these groups, beyond those experienced across the  
300 general population. Equity-deserving groups described VH in terms of the following key themes:

- 301 - Fatalistic beliefs in divine will and predeterminism;

- 302 - Rapid development and production of COVID-19 vaccines;
- 303 - Experiences with the healthcare system;
- 304 - Distrust of the government;
- 305 - Personal liberty and vaccine mandates, and
- 306 - Support for government.

307

- 308 • Fatalistic beliefs in divine will and predeterminism

309 Unique to our participants who identified as FNMI were discussions of fatalistic beliefs in divine  
310 will/predeterminism driving hesitancy. For example, a participant (35-44, Woman, FNMI4)  
311 discussed COVID-19 infections as “mother nature's way of cleansing things”. For this subgroup,  
312 contextual factors such as religious beliefs or fate were identified as playing an important role in  
313 how individuals perceived the need for vaccines or how they perceived the risk of COVID-19. For  
314 example, another participant highlighted the process of actively taking action to protect oneself  
315 with vaccines, and how perhaps one should just accept one’s fate.

316 *“I've just about had it. It's like, I had to take one for pneumonia. I had to take one for the flu,*  
317 *had to take it because of my lungs. And I thought I just had it. Maybe my time is my time” –*  
318 *55-64, Woman, FNMI6*

- 319 • Rapid development and production of COVID-19 vaccines

320 Relating to risk, the lack of testing and speed of production of the vaccines was associated with  
321 doubts about their safety and efficacy across FNMI, Black Canadians and LGBT2SQ+ participants.  
322 This was identified as a prominent factor impacting the VH of equity-deserving groups. For  
323 instance, the following two quotes illustrate that individuals were worried about how fast COVID-

324 19 vaccines were developed, leading them to question the safety of the vaccine and risk to their  
325 health and well-being:

326 *“I was a little hesitant, just because of the mRNA. I mean, they say it's been around forever.*  
327 *But, at the same time, I mean, I think we all should've been able to sign an informed consent*  
328 *that this was experimental, because, I mean, even the guy who made the mRNA said, ‘Until*  
329 *you've done 10 years of human trials, it's still experimental.’ I was a little worried because of*  
330 *that. I didn't want my son to take it.” – 35-44, Woman, FNMI4*

331 *“To me, it's basically just like pharmaceutical and medical marketing, trying to push a product*  
332 *because they feel it's going to be effective. They don't know if it's going to be effective. They're*  
333 *just going off of numbers and statistics and research, and their own research.” – 35-44, Man,*  
334 *BC3*

335 As a consequence, one participant (35-44, Woman, LGBT2SQ+ 2) shared not wanting to be “(...)”  
336 the first to get a vaccine (...). To this same participant, “[the vaccine] was just very much in a trial  
337 phase and from [their] experience working with trials, [they] felt very uncomfortable  
338 participating in something that [they were] being tested on.”

339 • Experiences with the healthcare system

340 The previous quotes on hesitancy due to the rapid development and production of COVID-19  
341 vaccines also relate to the subgroups’ experiences with the healthcare system. Members of the  
342 LGBT2SQ+ community, as well as Black Canadians, expressed their distrust of the healthcare  
343 system as being a key factor impacting their decision-making regarding COVID-19 vaccines. For  
344 instance, a member of the LGBT2SQ+ community explained how members of their community  
345 worried they would be treated differently by the medical community.



346 *“When you identify as part of the queer the community, I think that the first thing is that*  
347 *there's always a little part of your brain when you're encountering a health care provider,*  
348 *especially someone that you're not familiar with, that they might have personal biases or they*  
349 *might be personally uncomfortable, for whatever reason (...) I think that's a negative because*  
350 *it's like an extra step or an extra barrier or an extra condition to how we access or receive by*  
351 *health care settings.” – 25-34, Man, LGBT2SQ+ 4*

352 **Relatedly, a participant from the Black community (35-44, Man, BC3) explained how “everybody's**  
353 **genetic makeup is different. Someone may get the vaccine and be fine. Someone may get the**  
354 **vaccine and be very ill from it. It's not a guarantee”. However, this participant also explained that**  
355 **despite this, “(...) healthcare officials would portray [COVID-19 vaccines] as a beneficial thing to**  
356 **do for yourself, your household, your colleagues, your society, your community”. They further**  
357 **explained that this stance by the healthcare officials is not adequate since “they're not you”, and**  
358 **thus “they can't really say what's in your best interest”. This shared perspective highlights a lack**  
359 **of trust in the ability of healthcare professionals to understand and advocate for the unique**  
360 **needs of their patients.**

361 **• Distrust of the government**

362 **Distrust of the government, as it relates to COVID-19 VH, was expressed across several groups.**  
363 **For instance, below, an LGBT2SQ+ participant discusses their perception of the government as**  
364 **self-serving, as opposed to serving the population and at-risk communities such as the LGBT2SQ+**  
365 **community.**

366 *“I have little to no trust in my government. I feel that the government is the powers that be,*  
367 *or, for example, Trudeau, are simply symbols of many other moving parts and many of these*

368 *moving parts are self-serving. (...) And I don't believe that many of the promises and*  
369 *agreements that it makes and dealings that it does, are not always in the best interest of the*  
370 *community.” – 25-34, Woman, LGBT2SQ+ 5*

371 This aligns with experiences from low-income participants, where they discussed feeling  
372 misunderstood and unvalued by the government. They further expressed how the definition of  
373 being low-income alone is problematic and not representative of the diversity within this  
374 subgroup. For instance, one participant (18-24, Man, LI7) stated that they believed that “(...) [the  
375 government] should redefine what they mean by low income”. The same participant explained  
376 that “things have changed, things have increased, prices have changed”, suggesting that perhaps  
377 the definition is fluid and must be revisited to ensure the needs of the population are being met.  
378 A greater understanding of the experiences of low-income Canadians was seen as beneficial to  
379 helping the government better serve individuals within this community and help them feel heard  
380 and valued.

381 Participants also talked about feelings of defiance. For example, a following participant (55-64,  
382 Woman, FNMI6), discussed their feelings towards government in relation to COVID-19 vaccine  
383 mandates:

384 *“I think it's just defiance. I've had it with the whole health care telling us what we have to do*  
385 *now. And I'm so offended. (...) When did somebody think that because they had an outbreak*  
386 *of something, it's okay to take away people's rights or have them forced to give some of your*  
387 *medical information? I don't understand why that is so acceptable now. I get it. We're in a*  
388 *panic. I get we are going through something bad. But we've had bad things happen before.”*  
389 *– 55-64, Woman, FNMI6*

390 • Personal liberty and vaccine mandates

391 Another prominent factor associated with VH was objection to COVID-19 vaccine mandates.  
392 Black Canadians perceived this as a violation of their ability to advocate for themselves and as a  
393 barrier to Black Canadians' own decisions. For example, one participant (25-34, Woman, BC4)  
394 shared their lack of choice in their vaccination status, sharing that they were forced to get it "so  
395 that's why [they are] going to eventually do it, but [they] would prefer not to". They then followed  
396 this statement by stating that "it doesn't seem like [they] have much to say about it at this point",  
397 which seems to be an expression of lack of choice.

398 Vaccine mandates were also described by this subgroup as not beneficial to the general  
399 population and as a violation of the government's responsibility to protect the population. Some  
400 low-income participants who reported being hesitant about the COVID-19 vaccine felt they had  
401 no choice in whether they received the vaccine since the alternative would be unemployment,  
402 which may suggest a form of resentful acceptance or rather, adherence without acceptance. For  
403 instance, a participant (55-64, Woman, LI2) talked about having to take "a second job to help  
404 with [their] financial situation", however, that job "falls under that new umbrella that Doug  
405 [premier of Ontario] put out this week", and as consequence they now "have to get vaccinated,  
406 or [they] don't work". They went on to state their lack of choice in accepting the vaccine, "if [they]  
407 don't work, then [they] don't pay my bills". Another participant shared their discontent with  
408 vaccine mandates, challenging the government decision to dismiss healthcare workers refusing  
409 the vaccine by stating:

410 *"(...) When it comes to the point that you're firing... essentially firing. They call it leave without*  
411 *pay, but they're basically off the job, 290 healthcare workers, healthcare workers who last*

412 *year were being heroes for treating people with this and risking their lives at a guaranteed*  
413 *risk to combat this virus, and then a year later just to get rid of them and say, yeah, we don't*  
414 *value you anymore because you're not going along with our narrative, it's not good.” – 18-24,*  
415 *Man, LI7*

416 Additionally, and in line with earlier data regarding personal liberty as a factor driving the  
417 rejection of vaccination, the following quote shows the opinion of a participant who identified as  
418 FNMI arguing that by being in unceded territory, they are not within Canadian jurisdiction and,  
419 as such, should not have to abide by rules put in place by the government.

420 *“So, [not receiving] the booster would be out of defiance. It's up to me. It's not up to you*  
421 *whether I get it. It's I don't want to put it on a piece of paper and hand it to border security*  
422 *going across the border. It's not right. It's not my border. (...) That's the Canadian border. It's*  
423 *not my border. So, I have different views on some things.” – 55-64, Woman, FNMI6*

424 • **Support for government**

425 Contrary to previous groups, newcomers stood out by being generally very trusting of the  
426 government and accepting of COVID-19 vaccination. For instance, a participant (25-34, Man, N9)  
427 stated “any person coming to Canada will follow everything they need to follow to come here  
428 because [they, as newcomers] want to be here. If [newcomers] had to get a vaccine, they will get  
429 it. If [newcomers] had to quarantine, they will quarantine. [Newcomers] will respect the rules.”  
430 Another participant (18-24, Woman, N8), provided greater insight into this phenomenon, by  
431 explaining that newcomers “(...) don't want a situation where they have to get deported to their  
432 country just because of a pandemic, kind of a thing”, and how newcomers “don't want their  
433 dream of a better life to be thrown away”.

434 Being new to Canada and being offered the opportunity to immigrate and start a new life in a  
435 new country seem to be associated with vaccine acceptance, seemingly arising from feelings of  
436 both gratitude and fear of deportation, **as demonstrated in the quote below:**

437 *“We are arriving at a new country, so in my case, I want to learn about the country, and I want*  
438 *to follow all the rules. So I don't know if all newcomers are the same, but if they think like I*  
439 *think, they are easy because they want to make the thing correctly in this new country.” – 35-*  
440 *44, Woman, N7*

441

## 442 **Discussion**

443 This study aimed to investigate contextual factors contributing to COVID-19 VH across equity-  
444 deserving populations in Canada. Our findings **speak to the nature of COVID-19 hesitancy, as**  
445 **observed during pre-pandemic vaccine campaigns and during the early stages of vaccine**  
446 **availability. In** many ways data are consistent with the existing literature on COVID-19 vaccine  
447 hesitancy (16,17,37–40). **From this,** we can conclude that equity-deserving groups share many of  
448 the same beliefs/attitudes that fuel VH in the general population. Our novel data, however,  
449 contribute to a growing body of research acknowledging the contextual factors driving vaccine-  
450 related attitudes and beliefs, and the historical, political, and sociocultural factors **impacting VH**  
451 **in equity-deserving populations. These contextual factors** require consideration **and response by**  
452 **government and should inform efforts towards meaningful engagement with community as a**  
453 **starting point to** promote the confident acceptance of novel vaccines among equity-deserving  
454 groups within Canada. We discuss key findings as they relate to each subgroup below.

455 Contextual factors for participants identifying as FNMI: themes of fatalistic beliefs in divine  
456 will/predeterminism, feelings of defiance toward government mandates, perceptions relating to  
457 experimental vaccines and informed consent, history of oppression and discrimination, and  
458 distrust of the healthcare system

459 Participants identifying as FNMI discussed topics relating to themes of fatalistic beliefs in divine  
460 will/predeterminism as reasons not to accept the COVID-19 vaccine. Without expertise in this  
461 area, we suggest further research that engages FNMI communities to better understand and  
462 work to support vaccine acceptance in a manner that respects and accounts for these beliefs as  
463 a next step forward. Data also points to the importance of taking action to acknowledge and  
464 respond to feelings of defiance toward government mandates in association with VH. Historical  
465 experiences of oppression and cultural genocide across generations of FNMI communities may  
466 be exacerbated by the Government of Canada still failing to meet the needs of Indigenous People,  
467 as they experience barriers to adequate health care, healthy food, clean water supply, and  
468 experience issues such as overcrowded housing, homelessness, and high levels of incarceration  
469 (41). Relatedly, participants identifying as FNMI also discussed experimental vaccines and  
470 informed consent as reasons for VH. While the general concern that vaccines can have severe  
471 side effects exists among the general population, the history of medical experimentation,  
472 especially among children, that occurred on reserves and in residential schools in Canada (42),  
473 may explain why participants expressed hesitancy toward the vaccine, questioning its  
474 ‘experimental’ nature and concerns regarding informed consent. This might also relate to the  
475 fact that indigenous communities were one of the priority groups for vaccines and thus one of  
476 the first population groups to be offered the vaccine (43). This prioritization may have created or

477 reinforced ideas of being the 'guinea pig' and explain a reluctance to receive COVID-19 vaccines.  
478 These historical injustices experienced by FNMI communities can in part explain the persisting  
479 opposition to government intervention and provide further weight for the need to redress  
480 historical injustices over generating more tailored promotional materials to increase vaccine  
481 acceptance. As a step forward, research has emphasized the importance of supporting  
482 Indigenous peoples' right to self-determination, in how that may be an important step toward  
483 reducing hesitance toward the COVID-19 vaccines (44), and as such, likely novel vaccines in the  
484 future.

485 Contextual factors for the LGBT2SQ+ community: themes of perceptions relating to experimental  
486 vaccines and vaccine safety, as history of medical harm and distrust of the healthcare system

487 Participants that identified as LGBT2SQ+ also expressed concerns regarding the lack of testing of  
488 COVID-19 vaccines and low trust in government. As with FMNI, these are commonly cited  
489 concerns regarding the COVID-19 vaccine, but the rationale for these concerns may be rooted in  
490 experiences of systemic oppression leading to a lack of trust and VH (45). For example, society  
491 continues to privilege heterosexuality, which perpetuates the stigma and inequality negatively  
492 impacting gay and bisexual men (46). Furthermore, social marginalization and sexual health  
493 inequalities are found to contribute to behaviors such as unwillingness to seek and receive  
494 needed and adequate services and medical care (47). Indeed, historical and ongoing medical  
495 trauma, including misgendering and perceived emotional violence, have been found to be  
496 barriers to trust in the medical system and consequently to the uptake of COVID-19 vaccines (48).  
497 For example, Twitter data collected during COVID-19 found that posters used to promote COVID-  
498 19 vaccination were viewed as stigmatizing, akin to the promotion of preexposure prophylaxis

499 (18), a medication for people who do not have HIV but are at higher risk of exposure to it, via sex  
500 or injection-drug use (49). This showcases how a legacy of harm caused by healthcare institutions  
501 contributes to COVID-19 VH in this community of individuals (18). In addition, it was only in 1969  
502 that Prime Minister Pierre Trudeau’s proposed amendments to the Criminal Code permitted the  
503 decriminalization of homosexuality in Canada (50). The unique relationship between LGBT2SQ+  
504 and the government may help with the understanding of why some individuals in this subgroup  
505 are hesitant upon being asked to receive a COVID-19 vaccine. Broken trust, from a long history  
506 of oppression and persecution, needs to be rebuilt for greater adherence to vaccine mandates.

507 Contextual factors for Black Canadians: themes of perceived lack of autonomy, history of  
508 oppression and discrimination, and distrust of the healthcare system

509 Black participants in our research cited concerns regarding COVID-19 that largely reflect those of  
510 the general population, namely, distrusting healthcare providers/the healthcare system,  
511 rejection of vaccine mandates, and concerns about vaccine safety. However, the contextual  
512 factors discussed provide novel insight. In relation to vaccine mandates, participants described  
513 the denial of their rights and feeling that decisions were being made for members of the Black  
514 community and hesitancy related to medical distrust. These findings have been reported  
515 elsewhere in the Canadian context (51) and support calls to action Black-led partnerships  
516 between health care and stakeholders with existing trusted relationships in the community to  
517 increase confidence in SARS-CoV-2 vaccination in Black communities. This will also be an  
518 important consideration moving forward in the promotion of vaccination more broadly,  
519 particularly with novel vaccines to address emerging infectious diseases.



520 Contextual factors for low-income Canadians: themes of feeling misunderstood, distrust in the  
521 government, financial stress and unemployment threat, autonomy, and personal liberty

522 Low-income individuals in this study discussed feeling misunderstood by the government, which  
523 impacted their acceptance of the COVID-19 vaccines. Participants justified these feelings by  
524 sharing how they believe that those in power, namely, political leaders, have not experienced  
525 some of what the low-income community has experienced, creating a sense of disconnect  
526 between the two. Some of the distrust in authority and concerns of conflict of interest in this  
527 subgroup may arise from failures in a formal representative democracy of low-income  
528 individuals, which leads to situations where wealthy peoples' opinions carry more weight than  
529 the opinions of the poor (52). Representation is important because the preference in policies for  
530 higher income individuals may be different than that of the low-income subgroup (52). Lack of  
531 representation and communication between local government and members of this subgroup  
532 can greatly impact the trust that low-income individuals have in public health and government,  
533 both of which can lead to VH. Distrust in the government and feeling misunderstood by political  
534 leaders raises questions about the target demographic that benefits most from  
535 recommendations and mandates set about in response to COVID-19.

536 Low-income participants also cited concerns regarding the lack of prioritization of employment  
537 over vaccination status. The threat of unemployment is more salient for low-income individuals,  
538 since low-income individuals often do not have a safety net and experience barriers in access to  
539 quality food, housing care, and safety, as well as experience financial stress and poor mental health  
540 and more often engage in risky behaviors (53). In the context of vaccine mandates, losing their  
541 job and further aggravating their financial stress puts individuals with lower incomes in a

542 particularly unique place, where they adhere to COVID-19 vaccination, albeit begrudgingly. These  
543 factors contributed to discontent and anger toward the government, which may further  
544 exacerbate VH, and discussed defiance relating to the COVID-19 vaccines. Given that VH has been  
545 found to greatly affect individuals with lower socioeconomic status (e.g., lower education or  
546 income levels) (17), it is important that greater efforts are made to support this subgroup.

547 Contextual factors for newcomer to Canada: themes of support the government, and acceptance  
548 of vaccines

549 Newcomer participants were found to be generally accepting of the COVID-19 vaccine, a finding  
550 that is inconsistent with research suggesting that the odds of VH among immigrants in Canada  
551 are approximately two times greater than their Canadian-born counterparts (16). It is possible  
552 that this finding reflects the newcomer status – as one of perceived vulnerability – as our  
553 participants cited explanations for acceptance as they related to following the ‘rules’, doing what  
554 is asked of them, and not wanting to ‘throw away’ their new lives for not doing so. This is  
555 consistent with recent published work (e.g., see)(54)). It will be important to move forward to  
556 support newcomers to confidently accept vaccines and health information more broadly based  
557 on informed choice as opposed to perceived fear of punitive repercussions.

558 Eroded trust in the government and public health across equity-deserving subgroups

559 Underlying our themes and impacting the level of acceptance of novel vaccines across groups,  
560 appears to be an issue of eroding trust, particularly trust towards the government and public  
561 health. Previous research has found trust to be a critical factor impacting vaccine decision  
562 making, and thus VH (55,56). However, it has been suggested that a gap exists in the  
563 understanding of the process through which trust can be lost (57). It is important to acknowledge

564 that concepts of trust, mistrust and distrust are interrelated with one another, and that  
565 individuals experiencing VH may be able to change if the experiences they have with healthcare  
566 institutions and governments change (57). While it is possible for healthcare professionals to  
567 “partially repair the severed relationship” (57), this is simply a band-aid solution. Our findings  
568 provide some insight into contextual influences that may explain the process of losing trust across  
569 equity-deserving groups. **However, it is important to acknowledge that trust as a concept is quite**  
570 **complex, and that trust may be more difficult to (re)build if it has been eroding over many**  
571 **generations as opposed to being challenged during the COVID-19 pandemic.** Future research  
572 should keep exploring the process of losing trust and the role it has on VH, across different  
573 vaccines and population groups. **Identifying and understanding contextual factors driving**  
574 **vaccine-related attitudes and beliefs, and the historical, political, and sociocultural factors**  
575 **impacting VH, has the potential to support trust between equity-deserving groups and the**  
576 **Canadian government, and may support the development of interventions to increase the**  
577 **confident acceptance of vaccines, and particularly novel vaccines.**

#### 578 Going beyond tailored promotion efforts

579 **Our findings suggest that governments must work with equity-deserving groups to address**  
580 **vaccine-related anxieties and worries by acknowledging and responding to their needs. This**  
581 **approach may take different forms and will vary depending on the target population. While we**  
582 **did not co-develop our work with affected communities and acknowledge this as a limitation, our**  
583 **findings provide a foundation upon which to engage with communities and develop human-**  
584 **centered design strategies, such as co-creation, co-design, and co-production efforts, focused on**  
585 **VH across equity-deserving groups (58). For example, previous work done in Montreal, Canada,**

586 supports the benefits of these strategies to address VH among children and youth (59). Our work  
587 may help inform the design of strategies that can be used by researchers, government agencies,  
588 and policymakers to engage equity-deserving groups, taking into consideration the contextual  
589 factors shaping behaviors. A first step may be to acknowledge historical relationships with  
590 government and public health, respond to injustices of the past, and demonstrate  
591 trustworthiness and respect for including the voices of representatives of equity-deserving  
592 populations. Successful engagement with equity-deserving groups to promote vaccine  
593 acceptance, that take into consideration of the unique identities, experiences, and needs of  
594 underserved populations exist (61). This work might be replicated within Canada with a focus on  
595 individuals who identify as First Nations, Métis, Inuit, LGBT2SQ+, low-income and/or Black  
596 Canadians.

#### 597 Limitations

598 When collecting demographic data for participants involved in the study, level of education was  
599 not considered, despite being a key influencing factor of VH. While some sources interchangeably  
600 use education or level of income as a good indicator of SES, it is possible that data on low levels  
601 of education could have provided further insight into some of the themes presented. Political  
602 affiliation as a participant characteristic has also been suggested to be a strong influencing factor  
603 related to VH and should be a consideration in research investigating the acceptance of novel  
604 vaccines in the future. Our recruitment via Leger precluded us from obtaining perspectives of  
605 equity-deserving groups marginalized based on language (non-English or French speaking), those  
606 with the inability to be recruited or participate due to literacy or access to technology or from  
607 indigenous peoples living on reserve. **Lastly, we were not able to ensure congruence between**

608 interviewer and interviewee for all subgroups of focus. We acknowledge this is the limitation in  
609 both the collection, analysis, and interpretation of data. Our team will prioritize representation  
610 of marginalised populations, who understand the unique contexts of these communities in  
611 Canada, in future research.

612

### 613 **Conclusions**

614 VH is complex and multifaceted. This study highlights demographic and contextual factors  
615 associated with COVID-19 VH that are unique to equity-deserving groups within Canada. While  
616 the data regarding hesitancy largely mirror concerns reported in the vast body of literature citing  
617 rationale for COVID-19 hesitancy in high-income countries, the contextual factors related to  
618 historic and ongoing oppression point to the need for wider systemic change, over or in  
619 conjunction with tailored promotional materials. Herein, we identified novel themes – e.g.,  
620 fatalistic beliefs in divine will/predeterminism – that demonstrate a need for greater engagement  
621 with the community to better understand and support promotion efforts that do not run counter  
622 to belief systems. Our data provide government agencies and policymakers with an overview of  
623 the contextual factors influencing VH among equity-deserving groups that relate to unmet needs  
624 that should be addressed *before* we can expect attitudes and behaviours to change. Government  
625 and health officials might act on these findings by working with communities to co-design/co-  
626 produce efforts to address VH; going beyond simply tailoring promotional campaigns. As we  
627 “exit” the COVID-19 pandemic and see the emergence of novel infectious diseases and related  
628 vaccines, hesitancy in equity-deserving groups should continue to be a priority for public health  
629 across Canada. We focus here on historical and political factors that are and should continue to

630 be redressed to promote the confident acceptance of health promotion efforts now and moving  
631 forward.

632

633 **List of Abbreviations**

634 VH – Vaccine Hesitancy

635 GP – General Population

636 BC – Black Canadians

637 LGBT2SQ+ – Lesbian, Gay, Bisexual, Transgender, Two-Spirit, Queer, and additional sexual  
638 orientations, and gender identities under the LGBT2SQ+ umbrella.

639 FNMI – First Nations, Métis, and Inuit

640 LI – Low Income

641 N – Newcomer

642 NL – Newfoundland and Labrador

643 NS – Nova Scotia

644 ON – Ontario

645 AB – Alberta

646 BIPOC – Black, Indigenous, People of Color

647

648 **Declarations**

649 Ethics approval and consent to participate

650 Ethics approvals were granted by the University of Waterloo Research Ethics committee  
651 (approval number 42486).

652 Consent for publication

653 Participants have provided consent for interview data to be used for the write up and publication  
654 of this manuscript.

655 Availability of data and materials

656 Data are not available as it is a requirement of the ethics committee that data remain  
657 confidential.

658 Competing Interests

659 The author declares that there are no conflicts of interest.

660 Funding

661 This work was supported by the Canadian Institutes for Health Research Op. Grant: Emerging  
662 COVID-19 Research Gaps & Priorities—Confidence in science [# 466769] and a Social Sciences  
663 and Humanities Research Network Insight Development Grant [# 430-2020-00447].

664 Authors' contributions

665 Conceptualization: LGN, SBM, PRW, PB, MC

666 Data collection: SBM, EF, LGN, HH, BR, NAUI,

667 Formal analysis: LGN

668 Funding acquisition: SBM

669 Investigation: SBM

670 Writing: MHGN, SBM, PRW, PB, NAUI, EF, KEB

671 Methodology: SBM, PRW, PB, MC

672 Project administration: SBM

673 Resources: SBM

674 Supervision: SBM

675 Acknowledgements

676 We wish to acknowledge the trainees with whom we have worked that supported the collection  
677 of literature and data informing the present work.

678

679 **References**

- 680 1. Ogilvie M. OurWindsor. 2020 [cited 2022 Mar 7]. How a Toronto hospital handled Canada's  
681 first COVID-19 case: 'We didn't know this was a moment in history.' Available from:  
682 [https://www.ourwindsor.ca/news-story/10124148-how-a-toronto-hospital-handled-](https://www.ourwindsor.ca/news-story/10124148-how-a-toronto-hospital-handled-canada-s-first-covid-19-case-we-didn-t-know-this-was-a-moment-in-history-/)  
683 [canada-s-first-covid-19-case-we-didn-t-know-this-was-a-moment-in-history-/](https://www.ourwindsor.ca/news-story/10124148-how-a-toronto-hospital-handled-canada-s-first-covid-19-case-we-didn-t-know-this-was-a-moment-in-history-/)
- 684 2. Attwell K, Leask J, Meyer SB, Rokkas P, Ward P. Vaccine Rejecting Parents' Engagement  
685 With Expert Systems That Inform Vaccination Programs. *J Bioeth Inq.* 2017 Mar  
686 1;14(1):65–76.
- 687 3. Yoon S, Goh H, Matchar D, Sung SC, Lum E, Lam SSW, et al. Multifactorial influences  
688 underpinning a decision on COVID-19 vaccination among healthcare workers: a qualitative  
689 analysis. *Hum Vaccin Immunother.* 2022 Jun 10;
- 690 4. Akbar R. World Health Organization. 2019 [cited 2022 Mar 7]. Ten threats to global health  
691 in 2019. Available from: [https://www.who.int/news-room/spotlight/ten-threats-to-](https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019)  
692 [global-health-in-2019](https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019)



- 693 5. Dubé E, Gagnon D, MacDonald NE, Eskola J, Liang X, Chaudhuri M, et al. Strategies  
694 intended to address vaccine hesitancy: Review of published reviews. *Vaccine*. 2015 Aug  
695 14;33(34):4191–203.
- 696 6. Dubé E, Gagnon D, Ouakki M, Bettinger JA, Guay M, Halperin S, et al. Understanding  
697 vaccine hesitancy in Canada: Results of a consultation study by the Canadian Immunization  
698 Research Network. *PLoS One*. 2016 Jun 1;11(6).
- 699 7. Dubé E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger J. Vaccine hesitancy: An  
700 overview. Vol. 9, *Human Vaccines and Immunotherapeutics*. 2013. p. 1763–73.
- 701 8. MacDonald NE, Eskola J, Liang X, Chaudhuri M, Dube E, Gellin B, et al. Vaccine hesitancy:  
702 Definition, scope and determinants. *Vaccine*. 2015 Aug 14;33(34):4161–4.
- 703 9. Michelle Driedger S, Capurro G, Tustin J, Jardine CG. “I won’t be a guinea pig”: Rethinking  
704 public health communication and vaccine hesitancy in the context of COVID-19 [Internet].  
705 Vol. 41, *Vaccine*. Elsevier Ltd; 2023 [cited 2023 May 25]. p. 1–4. Available from:  
706 <https://pubmed.ncbi.nlm.nih.gov/36460532/>
- 707 10. Ward PR, Lunnay B, Foley K, Meyer SB, Thomas J, Olver I, et al. The Case of Australia Trust  
708 During Pandemic Uncertainty—A Qualitative Study of Midlife Women in South Australia.  
709 *International Journal of Social Quality(United States)*. 2021 Dec 1;11(1–2):289–308.
- 710 11. Aw J, Jie J, Seng B, Si S, Seah Y, Low LL. COVID-19 Vaccine Hesitancy-A Scoping Review of  
711 Literature in High-Income Countries. *Vaccines (Basel)* [Internet]. 2021; Available from:  
712 <https://doi.org/10.3390/vaccines9080900>

- 713 12. Robinson E, Jones A, Lesser I, Daly M. International estimates of intended uptake and  
714 refusal of COVID-19 vaccines: A rapid systematic review and meta-analysis of large  
715 nationally representative samples. Vol. 39, Vaccine. Elsevier Ltd; 2021. p. 2024–34.
- 716 13. Wang Q, Yang L, Jin H, Lin L. Vaccination against COVID-19: A systematic review and meta-  
717 analysis of acceptability and its predictors. *Prev Med (Baltim)*. 2021 Sep 1;150.
- 718 14. Sherman SM, Smith LE, Sim J, Amlôt R, Cutts M, Dasch H, et al. COVID-19 vaccination  
719 intention in the UK: results from the COVID-19 vaccination acceptability study (CoVAccS),  
720 a nationally representative cross-sectional survey. *Hum Vaccin Immunother*.  
721 2021;17(6):1612–21.
- 722 15. Government of Canada. Guide on Equity, Diversity and Inclusion Terminology [Internet].  
723 2022. Available from: [https://www.noslangues-  
724 ourlanguages.gc.ca/en/publications/equite-diversite-inclusion-equity-diversity-inclusion-  
725 eng#notion-69399](https://www.noslangues-ourlanguages.gc.ca/en/publications/equite-diversite-inclusion-equity-diversity-inclusion-eng#notion-69399)
- 726 16. Cénat JM, Noorishad PG, Moshirian Farahi SMM, Darius WP, Mesbahi El Aouame A, Onesi  
727 O, et al. Prevalence and factors related to COVID-19 vaccine hesitancy and unwillingness  
728 in Canada: A systematic review and meta-analysis. Vol. 95, *Journal of Medical Virology*.  
729 John Wiley and Sons Inc; 2023.
- 730 17. Aw J, Seng JJB, Seah SSY, Low LL. Covid-19 vaccine hesitancy—a scoping review of  
731 literature in high-income countries. Vol. 9, *Vaccines*. MDPI; 2021.

- 732 18. Griffith J, Marani H, Monkman H. COVID-19 vaccine hesitancy in Canada: Content analysis  
733 of tweets using the theoretical domains framework. *J Med Internet Res*. 2021 Apr 1;23(4).
- 734 19. Garg I, Hanif H, Javed N, Abbas R, Mirza S, Javaid MA, et al. COVID-19 Vaccine Hesitancy in  
735 the LGBTQ+ Population: A systematic review. Vol. 13, *Infectious Disease Reports*. MDPI;  
736 2021. p. 872–87.
- 737 20. Gerretsen P, Kim J, Caravaggio F, Quilty L, Sanches M, Wells S, et al. Individual  
738 determinants of COVID-19 vaccine hesitancy. *PLoS One* [Internet]. 2021 [cited 2022 May  
739 2]; Available from:  
740 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0258462>
- 741 21. Webber-Ritchey KJ, Simonovich SD, Spurlark RS. COVID-19: Qualitative Research With  
742 Vulnerable Populations. *Nurs Sci Q*. 2021 Jan 1;34(1):13–9.
- 743 22. City of Toronto. COVID 19: Ethno-Racial Identity & Income [Internet]. 2021 [cited 2023  
744 May 30]. Available from: [https://www.toronto.ca/community-people/health-wellness-  
745 care/health-programs-advice/respiratory-viruses/covid-19/covid-19-pandemic-  
746 data/covid-19-archived-dashboards/covid-19-ethno-racial-identity-income/](https://www.toronto.ca/community-people/health-wellness-care/health-programs-advice/respiratory-viruses/covid-19/covid-19-pandemic-data/covid-19-archived-dashboards/covid-19-ethno-racial-identity-income/)
- 747 23. Subedi R, Greenberg L, Turcotte M. COVID-19 mortality rates in Canada’s ethno-cultural  
748 neighbourhoods [Internet]. 2020 [cited 2023 May 30]. Available from:  
749 <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00079-eng.htm>
- 750 24. Prokopenko E, Kevins C. Vulnerabilities related to COVID-19 among LGBTQ2+ Canadians  
751 [Internet]. 2022 [cited 2023 May 30]. Available from:

- 752 <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00075->  
753 [eng.htm#correction-notice](https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00075-eng.htm#correction-notice)
- 754 25. Ng E. COVID-19 deaths among immigrants: Evidence from the early months of the  
755 pandemic [Internet]. 2021 [cited 2023 May 30]. Available from:  
756 <https://www150.statcan.gc.ca/n1/en/pub/45-28-0001/2021001/article/00017->  
757 [eng.pdf?st=cEvYc3Yy](https://www150.statcan.gc.ca/n1/en/pub/45-28-0001/2021001/article/00017-eng.pdf?st=cEvYc3Yy)
- 758 26. da Silva DT, Biello K, Lin WY, Valente PK, Mayer KH, Hightow-Weidman L, et al. Covid-19  
759 vaccine acceptance among an online sample of sexual and gender minority men and  
760 transgender women. *Vaccines (Basel)*. 2021;9(3):1–10.
- 761 27. Newman PA, Reid L, Tepjan S, Fantus S, Allan K, Nyoni T, et al. COVID-19 vaccine hesitancy  
762 among marginalized populations in the U.S. And Canada: Protocol for a scoping review.  
763 *PLoS One*. 2022 Mar 1;17(3 March).
- 764 28. Larson HJ, Clarke RM, Jarrett C, Eckersberger E, Levine Z, Schulz WS, et al. Measuring trust  
765 in vaccination: A systematic review. Vol. 14, *Human Vaccines and Immunotherapeutics*.  
766 Taylor and Francis Inc.; 2018. p. 1599–609.
- 767 29. McKinnon B, Quach C, Dubé È, Tuong Nguyen C, Zinszer K. Social inequalities in COVID-19  
768 vaccine acceptance and uptake for children and adolescents in Montreal, Canada. *Vaccine*.  
769 2021 Dec 3;39(49):7140–5.

- 770 30. Government of Canada. Government of Canada. 2021 [cited 2022 Mar 7]. COVID-19  
771 vaccine willingness among Canadian population groups. Available from:  
772 <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2021001/article/00011-eng.htm>
- 773 31. Charmaz K. Constructing Grounded Theory [Internet]. 2nd ed. Seaman J, editor. SAGE  
774 Publications Ltd; 2014 [cited 2022 Nov 7]. Available from: [https://us.sagepub.com/en-](https://us.sagepub.com/en-us/nam/constructing-grounded-theory/book235960#features)  
775 [us/nam/constructing-grounded-theory/book235960#features](https://us.sagepub.com/en-us/nam/constructing-grounded-theory/book235960#features)
- 776 32. Dick, Bob. Convergent interviewing essentials [Internet]. 2017. Available from:  
777 <http://www.aral.com.au/resources/coin.pdf>
- 778 33. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–  
779 101.
- 780 34. Malo B, Labbé F, Meyer SB, Filice E, Graham JE, MacDonald NE, et al. “I Want People to Be  
781 Able to Make an Informed Choice”: How Quebec naturopaths discuss vaccination in their  
782 practice. *Vaccine*. 2023 Jun 13;
- 783 35. Ontario Ministry of Health. COVID-19 Vaccine Guidance [Internet]. 2023 [cited 2023 Jun  
784 22]. Available from:  
785 [https://health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVI](https://health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccine_administration.pdf)  
786 [D-19\\_vaccine\\_administration.pdf](https://health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccine_administration.pdf)
- 787 36. Government of Canada. Archive 22: Recommendations on the use of COVID-19 vaccines  
788 [2021-10-22] [Internet]. 2021 [cited 2023 Jun 22]. Available from:

- 789 <https://www.canada.ca/en/public-health/services/immunization/national-advisory->  
790 [committee-on-immunization-naci/recommendations-use-covid-19-vaccines.html](https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/recommendations-use-covid-19-vaccines.html)
- 791 37. Momplaisir F, Haynes N, Nkwihoreze H, Nelson M, Werner RM, Jemmott J. Understanding  
792 Drivers of Coronavirus Disease 2019 Vaccine Hesitancy among Blacks. *Clinical Infectious*  
793 *Diseases*. 2021 Nov 15;73(10):1784–9.
- 794 38. Dubé E, Gagnon D, Nickels E, Jeram S, Schuster M. Mapping vaccine hesitancy-Country-  
795 specific characteristics of a global phenomenon. *Vaccine*. 2014;32(49):6649–54.
- 796 39. Padhi BK, Goel K, Sahoo KC, Naeem U, Yasmin F, Najeeb H, et al. COVID-19 Vaccine  
797 Hesitancy in the United States: A Systematic Review. 2021;9:770985. Available from:  
798 [www.frontiersin.org](http://www.frontiersin.org)
- 799 40. Lane S, MacDonald NE, Marti M, Dumolard L. Vaccine hesitancy around the globe: Analysis  
800 of three years of WHO/UNICEF Joint Reporting Form data-2015–2017. *Vaccine*. 2018 Jun  
801 18;36(26):3861–7.
- 802 41. Mosby I, Swidrovich J. Medical experimentation and the roots of COVID-19 vaccine  
803 hesitancy among Indigenous Peoples in Canada. Vol. 193, *CMAJ*. Canadian Medical  
804 Association; 2021. p. E381–3.
- 805 42. Rodriguez J. To tackle vaccine hesitancy, Canada can't ignore race, racism: health experts.  
806 CTV News [Internet]. 2020 [cited 2022 Jun 8]; Available from:  
807 <https://www.ctvnews.ca/health/coronavirus/to-tackle-vaccine-hesitancy-canada-can-t->  
808 [ignore-race-racism-health-experts-1.5234212](https://www.ctvnews.ca/health/coronavirus/to-tackle-vaccine-hesitancy-canada-can-t-ignore-race-racism-health-experts-1.5234212)

- 809 43. Ontario. Ontario Identifies Key Groups for Distribution of Initial COVID-19 Vaccines  
810 [Internet]. 2020. Available from: [https://news.ontario.ca/en/release/59508/ontario-](https://news.ontario.ca/en/release/59508/ontario-identifies-key-groups-for-distribution-of-initial-covid-19-vaccines)  
811 [identifies-key-groups-for-distribution-of-initial-covid-19-vaccines](https://news.ontario.ca/en/release/59508/ontario-identifies-key-groups-for-distribution-of-initial-covid-19-vaccines)
- 812 44. Greenwood M, MacDonald N. VACCINE MISTRUST: A LEGACY OF COLONIALISM. Vol. 193,  
813 CMAJ. Canadian Medical Association; 2021. p. E381–3.
- 814 45. Garg I, Hanif H, Javed N, Abbas R, Mirza S, Javaid MA, et al. COVID-19 Vaccine Hesitancy in  
815 the LGBTQ+ Population: A Systematic Review. 2021; Available from:  
816 <https://doi.org/10.3390/idr13040079>
- 817 46. Halkitis PN. Discrimination and homophobia fuel the HIV epidemic in gay and bisexual  
818 men. American Psychological Association [Internet]. 2012; Available from:  
819 [https://www.apa.org/pi/aids/resources/exchange/2012/04/discrimination-](https://www.apa.org/pi/aids/resources/exchange/2012/04/discrimination-homophobia#)  
820 [homophobia#](https://www.apa.org/pi/aids/resources/exchange/2012/04/discrimination-homophobia#)
- 821 47. Wolitski RJ, Fenton KA. Sexual health, HIV and sexually transmitted infections among gay,  
822 bisexual and other men who have sex with men in the United States. AIDS Behav [Internet].  
823 2011 Apr [cited 2022 Nov 19];15(SUPPL. 1). Available from:  
824 <https://link.springer.com/article/10.1007/s10461-011-9901-6>
- 825 48. Azucar D, Slay L, Valerio DG, Kipke MD. Barriers to COVID-19 Vaccine Uptake in the  
826 LGBTQIA Community. Am J Public Health. 2022 Mar 1;112(3):405–7.
- 827 49. hivinfo.nih.gov. HIV Prevention - Pre-Exposure Prophylaxis (PrEP) [Internet]. 2021 [cited  
828 2023 May 30]. Available from: <https://hivinfo.nih.gov/understanding-hiv/fact-sheets/pre->





- 849 55. Deml MJ, Buhl A, Huber BM, Burton-Jeangros C, Tarr PE. Trust, affect, and choice in  
850 parents' vaccination decision-making and health-care provider selection in Switzerland.  
851 *Sociol Health Illn.* 2022 Jan 1;44(1):41–58.
- 852 56. Peretti-Watel P, Ward JK, Vergelys C, Bocquier A, Raude J, Verger P. 'I Think I Made The  
853 Right Decision ... I Hope I'm Not Wrong'. Vaccine hesitancy, commitment and trust among  
854 parents of young children. *Sociol Health Illn.* 2019 Jul 1;41(6):1192–206.
- 855 57. Nurmi J, Jaakola J. Losing trust: Processes of vaccine hesitancy in parents' narratives. *Soc*  
856 *Sci Med* [Internet]. 2023 Jul;116064. Available from:  
857 <https://linkinghub.elsevier.com/retrieve/pii/S0277953623004215>
- 858 58. Vargas C, Whelan J, Brimblecombe J, Allender S. Co-creation, co-design and co-production  
859 for public health: a perspective on definitions and distinctions. *Public Health Res Pract.*  
860 2022 Jun 1;32(2).
- 861 59. McKinnon B, Abalovi K, Vandermorris A, Dubé È, Nguyen CT, Billou N, et al. Using human-  
862 centred design to tackle COVID-19 vaccine hesitancy for children and youth: A protocol for  
863 a mixed-methods study in Montreal, Canada. *BMJ Open.* 2022 Apr 5;12(4).
- 864 60. Aya Pastrana N, Agudelo-Londoño S, Franco-Suarez O, Otero Machuca J, Guzman-  
865 Tordecilla DN, López Sánchez MC, et al. Improving COVID-19 vaccine uptake: a message  
866 co-design process for a national mHealth intervention in Colombia. *Glob Health Action.*  
867 2023 Dec 31;16(1):2242670.

868