Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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"We need to protect each other": COVID-19 vaccination intentions and concerns among Racialized minority and Indigenous Peoples in Canada

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ABSTRACT

People may choose to receive vaccines in response to pressures that outweigh any concerns that they have. We explored Racialized minority and Indigenous Peoples' motivations for, perceptions of choice in, and concerns about, COVID-19 vaccination. We used a sequential explanatory mixed methods approach, including a national survey administered around the time vaccines were first authorized (Dec 2020) followed by qualitative interviews when vaccines were becoming more readily available to adults (May–June 2021). We analyzed survey data using descriptive statistics and interviews using critical feminist methodologies.

Survey respondents self-identified as a Racialized minority (n = 1488) or Indigenous (n = 342), of which 71.4% and 64.6%, respectively, intended to receive a COVID-19 vaccine. Quantitative results indicated perceptions of COVID-19 disease were associated with vaccination intention. For instance, intention was associated with agreement that COVID-19 disease is severe, risk of becoming sick is great, COVID-19 vaccination is necessary, and vaccines available in Canada will be safe ($p < 0.001$). COVID-19 vaccines were in short supply in Canada when we subsequently completed qualitative interviews with a subset of Racialized minority (n = 17) and Indigenous (n = 10) survey respondents. We coded interview transcripts around three emergent themes relating to governmentality and cultural approaches to intersectional risk theories: feelings of collective responsibility, choice as privilege, and remaining uncertainties about COVID-19 vaccines. For example, some mentioned the responsibility and privilege to receive a vaccine earlier than those living outside of Canada. Some felt constraints on their freedom to choose to receive or refuse a vaccine from intersecting oppressions or their health status. Although all participants intended to get vaccinated, many mentioned uncertainties about the safety and effectiveness of COVID-19 vaccination. Survey respondents and interview participants demonstrated nuanced associations of vaccine acceptance and hesitancy shaped by perspectives of vaccine-related risks, symbolic associations of vaccines with hope, and intersecting social privileges and inequities (including racialization).

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1. Introduction

Due to the disproportionate impacts of COVID-19 and initial procurement challenges (Ismail et al., 2020b), public health advisory groups in many high-income countries, including Canada, recommended prioritizing populations expected to be at high risk of exposure and/or severe disease for earlier access to COVID-19 vaccines (Ismail et al., 2020b; NACI, 2021a). Several public health organizations, researchers, and popular discourses voiced concerns about whether people subjected to historical and contemporary medical mistreatment, experimentation, and racism would refuse COVID-19 vaccination (Mosby and Swidrovich, 2021; Razai et al., 2021), echoing pre-pandemic concerns regarding other vaccines (Boerner et al., 2013; Driedger et al., 2015).

Previous COVID-19 vaccination intention research in high-income countries, including Canada, has framed vaccine acceptance as a reasonable response to vaccine availability (Gerretsen et al., 2021; Troiano and Nardi, 2021). In contrast, few studies have investigated individuals' rationales for accepting rapidly developed vaccines (Rosenthal and Cummings, 2021) that were approved under Emergency Use or Interim Order Authorizations, especially early in the rollout. For instance, how did people weigh the risks, uncertainties, and benefits of vaccination? How free did they feel their choice was to be vaccinated? This study examined intentions and motivations to receive COVID-19 vaccines by analyzing data collected from: 1) a national survey conducted in the third wave immediately after COVID-19 vaccines were authorized for emergency use (December 10–24, 2020), and 2) qualitative interviews completed during the fourth wave when vaccine procurement had improved and vaccine eligibility was expanded to most adults (April to June 2021) (CIHI, 2022). The national survey assessed trends in COVID -19 vaccine intention across diverse populations, while the qualitative interviews explored social factors shaping survey respondents' perceptions of risk and motivations to receive COVID-19 vaccines. We used an intersectional approach to combine complementary aspects of risk theories to interpret how power relations, emotion, and cultural understandings are enmeshed in public health governance and risk assessment (Douglas, 1994; Foucault, 2004; Giritli Nygren et al., 2020; Lupton, 2013; Zinn, 2016).

1.1. Context: COVID-19 vaccination in Canada

The first two COVID-19 vaccines (both on mRNA platforms) were authorized by Health Canada on December 9, 2020 and December 23, 2020, respectively (CIHI, 2022). On February 26 and March 5, 2021, two viral vector vaccines were authorized, although only one was available in Canada during this study (CIHI, 2022). Provincial and territorial health systems began COVID-19 vaccine rollout on December 14, 2020 in stages, starting with prioritized populations considered highest risk of COVID-19 exposure or severe disease, informed by recommendations from the National Advisory Committee on Immunization (NACI) (Ismail et al., 2020b), although groups included for each stage differed between the various provinces and territories. Prioritization recommendations were then expanded to include those in congregate living settings (e.g., quarters for migrant workers, prisons, shelters, group homes), adults 60 years of age and older, adults in diverse Racialized minority communities disproportionately affected by COVID-19, first responders, other essential workers who are highly-exposed to COVID-19, and primary caregivers for individuals at high risk of severe illness (NACI, 2021a). Indigenous (First Nations, Métis, and Inuit) communities and individuals were also prioritized for early vaccination in most provinces and territories (Stats Can, 2021).

Aside from these prioritized populations, most Canadians became eligible for COVID-19 vaccination between early-mid 2021 and may have been motivated to receive the vaccine because daily cases of COVID-19 were relatively high in most provinces from late March to May 2021 (CIHI, 2022), but some still experienced barriers to access (King et al., 2022; Sebring et al., 2022). By December 2021, over 87% of Canadians 12 years and older (>76% of the total population) had received a complete primary series of COVID-19 vaccines (Government of Canada, 2021). Adult COVID-19 vaccine uptake was substantially higher than other routine and pandemic vaccines in Canada and internationally (Troiano and Nardi, 2021).

COVID-19 vaccines were rolled out after nearly a year of restrictive public health measures, social isolation, and economic disruptions. They were expected to reduce disease transmission, protect against severe disease, relieve burden in healthcare settings, and initiate a transition away from restrictive measures. In this context, vaccines held immense emotional and symbolic value associated with the ritual of getting vaccinated and shaping the future of the COVID-19 pandemic (Brown, 2020). Yet, the novelty of COVID-19 vaccine and public health discourses promoting vaccination as the 'responsible' choice left many people uncertain about vaccine safety, effectiveness, and freedom of choice (Razai et al., 2021; Rosenthal and Cummings, 2021).

1.2. Theoretical approaches to risk, uncertainty, and vaccination

Our analysis is informed by governmentality (Foucault, 2004), cultural (Douglas, 1994), and intersectional approaches to risk theories (Giritli Nygren et al., 2020). From a governmentality perspective, public health discourses and policies about risk are shaped by power relations, and are one strategy (or apparatus of security) used to encourage individuals to pursue socially desired behaviors (Ayo, 2012), such as receiving vaccines (Foucault, 2004). Vaccines are particularly moralized because they are intended to protect individuals through personal immunity and populations by reducing transmission (Connell and Hunt, 2010). We draw on Foucault's concept of governmentality to analyze governance through discourses and education, as well as through social consequences (e.g., stigmatization, blame) for socially unacceptable health choices (Lupton, 2013), including vaccine refusal (Foucault, 2004; Reich, 2020).

Insights from Douglas's cultural approach to risk are useful to understand how stigmatization is directed towards those who already experience oppression (e.g., homophobia surrounding HIV/AIDS) (Douglas, 1994). During and before COVID-19, moral judgments of others' health behaviors were situated in pre-existing values and norms (Douglas, 1994), which (re)produce the stigmatization of social groups widely believed to be "risky" to others, social order, or health (Joshi and Swarnakar, 2021; Lupton, 2013). Blame for risk becomes "a tool for control" to maintain existing power relations (Joshi and Swarnakar, 2021, p. 494) in ways that align with governmentality approaches to understanding how responsibility for mitigating health risks are assigned (Ayo, 2012; Connell and Hunt, 2010; Lupton, 2013). Within that framing, stigmatization of those deviating from vaccination and public health recommendations is prevalent because they are seen as risky to others (Reich, 2020; Thompson and Kumar, 2011; Ward et al., 2017).

From an intersectional perspective, which groups are labeled "risky" are shaped by racism, colonialism, and oppressions at intersecting axes (e.g., poverty, gender, sexual orientation, ability, age) (Giritli Nygren et al., 2020). In Canada, oppression from systemic racism manifests differently for diverse and distinct Racialized minority or Indigenous Peoples. Indigenous Peoples on the land claimed by the Canadian state are survivors of genocide and colonialism from diverse First Nations, Métis, and Inuit cultures, nations, and communities. Racialized minorities represent diverse cultures and ethnicities, ranging from peoples who migrated more than seven generations ago to temporary residents. Experiences and implications of Canada's dominant power relations (white, settler, colonial) manifest differently for Racialized minority and Indigenous individuals based on intersecting social identities, but all are disadvantaged by systemic racism (Hogarth and Fletcher, 2018).

Racism and other systemic power relations shape the extent to which individual perceptions, emotions, and behavioral responses to health risks are constrained by access to resources and social acceptability

(Olofsson et al., 2014; Zinn, 2019). For example, real and perceived risks of potential loss of income or employment from time off to recover from vaccine side effects differ by income and job security. Various intersecting sites of privilege and oppression shape how experts and lay people combine risk assessment strategies, including what Zinn (2016) describes as "rational" (cost-benefit calculations), "non-rational" (faith, hope), and "in-between" strategies (experience, trust, emotion). Lupton (2013, p. 240) argues that emotion and risk are always linked in an "emotion-risk assemblage," meaning that "emotion and risk interact with each other and in the process, configure each other." For example, people form understandings of themselves or others as "risky" based on both literal and cultural boundaries between groups based on social class, age, ethnicity, and other social identifiers (Lupton, 2013). As such, discourses about public health risk are *always* shaped by emotion and power relations.

People assess and navigate risks associated with ambiguity or liminality (e.g., transition between states) with heightened emotional assessments (e.g., anxiety) (Brown, 2020; Lupton, 2013). From a cultural perspective, this anxiety emerges "because transition is neither one state nor the next, it is undefinable" (Douglas, 2002, p. 119). COVID-19 vaccination decisions are made at the juncture of several ambiguous or liminal states (Manca et al., 2022). First, the asymptomatic spread of COVID-19 (especially un/under-vaccinated bodies) facilitates anxieties about ambiguity between health and illness, contagion and safety. Second, during the early waves of the pandemic, vaccines evoked hope and symbolism of a transition out of the pandemic. Third, prior to September 2021 (and throughout this study), COVID-19 vaccines were in a transitional state between interim order and full authorization in Canada. Deciding about newly developed vaccines during a pandemic was a novel (and likely emotional) experience for residents in high-income countries.

In this manuscript, we flip common discourses framing vaccine refusal as abnormal by instead investigating why people accepted COVID-19 vaccines. We focused on intentions to vaccinate among Racialized minority and Indigenous Peoples (i.e., excluding white populations). Although Racialized minority and Indigenous Peoples have reason to distrust medical institutions due to experiences of differential care and mistreatment (Mosby and Swidrovich, 2021; Razai et al., 2021; Varcoe et al., 2019), they may also be motivated to get vaccinated because of risk of COVID-19 exposure and/or severe disease due to higher exposure jobs, less resources to follow public health guidelines, and higher incidences of comorbidities due to inequities (Giritli Nygren and Olofsson, 2020; Hogarth and Fletcher, 2018; Laster Pirtle and Wright, 2021).

1.3. Data and methods

We utilized an explanatory mixed methods study design (Shorten and Smith, 2017). First, we analyzed data from a national survey to investigate COVID-19 perspectives and vaccination intentions among those who self-identified as Racialized minority and Indigenous populations. Second, we interviewed a sub-sample of survey respondents with the purpose of gaining further insights into vaccination intentions, motivations, and concerns. The experiences of white populations are beyond the scope of this study.

1.4. Survey

We conducted a national cross-sectional online survey (N = 5028) from December 10–24, 2020, to gather perceptions about future COVID-19 vaccines. Respondents were selected from a pre-existing panel (Leger, 2021) of >400,000 Canadians representative of provincial population, gender, and age demographics (Stats Can, 2016). Respondents were over 18 years old, proficient in English or French, and had internet access. We purposefully sampled respondents who self-identified with a Racialized minority or Indigenous group. The survey was developed using previously validated questions about vaccination, pre-tested within the research team, and piloted with 20 individuals from the public. Previous publications include further details about the survey methods, rigor, and validity (Humble, 2021; Reifferscheid, 2022).

We analyzed survey responses from Racialized minority (N = 1488) and Indigenous (N = 342) respondents. Our primary variable of interest was intention to receive a COVID-19 vaccine. Respondents were asked, "If a safe and effective COVID-19 vaccine is available to me, I plan to get vaccinated" with a 5-point Likert response scale collapsed into three categories (strongly disagree/disagree, neither agree nor disagree, agree/strongly agree). Other variables of interest included: perceived risk of becoming sick with COVID-19 and belief about the severity of disease, perceived necessity and confidence in the safety of future COVID-19 vaccines, and sociodemographic variables.

We calculated descriptive statistics (frequencies and percentages) and the association between respondents' intention to get a COVID-19 vaccine and other variables of interest. Comparisons used Chi-square and Fisher's Exact (as appropriate) to calculate adjusted standardized residuals ($p < 0.05$); post hoc Bonferroni analysis was used to confirm significance in multiple category crosstabs. Due to the online survey completion requirements, no data was missing. We used SPSS version 26.0 (IBM, Chicago, IL, USA) for the analysis.

1.5. Semi-structured interviews

Thirteen percent of Racialized minority (n = 196) and 18% of Indigenous (n = 61) survey respondents consented to be contacted for follow-up interviews. We purposefully selected interview participants to ensure diversity across ethnic identities, province of residence, and socio-economic status (e.g., income, education, employment). We preferentially invited participants who identified barriers to accessing healthcare to gain insights into motivations for accessing COVID-19 vaccines among individuals who may have needed to exert more effort into accessing the vaccines (e.g., lengthy commutes, lack of accommodations for mobility concerns). The purposeful inclusion of participants with diverse demographic characteristics intended to generate insights into how intersecting social locations shape vaccine intentions and experiences of infectious disease risks. Although this convenience sample of participants represented many demographic groups in Canada, it under-represented more marginalized groups, including those with irregular internet access and limited proficiency in English or French.

We emailed interview invitations to 36 Racialized minority and 17 Indigenous survey respondents. Twenty-seven participants (17 Racialized minority and 10 Indigenous) completed 30–60 min semi-structured interviews in English (n = 23) or French (n = 4) over video conferencing or telephone between April and June 2021 (before vaccine passports were required to access non-essential services in any Canadian provinces or territories) (CIHI, 2022). Participants received a $40 gift card via email. To protect participants' privacy, we used pseudonyms, grouped Racialized minority and Indigenous identities into broad categories, and shared demographic data that cannot lead to identification (Table 2).

Interviews gathered participants' accounts of how their pandemic experiences were shaped by resource access (e.g., healthcare), experiences as Racialized minority or Indigenous Peoples, and intersecting social inequities, including health conditions. We approached the interviews from a feminist approach that values the knowledge that oppressed peoples have into systemic problems and inequities (Choo and Ferree, 2010). The semi-structured interview guide was informed by our feminist approach and survey responses about experiences during the pandemic, perceptions of COVID-19 disease and vaccines, vaccination intentions, and reasons for getting vaccinated (Supplementary Content) and was adapted in real time. For example, if a participant mentioned health conditions or discrimination shaping vaccine intentions, our follow-up questions explored those topics. Participants responded to questions with their personal experiences, reflections

based on observations from events in their communities, and combinations of personal experience and observations.

Interviews were transcribed and analyzed using a critical feminist methodological approach to discourse analysis (Lazar, 2007). Three researchers (EC, LA, TM) coded transcripts and developed a coding guide using NVivo 12 software (QSR International, Burlington, MA). Throughout analysis, we applied inductive approaches attentive to emerging themes in the data and abductive approaches that applied challenging feminist, intersectional, and risk theories. Incorporating abductive approaches into our analysis facilitated the creative application and combination of theories (governmentality, cultural, intersectional risk theories) (Tavory and Timmermans, 2014), to show how power relations around race, colonialism, and intersecting sites of oppression shape personal accounts about vaccination. Researchers engaged in reflexivity by recording reflections in annotations and memos, and regularly meeting to discuss how our identities and positionality as researchers shaped analysis.

2. Results

2.1. Survey

In total, 1488 survey respondents self-identified as a Racialized minority and 342 as Indigenous (see Table 1). Over half (56%) of Racialized minority respondents primarily spoke English and 7.6% spoke French, which are dominant languages in Canada, whereas 36.1% primarily spoke non-dominant languages. A third of Racialized minority respondents were born in Canada (33.4%), 26.7% arrived in the past five years, and 39.9% more than five years ago. Twenty-one percent of Indigenous respondents resided on a First Nations reserve or Métis settlement, whereas 50.9% resided in urban and 25.1% in rural settings.

Most Racialized minority (71.4%) and Indigenous (64.6%) respondents intended to receive a COVID-19 vaccine. Vaccination intentions among Racialized minority respondents were associated with level of education, annual household income, province, and primary language spoken at home (Table 1). There was lower intention among Racialized minority respondents with a non-university certificate or diploma ($p = 0.016$), and higher intention among those with an annual household income $\geq$ $80,000 ($p = 0.024$). There was a lower proportion of high vaccination intention among respondents from Québec ($p = 0.025$) and Racialized minority respondents who primarily spoke French ($p = 0.001$). Although not significant, there was higher vaccination intention among Racialized minority and Indigenous respondents diagnosed with a chronic illness (72.9% and 67.4% respectively), compared to those who reported no chronic illness (70.9% and 61.4% respectively).

Most Racialized minority and Indigenous respondents who intended to receive a COVID-19 vaccine agreed that COVID-19 disease is severe (81.0% and 81.1% respectively), and that they are at risk for becoming sick (83.7% and 82.5% respectively). We found positive associations ($p < 0.001$) between Racialized minority and Indigenous respondents' vaccination intention and their perceived risk of becoming sick with COVID-19 and COVID-19 disease severity.

Most Racialized minority (82.1%) and Indigenous (76.0%) respondents who intended to receive a COVID-19 vaccine agreed that vaccination against COVID-19 is necessary, and that COVID-19 vaccines that will be available in Canada would be safe (91.4% and 89.2% respectively). We found positive associations ($p < 0.001$) between Racialized minority and Indigenous respondents' vaccination intention and their agreement in the necessity of and confidence in the safety of COVID-19 vaccines available in Canada.

2.2. Semi-structured interviews

Of the 27 interview participants, 10 had received, 16 intended to receive (once eligible), and one spoke positively about the COVID-19 vaccine without mentioning her intention (Table 2). We expected high acceptance of COVID-19 vaccines because we purposefully invited participants who anticipated barriers to accessing vaccines for another study objective (Aylsworth). We organized findings into three themes that emerged from coding transcripts, synthesizing data (reflecting on relationships among codes), and informing analysis with existing theory and literature. These three themes include collective responsibility for self-governance, intersecting privileges and constraints, and remaining uncertainties about COVID-19 vaccines.

2.2.1. Collective responsibility for self-governance

Participants frequently shared feelings of togetherness, often using "we" to describe the shared experience of the pandemic and communal effort necessary to overcome the pandemic. Drawing on governmentality and cultural risk theories, these statements are demonstrative of self-governance towards getting vaccinated to protect oneself and others, and the symbolic value of vaccines (as a material object) and getting vaccinated (as a ritual practice) or passage out of the pandemic (desirable future events) (see Brown, 2020). Harmeet, a newcomer from India, explained, "the sooner we get vaccinated for this virus the better it would be for all of us." Similarly, Camila's main reason to get vaccinated was to protect strangers: "I don't want this only for me, I want this for everybody …. thinking about giving [COVID-19] to someone that is older and that person dying is something that really freaks me out …. the thought of hurting somebody … It's scary." Camila drew from her experience as a newcomer from Brazil and that of her friends who were newcomers to explain that, for newcomers: "you are enjoying the new life …. what I got from most of my friends, they were like, 'I can't wait to get the vaccine'." Nonetheless, Camila demonstrated the complexity of vaccine acceptance when suggesting that some of her friends had concerns about COVID-19 vaccines, but accepted the hope that COVID-19 vaccines symbolized because "they just want this to be over." In these statements, participants took up public health discourses about the collective responsibility to receive a vaccine to protect oneself and/or others, maintain community safety, and hopefully transition out of the pandemic.

Several participants expressed frustration towards unvaccinated others, who they saw as not acting responsibility. Shawn, a second-generation Canadian, expressed both frustration and understanding towards anyone hesitating to get vaccinated:

> I just want [COVID-19] to be over with, and if people would just listen and do what's supposed to be done. And people … should be taking [the] vaccine once it's here–but I can see someone being skeptical.

Participants demonstrated an expectation that others follow the expert public health discourses advising that high vaccine uptake should end the pandemic. That expectation shows how expert discourses are diffused through micro relations (Foucault, 2004), such as interpersonal interactions, emotional responses to risks, and cultural understandings of unvaccinated bodies as risky to others (Lupton, 2013).

However, some participants reflected on social inequality within their communities using reasoning that aligned with intersectionality, showing awareness of the need for communal responsibility and support beyond self-governance and blame. Tanya, who identified as First Nations and worked in public health and health promotions for First Nations communities, described the shared necessity and responsibility for communal care work beyond vaccination:

> [The one thing] COVID has shown to me is that community care is so important and …, public health is, by definition, community care and not … an individual thing … For all of us to be healthy, we all have to be healthy, and we need to protect each other.

Tanya understood the risks of COVID-19 as entangled with long-standing social inequities that disproportionately affect people in her community. She listed frustrations about social inequities that

Table 1
Survey respondent characteristics, perceptions of COVID-19 disease and vaccination, and intentions to vaccinate.

Characteristics[1]		% (n)	Intention to receive a COVID-19 vaccine, % (n)			p-value
			High	Neutral	Low	
Racialized minority respondents						
COVID-19 vaccination intention		(N = 1488)	71.4 (1062)	18.9 (281)	9.7 (145)	
Self-identified ethnicity	East Asian (e.g., Chinese, Filipino, Japanese, Korean, Vietnamese)	37 (550)	**76.7 (422)**$^{+}$	17.5 (96)	**5.8 (32)**$^{-}$	**<.001**
	South Asian (e.g., Indian, Sri Lankan)	26 (387)	71.1 (275)	20.4 (79)	8.5 (33)	
	Black (e.g., African, Haitian, Jamaican)	11.9 (177)	**53.1 (94)**$^{-}$	**27.7 (49)**$^{+}$	**19.2 (34)**$^{+}$	
	Arabic/West Asian/North African (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)	9.7 (144)	68.1 (98)	19.4 (28)	12.5 (18)	
	Latin/Central American (e.g., Mexican, Colombian, Brazilian, Cuban)	7.9 (117)	69.2 (81)	16.2 (19)	14.5 (17)	
	Mixed ethnicity[2]	7.6 (113)	81.4 (92)	8.8 (10)	9.7 (11)	
Migration status	Born in Canada	33.4 (497)	72.0 (358)	17.3 (86)	10.7 (53)	0.427
	New to Canada >5 years (before 2016)	39.9 (594)	72.4 (430)	18.2 (108)	9.4 (56)	
	New to Canada ≤5 years (2016–2020)	26.7 (397)	69.0 (274)	21.9 (87)	9.1 (36)	
Province	British Columbia	17.9 (267)	70.8 (189)	21.7 (58)	7.5 (20)	**0.025**
	Prairies[3]	15.7 (233)	76.4 (178)	15.5 (36)	8.2 (19)	
	Ontario	49.8 (741)	72.5 (537)	18.4 (136)	9.2 (68)	
	Québec	14.7 (218)	**62.8 (137)**$^{-}$	21.6 (47)	**15.6 (34)**$^{+}$	
	Atlantic provinces[4]	1.9 (29)	72.4 (21)	13.8 (4)	13.8 (4)	
Age	15–29 years	37.2 (554)	72.4 (401)	18.1 (100)	9.6 (53)	0.024
	30–39 years	32.5 (483)	67.7 (327)	19.5 (94)	12.8 (62)	
	40–49 years	17.2 (256)	72.7 (186)	22.3 (57)	5.1 (13)	
	50–59 years	9.1 (136)	72.8 (99)	16.9 (23)	10.3 (14)	
	≥60 years	4.0 (59)	83.1 (49)	11.9 (7)	5.1 (3)	
Gender	Woman	53.8 (800)	71.1 (569)	19.5 (156)	9.4 (75)	0.924
	Man	45.6 (679)	71.6 (486)	18.3 (124)	10.2 (69)	
	Gender minority	0.6 (9)	77.8 (7)	11.1 (1)	11.1 (1)	
Highest level of education	High school or less	17.5 (260)	68.8 (179)	21.5 (56)	9.6 (25)	**0.016**
	Non-university certificate or diploma (college/ apprenticeship)	15.7 (234)	64.1 (150)	20.9 (49)	**15.0 (35)**$^{+}$	
	University certificate or Bachelor's	45.8 (682)	74.0 (505)	17.6 (120)	8.4 (57)	
	More than a Bachelor's	20.4 (304)	73.7 (224)	17.1 (52)	9.2 (28)	
	Prefer not to answer	0.5 (8)	50.0 (4)	50.0 (4)	0.0 (0)	
Annual household income	< $40,000	22.7 (338)	66.6 (225)	23.4 (79)	10.1 (34)	**0.024**
	$40,000–79,000	30.0 (446)	69.3 (309)	19.1 (85)	11.7 (52)	
	≥ $ 80,000	47.3 (704)	**75.0 (528)**$^{+}$	16.6 (117)	8.4 (59)	
Language spoken most often at home	English	56.0 (833)	72.4 (603)	18.0 (150)	9.6 (80)	**0.001**
	French	7.9 (118)	**59.3 (70)**$^{-}$	20.3 (24)	**20.3 (24)**$^{+}$	
	Non-dominant languages	36.1 (537)	72.4 (389)	19.9 (107)	7.6 (41)	
Do you have, or have you been diagnosed with a chronic disease or condition[5]	Yes	23.1 (343)	72.9 (250)	18.1 (62)	9.0 (31)	0.769
	No	76.9 (1145)	70.9 (812)	19.1 (219)	10.0 (114)	
The COVID-19 disease is severe	Agree	79.5 (1183)	**81.0 (958)**$^{+}$	**13.1 (155)**$^{-}$	**5.9 (70)**$^{-}$	**<.001**
	Neutral					

(*continued on next page*)

Table 1 (*continued*)

Characteristics[1]		% (n)	Intention to receive a COVID-19 vaccine, % (n)			p-value
			High	Neutral	Low	
Racialized minority respondents						
		12.5 (186)	**34.9 (65)**$^{-}$	**50.5 (94)**$^{+}$	14.5 (27)	
	Disagree	8.0 (119)	**32.8 (39)**$^{-}$	26.9 (32)	**40.3 (48)**$^{+}$	
I am at risk for becoming sick from COVID-19 disease	Agree	40.5 (602)	**83.7 (504)**$^{+}$	**11.5 (69)**$^{-}$	**4.8 (29)**$^{-}$	**<.001**
	Neutral	29.6 (440)	**63.0 (277)**$^{-}$	**28.2 (124)**$^{+}$	8.9 (39)	
	Disagree	30.0 (446)	**63.0 (281)**$^{-}$	19.7 (88)	**17.3 (77)**$^{+}$	
Vaccination against COVID-19 is necessary because the risk of getting the COVID-19 virus in Canada is great	Agree (more likely to vaccinate)	71.9 (1070)	**82.1 (878)**$^{+}$	**11.3 (121)**$^{-}$	**6.6 (71)**$^{-}$	**<.001**
	Neutral	16.9 (251)	**27.1 (68)**$^{-}$	**51.8 (130)**$^{+}$	**21.1 (53)**$^{+}$	
	Disagree (less likely to vaccinate)	11.2 (167)	69.5 (116)	18.0 (30)	12.6 (21)	
I am completely confident that the COVID-19 vaccines(s) that will be available in Canada will be safe	Agree (more likely to vaccinate)	57.2 (851)	**91.4 (778)**$^{+}$	**6.7 (57)**$^{-}$	**1.9 (16)**$^{-}$	**<.001**
	Neutral	31.4 (467)	**50.7 (237)**$^{-}$	**39.0 (182)**$^{+}$	10.3 (48)	
	Disagree (less likely to vaccinate)	11.4 (170)	**27.6 (47)**$^{-}$	24.7 (42)	**47.6 (81)**$^{+}$	
Indigenous respondents						
COVID-19 vaccination intention		(N = 342)	64.6 (221)	17.5 (60)	17.8 (61)	
Self-identified Indigenous groups	First Nations	45.9 (157)	64.3 (101)	19.1 (30)	16.6 (26)	**0.022***
	Métis	44.7 (153)	68.0 (104)	15.7 (24)	16.3 (25)	
	Inuk[6]	3.8 (13)	38.5 (5)	7.7 (1)	**53.8 (7)**$^{+}$	
	Other	3.5 (12)	75.0 (9)	8.3 (1)	16.7 (2)	
	Prefer not to answer	2.0 (7)	28.6 (2)	**57.1 (4)**$^{+}$	14.3 (1)	
Where do you live?	First Nations reserve, Métis settlement or Inuit community	21.3 (73)	57.5 (42)	21.9 (16)	20.5 (15)	0.200*
	Urban setting[7]	50.9 (174)	71.3 (124)	13.2 (23)	15.5 (27)	
	Rural setting[8]	25.1 (86)	57.0 (49)	22.1 (19)	20.9 (18)	
	Prefer not to answer	2.6 (9)	66.7 (6)	22.2 (2)	11.1 (1)	
Province of residence	British Columbia	12.9 (44)	68.2 (30)	22.7 (10)	9.1 (4)	0.129
	Prairies[3]	25.4 (87)	62.1 (54)	17.2 (15)	20.7 (18)	
	Ontario	21.6 (74)	54.1 (40)	24.3 (18)	21.6 (16)	
	Québec	33.9 (116)	71.6 (83)	10.3 (12)	18.1 (21)	
	Atlantic provinces[4]	6.1 (21)	66.7 (14)	23.8 (5)	9.5 (2)	
Age	15–29 years	26.9 (92)	62.0 (57)	15.2 (14)	22.8 (21)	0.080
	30–39 years	24.0 (82)	67.1 (55)	18.3 (15)	14.6 (12)	
	40–49 years	22.5 (77)	53.2 (41)	24.7 (19)	22.1 (17)	
	50–59 years	12.9 (44)	65.9 (29)	15.9 (7)	18.2 (8)	
	≥60 years	13.7 (47)	83.0 (39)	10.6 (5)	6.4 (3)	
Gender	Woman	52.0 (178)	62.4 (111)	16.9 (30)	20.8 (37)	0.440*
	Man	45.3 (155)	65.8 (102)	18.7 (29)	15.5 (24)	
	Gender minority	2.6 (9)	88.9 (8)	11.1 (1)	0.0 (0)	
Highest level of education	High school or less	22.8 (78)	65.4 (51)	17.9 (14)	16.7 (13)	0.805*
	Non-university certificate or diploma (college/ apprenticeship)	41.2 (141)	61.0 (86)	17.0 (24)	22.0 (31)	
	University certificate or Bachelor's	27.2 (93)	67.7 (63)	18.3 (17)	14.0 (13)	
	More than a Bachelor's	7.6 (26)	73.1 (19)	15.4 (4)	11.5 (3)	
	Prefer not to answer	1.2 (4)	50.0 (2)	25.0 (1)	25.0 (1)	
Annual household income	< $40,000	24.6 (84)	61.9 (52)	17.9 (15)	20.2 (17)	0.674

(*continued on next page*)

Table 1 (*continued*)

Characteristics[1]		% (n)	Intention to receive a COVID-19 vaccine, % (n)			p-value
			High	Neutral	Low	
Racialized minority respondents						
	$40,000–79,999	35.7 (122)	65.6 (80)	14.8 (18)	19.7 (24)	
	≥ $ 80,000	39.8 (136)	65.4 (89)	19.9 (27)	14.7 (20)	
Language spoken most often at home	Indigenous	3.2 (11)	45.5 (5)	36.4 (4)	18.2 (2)	**0.016***
	English	62.0 (212)	63.7 (135)	20.3 (43)	16.0 (34)	
	French	31.0 (106)	71.7 (76)	10.4 (11)	17.9 (19)	
	Minority languages	3.8 (13)	38.5 (5)	15.4 (2)	46.2 (6)	
Do you have, or have you been diagnosed with a chronic disease or condition[5]	Yes	53.8 (184)	67.4 (124)	13.6 (25)	19.0 (35)	0.114
	No	46.2 (158)	61.4 (97)	22.2 (35)	16.5 (26)	
The COVID-19 disease is severe	Agree	68.1 (233)	**81.1 (189)$^{+}$**	**12.0 (28)$^{-}$**	**6.9 (16)$^{-}$**	**<.001**
	Neutral	18.7 (64)	**37.5 (24)$^{-}$**	**32.8 (21)$^{+}$**	29.7 (19)	
	Disagree	13.2 (45)	**17.8 (8)$^{-}$**	24.4 (11)	**57.8 (26)$^{+}$**	
I am at risk for becoming sick from COVID-19 disease	Agree	51.8 (177)	**82.5 (146)$^{+}$**	**10.7 (19)$^{-}$**	**6.8 (12)$^{-}$**	**<.001**
	Neutral	25.4 (87)	56.3 (49)	**27.6 (24)$^{+}$**	16.1 (14)	
	Disagree	22.8 (78)	**33.3 (26)$^{-}$**	21.8 (17)	**44.9 (35)$^{+}$**	
Vaccination against COVID-19 is necessary because the risk of getting the COVID-19 virus in Canada is great	Agree (more likely to vaccinate)	67.0 (229)	**76.0 (174)$^{+}$**	**11.8 (27)$^{-}$**	**12.2 (28)$^{-}$**	**<.001**
	Neutral	17.3 (59)	**32.2 (19)$^{-}$**	**42.4 (25)$^{+}$**	25.4 (15)	
	Disagree (less likely to vaccinate)	15.8 (54)	**51.9 (28)$^{-}$**	14.8 (8)	**33.3 (18)$^{+}$**	
I am completely confident that the COVID-19 vaccines(s) that will be available in Canada will be safe	Agree (more likely to vaccinate)	56.7 (194)	**89.2 (173)$^{+}$**	**6.2 (12)$^{-}$**	**4.6 (9)$^{-}$**	**<.001**
	Neutral	24.0 (82)	**45.1 (37)$^{-}$**	**36.6 (30)$^{+}$**	18.3 (15)	
	Disagree (less likely to vaccinate)	19.3 (66)	**16.7 (11)$^{-}$**	27.3 (18)	**56.1 (37)$^{+}$**	

Notes.
*Comparisons use Fisher's Exact to calculate adjusted standardized residuals (expected number of observations <5).
+ Proportion is higher than what was expected by chance.
- Proportion is lower than what was expected by chance.
[1] Significant difference at $p < 0.05$ in a Chi-square analysis of adjusted standardized residuals are indicated in bold font.
[2] Participants who self-identified as belonging to two or more Racialized minority groups and/or white and Racialized minority groups.
[3] Prairie provinces include Alberta, Saskatchewan, and Manitoba.
[4] Atlantic provinces include PEI, Nova Scotia, New Brunswick, and Newfoundland and Labrador.
[5] Chronic conditions: diabetes, liver or kidney disease, cancer, immunocompromised, obesity, or dementia.
[6] Few respondents self-identified as Inuk (n = 13) or 'other' (n = 12), therefore intention results for sub-populations are not statistically reliable (p =.022*).
[7] Urban setting (a city that is not on a First Nations reserve, Métis settlement, Inuit community).
[8] Rural setting (not a First Nations reserve, Métis settlement, Inuit community).

negatively affect health in many (not all) First Nations communities, including inadequate "access to clean running water," bans on the use of alcohol-based hand sanitizer, crowded and inadequate housing, and limited access to healthcare. Her reasoning shows how these inequalities put people at risk *and* limit agency to follow public health measures:

> Having adequate resources allowed some people to stay safer than others …. It's not that people got COVID because they were behaving badly, they had to go to work every day, that was the reality, it was that or they didn't have a place to live, and you know, the judgment, I think that went along with COVID infections as well.

Tanya linked stigmatization and blame for not following public health measures (including vaccination) to social inequities, systemic racism, and colonialism. For Tanya, collective responsibility centered on resolving long-standing inequities that limit access to resources needed to follow public health recommendations, rather than only self-governance.

2.2.2. *Intersecting privileges and constraints*

Several participants further demonstrated intersectional thinking by articulating how a matrix of privileges and constraints shaped their decisions about public health risks, including vaccination. Hanna, who self-identified as Black and a recent university graduate, reflected on the privileges of accessing COVID-19 vaccines and what she perceived as excessive vaccine procurement in Canada. She stated, "Being a part of a G20 country, … part of a Eurocentric nation, I'm directly benefiting from it." Hanna explained that her new job as a schoolteacher facilitated earlier access to a COVID-19 vaccine than her peers. She expressed feelings of privilege when explaining that she successfully sought out a specific mRNA vaccine product that was less likely to cause allergic reactions because of her personal history of anaphylactic allergies. Similarly, Maria, who migrated to Canada with her husband in 2019,

Table 2
Interview participant summary (N = 27).

Pseudonym	Gender	Age	Region	Ethnic identity	Geographic location	Years of residence in Canada (participants who migrated only)	Vaccine status in interview (April to May 2021)
Indigenous participants							
Alain	Man	35	QC	Métis	Urban		1st dose scheduled
Cossette	Woman	74	QC	Métis	Rural		2nd dose scheduled
Déborah	Woman	60	MB	Métis	Urban		Vaccinated (1 dose)
Denise	Woman	44	SK	Métis	Urban		1st dose scheduled
Ed	Man	53	BC	First Nations	Urban		Vaccinated (2 doses)
Justin	Man and gender non-conforming	38	ON	Indigenous without further specification	Urban		Vaccinated (1 dose)
Keith	Man	33	BC	Métis	Urban		Waiting to become eligible
Susan	Woman	35	MB	Métis	Urban		1st dose scheduled
Sylvie	Woman	70	ON	Indigenous without further specification	Rural		2nd dose scheduled
Tanya	Woman	42	ON	First Nations	Rural		Missing
Racialized minority participants							
Abdulla	Man	25	MB	South Asian	Urban	>5 years in Canada	1st dose scheduled
Adam	Man	47	ON	West Asian	Urban	>5 years in Canada	Waiting to become eligible
Camila	Woman	33	QC	Latin	Urban	<5 years in Canada	Waiting to become eligible
Canna	Woman	48	AB	South Asian	Urban	>5 years in Canada	Waiting to become eligible
Fadwa	Woman	41	QC	North African	Urban	<5 years in Canada	1st dose scheduled
Hanna	Woman	23	BC	Black	Urban		Vaccinated (1 dose)
Harmeet	Man	37	ON	South Asian	Urban	<5 years in Canada	Waiting to become eligible
Jasnoor	Woman	19	QC	South Asian	Urban	<5 years in Canada	Waiting to become eligible
Jennifer	Woman	53	BC	East Asian	Urban		Vaccinated (1 dose)
Maria	Woman	32	AB	Latin	Urban	<5 years in Canada	Waiting to become eligible
Mohammed	Man	39	BC	South Asian	Urban		Waiting to become eligible
Olabisi	Woman	18	AB	Black	Urban	<5 years in Canada	Vaccinated (1 dose)
Rohan	Man	20	MB	South Asian	Urban	<5 years in Canada	Waiting to become eligible
Shawn	Man	41	ON	Missing	Urban		Waiting to become eligible
Tomás	Man	33	BC	Latin	Urban	<5 years in Canada	Waiting to become eligible
Vidhi	Woman	44	ON	South Asian	Urban		Vaccinated (1 dose)
Yeri	Woman	45	ON	East Asian	Urban		Vaccinated (1 dose)

expressed discomfort about accessing vaccines earlier than those overseas, "I don't feel a lot in danger for myself, but it bothers me that so many people are dying and suffering, especially, … back in Brazil." Hanna and Maria's discomfort with the privilege Canadian residents had to access vaccines earlier than people in low- and middle-income countries reflects awareness of privilege and acceptance of the unique symbolic value of vaccination when compared to other public health measures.

Participants also spoke to how discrimination and systemic inequities shaped their pandemic-related experiences and decisions. Jasnoor, a 19-year-old South Asian international student who wanted to be vaccinated to protect others, explained that she felt pressure to "follow the pandemic regulations" in public spaces. She elaborated:

> It's always the small thing present at the back of my mind, is my ethnicity or the fact that I am not from here, I'm not a citizen—that might lead to any prejudice or discriminatory behavior against me by maybe the hospital staff.

Without mentioning personal experiences with discrimination, Jasnoor implied that she followed pandemic regulations to avoid being "judged more harshly by other people or by the police" in Québec "as a person of color, as an immigrant," and as a non-Francophone. Similarly, Jennifer, an asthmatic parent of a child with special needs, described how anti-Chinese racism shaped her experiences. She described feeling "like I was getting blamed [for COVID-19] because of my skin color", as people would "give you dirty looks, as if you caused it." While participants did not directly link these experiences to their vaccine intentions, we hypothesize that they affected perceptions of freedom of choice in and necessity of vaccination among diverse Racialized minority and Indigenous Peoples. Discussions of experiences with discrimination reflect insights from theory and research into how responses to risk naturalize assumptions that already oppressed people are risky (Brown and Zinn, 2021; Douglas, 1994; Giritli Nygren et al., 2020; Joshi and Swarnakar, 2021; Lupton, 2013).

Health status also shaped participants' perceptions of choice about vaccination. Cossette, a Métis senior and retired nurse, stated she was "anti-vaccine" and had "always been against vaccines," but instructed her husband, "to get the vaccine" because of his age and health concerns. He told her if she did not also get vaccinated, she could still get COVID-19 "and then I will die." In response, Cossette said, "We both got the vaccine" (translated from French). Several participants talked about COVID-19 vaccination as a life-or-death issue. Identifying as "a bigger person" with asthma, Shawn explained:

> But if [I] get the COVID, then I'm probably going to end up dying anyways …. So I'm like 60/40 or 70/30 to go get [the vaccine]. But I know that I should go and get it.

Like other participants who perceived COVID-19 to be particularly dangerous to themselves or loved ones, Shawn favored the uncertainties about the vaccine over the risks of COVID-19 disease.

2.2.3. Remaining uncertainties about COVID-19 vaccines

Despite receiving or intending to receive a vaccine, many participants felt uncertain about the new COVID-19 vaccines' safety, effectiveness, and long-term effects. Rohan, who came to Canada from Bangladesh for university, distrusted information that pharmaceutical manufacturers provided: "As it is a business model for them, they will only advertise the pros and the cons like if it's a matter of life and death. I think they should be more transparent about the cons." Despite feeling like it was "still really early" and "governments were speeding up the process," Rohan intended to receive a COVID-19 vaccine when he became eligible, explaining, "I feel like it's a bit more tested now, … [I'm] a bit more comfortable with it." Likewise, Fadwa who was immunocompromised and originally from North Africa, explained, "I'm not anti-vaccine at all. It has saved the world from a lot of epidemics …. My reluctance is really in relation to the novelty" (translated from French). Fadwa recognized the successes of vaccines for containing deadly diseases, but stated concerns about "genetically modified

messenger RNA in my body," which aligned with popular (albeit scientifically unsupported) uncertainties about mRNA vaccines at the time.

Many participants expressed hesitancy towards a particular available vaccine, the viral vector vaccine, because of its association with rare vaccine-induced immune thrombotic thrombocytopenia (VITT), a widespread concern in Canada at the time of the interviews. Mohammad preferred to receive an mRNA vaccine when eligible because he had "read an obituary of somebody in the UK who died of blood clots getting that vaccine in her brain." Effectiveness was another concern with viral vector vaccines. Abdulla stated that he wanted the vaccine "that has the highest effectiveness." Seeking out specific COVID-19 platforms was one means for participants to seek control while grappling with their uncertainties about novel COVID-19 vaccines and liminality of the pandemic.

Participants weighed the risks of COVID-19 as worse than their uncertainties about vaccine safety. One participant (pseudonym omitted for confidentiality) had chronic obstructive pulmonary disease and had previously used novel drugs to manage HIV. They explained,

> "you look at the HIV crisis, I mean they weren't approving medications to be used, but people were just going and saying, 'Look people are dying, give us the pills anyway,' right. So, it's interesting you live through one pandemic, still an epidemic, like that and you're more open to something like this."

This participant was prioritized for and received a COVID-19 vaccine early in the rollout. They acknowledged and dismissed the relevance of long-term effects to their vaccine decision, given the increased disease severity associate with their health conditions.

Other participants expressed concerns about vaccine access and timing because of an initial shortage of vaccine doses. At the time of interviews, NACI (2021b) and most provinces recommended a four-month spacing between the first and second mRNA vaccine doses, whereas manufacturers recommended three or four weeks (BioNTech SE and Pfizer, 2021; ModernaTX, 2021). Vidhi asked, "if it's that long, am I more or less just getting the first dose again?" Vidhi wanted both doses of the vaccine following manufacturers' recommendations.

Several participants changed their minds once eligible to receive COVID-19 vaccine. Justin explained:

> If you'd asked me like a week before I got the shot …, I think I would have said, 'Well, I'm going to think about it, then I'll probably get it.' But when the option came up, I don't even remember making a decision, it was just, 'Yeah okay. I'll be there.'

Justin, who identified as Indigenous without further specification, had his appointment booked for him by his mother when Canada was prioritizing Indigenous Peoples for early vaccination. Furthermore, Denise, who identified as Métis, said that the experience of having to isolate her family who tested positive for COVID-19 gave her "lived experience" to overcome her hesitations towards the vaccine. She explained, "if you would have asked me in December 'be the first one to get it,' I don't think I would have put up my hand." As a smoker, she wondered if she was at increased risk of rare adverse events following vaccination. Yet, after her husband tested positive for the disease, she began advocating to others in her community to "protect your family" by getting vaccinated because "no matter how safe you think you're being … you don't even know when it's [COVID-19] going to creep up and it can affect your whole life."

Several participants wanted to see the effects of the first dose before deciding about a second. After receiving one vaccine dose, Cossette had "more concerns" and was undecided if she would complete her vaccine series. Jennifer had received a first dose and said she was "about 70% going to get [her second]," but would wait until "two weeks until after [others around her] get the shot and see if they are okay" before deciding. She attributed her concerns to information on YouTube about someone who: "got into some weird paralyzation after the second shot. And then, my friend has friends in India where it is really bad for COVID …. her relatives died after the second shot." Jennifer's account uses various information sources and strategies that Zinn (2016) argues inform all risk assessments (e.g., weighing pros and cons, following expertise, felt responses).

3. Discussion

Although four vaccines were authorized for use in Canada before and during this study, vaccine procurement remained challenging and much of the population was waiting to become eligible to access COVID-19 vaccines. Consistent with other Canadian studies (Benham et al., 2021; Gerretsen et al., 2021; Ogilvie et al., 2021), most survey respondents and interview participants intended to receive a COVID-19 vaccine. Moreover, most survey respondents who intended to receive a vaccine agreed that COVID-19 disease was severe, and vaccination was necessary. This finding is consistent with studies on acceptability of other vaccines, in which acceptability was linked to perceived susceptibility to and severity of disease, and perceived effectiveness and importance of vaccination (Ismail et al., 2020a). Interview participants intended to accept COVID-19 vaccination to protect themselves and others, resume social activities, and contribute to the communal responsibility (and hope) of ending the pandemic. Their personal accounts demonstrate how intersecting discourses, social inequities, power relations, and health conditions shape COVID-19 vaccine decisions.

Vaccine supportive and hesitant perspectives are often dichotomized in the literature, which over-represents perspectives from white majority populations (Goldenberg, 2021). However, both survey respondents and interview participants expressed perspectives that challenge this dichotomy. In December 2020, before vaccines were readily available in Canada, a substantial minority of survey respondents reported that they intended to get vaccinated *and* indicated that they were unsure or disagreed that COVID-19 vaccines would be safe. Results are consistent with the H1N1 pandemic where individuals expressed concerns about the novel vaccines, however ultimately accepted vaccination (Boerner et al., 2013; Driedger et al., 2015; Henrich and Holmes, 2009). Interview participants favorably assessed the uncertainties around getting vaccinated (e.g., long-term side effects, safety and effectiveness), versus the risk of COVID-19 disease (e.g., severe illness, death, contagion to vulnerable others). Several interview participants reflected on their earlier indecision about the vaccine, suggesting their decisiveness increased as the pandemic progressed, new information about COVID-19 vaccination emerged, and more people received COVID-19 vaccines. These findings support understandings of vaccine refusal and acceptance as a dynamic spectrum, ranging from refusal of all vaccines to cautious or full acceptance of most or all vaccines (Goldenberg, 2021).

From a governmentality perspective (Foucault, 2004), interview participants' use of "we" and emphasis on communal responsibility echoed discourses that govern oneself and others towards taking individual actions to reduce collective health risks. Participants emphasized the importance of getting vaccinated to lower risks from COVID-19 for the Canadian population, their communities and households, and themselves. By accepting and actively demanding vaccination of themselves, many participants echoed discourses of personal responsibility and risk, which are typically mobilized without attention to inequities in access to the resources needed to take on responsibility (Giritli Nygren and Olofsson, 2020). From both governmentality and cultural perspectives, discourses about and responses to risk simultaneously motivate risk adverse actions and maintain dominant power relations across intersecting social locations, for example by enabling blame of populations without access to resources (Brown and Zinn, 2021; Manca, 2021).

While discussing communal responsibility, interview participants situated themselves in relation to dominant power relations. Some mentioned the uncomfortable privilege of accessing vaccines earlier

than individuals living in other countries. Yet, many shared concerns that they, and diverse marginalized individuals, were less free to deviate from public health recommendations than those with social and health privileges. All interview participants who mentioned chronic health conditions felt they needed the vaccine even if they were concerned about vaccine safety for someone with their health conditions, which tend to be disproportionately experienced by Racialized minority and Indigenous Peoples as a result of systemic inequities (Hankivsky, 2012; Hogarth and Fletcher, 2018; Laster Pirtle and Wright, 2021). Despite these findings in the interviews, the correlation between vaccination intention and chronic illness was not significant in survey results from this study, which did not control for specific health conditions. Other studies have observed significant correlations between chronic health conditions (e.g., chronic lung disease) and COVID-19 vaccine uptake (Schwarzinger et al., 2021; Tsai et al., 2022), suggesting that chronic health conditions may be a major influencer in how individuals assess their personal risks from COVID-19.

Interview data supports intersectional and cultural risk theories, showing how sites of oppression reproduce social inequities through a diffusion of risk and blame onto those with the least power (Douglas, 1994; Giritli Nygren et al., 2020; Lupton, 2013). For instance, consistent with other studies throughout the pandemic (Joshi and Swarnakar, 2021; Laster Pirtle and Wright, 2021), participants discussed intersecting forms of discrimination constraining their decisions regarding public health guidelines and vaccination. Tanya described how individuals who are least able to reduce their risks from COVID-19 are subjected to blame and stigmatization for being risky. Her description shows the inadequacy of self-governance to protect diverse oppressed populations from blame for not following public health guidelines when they lack access to material resources necessary to do so (Douglas, 1994; Lupton, 2013), and were overlooked in many countries' pandemic responses (Giritli Nygren and Olofsson, 2020; Manca, 2021). Calls for personal responsibility appear sufficient for those at intersecting sites of privilege with the resources to decide how much to protect themselves (e.g., white, wealthy, cisgendered men) and justify blame towards individuals at intersecting sites of oppression for problems beyond their control (e.g., Racialized minorities, Indigenous Peoples, lower-income peoples, women, and gender minorities). Interview participants weighed their uncertainties about COVID-19 vaccines against both the dangers of COVID-19 disease and the social repercussions that arise from being stigmatized and blamed.

Finally, participants shared concerns about the COVID-19 vaccines that were circulating in news, social media, and public discourse at the time of the interviews (e.g., blood clots, long-term vaccine effects). They discussed interactions between the liminal states between contagion and safety, the pandemic and normalcy, and vaccine novelty and long-term evidence. In doing so, they used "rational", "in-between", and "non-rational" risk assessment strategies (Zinn, 2016). For rational strategies, they weighed the pros of getting vaccinated for themselves and their communities against their uncertainties about the vaccines with consideration for their personal health status. They drew on in-between strategies when they expressed emotions (e.g., fear of COVID-19 disease) and/or relied on trust in and experience with routine vaccines. They also utilized non-rational strategies, such as hope that COVID-19 vaccines would facilitate a return to non-pandemic interactions. How individuals utilize these strategies, interpret individual responsibility, and label others as risky are shaped by power relations, cultural values, access to resources, among other social focuses (Brown and Zinn, 2021; Olofsson et al., 2014; Zinn, 2016, 2019).

3.1. Limitations

There is much more diversity in Canada than can be represented by the survey respondents and interview participants or this manuscript. We reduced complex identities and personal histories into descriptive categories to provide snapshots into some of the influences on Racialized minority and Indigenous Peoples' decisions about COVID-19 vaccines. Participants were invited from a sub-sample of a panel who requested to receive email survey invitations from Leger, which excludes those who lack regular access to the internet due to poverty, living in an institutionalized setting, choice, and other reasons. We cannot know if or how social desirability shaped survey or interview participant responses. Finally, we asked participants about experiences within their communities but did not directly ask about how racism or discrimination shaped their vaccine intentions, and therefore, cannot know how widespread experiences of racism were among participants.

4. Conclusion

In this study, we shifted focus away from the perspectives of under- and unvaccinated individuals and towards understanding acceptance and the symbolic value of vaccines as something worthy of investigation. The benefits of vaccination only exist in relation to risks of disease. Grappling with the anxiety from the ambiguity associated with COVID-19 contagion and the transition from the pandemic to post-pandemic, individuals sought security from novel vaccines despite feelings of risk associated with their transition from a novel pharmaceutical product to long-term use. How people interpret, assess, and weigh those risks is shaped by a myriad of social factors, including discourses of responsibility, systemic inequities, power relations, and cultural values. We specifically investigated Racialized minority and Indigenous Peoples' vaccination intentions and decisions to gain insights into vaccine experiences within their communities. Participants often echoed discourses about personal responsibility that govern individuals towards accepting vaccination. In doing so, they demonstrated how extensively discourses about risk and personal responsibility shape understandings of vaccine uptake and personal responsibility for communal health risks. Other participants commented on the limitations of those discourses regarding constraints on choice, access to resources, or experiences of discrimination. Our results demonstrate intersecting social inequities may shape *both* hesitancies *and* motivations for vaccination. This information aids in supporting vaccine decision making across diverse populations.

Ethics approval

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

Declaration of authors competing interest

TM, RMH, LA, SEM, DG, EC, SBM, JPL, and SEW have no conflicts of interest to declare. MS has been an investigator on projects funded by GlaxoSmithKline, Merck, Moderna, Pfizer, Sanofi-Pasteur, Seqirus, Symvivo and VBI Vaccines. All funds have been paid to his institute, and he has not received any personal payments.

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Author credit

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Data availability

The data that has been used is confidential.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2022.115400.

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