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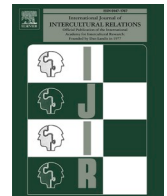
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Socio-cultural correlates of self-reported experiences of discrimination related to COVID-19 in a culturally diverse sample of Canadian adults

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ABSTRACT

Minorities and marginalized groups have increasingly become the target of discriminatory actions related to the COVID-19 pandemic. Detailed information about the manifestation of COVID-related discrimination is required to develop preventive actions that are not stigmatizing for such groups. The present study investigates experiences of perceived discrimination related to COVID-19 and its socio-cultural correlates in a culturally diverse sample of adults in Quebec (Canada). An online survey was completed by 3273 Quebec residents (49 % 18–39 years old; 57 % female; 49 % White). We used multivariate binomial logistic regression models to assess prevalence of COVID-related discrimination and to investigate socio-cultural correlates of reasons and contexts of discrimination. COVID-related discrimination was reported by 16.58 % of participants. Non-white participants, health-care workers and younger participants were more likely to experience discrimination than White, unemployed and older participants, respectively. Discrimination was reported primarily in association with participants' ethno-cultural group, age, occupation and physical health and in the context of public spaces. Participants of East-Asian descent and essential workers were more likely to report discrimination because of their ethnicity and occupation, respectively. Although young people experienced discrimination across more contexts, older participants were primarily discriminated in the context of grocery stores and because of their age. Our findings indicate that health communication actions informed by a social pedagogy approach should target public beliefs related to the association of COVID-19 with ethnicity, age and occupation, to minimize pandemic-related discrimination. Visible minorities, health-care workers and seniors should be protected and supported, especially in public spaces.

Introduction

The COVID-19 pandemic is affecting global health, societies and economies around the world, and fueling fear, discrimination and xenophobic discourses in the general population. There is considerable intersectionality between the pandemic's impact on health and issues of structural inequality and racism in many countries. Discrimination refers to the unjust treatment of an individual based on a

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category/group to which the individual belongs, such as race, age or gender (Krieger, 2000). The study of discrimination is crucial given that discrimination has a significant impact on physical health and personal wellbeing (Berry & Hou, 2016; 2017). Othering processes and disease-related stigma and discrimination targeting minorities and marginalized groups are common in epidemics (Eaton & Kalichman, 2020; Reny & Barreto, 2020), and COVID-19 is no exception. Since the start of the pandemic in December 2019, minorities and marginalized groups have been the target of COVID-19 discriminatory actions (Devakumar, Shannon, Bhopal, & Abubakar, 2020; Ransing et al., 2020; Singh & Subedi, 2020). The World Health Organization has called for increased attention to prevent stigma and discrimination associated with COVID-19, underlining how this health emergency has exacerbated pre-existing social, economic and political fractures and injustices within communities and societies (World Health Organization, 2020a). Detailed information about the manifestation of COVID-related discrimination is required to develop preventive actions that do not stigmatize minorities and other targeted groups. The current study aims to document experiences of COVID-related discrimination in a culturally diverse sample of adults to inform policy development and public health messaging aimed at building a safer and more inclusive society during the pandemic. Reducing COVID-related stigma and discrimination in the general population can promote disease prevention efforts and reduce health disparities (Eaton & Kalichman, 2020; Logie & Turan, 2020).

Ethno-cultural group, age, occupation and COVID-19 related discrimination

The COVID-19 virus was first identified in late December 2019 in Wuhan, Hubei Province, China (World Health Organization, 2020b). The highly-contagious virus causes a respiratory infection and spreads through respiratory droplets produced when an infected person coughs, sneezes or talks. Older adults are at a significantly increased risk of developing severe and debilitating illness from COVID-19 (World Health Organization, 2020b), because of the coexistence of multiple risk factors such as physiological changes associated with aging, multimorbidity, and pre-existing social and health issues. These characteristics of the virus as well as the harmful declarations of political representatives linking the spread of the virus to specific countries, ethnicities or age groups in several countries may have contributed to shaping targets of COVID-related discrimination (Devakumar et al., 2020).

Globally, people of Chinese or Asian descent have been targets of COVID-related discrimination, ranging from verbal abuse to violent attacks taking place in public spaces (e.g., bus, shops, streets) and online (He, He, Zhou, Nie, & He, 2020; Kandil, 2020; Zheng, Goh, & Wen, 2020). A similar pattern of discrimination directed towards people of Asian descent was observed in links with the SARS virus, which also was first found in China (Person, Sy, Holton, Govert, & Liang, 2004). In addition, political leaders actively contributed to reinforcing racial discrimination and conspiracy theories. For instance, US President Donald Trump referred to the virus as the “Chinese” virus (Sheth, 2020). Likewise, former Italian Deputy Prime Minister Matteo Salvini wrongly linked the spread of the COVID-19 virus to African asylum seekers, calling for border closures and making immigrants an easy target of COVID-related discrimination (Tondo, 2020).

There has also been documentation of COVID-related ageism since the start of the pandemic (Lichtenstein, 2020; Previtali, Allen, & Varlamova, 2020). Ageism, defined as discrimination based on age, is not a new phenomenon and has been growing in Western societies in the last 50 years (Butler, 1969; Walker, 2012). The acknowledgment of the aging of the population and the related expenses for pensions and health care by governments has contributed to the spread of the idea that older people are a burden for national economies (Walker, 2012). Chronological age has been used in the development of COVID-related public policies and messaging and may have contributed to the spread of harmful and discriminatory attitudes and behaviors towards older people in our societies (Ayalon et al., 2020; Previtali et al., 2020). For instance, the hashtag #BoomerRemover on social media has praised the virus for helping us reduce the public expense devoted to older persons (Morrow-Howell, Galucia, & Swinford, 2020) and has not been officially condemned. On the contrary, this stance has been endorsed by political representatives, for instance in the US (Coughlin & Yoquinto, 2020).

There have been reports of social exclusion and violence directed towards frontline health-care workers during the pandemic in countries around the world (McKay, Heisler, Mishori, Catton, & Kloiber, 2020; Singh & Subedi, 2020). Neighbours and healthcare professionals not involved in COVID-19 responses have discriminated against COVID-19 healthcare providers by avoiding them or expressing displeasure that they live nearby (The Economist, 2020). Although these workers are at increased risk of exposure to the virus, public messaging and media may have contributed to overestimation of perceived risk and underestimation of the perceived effectiveness of protective measures (e.g., hygiene, masks, physical distancing, testing) being taken by this segment of the healthcare workforce (Singh & Subedi, 2020).

The negative impact of discrimination on mental health is well-documented in the literature (Carter et al., 2019; Cave, Cooper, Zubrick, & Shepherd, 2020) and emerging evidence suggests that COVID-related discrimination is associated with mental distress in the general population (Liu, Finch, Brenneke, Thomas, & Le, 2020). In addition, discrimination can undermine disease control efforts by preventing help-seeking behaviors and access to health care (Corrigan, 2004; Mahajan et al., 2008). There is also evidence that COVID-related discrimination and stigma are associated with negative attitudes towards public health prevention efforts, including respecting social distancing guidelines (Frounfelker et al., in press). Given the preoccupying consequences of discrimination on social and health outcomes, it becomes imperative to join forces to fight COVID-related discrimination by promoting inclusiveness in policy and media. Empirical evidence documenting reasons and contexts of COVID-related discrimination is urgently needed to inform the development of public policies and messaging at the institutional, community and individual level.

We use a framework of social pedagogy (Nelson & Venkatesh, In press) and anti-oppressive forms of public engagement (Freire, 2017) to identify specific strategies to minimize and counter pandemic-related discrimination. Social pedagogy aims to address social inequality and facilitate social change by promoting learning, well-being and connection at both the individual and community level. An anti-oppressive framework is well-aligned with the field of social pedagogy, and further emphasizes the importance of adopting a

critical lens to develop strategies aimed at creating an egalitarian and inclusive environment. It stresses the importance of acknowledging and critically examining the power imbalances that exist in the larger socio-cultural and political context to fight oppression, racism and discrimination in society. It informs the concept of cultural competence, the goal of which is to create a healthcare system and workforce capable of delivering care to every patient that considers and integrates all facets of culture (e.g., race, ethnicity, culture, or language proficiency) (Sue & Sue, 2003). In a crisis context, such as during the present pandemic, this social pedagogy lens should inform health communication approaches to avoid promoting prejudices and the targeting of specific groups through media, social media and institutional messaging. The lessons learned from the present context are crucial also to inform future preventive actions.

The Quebec context

The first case of COVID-19 in Canada was confirmed on January 27th (Government of Canada, 2020). A month later, the Quebec government reported the first presumed case of COVID-19 in the province (Government of Canada, 2020). As of August 5th, 2020, 60,000 people tested positive for COVID-19 in Quebec, about half of the total who have tested positive country-wide (Government of Canada, 2020). To date, 80 % of people who tested positive for COVID-19 in the province reside in the Greater Montreal Area (GMA) (Communauté métropolitaine de Montréal, 2020). The disproportionately higher number of individuals diagnosed with COVID-19 in GMA compared to the rest of the province has resulted in variations in public health policies and public perspectives (Institut Nationale De Santé Publique Du Québec, 2020). For instance, reopening and deconfinement in the GMA lagged one to two weeks behind the rest of the province. Even within the GMA, cultural and social disparities in rates of COVID-19 infections and mortality have been reported, with a disproportionately higher number of individuals diagnosed with COVID-19 residing in diverse, multiracial neighbourhoods of the city (Center for Research-Action on Race Relations (CRARR) (2020)). Since the pandemic, there has been an increase in reports of COVID-19 related discrimination in the province, especially in terms of incidents directed at members of Asian communities (Center for Research-Action on Race Relations (CRARR) (2020)). Specific concerns have been expressed over issues of systemic discrimination and unsafe work conditions because of the high prevalence of racialized minorities (e.g., Black, Asian, Latino and Arab) working as health care attendants in seniors' residences and hospitals (Center for Research-Action on Race Relations (CRARR) (2020)). It is important to note that Quebec society is demographically and culturally diverse, and 13.7 % of its population is foreign-born (Statistics Canada, 2017); such a diversity is even higher in the GMA, where 23.4 % of residents are foreign-born. Unfortunately, there is limited empirical evidence on the impact of COVID-19 discrimination on cultural communities' health and mental health in the province. Recent evidence found that Montreal's cultural communities are disproportionately vulnerable to COVID-19 due to social and economic inequalities which existed prior to the pandemic and that got exacerbated during this health emergency (Cleveland, Hanley, Jaimés, & Wolofsky, 2020). Another study found that COVID-related discrimination was associated with worse mental health outcomes among a culturally diverse sample of Quebec participants, and its impact was stronger among Black participants (Miconi et al., 2021). This highlights the importance of investigating social and ethnic disparities during the current health emergency in the province.

The present study

This study investigates experiences of perceived discrimination related to COVID-19 in a culturally diverse sample of adults in Quebec (Canada) to inform communication approaches aimed at minimizing stigma and discrimination during and in the aftermath of the pandemic. Specifically, we investigate: 1) overall prevalence of COVID-19 discrimination experiences, including contexts in which discrimination took place and perceived reasons for discrimination; 2) prevalence of COVID-related discrimination across socio-demographic and ethno-cultural groups; 3) prevalence and total number of the most common contexts and reasons of COVID-related discrimination across socio-cultural groups (i.e., age, ethno-cultural group, occupation, geographical location). Based on the available evidence on COVID-19-related discrimination, with regards to the first research aim, we expected the majority of experiences to take place in public places (e.g., public transport, groceries, streets) and online. We expected the most common reasons for discrimination to be related to one's ethno-cultural origin, occupation (e.g., essential workers) and age. As for the second research aim, COVID-related discrimination was expected to be reported more among East-Asian participants, older participants and essential workers and in the GMA. With regards to the third and last aim, we anticipated that participants belonging to the East Asian ethno-cultural group would be more likely to experience COVID-related discrimination because of ethnicity/race, that older participants would be more likely to experience discrimination because of age, and that essential workers would be more likely to experience discrimination because of their occupation. We also expected East Asian participants, essential workers and older people to be discriminated more frequently in public spaces (e.g., street, stores) than other locations. No specific hypotheses were formulated with regards to differences in reported reasons and contexts of discrimination across geographical locations.

Method

Participants and procedure

A total of 3273 residents of the province of Quebec aged 18 and over (*mean age* = 42.74, *SD* = 16.95, *range*: 18–88; 57 % female, 43 % male) completed an online survey (see Table 1). Participants were a convenience sample recruited from the representative Leo panel (Léger Opinion), which includes more than 400,000 Canadian households. Léger oversampled respondents who identified as part of a

visible minority to obtain a more culturally diverse sample, in line with the study objectives. Participants were required to self-identify with one of the following ethnic groups: White, Chinese, South Asian (e.g. East Indian, Pakistani, Sri Lankan, etc.), Black (African, Afro-American, etc.), Filipino, Latin American, Southeast Asian (e.g. Cambodian, Indonesian, Laotian, Vietnamese, etc), Arab (Maghreb, Middle East), West Asian (e.g., Afghan, Iranian, etc.), Japanese, Korean, Other. We preserved White, Black, Arab and South-Asian categories per participant responses; for statistical reasons, we re-grouped the remaining categories into broader ethno-cultural groups. Specifically, Chinese (n = 223), Japanese (n = 15) and Korean participants (n = 11) were grouped together as East Asians (N = 249); Filipino (n = 11) and Southeast Asian participants (e.g., Cambodian, Indonesian, Laotian, Vietnamese, etc; n = 108) were all categorized as Southeast Asians (N = 119). The “Other” cohort (N = 61) included participants who self-identified as West Asians (n = 30), Latin American (n = 27) and those who originally identified as “other” (n = 4). The survey was presented as a study about COVID-19 and social distancing. Participants completed the survey in either French or English between June 1, 2020 and June 23, 2020. Participation was voluntary and confidential. All participants received between 50 cents to \$2 in compensation, depending upon length of time taken to complete the survey (average completion time of 12 min) and provided electronic informed consent. A total of 8825 invitation emails were sent. The response rate was 37 %. The study was approved by the Institutional Review Board of the Faculty of Medicine at McGill University.

Table 1

Sociodemographic characteristics of participants for the total sample (n = 3273), and separately for participants who reported COVID-related discrimination and for those who did not report it.

Characteristics	n (%)		
	Total Sample (n = 3273)	COVID-related discrimination (n = 541)	No COVID-related discrimination (n = 2732)
Age			
18–39 years	1611 (49.22)	372 (68.76)	1239 (45.35)
40 – 59 years	994 (30.37)	103 (19.04)	891 (32.61)
≥ 60 years	668 (20.41)	66 (12.00)	602 (22.04)
Missing	0	0	0
Gender			
Male	1418 (43.32)	237 (43.81)	1181 (43.23)
Female	1855 (56.68)	304 (56.19)	1551 (56.77)
Missing	0	0	0
Race/ethnicity			
White	1606 (49.07)	154 (28.47)	1452 (53.15)
East Asian	249 (7.61)	77 (14.23)	172 (6.30)
South Asian	96 (2.93)	28 (5.18)	68 (2.49)
Black	692 (21.14)	158 (29.21)	534 (19.55)
South East Asian	119 (3.64)	29 (5.36)	90 (3.29)
Arab	450 (13.75)	81 (14.97)	369 (13.51)
Other	61 (1.86)	14 (2.59)	47 (1.72)
Missing	0	0	0
Generation			
1 st	1167 (36.23)	229 (43.21)	938 (34.86)
2 nd	668 (20.74)	150 (28.30)	518 (19.25)
3 rd or more	1386 (43.03)	151 (28.49)	1235 (45.89)
Missing	52	11	41
Education			
High school or less	476 (14.74)	90 (16.82)	386 (14.33)
Technical degree/some college or university	1218 (37.72)	208 (38.88)	1010 (37.49)
University degree or above	1535 (47.54)	237 (44.30)	1298 (48.18)
Missing	44	6	38
Employment status/Occupation			
Unemployed [not because of COVID-19]	903 (28.05)	117 (21.99)	786 (29.25)
Essential worker [not healthcare]	685 (21.28)	106 (19.92)	579 (21.55)
Non-essential worker	886 (27.52)	113 (21.24)	773 (28.77)
Essential health-care worker	361 (11.21)	116 (21.80)	245 (9.12)
Lost job because of COVID-19	384 (11.93)	80 (15.04)	304 (11.31)
Missing	54	9	45
Geographical location			
Outside Greater Montreal Area	1004 (31.57)	133 (25.78)	871 (32.70)
Greater Montreal Area	2176 (68.43)	383 (74.22)	1793 (67.30)
Missing	93	25	68
Exposure to COVID-19			
No	2311 (71.53)	284 (53.89)	2027 (74.96)
Yes	920 (28.47)	243 (46.11)	677 (25.04)
Missing	42	14	28

Measures

COVID-related discrimination

Participants reported reasons for perceived discrimination (if any) in the last month because of their presumed COVID-19 status, based on a questionnaire developed by Williams, Yu, Jackson, and Anderson (1997) and adapted to the present health emergency context. Specific reasons and contexts of discrimination for the present study were selected following a discussion and consensus reached within the research team on reasons and contexts most relevant to investigate during the pandemic. This was informed by current public health measures (e.g., shutdown of non-essential businesses, school closures, social distancing) and clinical observations in the field. Participants were asked: “Have you been discriminated against because of your presumed COVID-19 status for any of the following reasons in the past month? Check all that apply”. The list of reasons included (yes/no response format): Age, Gender, Physical Health, Immigration Status, Race/ethnicity, Occupation, Income, Neighborhood you live in. Reasons of discrimination were summed to get to the total number of reasons of discrimination reported by each participant (range 0–8). Participants who reported at least one incident of COVID-related discrimination in the last month were asked: “Have you experienced discrimination because of your presumed COVID-19 status in any of the following situations in the past month? Check all that apply (yes/no response format): at work or looking for a job, looking for an apartment or house, online, public transportation, supermarkets/pharmacy/grocery stores, in the streets/parks and health and social services. Contexts of discrimination were summed to get to the total number of contexts in which a participant experienced discrimination in the last month (range 0–7).

Socio-cultural variables

Participants self-reported age (18–39, 40–59, 60+), gender (male, female, other), education (high school or less, technical degree or some college/university, university degree and above), immigrant generation (first-, second- and third-generation immigrant and above), race/ethnicity (White, East Asian, South Asian, Black, South East Asian, Arab, Other), employment status/occupation (unemployed prior to COVID-19, employed – designated as an essential worker by the Quebec government, employed – not designated as an essential worker, essential health care worker, and unemployed because of COVID-19), geographical location (GMA vs elsewhere in

Table 2

Results of a multivariate binomial regression model looking at the associations between socio-cultural variables and COVID-related discrimination (0 = no reported experiences of COVID-related discrimination; 1 = at least one reported experience of COVID-related discrimination) ($n = 3273$).

Variables	Experiences of COVID-related discrimination	
	OR (95 % CI)	LR χ^2 (df)
Age		27.730(2)***
18–39 years	Ref	
40–59 years	0.510 (0.391, 0.661)***	
≥ 60 years	0.639 (0.442, 0.915)*	
Gender		11.900(1)***
Male	Ref	
Female	0.684 (0.551, 0.849)***	
Race/ethnicity		51.816(6)***
White	Ref	
East Asian	4.609 (2.947, 7.233)***	
South Asian	3.326 (1.810, 6.027)***	
Black	2.078 (1.415, 3.073)***	
South East Asian	3.092 (1.747, 5.406)***	
Arab	1.836 (1.199, 2.820)**	
Other	2.525 (1.177, 5.105)*	
Generation		0.152(2)
1 st	Ref	
2 nd	1.051 (0.808, 1.364)	
3 rd or more	1.044 (0.723, 1.516)	
Education		6.225(2)*
High school or less	Ref	
Technical degree/some college or university	0.913 (0.671, 1.249)	
University degree or above	0.720 (0.530, 0.985)*	
Employment status/Occupation		35.995(4)***
Unemployed [not because of COVID-19]	Ref	
Essential worker [not healthcare]	0.850 (0.605, 1.193)	
Non-essential worker	0.792 (0.569, 1.103)	
Essential health-care worker	2.056 (1.434, 2.948)***	
Lost job because of COVID-19	1.152 (0.800, 1.653)	
Geographical location		0.011(1)
Outside Greater Montreal Area	Ref	
Greater Montreal Area	1.013 (0.794, 1.299)	
Exposure to COVID-19		53.506(1)***
No	Ref	
Yes	2.240 (1.808, 2.775)***	

Table 3

Descriptive statistics of reasons of COVID-related discrimination across socio-cultural variables. P-value of the univariate effect of each socio-cultural variable on each reason of COVID-related discrimination is reported (n = 541).

Characteristics	Age			Gender		Physical health		Occupation	
	n	Prevalence n (%)	p-value	Prevalence n (%)	p-value	Prevalence n (%)	p-value	Prevalence n (%)	p-value
Age	541		<.001		<.001		.989		.007
18 - 39 years	372	69 (18.55)		58 (15.59)		63 (16.94)		69 (18.55)	
40 – 59 years	103	14 (13.59)		6 (5.83)		18 (17.48)		24 (23.30)	
≥ 60 years	66	51 (77.27)		0 (0.00)		11 (16.67)		4 (6.06)	
Gender	541		.097		.796		.077		.429
Male	237	67 (28.27)		29 (12.24)		48 (20.25)		39 (16.46)	
Female	304	67 (22.04)		35 (11.51)		44 (14.47)		58 (19.08)	
Race/ethnicity	541		<.001		.011		.015		.037
White	154	69 (44.81)		14 (9.09)		32 (20.78)		30 (19.48)	
East Asian	77	4 (5.19)		4 (5.19)		4 (5.19)		9 (11.69)	
South Asian	28	7 (25.00)		6 (21.43)		8 (28.57)		2 (7.14)	
Black	158	29 (18.35)		23 (14.56)		26 (16.46)		28 (17.72)	
South East Asian	29	3 (10.34)		1 (3.45)		3 (10.34)		2 (6.90)	
Arab	81	18 (22.22)		11 (13.58)		17 (20.99)		22 (27.16)	
Other	14	4 (28.57)		5 (35.71)		2 (14.29)		4 (28.57)	
Generation	530		<.001		.724		.006		.927
1 st	229	36 (15.72)		29 (12.66)		27 (11.79)		39 (17.03)	
2 nd	150	30 (20.00)		15 (10.00)		26 (17.33)		27 (18.00)	
3 rd or more	151	67 (44.37)		18 (11.92)		37 (24.50)		28 (18.54)	
Education	535		.742		.539		.700		.679
High school or less	90	25 (27.78)		9 (10.00)		18 (20.00)		19 (21.11)	
Technical degree/some college or university	208	51 (24.52)		22 (10.58)		35 (16.83)		38 (18.27)	
University degree or above	237	56 (23.63)		32 (13.50)		38 (16.03)		40 (16.88)	
Employment status/ Occupation	532		<.001		.200		.464		<.001
Unemployed [not because of COVID-19]	117	50 (42.74)		8 (6.84)		16 (13.68)		9 (7.69)	
Essential worker [not healthcare]	106	17 (16.04)		14 (13.21)		16 (15.09)		23 (21.70)	
Non-essential worker	113	20 (17.70)		18 (15.93)		17 (15.04)		15 (13.27)	
Essential health-care worker	116	32 (27.59)		15 (12.93)		24 (20.69)		35 (30.17)	
Lost job because of COVID-19	80	14 (17.50)		7 (8.75)		17 (21.25)		12 (15.00)	
Geographical location	516		.137		.754		.650		.201
Outside Greater Montreal Area	133	40 (30.08)		17 (12.78)		21 (15.79)		18 (13.53)	
Greater Montreal Area	383	90 (23.50)		45 (11.57)		67 (17.49)		70 (18.28)	
Exposure to COVID-19	527		.383		.003		.351		.048
No	284	76 (26.76)		22 (7.75)		45 (15.85)		42 (14.79)	
Yes	243	57 (23.46)		39 (16.05)		46 (18.93)		52 (21.40)	
Total	541	134 (24.77)		64 (11.83)		92 (17.01)		97 (17.93)	
Characteristics	Income			Immigration status		Race/ethnicity		Neighborhood you live in	
	n	Prevalence n (%)	p-value	Prevalence n (%)	P-value	Prevalence n (%)	p-value	Prevalence n (%)	p-value
Age	541		.082		<.001		<.001		.008
18 - 39 years	372	49 (13.17)		67 (18.01)		167 (44.89)		51 (13.71)	
40 – 59 years	103	11 (10.68)		15 (14.56)		50 (48.54)		21 (20.39)	
≥ 60 years	66	3 (4.55)		0 (0.00)		8 (12.12)		3 (4.55)	
Gender	541		.002		.616		.063		.199
Male	237	39 (16.46)		38 (16.03)		88 (37.13)		38 (16.03)	
Female	304	24 (7.89)		44 (14.47)		137 (45.07)		37 (12.17)	
Race/ethnicity	541		.017		<.001		<.001		.005
White	154	20 (12.99)		8 (5.19)		15 (9.74)		27 (17.53)	
East Asian	77	3 (3.90)		4 (5.19)		66 (85.71)		2 (2.60)	
South Asian	28	9 (32.14)		9 (32.14)		14 (50.00)		3 (10.71)	
Black	158	19 (12.03)		36 (22.78)		82 (51.90)		21 (13.29)	
South East Asian	29	2 (6.90)		2 (6.90)		23 (79.31)		2 (6.90)	
Arab	81	8 (9.88)		20 (24.69)		22 (27.16)		17 (20.99)	
Other	14	2 (14.29)		3 (21.43)		3 (21.43)		3 (21.43)	
Generation	530		.418		<.001		<.001		.145
1 st	229	22 (9.61)		51 (22.27)		125 (54.59)		27 (11.79)	
2 nd	150	21 (14.00)		18 (12.00)		72 (48.00)		18 (12.00)	
3 rd or more	151	18 (11.92)		11 (7.28)		24 (15.89)		28 (18.54)	
Education	535		.086		.498		.011		.708
High school or less	90	15 (16.67)		17 (18.89)		30 (33.33)		15 (16.67)	
	208	27 (12.98)		28 (13.46)		77 (37.02)		27 (12.98)	

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Table 3 (continued)

Characteristics	n	Age		Gender		Physical health		Occupation	
		Prevalence n (%)	p-value	Prevalence n (%)	p-value	Prevalence n (%)	p-value	Prevalence n (%)	p-value
Technical degree/some college or university									
University degree or above	237	20 (8.44)		36 (15.19)		115 (48.52)		33 (13.92)	
Employment status/ Occupation	532		.050		.147		.006		.601
Unemployed [not because of COVID-19]	117	8 (6.84)		19 (16.24)		33 (28.21)		12 (10.26)	
Essential worker [not healthcare]	106	14 (13.21)		22 (20.75)		53 (50.00)		18 (16.98)	
Non-essential worker	113	18 (15.93)		13 (11.50)		55 (48.67)		14 (12.39)	
Essential health-care worker	116	8 (6.90)		12 (10.34)		46 (39.66)		18 (15.52)	
Lost job because of COVID-19	80	13 (16.25)		15 (18.75)		34 (42.50)		12 (15.00)	
Geographical location	516		.987		.597		.366		.012
Outside Greater Montreal Area	133	15 (11.28)		22 (16.54)		51 (38.35)		11 (8.27)	
Greater Montreal Area	383	43 (11.23)		56 (14.62)		164 (42.82)		64 (16.71)	
Exposure to COVID-19	527		.812		.002		.489		.035
No	284	32 (11.27)		27 (9.51)		123 (43.31)		31 (10.92)	
Yes	243	29 (11.93)		46 (18.93)		98 (40.33)		42 (17.28)	
Total	541	63 (11.65)		82 (15.16)		225 (41.59)		75 (13.86)	

the province) and exposure to the virus (exposed vs non-exposed).

Data analysis

Descriptive information for the sample was summarized using counts and proportions for categorical variables. Less than 5% of data were missing for each variable and pairwise deletion was used in analyses. Next, we used multivariate binomial logistic regression on the total sample to assess if specific socio-cultural characteristics were associated with higher risk of experiencing COVID-related discrimination. Then, researchers used multivariate binomial logistic regression on the subsample of participants who experienced discrimination to assess if and how the socio-cultural variables of interest (i.e., age, ethno-cultural group, employment status/occupation and geographical location) were associated with each reason and context of discrimination. Prior to conducting multivariate binomial regression models for each reason and context of discrimination, age was recoded from three to two categories by merging participants aged between 40 years and more in one group, for issues related to statistical power (i.e., few participants aged 60+). Poisson generalized linear regression models with a log link function were used to assess differences in the total number of reported reasons and contexts of discrimination across socio-cultural groups. We used robust standard errors to adjust for violation of the distribution assumption that the variance equals the mean (Cameron & Trivedi, 2009). All multivariate regression models controlled for gender, education, immigrant status and exposure to COVID-19, as such factors have been linked to experiences of discrimination across multiple reasons and contexts within an intersectionality perspective (Ellermann, 2020; Ifatunji & Harnois, 2016; McMahan et al., 2016; Potter et al., 2019; Singh, Bhutani, & Fatima, 2020). The threshold for statistical significance was set to 0.05 (two-sided tests). R software was used in all analyses (R Core Team, 2017).

Results

Overall prevalence and correlates of COVID-related discrimination

The prevalence of reported COVID-related discrimination in the overall sample was 16.58 % (n = 541) (see Table 1). Participants who experienced COVID-related discrimination were more likely to be men, young, with a lower education and healthcare workers compared to those who did not report discrimination. Non-White participants were also at higher risk of experiencing discrimination, with East Asian participants being four times more likely than White participants, followed by South Asian and South-East Asian participants. Participants who did not report or perceive as much discrimination did not differ in terms of geographical location (GMA vs the rest of the province), or immigrant status (see Table 2).

Prevalence of COVID-19 related discrimination among those who experienced discrimination

Overall, 66 % of discriminated participants experienced discrimination for one reason, 21 % for two reasons and the remaining 13 % for three or more reasons (range 1–7). In terms of contexts, among participants who reported discrimination, 23 % did not report any context of discrimination, 46 % reported one, 19 % reported two and the remaining 12 % reported three or more (range 0–6). Among those that reported COVID-related discrimination, the most common reported reasons were race/ethnicity and age, followed by occupation and physical health. Participants were more likely to report COVID-related discrimination in stores and in streets/parks than other locations. Of interest, although only 66 participants over 60 reported having being discriminated (10 % of total sample), 77

Table 4

Descriptive statistics of contexts of COVID-related discrimination across socio-cultural variables. P-value of the univariate effect of each socio-cultural variable on each context of COVID-related discrimination is reported ($n = 541$).

Characteristics	Online		Public transportation		Supermarkets/pharmacy/ grocery stores		In the streets/parks		Look for job or at workplace		Health and social services		
	n	Prevalence n (%)	p- value	Prevalence n (%)	p- value	Prevalence n (%)	p- value	Prevalence n (%)	p- value	Prevalence n (%)	p- value	Prevalence n (%)	p- value
Age	536		<.001		<.001		<.001		.036		<.001		.212
18 - 39 years	371	47 (12.67)		61 (16.4)		90 (24.26)		94 (25.34)		113 (30.46)		73 (19.68)	
40 – 59 years	101	9 (8.91)		15 (14.85)		27 (26.73)		19 (18.81)		20 (19.80)		18 (17.82)	
≥ 60 years	64	0 (0.00)		1 (1.56)		31 (48.44)		8 (12.50)		3 (4.69)		7 (10.94)	
Gender	536		.638		.035		.948		.071		.438		.005
Male	233	26 (11.16)		42 (18.03)		64 (27.47)		44 (18.88)		63 (27.04)		55 (23.61)	
Female	303	30 (9.90)		35 (11.55)		84 (27.72)		77 (25.41)		73 (24.09)		43 (14.19)	
Race/ethnicity	536		.976		.177		.161		.045		<.001		.034
White	149	15 (10.07)		12 (8.05)		42 (28.19)		27 (18.12)		23 (15.44)		25 (16.78)	
East Asian	77	6 (7.79)		12 (15.58)		23 (29.87)		27 (35.06)		16 (20.78)		6 (7.79)	
South Asian	28	3 (10.71)		5 (17.86)		4 (14.29)		9 (32.14)		11 (39.29)		9 (32.14)	
Black	158	17 (10.76)		26 (16.46)		41 (25.95)		31 (19.62)		43 (27.22)		36 (22.78)	
South East Asian	29	4 (13.79)		7 (24.14)		14 (48.28)		9 (31.03)		6 (20.69)		4 (13.79)	
Arab	81	9 (11.11)		12 (14.81)		21 (25.93)		14 (17.28)		28 (34.57)		14 (17.28)	
Other	14	2 (14.29)		3 (21.43)		3 (21.43)		4 (28.57)		9 (64.29)		4 (28.57)	
Generation	525		.861		.150		.628		.692		.085		.941
1 st	229	25 (10.92)		40 (17.47)		69 (30.13)		53 (23.14)		67 (29.26)		41 (17.90)	
2 nd	150	14 (9.33)		17 (11.33)		39 (26.00)		37 (24.67)		37 (24.67)		29 (19.33)	
3 rd or more	146	16 (10.96)		17 (11.64)		39 (26.71)		30 (20.55)		28 (19.18)		27 (18.49)	
Education	530		.230		.961		.169		.288		.317		<.001
High school or less	90	10 (11.11)		13 (14.44)		19 (21.11)		18 (20.00)		27 (30.00)		31 (34.44)	
Technical degree/some college or university	206	27 (13.11)		30 (14.56)		55 (26.70)		42 (20.39)		54 (26.21)		23 (11.17)	
University degree or above	234	19 (8.12)		32 (13.68)		73 (31.20)		61 (26.07)		52 (22.22)		44 (18.80)	
Occupation	527		.557		.124		<.001		.847		<.001		.653
Unemployed [not because of COVID-19]	116	8 (6.90)		12 (10.34)		52 (44.83)		23 (19.83)		13 (11.21)		17 (14.66)	
Essential worker [not healthcare]	105	14 (13.33)		19 (18.10)		25 (23.81)		27 (25.71)		36 (34.29)		18 (17.14)	
Non-essential worker	113	12 (10.62)		12 (10.62)		27 (23.89)		28 (24.78)		24 (21.24)		21 (18.58)	
Essential health-care worker	114	14 (12.28)		15 (13.16)		27 (23.68)		25 (21.93)		35 (30.70)		23 (20.18)	
Lost job because of COVID-19	79	8 (10.13)		17 (21.52)		15 (18.99)		18 (22.78)		24 (30.38)		18 (22.78)	
Geographical location	511		.227		.493		.158		.206		.396		.007
Outside Greater Montreal Area	132	18 (13.64)		17 (12.88)		43 (32.58)		35 (26.52)		37 (28.03)		14 (10.61)	
Greater Montreal Area	379	37 (9.76)		58 (15.30)		99 (26.12)		80 (21.11)		92 (24.27)		78 (20.58)	
Exposure to COVID-19	522		<.001		.112		.687		.460		.190		.038
No	281	17 (6.05)		33 (11.74)		76 (27.05)		60 (21.35)		63 (22.42)		42 (14.95)	
Yes	241	38 (15.77)		40 (16.60)		69 (28.63)		58 (24.07)		66 (27.39)		53 (21.99)	
Total	536	56 (10.45)		77 (14.37)		148 (27.61)		121 (22.57)		136 (25.37)		98 (18.28)	

Table 5

Results of multivariate binomial regression models on the association between age, ethno-cultural group, occupation and geographical location and reported reasons of COVID-related discrimination (n = 541).

Variables	COVID-related discrimination reasons															
	Age		Gender		Physical Health		Occupation		Income		Immigration Status		Race/Ethnicity		Neighborhood you live in	
	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)
Age		2.32 (1)		11.74 (1)***		0.01 (1)		0.04 (1)		0.93 (1)		3.75 (1)		3.11(1)		0.06 (1)
18–39 years	Ref		Ref		Ref		Ref		Ref		Ref		Ref		Ref	
≥ 40 years	1.51 (0.89, 2.56)		0.23** (0.08, 0.56)		0.97 (0.53, 1.74)		1.06 (0.58, 1.91)		0.70 (0.32, 1.44)		0.49 (0.23, 1.01)		1.66 (0.95, 2.96)		0.93 (0.49, 1.73)	
Race/ethnicity		20.13 (6)**		11.50 (6)		13.52 (6)*		18.78 (6)**		11.01 (6)		28.66 (6)***		108.23 (6)***		14.28 (6)*
White	Ref		Ref		Ref		Ref		Ref		Ref		Ref		Ref	
East Asian	0.15** (0.04, 0.44)		0.39 (0.09, 1.46)		0.30 (0.06, 1.03)		0.47 (0.16, 1.27)		0.26 (0.05, 0.99)		0.69 (0.15, 3.00)		46.56*** (17.47, 136.52)		0.14* (0.02, 0.55)	
South Asian	1.13 (0.36, 3.36)		2.21 (0.58, 8.15)		2.29 (0.69, 7.20)		0.17 (0.01, 0.96)		2.27 (0.66, 7.80)		5.68* (1.46, 23.56)		10.97*** (3.59, 35.31)		0.58 (0.12, 2.21)	
Black	0.49* (0.24, 0.98)		1.05 (0.41, 2.77)		1.02 (0.46, 2.24)		0.50 (0.22, 1.11)		0.69 (0.27, 1.81)		4.18* (1.49, 13.44)		9.69*** (4.42, 22.74)		0.60 (0.26, 1.38)	
South East Asian	0.26 (0.06, 0.90)		0.28 (0.01, 1.78)		0.76 (0.16, 2.76)		0.28 (0.04, 1.18)		0.44 (0.06, 2.01)		0.47 (0.02, 3.42)		32.63*** (10.20, 118.36)		0.33 (0.05, 1.38)	
Arab	0.65 (0.29, 1.45)		1.08 (0.36, 3.22)		1.94 (0.82, 4.67)		1.59 (0.68, 3.72)		0.64 (0.21, 1.89)		4.73** (1.54, 16.27)		2.40 (0.98, 6.06)		1.22 (0.50, 2.99)	
Other	1.56 (0.36, 5.96)		3.27 (0.69, 14.51)		1.25 (0.17, 5.87)		1.87 (0.42, 7.51)		1.18 (0.15, 6.03)		2.61 (0.32, 15.03)		2.36 (0.44, 10.37)		0.75 (0.10, 3.50)	
		14.85 (4)**		2.67 (4)		4.47 (4)		21.63 (4)***		6.43 (4)		7.95 (4)		9.09(4)		2.70 (4)

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Table 5 (continued)

Variables	COVID-related discrimination reasons															
	Age		Gender		Physical Health		Occupation		Income		Immigration Status		Race/Ethnicity		Neighborhood you live in	
	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)
Employment status/ Occupation																
Unemployed [not because of COVID-19]	Ref		Ref		Ref		Ref		Ref		Ref		Ref		Ref	
Essential worker [not healthcare]	0.36** (0.17, 0.75)		1.15 (0.41, 3.44)		1.09 (0.46, 2.58)		4.57** (1.84, 12.35)		1.76 (0.62, 5.30)		1.03 (0.44, 2.48)		2.57* (1.22, 5.53)		1.82 (0.76, 4.50)	
Non-essential worker	0.36** (0.17, 0.72)		1.66 (0.62, 4.83)		1.08 (0.48, 2.47)		1.99 (0.77, 5.47)		3.06* (1.17, 8.74)		0.44 (0.17, 1.13)		2.46* (1.18, 5.22)		1.10 (0.44, 2.75)	
Essential health-care worker	0.87 (0.44, 1.72)		1.45 (0.53, 4.29)		1.84 (0.83, 4.14)		5.91*** (2.48, 15.50)		1.42 (0.46, 4.53)		0.42 (0.16, 1.05)		1.38 (0.66, 2.91)		1.64 (0.69, 3.99)	
Lost job because of COVID-19	0.41* (0.18, 0.88)		0.82 (0.25, 2.66)		1.83 (0.79, 4.26)		2.40 (0.85, 6.99)		2.37 (0.84, 7.13)		0.82 (0.32, 2.08)		1.64 (0.74, 3.67)		1.30 (0.49, 3.44)	
Geographical location		0.49 (1)		0.75 (1)		0.26 (1)		0.87 (1)		0.00 (1)		1.12 (1)		0.01(1)		5.81 (1)*
Outside Greater Montreal Area	Ref		Ref		Ref		Ref		Ref		Ref		Ref		Ref	
Greater Montreal Area	0.83 (0.49, 1.41)		0.74 (0.39, 1.48)		1.16 (0.66, 2.12)		1.34 (0.73, 2.58)		1.02 (0.53, 2.06)		0.70 (0.37, 1.36)		0.98 (0.57, 1.68)		2.36* (1.17, 5.24)	

Note. *p < .05; ** p < .01; ***p < .001. All models included gender, education, immigrant status and exposure to COVID-19 as control variables. Separate models were run for each COVID-related discrimination reason (0 = not discriminated; 1=discriminated).

Table 6Results of multivariate binomial regression models on the association between age, ethno-cultural group, occupation and geographical location and reported contexts of COVID-related discrimination ($n = 541$).

Variables	COVID-related discrimination contexts													
	Online		Public Transportation		Supermarket/pharmacy/ grocery store		In the streets/parks		Look for job or at workplace		Looking for an apartment or house		Health and social service	
	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)	OR (95 % CI)	LR χ^2 (df)
Age		6.12 (1)*		1.77 (1)		2.25(1)		1.20 (1)		9.10 (1)**		4.96 (2)*		0.73 (1)
18–39 years	Ref		Ref		Ref		Ref		Ref		Ref		Ref	
≥ 40 years	0.36* (0.14, 0.82)		0.64 (0.32, 1.23)		1.47 (0.89, 2.41)		0.74 (0.42, 1.27)		0.42** (0.23, 0.74)		0.34* (0.12, 0.89)		0.77 (0.41,1.40)	
Race/ethnicity		2.00 (6)		4.87 (6)		8.20(6)		7.67 (6)		16.72 (6)*		7.08 (6)		6.46 (6)
White	Ref		Ref		Ref		Ref		Ref		Ref		Ref	
East Asian	0.69 (0.19, 2.36)		2.61 (0.87, 7.99)		1.32 (0.57, 3.06)		2.24 (0.97, 5.26)		1.05 (0.42, 2.63)		1.14 (0.20, 5.66)		0.39 (0.12, 1.14)	
South Asian	0.93 (0.17, 4.01)		1.87 (0.41, 7.50)		0.61 (0.15, 2.08)		1.93 (0.62, 5.82)		2.42 (0.81, 7.25)		1.90 (0.23, 11.44)		1.44 (0.44, 4.49)	
Black	0.68 (0.25, 1.86)		2.22 (0.88, 5.94)		1.15 (0.56, 2.38)		1.02 (0.48, 2.21)		1.19 (0.56, 2.58)		3.41* (1.08, 11.83)		1.03 (0.47, 2.26)	
South East Asian	1.43 (0.33, 5.56)		3.63* (0.98, 13.10)		2.97* (1.09, 8.19)		1.68 (0.55, 4.88)		1.05 (0.29, 3.36)		3.43 (0.58, 17.80)		0.61 (0.15, 2.06)	
Arab	0.85 (0.27, 2.63)		2.13 (0.74, 6.27)		0.88 (0.38, 2.01)		1.01 (0.41, 2.43)		2.57* (1.12, 5.99)		1.79 (0.41, 7.58)		0.81 (0.32, 2.03)	
Other	1.39 (0.18, 7.46)		2.54 (0.33, 13.26)		1.08 (0.21, 4.43)		1.80 (0.41, 6.95)		7.37** (1.87, 31.33)		2.03 (0.10, 16.27)		1.23 m(0.23, 5.18)	
Occupation		1.69 (4)		3.60 (4)		20.43 (4)***		1.46 (4)		12.05 (4)*		2.32 (4)		2.49 (4)
Unemployed [not because of COVID- 19]	Ref		Ref		Ref		Ref		Ref		Ref		Ref	
Essential worker [not healthcare]	1.29 (0.48, 3.62)		1.40 (0.59, 3.50)		0.35** (0.18, 0.67)		1.37 (0.66, 2.87)		3.20** (1.47, 7.40)		0.56 (0.19, 1.63)		0.87 (0.37, 2.04)	
Non-essential worker	1.04 (0.37, 3.00)		0.95 (0.37, 2.45)		0.30*** (0.16, 0.57)		1.40 (0.69, 2.87)		1.89 (0.84, 4.44)		0.51 (0.16, 1.54)		1.01 (0.45, 2.29)	
Essential health-care worker	1.56 (0.59, 4.38)		1.29 (0.52, 3.28)		0.29*** (0.15, 0.57)		1.05 (0.49, 2.24)		3.31** (1.50, 7.72)		0.56 (0.19, 1.65)		1.34 (0.60, 3.02)	
Lost job because of COVID-19	0.89 (0.28, 2.75)		1.99 (0.81, 5.04)		0.29** (0.14, 0.61)		1.30 (0.59, 2.86)		2.69* (1.17, 6.44)		0.43 (0.12, 1.40)		1.51 (0.65, 3.54)	
Geographical location		2.12 (1)		0.00 (1)		3.18(1)		4.08 (1)*		1.30 (1)		0.36 (1)		6.50 (1)*
Outside Greater Montreal Area	Ref		Ref		Ref		Ref		Ref		Ref		Ref	
Greater Montreal Area	0.61 (0.31, 1.20)		1.02 (0.55, 1.94)		0.64 (0.39, 1.05)		0.59* (0.36, 0.98)		0.74 (0.45, 1.24)		0.79 (0.37, 1.77)		2.25* (1.20, 3.98)	

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. All models included gender, education, immigrant status and exposure to COVID-19 as control variables. Separate models were implemented for each COVID-related discrimination context (0 = not discriminated; 1 = discriminated).

% of them experienced discrimination because of their age, and 48 % of them were discriminated in stores/supermarkets (see Tables 3 and 4).

Correlates of perceived discrimination among those who experienced COVID-related discrimination

Results of binomial regression models to investigate the impact of age, ethno-cultural group, employment status/occupation and geographical location on reported reasons of COVID-related discrimination are reported in Table 5. Age was statistically significantly associated with gender as reason of discrimination, in that younger participants were more likely to experience COVID-related discrimination because of their gender. One's ethnocultural group was significantly associated with race/ethnicity, age, immigrant status and residential neighbourhood as reasons of COVID-related discrimination. Specifically, East Asian participants reported the highest level of discrimination because of ethnicity, followed by South East Asian, South Asian and Black participants. East Asian and Black participants were less likely than White participants to be discriminated because of age, and East-Asian participants were also less likely to be discriminated because of the neighbourhood they lived in. South Asian, Arab and Black participants were more likely to report discrimination because of their immigrant status. Employment status was significantly associated with age and occupation as reasons of discrimination. Specifically, essential workers, and health-care workers in particular, were at higher risk of reporting COVID-related discrimination because of their occupation. Unemployed participants were more likely to report COVID-related discrimination because of their age. Finally, participants' geographical location was significantly associated with neighbourhood as reason of discrimination. Participants living in the GMA were twice as likely than participants living in the rest of the province to report experiencing discrimination because of the neighbourhood they lived in. No statistical significant associations emerged between the socio-cultural variables of interest and income or physical health.

In terms of contexts of discrimination (Table 6), age was significantly associated with discrimination experienced online, looking for a job and looking for an apartment, in that younger participants (aged 18–39) were more likely to experience discrimination at work, looking for an apartment, and online. Participants's ethno-cultural group was associated with discrimination at work or looking for a job. Specifically, participants identifying as Arab or with the "Other" minority group reported more COVID-related discrimination at work or looking for a job than White participants. Participants' employment status was associated with discrimination experienced at the workplace/looking for a job and in supermarkets/grocery stores. In terms of odd-ratios, participants who were unemployed prior to the pandemic reported more COVID-related discrimination in stores/supermarkets but reported less discrimination at work or looking for a job than essential workers and participants who lost their job because of the epidemic. Participants' geographical location was significantly associated with discrimination experienced in the health and social services and in street\parks, in that participants who were living in the GMA were twice as likely to have experienced COVID-related discrimination in health and social services, but less likely than participants not living in the GMA to experience COVID-related discrimination in streets/parks.

Table 7

Results of Poisson regression models on the association between age, ethno-cultural group, occupation and geographical location and total counts of reasons and contexts of COVID-related discrimination ($n = 541$).

Variables	Total counts for reasons		Total counts for contexts	
	Estimate (95 % CI)	LR χ^2 (df)	Estimate (95 % CI)	LR χ^2 (df)
Age		0.734(2)		9.438(2)**
18–39 years	Ref		Ref	
40–59 years	-0.001 (-0.136, 0.133)		-0.199 (-0.402, 0.003)	
≥ 60 years	-0.129 (-0.326, 0.067)		-0.493 (-0.776, -0.210) ***	
Race/ethnicity		12.011(6)		6.399(6)
White	Ref		Ref	
East Asian	-0.089 (-0.295, 0.116)		0.120 (-0.161, 0.401)	
South Asian	0.433 (0.158, 0.708)**		0.267 (-0.093, 0.627)	
Black	0.113 (-0.075, 0.300)		0.115 (-0.126, 0.356)	
South East Asian	-0.066 (-0.366, 0.234)		0.363 (-0.007, 0.733)	
Arab	0.173 (-0.033, 0.380)		0.132 (-0.152, 0.417)	
Other	0.302 (-0.205, 0.809)		0.497* (0.030, 0.964)	
Occupation		2.910(4)		2.783(4)
Unemployed [not because of COVID-19]	Ref		Ref	
Essential worker [not healthcare]	0.158 (-0.010, 0.326)		-0.071 (-0.327, 0.185)	
Non-essential worker	0.044 (-0.122, 0.210)		-0.215 (-0.469, 0.039)	
Essential health-care worker	0.177 (-0.009, 0.363)		-0.072 (-0.319, 0.175)	
Lost job because of COVID-19	0.078 (-0.088, 0.244)		-0.054 (-0.305, 0.196)	
Geographical location		0.011(1)		2.773(1)
Outside Greater Montreal Area	Ref		Ref	
Greater Montreal Area	0.009 (-0.121, 0.140)		-0.158 (-0.330, 0.014)	

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. All models included gender, education, immigrant status and exposure to COVID-19 as control variables.

Correlates of sums of self-reported reasons and contexts of discrimination among those who experienced COVID-related discrimination

Results from multivariate Poisson regression models indicated that the total number of reported reasons of COVID-related discrimination did not vary across age, ethno-cultural group, occupation or geographical location (Table 7). Only age was significantly associated with total number of reported reasons of COVID-related discrimination. Younger participants (aged 18–39) were more likely to experience discrimination across multiple contexts (see Table 7).

Discussion

The present study documented experiences of COVID-related discrimination during the pandemic in an ethno-culturally diverse adult sample in Quebec (Canada). Results build on existing literature on the deleterious effects of COVID-related discrimination on mental health (Liu et al., 2020; Miconi et al., 2021) and social distancing intentions (Frounfelker et al., in press). Our results are not surprising in light of the rise in xenophobic and discriminatory incidents observed during the COVID-19 pandemic (He et al., 2020; Ransing et al., 2020) and underline the need of empirical research to inform public policy and pedagogical interventions. Such interventions should aim to mitigate the social and individual negative effects of the pandemic in terms of mental health and community inter-relations now and in the near future.

Prevalence of COVID-19 related discrimination

Our findings confirmed that COVID-related discrimination is an emerging but concerning reality during the present pandemic (Devakumar et al., 2020; Ransing et al., 2020). Overall, racialized minorities, health-care workers and younger participants were more likely to report COVID-related discrimination. Our findings confirm that ethnicity, occupation and age are important socio-cultural determinants and reasons of COVID-related discrimination during the current pandemic (He et al., 2020; Previtali et al., 2020; Singh & Subedi, 2020). Participants who were exposed to COVID-19 were also more likely to experience disease-related discrimination, in line with prior literature on the association between infection during an epidemic and stigma (Lee et al., 2007; McMahon et al., 2016; Singh et al., 2020). In addition, men and less educated participants were also at higher risk of experiencing discrimination. These findings can be understood within an intersectionality perspective suggesting that race, gender and socio-economic status shape the experience of perceived discrimination, which is the result of a combination of different daily realities (Ifatunji & Harnois, 2016; Potter et al., 2019).

COVID-related discrimination and ethno-cultural origin

Our findings are in line with reports of discriminatory incidents that have been populating the news since the start of the pandemic, and confirm that participants with an Asian background, especially East Asians, are at a very high risk of incurring into COVID-related discrimination because of their race/ethnicity (He et al., 2020; Liu et al., 2020). Public messaging and political leaders may have played an active role in fueling rather than fighting this type of racial discrimination during the pandemic by associating in their speeches the virus with a specific geographical location, such as China (Sheth, 2020).

The fact that East Asian participants were less likely to report age or neighbourhood as reasons of discrimination may be related to the fact that race/ethnicity was for them the main reason of experiences of discrimination. The same explanation applies for Black participants, who were also less likely to experience discrimination because of age. The fact that South-Asian, Arab and Black participants were more likely to report discrimination because of their immigrant status may be linked to the demographic characteristics of recent immigrants in Quebec (Statistics Canada, 2017) which are also reflected in our sample, with the majority of South Asian, Arab and Black participants being first generation immigrants, hence more likely to have a precarious or temporary status in Quebec. Arab and other minority groups were at an increased risk of being discriminated at work or while looking for a job. These ethno-cultural groups are over-represented among essential workers in Quebec during the pandemic, as a result of pre-existing social and structural inequalities (Center for Research-Action on Race Relations (CRARR) (2020)). Taken together, these results suggest that although participants with an Asian descent are the ethno-cultural group at the highest risk of COVID-related discrimination, other racialized minorities are still experiencing COVID-related discrimination in links with their ethnic background and other cultural reasons, such as one's immigrant status. Although some initiatives were taken by public authorities in Quebec to ensure health coverage and protection of immigrant and racialized groups at the beginning of the pandemic, our findings indicate that such efforts were not completely effective and that more work is needed to ensure the safety of immigrant groups and ethnic minorities during the pandemic.

COVID-related discrimination and age

Younger participants reported more experiences of COVID-related discrimination overall and across contexts than older participants, mirroring a more active and dynamic life-style during the pandemic, which is likely to expose them more to situations in which discrimination may occur. This may also reflect a pitfall of ageism, in that young people may underestimate the risks and feel invincible and not responsible during the pandemic (Previtali et al., 2020), as showed for instance by the behaviors of young students who were partying and gathering together during spring break (Miller, 2020). Nonetheless, seniors were primarily discriminated in stores and because of their age. Our findings are in line with news reports on the outbreak of "Ageism" during the pandemic (Previtali et al., 2020) and highlight the need to protect not just young people but also seniors from discriminatory experiences, especially in stores.

COVID-related discrimination and employment status/occupation

In line with our expectations, health care workers were at higher risk of COVID-related discrimination and more likely to attribute it to their occupation. This confirms prior findings on social stigma and discrimination experienced by frontline workers across the globe (McKay et al., 2020; Singh & Subedi, 2020; The Economist, 2020; World Health Organization, 2020c). Reducing the risks of experiencing stigma and discrimination for frontline health workers is of crucial importance to protect their mental wellbeing and help in controlling this public health crisis effectively.

COVID-related discrimination and geographical location

The unique patterns of discrimination in the GMA are noteworthy and cause for further reflection. For instance, neighbourhood was more frequently reported as a reason of discrimination among participants living in the GMA than other areas of Quebec. Although this may simply be a product of the urban structure of the GMA and greater emphasis on neighborhood boundaries and characteristics than elsewhere in the province, such a finding could be related to the phenomena of public authorities' sharing information about rates of infection in the GMA by neighbourhood/municipality; this practice highlighted geographical disparities in COVID infection based on neighborhood characteristics such as socioeconomic status and cultural diversity (Santé Montreal, 2020).

In addition, the fact that participants living in the Montreal area were twice as likely to experience discrimination in health and social services than participants living in the rest of the province raises questions as to whether health and social services in Montreal lack the cultural competence and inclusivity necessary to promote access to high-quality health-care to a culturally diverse population. Last, the fact that people living in the GMA were less likely than people living in the rest of the province to experience discrimination in the streets and parks suggests that highly diverse urban settings may be relatively protective from discrimination when minorities become the demographic majority (Hunt, Wise, Jipguep, Cozier, & Rosenberg, 2007; Welch, Sigelman, Bledsoe, & Combs, 2001).

Implications for public health messaging and programs

Our findings indicate that anti-discriminatory actions should address and modify public beliefs related to the association of COVID-19 with race/ethnicity, age, occupation, physical health and neighbourhood. In the short term, our findings also suggest that health communication actions with an anti-discriminatory objective should primarily target public spaces (e.g., stores, streets), but also the workplace and health and social services. Public health messaging oriented towards solidarity and how the general population can protect vulnerable individuals such as members of visible minorities and seniors, as well as the promotion of positive images of health-care and essential workers among the general public seem potential avenues to reduce the stigma and discrimination associated with one's ethnic origin, occupation and age. From a prevention standpoint - in terms of future directions - our work points to the urgent need for the development, implementation and evaluation of multi-sectoral, community-based anti-discrimination programs which are grounded in principles of social pedagogy and anti-oppression (Nelson & Venkatesh, in press). In the specific context of the COVID-19 pandemic, social pedagogy refers to the reflexive and inclusive creation of dialogic spaces that promote pluralism, critical thinking and digital literacy. When applied alongside Freire (2017) principles of anti-oppression, social pedagogy in a pandemic context can ensure a re-alignment of the development of public policy that takes into account the perspectives of those communities that are marginalised through discrimination and also including key stakeholders with relevant expertise in health (mental, physical or otherwise), public safety, community development and social services. This also means that interventions grounded in social pedagogy should not only be designed to improve learning outcomes related to knowledge acquisition (e.g., digital literacy, building resilience against misinformation) and cognitive outcomes (e.g., transfer of learning in ecologically valid contexts), but also catalyse concrete outcomes associated with reduction in perpetrating discrimination (Logie & Turan, 2020). Such primary prevention programming could potentially include four unique components: 1) creating consultation groups led by community stakeholders with input from partners in public policy, public safety, education, social services, and health, 2) training, mentoring and equipping of marginalised community groups with critical digital literacy skills that contribute to a reduction in perpetration of discriminatory rhetoric, 3) showcasing community-led efforts on how to improve engagement, reduced aggression, and creating pluralist dialogic platforms to respond to discrimination; and 4) creating a robust evaluation framework which links the measured impacts of the prevention programming on individual, group and stakeholder outcomes.

In addition, it is important to monitor discriminatory phenomena in time during the pandemic, as the situation is changing rapidly. Studies aimed to investigate why COVID-19 related discrimination is experienced more in some contexts by specific social groups are warranted, as such knowledge could help to further the development of timely discrimination prevention policies and programs.

Undoubtedly, age emerges as an important determinant of contexts and reasons of COVID-related discrimination. Our findings warn about the use of chronological age for public policies and messaging and suggests that interventions should be developed more on the basis of individual differences across age groups and considering the intersection of different social, economic and health factors (Ayalon et al., 2020; Previtali et al., 2020).

Emphasizing the efficacy and reduction of risk of infection due to preventive measures such as wearing a mask, hand washing and physical distancing over risks could reduce the stigma attached to essential workers and individuals with pre-existing health conditions. It is essential to disseminate accurate information on COVID-19 and risks of infection and transmission of the virus and emphasize the precautions taken by health care and essential workers to reduce such risks (Singh & Subedi, 2020). Increasing agency and empathy to promote solidarity and support within communities has proven to be an effective strategy to mitigate the negative outcomes of prior epidemics (Eaton & Kalichman, 2020; Logie & Turan, 2020).

Training health professionals in cultural competence can improve one's awareness around communication styles, explanatory styles as well as facilitate collaborations with interpreter services in the health domain. These are all fundamental aspects to enable effective work in cross-cultural situations. In addition, an acknowledgement of systemic racism and of the associated structural violence is often warranted to establish trust and help patients feel safe while receiving services. Cultural competence and cultural safety are complementary in health and social services and together constitute an essential step to overcome access barriers to care for cultural minority groups in ethnically diverse cities such as the GMA. The framing of public messaging regarding infection rates by neighbourhoods and municipalities needs to be carefully assessed to make sure that inclusiveness and solidarity rather than fear and isolation are underlined by policies and the media (Eaton & Kalichman, 2020). Our findings also indicate that health and social professionals should be aware of the increased risk of experiencing COVID-related discrimination of ethnic minorities, health-care workers, young people and seniors. Professionals working in the health and social services should actively support and protect these populations from discrimination and stigma during and in the aftermath of the pandemic.

Limitations and future directions

There are several limitations to this study. First, our study used a convenience sample and included a majority of participants with some college or a university degree, therefore findings cannot be generalized to the larger Quebec population nor to less educated populations. Second, differences may exist within the broad ethno-cultural groups used in the present study. Studies including larger samples and collecting more fine-grained ethno-cultural information are warranted. Third, we relied on self-reports and thus social desirability and response biases need to be taken into account. Fourth, participants who present several risk factors (e.g., essential healthcare worker of Asian descent) may be at increased risk of experiencing COVID-related discrimination but because of sample size limitations we could not test such interaction effects. Intersectionality may be very useful to understand the dynamics and relative risk of discrimination (Logie & Turan, 2020; Weber, 2010) and future studies are needed to shed light on this issue during the present pandemic. Last, our results cannot be generalized to different countries nor to other Canadian provinces, and more research on regional and trans-national differences is needed.

Conclusion

In spite of these limitations, our study provides the first empirical evidence of experiences of COVID-related discrimination during the current pandemic in a culturally diverse adult sample in the Canadian context. COVID-related discrimination is a concerning phenomenon during the present pandemic that deserves timely prevention and intervention. As it is multi-determined and assumes multiple forms, it is important to acknowledge its prevalence and complexity and to situate it within an intersectionality framework. It is crucial to protect minority groups who have already been disproportionately impacted by the pandemic due to systemic inequalities. Likewise, young people, seniors and essential health-care workers should be supported at the individual and collective level. The reduction of overall levels of discrimination – COVID-related and not – would help building a more just and equitable society and reduce the long-term negative impacts of the pandemic on individuals and communities.

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Declaration of Competing Interest

The authors reported no declarations of interest.

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