

BMJ Open Prevalence and characteristics of anti-Indigenous bias among Albertan physicians: a cross-sectional survey and framework analysis

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To cite: Roach P, Ruzycski SM, Hernandez S, *et al*. Prevalence and characteristics of anti-Indigenous bias among Albertan physicians: a cross-sectional survey and framework analysis. *BMJ Open* 2023;**13**:e063178. doi:10.1136/bmjopen-2022-063178

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-063178>).

Received 24 March 2022
Accepted 06 February 2023



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ABSTRACT

Objective Recent deaths of Indigenous patients in the Canadian healthcare system have been attributed to structural and interpersonal racism. Experiences of interpersonal racism by Indigenous physicians and patients have been well characterised, but the source of this interpersonal bias has not been as well studied. The aim of this study was to describe the prevalence of explicit and implicit interpersonal anti-Indigenous biases among Albertan physicians.

Design and setting This cross-sectional survey measuring demographic information and explicit and implicit anti-Indigenous biases was distributed in September 2020 to all practising physicians in Alberta, Canada.

Participants 375 practising physicians with an active medical licence.

Outcomes Explicit anti-Indigenous bias, measured by two feeling thermometer methods: participants slid an indicator on a thermometer to indicate their preference for white people (full preference is scored 100) or Indigenous people (full preference, 0), and then participants indicated how favourably they felt toward Indigenous people (100, maximally favourable; 0, maximally unfavourable). Implicit bias was measured using an Indigenous-European implicit association test (negative scores suggest preference for European (white) faces). Kruskal-Wallis and Wilcoxon rank-sum tests were used to compare bias across physician demographics, including intersectional identities of race and gender identity.

Main results Most of the 375 participants were white cisgender women (40.3%; n=151). The median age of participants was 46–50 years. 8.3% of participants felt unfavourably toward Indigenous people (n=32 of 375) and 25.0% preferred white people to Indigenous people (n=32 of 128). Median scores did not differ by gender identity, race or intersectional identities. White cisgender men physicians had the greatest implicit preferences compared with other groups (−0.59 (IQR −0.86 to −0.25); n=53; p<0.001). Free-text responses discussed ‘reverse racism’ and expressed discomfort with survey questions addressing bias and racism.

Conclusions Explicit anti-Indigenous bias was present among Albertan physicians. Concerns about ‘reverse racism’ targeting white people and discomfort discussing racism may act as barriers to addressing these biases.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study is the first to measure explicit and implicit anti-Indigenous biases among practising physicians to understand the source of discrimination in our health system.
- ⇒ Directly asking physicians about their feelings toward Indigenous patients is a direct, self-reported measure of explicit bias.
- ⇒ Understanding anti-Indigenous bias is a call to action for Canadian physicians from the Truth and Reconciliation Commission.
- ⇒ The connection between implicit bias and bias in clinical decision-making is not straightforward.

About two-thirds of respondents had implicit anti-Indigenous bias. These results corroborate the validity of patient reports of anti-Indigenous bias in healthcare and emphasise the need for effective intervention.

INTRODUCTION

Anti-Indigenous racism in the Canadian healthcare system is alarmingly common. Examples of both interpersonal^{1,2} and structural^{3,4} anti-Indigenous racism abound in the medical literature,⁵ multiple government reports^{6,7} and news media without significant repercussions or interventions. Anti-Indigenous bias may be explicit and relational, as in the case of Joyce Echaquan, a First Nations woman who was openly mocked by healthcare professionals before her death in hospital,⁸ or implicit and systemic, as in the case of Lillian Vanasse, a First Nations woman who was assumed to be in methadone withdrawal but died of heart failure in an emergency department.⁹ This structural and interpersonal anti-Indigenous racism interacts, leading to less acute triage scoring for First Nations patients presenting to the emergency department with the same visit reason as non-Indigenous patients,¹⁰ a greater prevalence of chronic and infectious diseases

among residential school survivors,¹¹ and a consistent lack of adequate resourcing for Indigenous communities.¹²

While anti-Indigenous bias may be most obviously harmful when it affects patient outcomes,¹³ there are negative impacts of this bias on trainees and physicians as well.^{14 15} A common but often overlooked example is the influence of witnessing racism on Indigenous learners and healthcare professionals, especially when this racism is permitted and unchallenged by non-Indigenous colleagues.¹⁴ Epistemic racism is part of the hidden curriculum through medical training, where medical students are taught that Indigenous health customs and practices are not 'evidence based' leading to devaluation of Indigenous medicine, healing and culture.¹⁶ Altogether, while it is publicly acknowledged that anti-Indigenous bias in health systems is inexcusable, it remains rampant in both frequency and magnitude.

The Truth and Reconciliation Commission calls on Canadian healthcare systems to address and remediate their approach to Indigenous people.¹⁷ Research has focused on measuring the impact of structural and interpersonal racism on Indigenous patients¹⁰ and learners¹⁴ without evaluation of interpersonal anti-Indigenous attitudes among healthcare workers who perpetuate this discrimination. The objective of this study was to measure the prevalence of interpersonal anti-Indigenous bias among physicians in Alberta, including explicit and implicit biases, with the aim of informing policy to improve the healthcare and medical education systems for Indigenous physicians, trainees and patients. Implicit bias refers to unconscious beliefs that are based on the values of a culture or society.¹⁸ Explicit bias refers to stated beliefs based on stereotypes.¹⁸ Discrimination refers to actions that disadvantage groups of people based on explicit or implicit biases or attitudes.¹⁹ These data were collected as part of a larger study of diversity, bias and equity in Albertan physicians.

METHODS

Study design

This manuscript reports a subsection of results focusing on anti-Indigenous bias from a larger, cross-sectional survey that was circulated to all active physicians in Alberta (online supplemental appendix 1). The survey was developed and pilot tested by a diverse team of academic physicians and researchers at the University of Calgary, including First Nations, Métis, settler and racial minority people. The survey had seven total domains (65–175 questions) designed to measure the demographic diversity of currently practising physicians (maximum 59 items),²⁰ their experiences of the workplace (maximum 113 items)²¹ and anti-Indigenous bias (3 items); the results for the other survey objectives are reported elsewhere. Participation was uncompensated, anonymous and voluntary. Informed consent was obtained for all respondents electronically at the start of the survey. This manuscript is reported according to the Checklist for Reporting Results

of Internet E-Surveys²² and Consolidated Criteria for Reporting Qualitative Research²³ guidelines for reporting survey and qualitative research, respectively, to ensure accurate reporting of all survey questions, including the free-text fields.

Patient and public involvement

No members of the public or patients were involved in this study.

Setting

Alberta is a Canadian province of 4.4 million people served by a single health system. In Canada, 'Indigenous' refers to First Nations, Métis and Inuit people. There are about 260 000 Indigenous people living in the province, including approximately 114 000 Métis and 2500 Inuit people in addition to the 48 First Nations communities.²⁴ Indigenous people comprise 6.5% of Alberta's population but less than 1%–3% of physicians^{20 25} and 3% of nurses are working in Alberta.²⁶ All physicians affiliated with Alberta Health Services (about 80% of practising physicians) participate in mandatory cultural safety training on an annual basis. This training includes courses that address anti-Indigenous bias.²⁷

Canada has a long history of anti-Indigenous racism, including within the health system. This study focuses on physicians as a potential source of interpersonal bias, as defined by Jones' framework, which describes how racism may manifest as interpersonal, institutional and internalised racism.²⁸ Interpersonal racism refers to the actions of an individual person to devalue and dehumanise another person based on their perceived race, regardless of intent or awareness.²⁸ Interpersonal anti-Indigenous racism has been well documented in Alberta and Canada^{6 7 13} from the perspective of Indigenous people, including in multiple highly publicised patient deaths, including several cases where Indigenous patients were assumed to be intoxicated or in withdrawal and subsequently died of other treatable conditions.^{1 2} The effects of interpersonal anti-Indigenous racism among Alberta healthcare workers are seen in the lower triage scores assigned to First Nations patients presenting to emergency rooms with similar complaints as white patients.¹⁰ Interpersonal anti-Indigenous racism has been studied from the perspective of those on the receiving end of racism, including Indigenous patients in Alberta^{5 13} and Canadian university students,¹⁵ but there are few studies characterising the attitudes of healthcare workers who perpetuate this discrimination.

The sampling frame included all practising physicians in Alberta. A link to access the survey was circulated in the Alberta Medical Associations' monthly newsletter (approximately 14 000 subscribers, including retired physicians and duplicate email addresses), the College of Physicians and Surgeons of Alberta monthly newsletter (11 730 recipients), and the weekly Alberta Health Services newsletter (9158 recipients). The mailing lists of each of these groups is overlapping; there are 11 688 active

physicians working in Alberta. Reminders to complete the survey were posted on the social media accounts of these organisations without a link to the survey. The survey was open from 1 September 2020 to 15 October 2020 (6 weeks). Self-identified Indigenous participants did not complete the sections on anti-Indigenous bias but were able to contribute free-text comments. This decision was based on advice from Indigenous study team members, who felt that these questions could be traumatising to Indigenous participants without adding important data to the analysis.

Measures

Explicit anti-Indigenous bias was assessed using two feeling thermometer approaches. This approach uses a continuous slider that is moved by the participant between two opposite ends, to indicate their agreement with a statement. These methods are similar to a Likert scale approach but allow a continuous response rather than requiring the respondent to choose from options. The first thermometer asked about overall feeling towards Indigenous people from ‘cold/unfavourable’ to ‘warm/favourable’ (range 0–100, higher scores indicating more warm or favourable) and the second asked about preference for Indigenous or white people (score of 0 indicating a complete preference for Indigenous people, score of 100 indicating a complete preference for white people, score of 50 indicating neutral).²⁹ The

first measure assesses the overall feeling of a participant toward Indigenous people and the second measures the participant’s preference compared with a privileged racial group. This approach is similar to measures used to assess self-reported explicit bias which are typically paired with implicit association tests (IATs)²⁹ and have been used to study anti-obesity bias among medical students.³⁰ Both thermometers had a neutral or no preference option (figure 1A,B).

Implicit anti-Indigenous bias was assessed using an IAT where participants were asked to match images of Indigenous peoples in Canada and European (white) people with positive and negative characteristics in a randomised fashion.³¹ The differential latency in time was assessed between matching a positive and negative characteristic with an Indigenous compared with a white person. Scores are reported in latencies; negative scores suggest an implicit preference for white people and positive scores suggest an implicit preference for Indigenous people. Greater absolute scores suggest a stronger preference such that a very negative score indicates a greater preference for white people. Scores between -0.15 and $+0.15$ suggest no implicit preference and scores lower than -0.65 and greater than $+0.65$ suggest stronger implicit biases. IATs predict discriminatory behaviour among the general public,³⁰ though they are variably associated with discriminatory clinical behaviours among physicians.³¹

How do you feel toward Indigenous people?



Please indicate your preference by sliding the pointer.

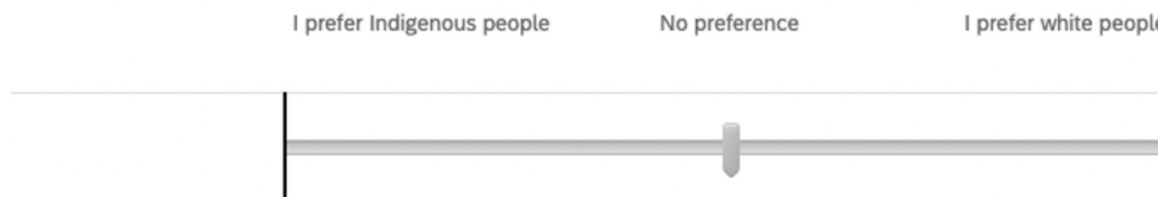


Figure 1 Explicit anti-Indigenous bias was measured using sliding scale ‘feeling thermometer’ approaches. Scores were converted to numbers based on the distance that the slider was moved by participants. (A) A score of 0 corresponded to ‘cold/unfavourable’ feelings and 100 corresponded to ‘warm/favourable’ feelings toward Indigenous people. (B) A score of 0 corresponded to a complete preference for Indigenous people and 100 indicated a complete preference for white people. For both scales, a score of 50 indicated a neutral response.



The IAT was the final activity of the survey and participants were not told that there was an IAT to reduce the possibility of social desirability bias by priming participants. Social desirability bias refers to a type of response bias where participants under-report socially undesirable behaviours, even on anonymous surveys. The IAT used in this study was developed by Well Living House researchers in Toronto.

Prior to completing the IAT, participants were provided an open-text field where participants were invited to 'share any comments that you feel are important with the study team'.

Terminology

In this study, race is conceptualised as a self-identified, social construct that may include ethnicity and/or ancestry.²⁸ We use the acronym 'BIPOC' to refer to black, Indigenous and people of colour, a heterogeneous group of people who experience marginalisation due to their race. We use 'BPOC' to refer to black and people of colour when reporting results that excluded Indigenous participants. We stratified our results by intersectional identities of cisgender identity and race: white cisgender men, white cisgender women, B(I)POC cisgender men and B(I)POC cisgender women. Intersectionality, as described by Dr Kimberlé Crenshaw,³² refers to how overlapping identities can create unique experiences of disadvantage. Using an intersectional lens, black women experience not only sexism and racism but also misogyny,³³ the specific discrimination experienced by black women (eg, the stereotype of the 'angry black woman' or discrimination due to natural hairstyles). In this study, we examined the prevalence of anti-Indigenous bias stratified by intersectional identities while not referring specifically to intersectional experiences of this discrimination. Due to small numbers of participants and the risk of identifiability, we did not analyse data by racial identity for participants with diverse gender identities (eg, trans, non-binary gender, gender fluid, agender).

Analysis

Complete survey data were only available to one member of the study team (SMR) due to the sensitive nature of the study questions. Data were presented to team members for analysis as aggregate responses so that only relevant, non-identifying information was available to other study members who analysed data. Responses were stratified by demographic characteristics and workplace characteristics, including discipline and setting (metropolitan, urban, large rural, rural and remote according to Alberta Health Services definitions³⁴), leadership roles and academic appointment.

The Wilcoxon rank-sum test was used to compare non-parametric continuous measures between two groups (eg, cisgender men and women) and Kruskal-Wallis tests were used to compare non-parametric continuous measures between intersectional identities (eg, white cisgender men, white cisgender women, BPOC cisgender

men and BPOC cisgender women). Assessment of non-response bias was guided by the framework developed by Halbesleben and Whitman³⁵ using comparison of participant demographics with known demographic data about physicians in Alberta obtained from Statistics Canada and the Canadian Institute for Health Information. The non-response analysis has been published elsewhere.²⁰ Data analysis was performed using Stata (College Station, Texas, USA).

Open-text responses to the question 'Please use this space to tell us anything you want us to know' were independently coded using framework analysis³⁶ by two study team members (SMR and PR) and reconciled through discussion. PR is a health systems researcher with expertise in qualitative methods, Indigenous health research and health systems safety (anti-racism). She is a feminist Métis cisgender woman. SMR is an academic physician with expertise in equity, diversity, and inclusion and previous experience with qualitative research methods. She is a cisgender woman feminist and white settler. Framework analysis is a qualitative approach to data analysis developed for use in health and social policy, making it an appropriate method when examining data with the intent of influencing policy and systems.³⁷ In this study, the units of analysis were a priori defined demographic identities. There are five stages to framework analysis: (1) familiarisation with the data, (2) developing a thematic framework based on familiarisation and a priori themes, (3) indexing, (4) charting, and (5) mapping and interpretation.³⁷ Framework analysis allows for the deductive analysis and mapping of data onto themes determined through the expertise of the research team, while also providing space for iterative analysis and creation of new themes as they emerge from the data through the analysis. Small, descriptive codes were therefore developed both deductively and inductively and synthesised into larger themes based on the framework with units of comparison determined by respondent race and gender identity (table 1). This manuscript reports the results of framework analysis of comments that were indexed as 'anti-Indigenous bias/experiences'. Comments were edited for spelling and grammar and de-identified prior to reporting.

RESULTS

Demographics

Full demographic characteristics of the study participants are presented in table 2. In summary, 1087 physicians participated in the survey (response rate of 9.3%). Cisgender men, family physicians and white participants may have been under-represented among survey respondents relative to their composition among all physicians (33.4% of respondents were cisgender men compared with 60.8% of Alberta physicians, 33.4% were family physicians compared with 50.0% of Alberta physicians, and 50.3% were white compared with 70.3% of Canadian physicians, respectively).²⁰

Table 1 Framework table of themes related to Indigenous participants' experiences of racism and representative participant comments

Code/theme	Exemplar quotations
Personal experiences of anti-Indigenous discrimination	Systemic racism is the characteristic of (the) Alberta health system against visible minorit(ies) either as a worker or patient, specifically Indigenous (people). (P999, redacted)
Witnessed experiences of anti-Indigenous discrimination	I have heard comments from classmates about how one student may have gotten into medical school due to (I)ndigenous status rather than merit. (P23, BIPOC cisgender woman)
'Reverse discrimination' by Indigenous people	I have often been treated poorly by (F)irst (N)ations patients due to being a white male. (P477, white cisgender man, leader)
Discomfort with discussion of anti-Indigenous bias	The last question in this set about preferences between white and (I)ndigenous people was an odd one. (P147, BIPOC cisgender man, leader) (Questions about explicit anti-Indigenous bias) are biased and should not be used. (P114, white cisgender man)

Indigenous participants provided open-text responses.
BIPOC, black, Indigenous and people of colour.

There was an important amount of non-response; the demographics of respondents to the implicit and explicit anti-Indigenous bias questions varied by question and are presented in [table 3](#). Non-response to these questions was similar across demographic groups. The correlation between explicit and implicit bias measures is reported in online supplemental figure 1.

Explicit anti-Indigenous bias

There were 375 participants who responded to the explicit anti-Indigenous bias question 'How do you feel toward Indigenous people?' (34.5% of all participants). Overall, the median score was 84 (IQR 71–100; [table 4](#) and [figures 1A and 2A](#)). There were 32 physician respondents who selected a score less than 50, indicating that they felt unfavourably toward Indigenous people (8.3%). Median scores did not differ by gender identity (Wilcoxon rank-sum $p=0.43$ for cisgender men compared with cisgender women), race (Wilcoxon rank-sum $p=0.49$ for white compared with BPOC) or intersectional identities (Kruskal-Wallis $p=0.28$). Younger participants, those with an academic affiliation and those practising in remote locations had more favourable feelings toward Indigenous people (online supplemental table 1).

Only 128 participants (11.8%) answered the second explicit anti-Indigenous bias question on preference. The median score for all participants was 54 (IQR 50–65; [table 4](#) and [figures 1B and 2B](#)). One-quarter of respondents selected a score greater than 65, indicating a preference for white people ($n=35$). There was no difference in median preference scores by gender identity (Wilcoxon rank-sum $p=0.97$ for cisgender men compared with cisgender women), race (Wilcoxon rank-sum $p=0.10$ for white compared with BPOC) or intersectional identities (Kruskal-Wallis $p=0.42$) ([figure 2B](#)). There were no clear patterns based on practice setting, age, discipline, leadership role or academic affiliation (online supplemental table 1).

Implicit anti-Indigenous bias

There were 234 respondents who completed the IAT. The median score for the sample was -0.34 (IQR -0.66 to -0.03 ; range -1.66 to $+1.19$; [table 4](#) and [figure 3](#)), suggesting an overall moderate preference for white faces. There were 67% of scores that demonstrated a preference for white faces and 13% that demonstrated a preference for Indigenous faces. Cisgender men had greater implicit preferences for white faces compared with cisgender women (median -0.52 (IQR -0.76 to -0.19) and -0.26 (IQR -0.60 to 0.03), $p<0.001$), and white cisgender men had the greatest implicit preferences compared with other groups ($p<0.001$). Participants practising in remote settings had the most neutral implicit preferences and those in urban and large rural settings had greatest implicit preference for white faces. Older participants, those in surgical disciplines and those without an academic affiliation had the strongest preference for white faces (online supplemental table 1; $p=0.01$, $p=0.02$ and $p=0.01$, respectively).

Framework analysis

Twenty of the 256 comments recorded in the open-text response box addressed anti-Indigenous bias or Indigenous experiences of racism in the health system (7.8% of comments), and this was the single largest category of comments focused on racism against a specific racial group in the larger diversity census study. Within these 20 comments, coding, indexing and charting were completed after immersion in the data by SMR and PR. Continual peer debriefing was engaged in during analysis, including frequent discussions around the indexing and charting of the data and subsequent mapping and interpretation into thematic domains of meaning. Four overarching themes were identified: personal experience of anti-Indigenous bias, witnessed anti-Indigenous bias, 'reverse discrimination' and expressed discomfort with the survey questions about anti-Indigenous bias ([table 1](#)). It was possible that an individual response would be

**Table 2** Select demographic characteristics of survey participants

	n	%
Entire cohort	1087	–
Gender identity		
Cisgender men	363	33.4
Cisgender women	509	46.8
Transgender men	1–25	<3
Transgender women	1–25	
Non-binary gender	1–25	
Gender diverse	1–25	
Two-spirited	1–25	
Self-described, unsure or preferred not to answer	48	18.5
Sexual orientation		
Member of the LGBTQI2S+ community	25–50	<5
Heterosexual	>1000	>95
Race or ethnicity*		
Black	50	4.6
White	547	50.3
Indigenous	1–25	<3
Hispanic	1–25	<3
Latinx	1–25	<3
Middle Eastern	53	4.9
South Asian	82	7.5
East Asian	67	6.2
Southeast Asian	1–25	<3
Race not listed	33	3.0
Preferred not to answer	188	17.3
Discipline of practice		
Family medicine	291	33.4
Medical specialty	381	43.7
Surgical specialty	88	10.1
Not listed	96	11.1
Preferred not to answer	15	1.7
Age		
26–30 years	23	2.5
31–35 years	144	15.9
36–40 years	144	15.9
41–45 years	125	13.8
46–50 years	127	14.1
51–55 years	118	13.1
56–60 years	81	9.0
61–65 years	70	7.7
Older than 65 years	60	6.6
Years in practice		
<5	178	20.7

Continued

Table 2 Continued

	n	%
5–10	177	20.6
11–15	125	14.5
16–20	104	12.1
21–25	88	10.2
>25	180	20.9
Prefer not to answer	9	1.1
Practice location		
Metropolitan centre	644	67.6
Urban centre	105	11.0
Large rural centre	44	4.6
Rural area	62	6.5
Remote area	21	2.2
Not listed	77	8.1
University affiliation		
University of Alberta	206	19.0
University of Calgary	437	40.2

LGBTQI2S+ refers to people who identify as lesbian, gay, bisexual, transgender, queer, intersex, two-spirit, or otherwise gender diverse or having a diverse sexual orientation.

Participant numbers in categories where there were fewer than 50 or 5% of each group are reported as aggregated ranges to prevent identifiability.

*Multiple responses permitted, percentages may exceed 100%.

mapped onto more than one theme, if multiple concepts were present in a single response.

Personal experiences of anti-Indigenous discrimination

Participants who self-identified as Indigenous or who had Indigenous family members reported examples of systemic, interpersonal and internalised anti-Indigenous racism in the medical workplace. One participant shared: “(Our medical organization) continues to have a racist and toxic workplace... I am (identity, redacted) and (have) strong familial ties to Aboriginals and I am sickened by what I continue to see with regards to marginalization of Aboriginals” (P710). A First Nations respondent commented: “I internalize the racism sometimes because I think perhaps if I was more involved in discussions or groups there would be less racism... I can’t afford to ... do this type of work as a volunteer... (leadership) is not really wanting change, they want to tick boxes... I have been hearing (racist remarks) since I was a med student and I’m exhausted” (P482, cisgender woman).

Witnessed experiences of anti-Indigenous discrimination

Several non-Indigenous participants witnessed anti-Indigenous bias towards patients, colleagues and learners. For example, a BIPOC cisgender female participant shared: “There is a major racism issue in healthcare and academia in Alberta... I see this play out frequently with my Indigenous patients, whose concerns are not

Table 3 Number and response rate of participants who responded to each of the explicit and implicit anti-Indigenous bias questions, stratified by participant race and gender identity

	Total (n, %)	White cisgender men n (%)	White cisgender women n (%)	BPOC cisgender men n (%)	BPOC cisgender women n (%)	Non-response assessment* (p value)
Began the full survey	1087	189	303	136	151	–
‘How do you feel toward Indigenous people?’	375 (34.5)	86 (45.5)	151 (49.8)	58 (42.6)	63 (41.7)	0.32
‘Please indicate your preference’	128 (11.8)	23 (12.2)	58 (19.1)	17 (12.5)	25 (16.6)	0.13
Indigenous implicit association test	234 (21.5)	53 (28.0)	101 (33.3)	37 (27.2)	37 (24.5)	0.21

Indigenous participants did not receive explicit and implicit anti-Indigenous bias questions.

* χ^2 test to compare respondents with non-respondents in each demographic identity. A p value of <0.05 suggests a difference in response rate between groups.

BPOC, black and people of colour.

valued” (P150) and a white cisgender woman reported: “I have directly witnessed anti-Indigenous macroaggression within the medical community” (P515). One participant reported: “The way other physicians and nursing staff treat Indigenous people is scary. They are not health-care providers, they are a group of criminals working in a hospital” (P995, BIPOC cisgender woman). Of note, none of the respondents specifically indicated intervening in these witnessed events.

‘Reverse discrimination’ by Indigenous people

In contrast, several white physicians, including those with leadership positions in medicine, reported experiencing ‘reverse discrimination’ from Indigenous patients; examples included: “Surprisingly, I was discriminate(d) against by a First Nation(s) patient!!” (P410, cisgender man) and “The most common sort of racism I have seen is an Indigenous person being racist in words and actions against white people. This is 100× more common than the converse. Our Indigenous patients very commonly play the race card and treat white health care workers in a very racist manner” (P777, cisgender man). One participant felt that the focus on anti-Indigenous bias caused personal disadvantage: “I am depressed that because I have white skin, I am guilty of residential schools, slavery and I am to be punished by having less chance to get a leadership position, good job etc” (P653, white cisgender woman). This indicates a lack of understanding of the concept of equity and a false equivalency of equity and oppression by the perceived loss of societal advantage.

Discomfort with discussion of anti-Indigenous bias

Multiple participants expressed discomfort with the explicit anti-Indigenous bias questions; for example, “(The explicit anti-Indigenous bias) questions are biased and should not be placed in a survey” (P11, white cisgender man). The study team also received two phone calls and three emails from participants who were concerned that these questions perpetuated anti-Indigenous bias. This led the study team to remove the IAT from the survey prior to the survey close date. These comments, all from

white physicians, expressed discomfort with an explicit discussion about preferences based on race.

DISCUSSION

This cross-sectional survey of Albertan physicians identified that about 10%–25% reported explicit anti-Indigenous bias and that overall, physicians had moderate implicit anti-Indigenous bias. Importantly, implicit anti-Indigenous bias varied between demographic groups and was greatest among white cisgender male physicians and least among BPOC cisgender female physicians. Older physicians, those practising in urban or large rural settings, those in surgical disciplines and those without academic affiliations had greatest implicit anti-Indigenous bias. Framework analysis of survey open-text comments demonstrated a contrast between the experiences of racism of some participants with the perceptions of equity or ‘reverse discrimination’ by others.

Explicit anti-Indigenous attitudes were prevalent among Albertan physicians; 8.3% of all respondents reported feeling cold or unfavourable toward Indigenous people and 25.0% reported a preference for white people over Indigenous people. Unlike other studies, we did not find that white cisgender men had stronger explicit racial bias compared with other groups.²⁹ This may be due to social desirability bias, small sample size or non-response bias, as white participants and cisgender men were under-represented among respondents in our survey. These self-reported explicit biases among physicians corroborate government reports,⁷ news media accounts,⁸ observational data¹⁰ and qualitative evidence⁵ of interpersonal anti-Indigenous racism in the Canadian healthcare system.

Implicit anti-Indigenous biases were common, with about two-thirds of all participants favouring white people over Indigenous people. Exploratory analysis of demographic characteristics associated with greater explicit or implicit bias may help target interventions to those groups with highest prevalence of bias, including



Table 4 Median (IQR) scores of explicit and implicit anti-Indigenous bias measures by respondent demographics

	All	Cisgender men	Cisgender women	P value*	White participants	BPOC participants	P value*	White cisgender men	White cisgender women	BPOC cisgender men	BPOC cisgender women	P value†
'How do you feel toward Indigenous people?'	84 (71–100)	84 (70–99)	84 (71–100)	0.43	83 (71–98)	85.5 (70–100)	0.49	80 (65–97)	84 (72–98)	86.5 (71–100)	83 (66–100)	0.28
'Please indicate your preference'	54 (50–65)	55 (51–63)	55 (50–67)	0.97	57 (51–67)	52 (48–61)	0.10	58 (51–58)	56.5 (50–56.5)	54 (50–54)	52 (46–52)	0.42
Anti-Indigenous implicit association test	-0.34 (-0.66 to -0.03)	-0.52 (-0.76 to -0.19)	-0.26 (-0.60 to 0.03)	<0.001	-0.38 (-0.70 to -0.07)	-0.25 (-0.58 to 0.01)	0.14	-0.59 (-0.86 to -0.25)	-0.30 (-0.63 to 0.02)	-0.39 (-0.58 to -0.07)	-0.15 (-0.52 to 0.09)	<0.001

Indigenous participants did not receive explicit and implicit anti-Indigenous bias questions.
 *Wilcoxon rank-sum test.
 †Kruskal-Wallis test.
 BPOC, black and people of colour.

white, cisgender men and older physicians. Physicians in surgical specialties, urban and large rural settings, and who are not affiliated with a university may also benefit from targeted intervention.

While several studies examine the experiences of discrimination of Indigenous physicians, trainees^{14 15} and patients,^{5 38} there is a single study that measures anti-Indigenous bias among non-Indigenous Canadian physicians, which focuses on medical educators.⁴ Multiple studies report strong implicit preferences among physicians for white people compared with black people; similar to our study, implicit white preference has been measured as higher among white male physicians than female physicians.²⁹ The high prevalence of anti-Indigenous bias measured in our study is supported by literature on the experiences of Indigenous patients; data from Alberta and Ontario suggest that Indigenous people commonly experienced discrimination in emergency departments.^{5 10 38} While the association between implicit bias and healthcare outcomes varies,³¹ increasing anti-black bias has been associated with use of more socially dominant language in physician–patient interactions,³⁹ less appropriate pain management⁴⁰ and diagnostic errors.¹⁸

Directed interventions, such as intentional contact with under-represented groups and a more positive racial culture in medical school, have been shown to decrease discrimination by medical students and physicians.⁴¹ Given the paucity of high-quality evidence supporting interventions to reduce implicit biases,³¹ implicit biases may be best addressed by systems-level protections that reduce the opportunity for personally mediated bias to influence decision-making. Examples may include decision aids, standardised order sets or centralised triaging. Several responses to our explicit and implicit anti-Indigenous bias measures demonstrate a discomfort with discussing race and bias among physicians. We suggest undergraduate, postgraduate and continuing medical education programmes review and evaluate their materials using an anti-colonial lens, to ensure that physicians are receiving adequate anti-racist education about Indigenous people in Canada.⁴² Equity, diversity and inclusion literacy and anti-racism are core professional competencies for physicians and should be incorporated longitudinally into medical education by those with formal training and with lived experience of marginalisation.⁴² Specific training for Indigenous cultural safety, skills-based anti-racism education and education on treaties, conflict resolution and the United Nations Declaration on the Rights of Indigenous Peoples⁴³ is outlined as an urgent need that can be delivered through embedded, longitudinal Indigenous health education for all health professionals.^{17 42} In particular, the frequency of participant comments about 'reverse racism' suggests a lack of understanding of racism, which is most accurately conceptualised as racial bias plus societal power to disadvantage groups based on their race and therefore cannot operate in 'reverse' to disadvantage groups with privilege.⁴⁴ Further, healthcare

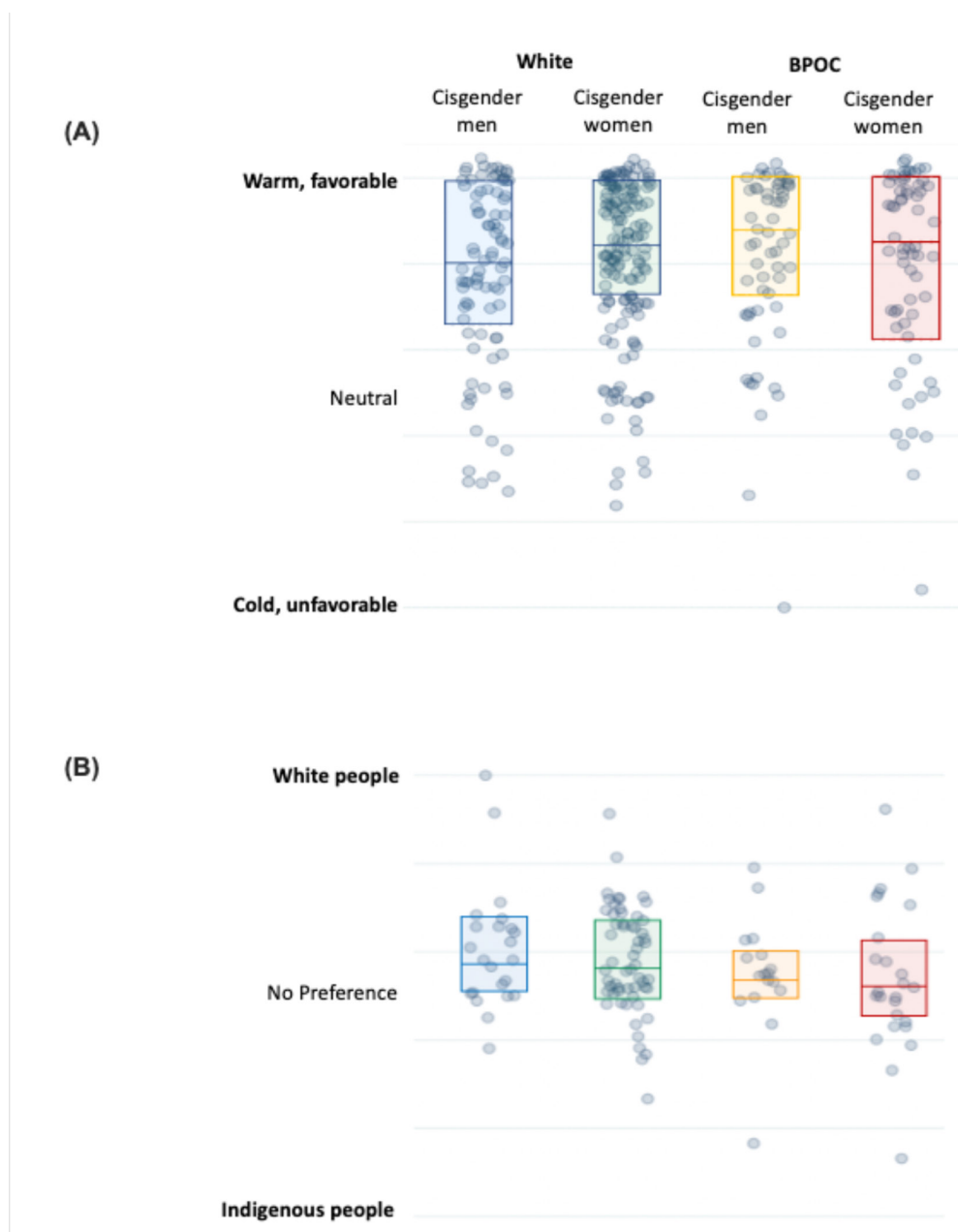


Figure 2 Measures of explicit anti-Indigenous bias by gender identity and race. (A) How do you feel about Indigenous people?; (B) Do you prefer white people or Indigenous people? Each circle represents a respondent answer. Medians and IQRs are overlaid. Indigenous participants did not receive explicit and implicit anti-Indigenous bias questions. BPOC, black and people of colour.

organisations and leaders should develop strategies within their admissions, hiring and promotion policies to recognise and remediate physicians with explicit anti-Indigenous bias. Explicit anti-Indigenous bias is not compatible with medical leadership, medical education or clinical medicine.

This study has several limitations. First, the overall response rate was less than 10% and questions about explicit and implicit biases were often skipped by participants. This introduces potential for non-response and selection bias among participants. Based on Leverage-Salience Theory, which anticipates that respondents who are most interested in a topic will be most likely to

participate in a survey,³⁵ we hypothesise that active non-response to our survey may be lower than other studies. This is because physicians with strong anti-Indigenous attitudes and physicians with anti-racist attitudes may be more motivated to respond to this survey than participants with less strong attitudes, allowing for representation of opposing opinions and fewer 'neutral' opinions that exist in the overall population.³⁵ Further, we expect that social desirability bias may lead to an underestimate of explicit anti-Indigenous racism by participants. Despite the actions of potential non-response and selection bias, we still collected a number of responses that indicated explicit anti-Indigenous bias from practising

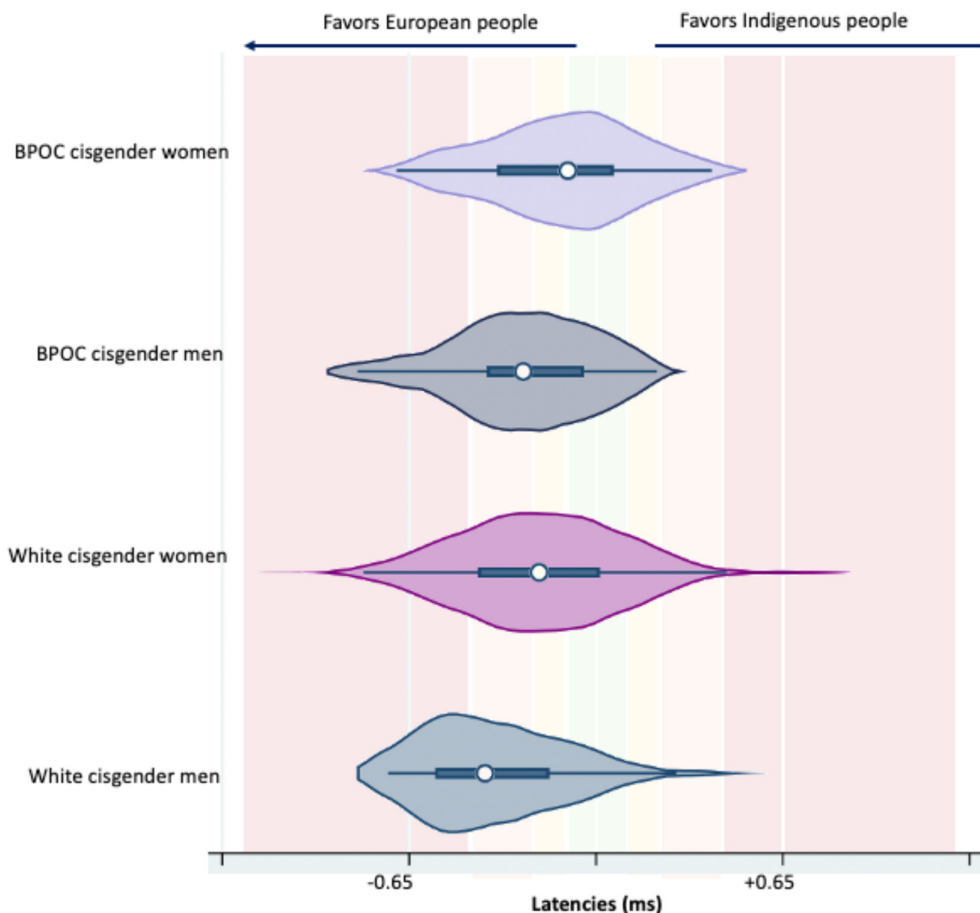


Figure 3 Distribution of scores on the Indigenous implicit association test by respondent gender identity and race. White circles represent median score and blue rectangles represent the IQR. Red background indicates strong preferences, orange suggests moderate preferences, yellow suggests weak preference and green suggests no preference. Indigenous participants did not receive explicit and implicit anti-Indigenous bias questions. BPOC, black and people of colour.

physicians—a proportion that should be zero, given the privileged role and social obligations of physicians. In addition, grouping participants from different racial groups into a heterogeneous category (‘BPOC’) may lead to a false-negative result through competing risks. For example, teachers may have unrealistically high expectations about the performance of Asian students based on stereotypes, whereas black students may be seen as having less academic potential.⁴⁵ Though these are both harmful experiences of racism, combining Asian and black participant responses to a survey question about their teacher’s perceptions of their ability may lead to a false, neutral result. Despite this risk, we combined this group to protect individual participants from identification after discussion within the study team. Lastly, our measures of explicit and implicit biases have inherent limitations; for example, there is controversy about what IATs measure and how these results should be interpreted.⁴⁶ However, use of IATs in aggregate or to prompt reflection rather than to evaluate individuals is likely appropriate.³¹

This study represents a first attempt to characterise implicit and explicit anti-Indigenous biases among Canadian physicians. Our results demonstrate a high prevalence of explicit bias among Albertan physicians,

corroborating anecdotal and peer-reviewed evidence of discrimination experienced by Indigenous patients, trainees and physicians. Further, we report that implicit anti-Indigenous bias is associated with the demographic and workforce characteristics of physicians, allowing for targeted intervention. Altogether, addressing anti-Indigenous bias among physicians must be an urgent priority for Canadian healthcare systems. These interventions should address systems-level and individual-level contributors to racism.

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Acknowledgements Angela Unsworth, Mona Sikal, Marni Panas, Jamie Rice, Lisa Beesley and Debrah Wirtzfeld from Alberta Health Services; Stephanie Usher from the Alberta Medical Association; Melissa Campbell and Nicole Kain from the College of Physicians and Surgeons of Alberta; and the Department of Medicine Anti-Racism Working Group.

Contributors PR, a Métis researcher, conceived and designed the study, contributed to data collection and analysis, supervised trainees, cowrote the first draft of the manuscript and edited the final version of the manuscript. SMR conceived and designed the study, contributed to data collection and analysis, supervised trainees, cowrote the first draft of the manuscript and edited the final version of the manuscript. SH, a First Nations medical student, designed the study, contributed to data analysis and edited the final version of the manuscript. AC, a Métis medical student, designed the study, contributed to data analysis and edited the final version of the manuscript. JH-L conceived of and designed the study,

contributed to data collection and analysis, and edited the final version of the manuscript. SA designed the study, contributed to data collection and analysis, and edited the final version of the manuscript. CB, a Metis researcher, conceived and designed the study, provided trainees supervision, contributed to data collection and analysis, cowrote the first draft of the manuscript and edited the final version of the manuscript. SMR accepts full responsibility for this work and the conduct of this study, had access to the data, and controlled the decision to publish. SMR is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval This study was approved by the University of Calgary's institutional ethics review board (REB20-1138).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. Due to privacy concerns, we will share data in aggregate or anonymised form upon reasonable request.

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