QUANTITATIVE RESEARCH

Inequalities in Determinants of Health Among Aboriginal and Caucasian Persons Living With HIV/AIDS in Ontario: Results From the Positive Spaces, Healthy Places Study

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ABSTRACT

Objectives: Aboriginal Canadians (i.e., First Nations, Inuit and Métis) are disproportionately affected by HIV/AIDS, and experience greater social and economic marginalization and poorer housing conditions. This study sought to understand the differences in the determinants of health and housing-related characteristics between samples of Aboriginal and Caucasian adults living with HIV/AIDS in Ontario.

Methods: We analyzed baseline demographic, socio-economic, health, and housing-related data from 521 individuals (79 Aboriginal and 442 Caucasian) living with HIV/AIDS and enrolled in the *Positive Spaces, Healthy Places* study. We compared the characteristics of Aboriginal and Caucasian participants to identify determinants of health and housing-related characteristics independently associated with Aboriginal ethnicity.

Results: Compared to Caucausian participants living with HIV, Aboriginal participants were more likely to be younger, female or transgender women, less educated, unemployed, and homeless or unstably housed. They were also more likely to have low incomes and to have experienced housing-related discrimination. In a multivariate model, gender, income, and experiences of homelessness were independently associated with Aboriginal ethnicity.

Conclusion: Aboriginal individuals living with HIV/AIDS in our sample are coping with significantly worse social and economic conditions and are more likely to experience challenging housing situations than a comparison group of Caucasian individuals living with HIV/AIDS. To develop effective care, treatment and support strategies for Aboriginal peoples with HIV, it is critical to address and improve their socio-economic and housing conditions.

Key words: HIV; inequality; determinants of health; housing; Aboriginal peoples

La traduction du résumé se trouve à la fin de l’article.

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Aboriginal peoples in Canada are disproportionately affected by HIV/AIDS and account for a rising percentage of new HIV-positive test reports and AIDS diagnoses.[1] While Aboriginal peoples comprise 3.8% of the Canadian population,[2] they accounted for 8% of people living with HIV and 12.5% of new infections in 2008. Their HIV infection rate is 3.6 times higher than that of non-Aboriginal Canadians.[3]

Because Ontario does not routinely collect information on the ethnicity of people diagnosed with HIV, data on Aboriginal persons affected by HIV/AIDS in the province is inadequate. Based on the limited data available from two health unit areas that do collect ethnicity data – Toronto and Ottawa – of the 10,606 HIV cases reported between 1980 and 2004 (73% of HIV diagnoses in Ontario over that period), ethnicity was known for fewer than two thirds (6,463 cases or 61%). Of those 6,463 cases, Aboriginal peoples accounted for 88 infections (66 male and 22 female) or a rate of 1.4%. Although Ontario does collect race/ethnicity information more routinely for AIDS than HIV cases, only 71% of the 7,811 AIDS cases reported in Ontario between 1981 and 2004 identified ethnicity. Of these AIDS cases, 61 persons (50 male and 11 female) or 1.1% were among Aboriginal individuals.[4] Because of the inadequacy of the data, these figures likely under-represent the extent of HIV infection in Aboriginal peoples in Ontario.

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Dedication: This article is dedicated to the memory of LaVerne Monette, co-investigator with the CIHR-funded Positive Spaces, Healthy Places (PSHP) research project, who passed away December 1, 2010. Responsible for the Aboriginal arm of the study, she played a key role in developing the questionnaire, analyzing the data and presenting the findings. She brought to our team her life experiences as an Aboriginal woman and her passion to help Aboriginal people living with and at risk of HIV. She understood the critical role of housing in health and quality of life, and was a strong advocate for research to identify the housing needs of Aboriginal people in Ontario and for policy change that will lead to safe, stable housing for all.

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Aboriginal peoples with HIV face disparities in HIV treatment and outcomes. They are more likely to: be diagnosed later,[5] initiate treatment later,[6] receive inadequate antiretroviral therapy,[7] die from AIDS without accessing antiretroviral therapy,[8] and experience higher mortality even after initiating antiretroviral treatment.[9]

The higher rates of infection and worse health outcomes seen in Aboriginal populations compared to non-Aboriginal populations are not unique to HIV/AIDS. Significant disparities between Aboriginal and non-Aboriginal Canadians have been documented across a wide range of health and social indicators, and research has pointed to historical, social, economic, and behavioural conditions and determinants that put Aboriginal peoples at higher risk of poorer health and health outcomes than non-Aboriginal Canadians.[10] Research has documented the inferior, inadequate, and often unhealthy housing conditions in Aboriginal communities and posited about the role housing conditions play, with other determinants of health, in contributing to health disparities.[11] While the focus of research in this area has historically been on the conditions of housing in Aboriginal communities on reserves, only 18.5% of Aboriginal populations were located on reserves in 2001.[12] Recent research has identified critical housing needs for Aboriginal peoples living off reserve, especially given the large numbers of Aboriginal Canadians (>50%) who migrate to large urban areas.[12] Compared to non-Aboriginal Canadians, Aboriginal peoples living off reserve are more likely to live in inadequate housing, including crowded homes and homes needing major repairs.[12]

In this study, we quantify social determinants of health, with a particular focus on housing, for samples of Aboriginal compared to Caucasian individuals living with HIV/AIDS in Ontario. This approach can begin to inform policies, programs and services that can help address health disparities.

METHODS

Study design and data collection

These analyses are based on data from the Positive Spaces, Healthy Places (PSHP) study, a longitudinal observational cohort of 602 individuals living with HIV in Ontario. The objective of PSHP is to explore the housing needs and experiences of persons living with HIV and assess the impact of housing on health and health-related quality of life outcomes. It is a community-based research (CBR) study within a determinants of health framework, designed and implemented with active participation of community members affected by HIV, consistent with the principle of Greater Involvement of People Living with or Affected by HIV/AIDS (GIPA).[13]

Our study[14] recruited a baseline sample of people living with HIV who were principally affiliated with or connected to community-based AIDS service organizations in Ontario. To ensure the sample was as representative as possible, participants were recruited using a range of health and social service access points, including: shelters; agencies serving women, families and youth; Aboriginal organizations; transitional housing providers; and supportive housing agencies. Efforts were made to include harder-to-reach populations such as people who are homeless or unstably housed (i.e., individuals living in shelters, hotels, motels, or couch-surfing).

Participants were eligible for the study if they were HIV-positive, able to provide informed consent, and lived in Ontario. All participants were screened for eligibility, and informed consent was obtained prior to administering the questionnaire. All consents and questionnaires were conducted in person by peer research assistants (PRAs) who received training on various topics, including Aboriginal cultural and socio-economic issues. The study was approved by the Research Ethics Board of McMaster University, Hamilton, Ontario and the University of Toronto. The current study and analyses focus on data from the baseline questionnaire collected in 2006.

Measures

The questionnaire collected data on a comprehensive spectrum of issues related to the determinants of health, housing experiences, and health status of people living with HIV/AIDS. For this study, we analyzed a subset of data and items from the full questionnaire to compare the social determinants of health and housing characteristics for Aboriginal peoples with HIV with those of Caucasian persons living with HIV. Participants were asked which ethnic group they belonged to (e.g., English, Italian, Jamaican) and whether they were members of an Aboriginal group (i.e., First Nations, Inuit or Metis). For this study, individuals who reported being a member of an Aboriginal group, regardless of ethnicity, are classified as Aboriginal and those who identified as members of ethnic groups of European origin were categorized as Caucasian.

We examined socio-demographic characteristics (i.e., age, gender, sexual orientation, education, employment, and income), health-risk behaviours (i.e., alcohol use and drug use), and housing-related characteristics of participants. Standard validated instruments were used to assess alcohol use (Alcohol Use Disorders Identification Test (AUDIT)),[15] non-medicinal drug use (Drug Abuse Screening Test (DAST-20),[16] and depression (CES-D self-report depression scale).[17]

Given the focus on housing-related determinants of health, we analyzed data on participants': regions of residence (i.e., Eastern Ontario, Northern Ontario, South and South Western Ontario, and Greater Toronto Area); histories of incarceration and homelessness; housing stability (defined for purposes of the study as not having to move frequently, not being worried about housing and proportion of income spent on housing) and moves; rent payment characteristics; experiences of and perceived reasons for housing discrimination; and satisfaction with residence and location of residence.

Statistical analyses

All analyses were performed using SPSS 16.0 (SPSS Inc, Chicago, IL). For the two groups – Aboriginal peoples with HIV and Caucasian people with HIV – we compared socio-demographic determinants of health, and housing-related variables using two stages of analysis. In the first stage, means, medians, standard deviations, and inter-quartile ranges were calculated for continuous variables. Means were compared for continuous variables using t-tests and Wilcoxon rank-sum tests. Frequencies were calculated for categorical variables and were compared using Pearson's χ^2 tests and non-parametric χ^2 tests. Fisher's exact test

Table 1. Socio-demographic, Health-related and Housing Characteristics of Participants

Characteristics	Aboriginal N=79		Caucasian N=442		p-value*
	N or Mean	% or (SD)	N or Mean	% or (SD)	
Socio-demographic characteristics					
Age†	42	(7.8)	44	(8.6)	**0.020**
Gender (Female/ Transgender woman)	27	34%	76	17%	**0.004**
Sexual orientation (Heterosexual)	36	46%	121	27%	**0.001**
Education (< high school diploma)	31	39%	99	22%	**0.010**
Employed (Yes)	9	11%	91	21%	0.056
Annual income (≤$10K)	18	23%	49	11%	**0.006**
Health risk behaviours					
Harmful alcohol use (AUDIT ≥8) (Yes)	25	31%	86	20%	**0.020**
Harmful drug use (DAST ≥6) (Yes)	35	44%	122	28%	**0.004**
Significant depression (CES-D ≥16 (Yes)	36	46%	226	51%	0.410
General health (Excellent/very good)	26	33%	155	35%	0.830
Housing-related characteristics					
Region (Eastern and Northern Ontario)	33	42%	102	23%	**0.001**
Unstable housing (Yes)	6	8%	10	2%	**0.012**
History of incarceration (At least once)	41	52%	144	33%	**0.001**
History of homelessness (Yes)	49	63%	164	37%	**0.001**
Experienced housing discrimination	39	49%	142	32%	**0.004**
Perceived reasons of discrimination					
Source of income	21	26%	51	12%	**<0.001**
HIV status	9	11%	57	13%	0.689
Sexual orientation	10	13%	53	12%	0.892
Employment status	17	21%	45	10%	**0.005**
Race	20	25%	18	4%	**<0.001**
Live in social housing or receive rent subsidy	55	70%	272	62%	0.154
Rent is >30% of income	47	59%	238	54%	0.320
Paying rent is very difficult/difficult	44	55%	310	70%	**0.008**
Home is a good location	48	61%	303	69%	0.200
Satisfied with whole residence	49	62%	286	65%	0.690
Satisfied with neighbourhood	40	51%	267	60%	0.120

* Two-tailed values of Wilcoxon rank-sum test or Pearson's χ^2 tests.
† Information is missing for 3 Aboriginal and 39 Caucasian participants.

was used for contingency tables in which 25% of the expected cell frequencies were less than five.

In the second stage, we used logistic regression to examine determinants of health independently associated with Aboriginal ethnicity, where we included variables selected using the backward stepwise logistic regression method and the Akaike Information Criteria method.[18]

RESULTS

Socio-demographic characteristics

Of the 602 individuals enrolled in the study, we excluded 79 participants who self-identified as members of African, Caribbean, and Asian/Pacific ethnic groups, yielding a sample of 523 individuals. Of those, 442 (85%) identified themselves as Caucasian, and the remaining 79 (15%) self-identified as Aboriginal (First Nations, Inuit or Métis). Compared to Caucasian participants, Aboriginal participants in the sample were generally younger (mean age 42 versus 44 years, p<0.05) and more likely to identify as female or transgender women (34% versus 17%, p<0.01) and heterosexual (46% versus 27%, p<0.01) (Table 1).

Compared to Caucasian participants, Aboriginal participants were more likely to have a lower level of education (39% versus 22%, p=0.01). While 11% of Aboriginal participants were employed compared to 21% of Caucasian participants, this difference was not statistically significant (p=0.056). However, there was a significant difference in the percentage of Aboriginal participants who reported an annual average income of less than $10,000 compared to Caucasian participants (23% versus 11%, p=0.01).

Health risk behaviours

Compared to Caucasian participants, Aboriginal participants were more likely to report harmful alcohol use, defined as AUDIT ≥8 (31% versus 20%, p<0.05) and harmful non-medicinal drug use (DAST ≥6) (44% versus 28%, p<0.01). The two populations did not differ significantly in self-reported number of depressive symptoms or self-reported general health status.

Housing-related characteristics

Compared to Caucasian participants, Aboriginal participants were more likely to live in Eastern or Northern Ontario (42% versus 23%, p<0.01), have a history of incarceration (52% versus 33%, p<0.01), and have a history of homelessness (63% versus 37%, p<0.01). The percentage of Aboriginal participants who reported perceived housing discrimination was significantly higher than that of Caucasian participants (49% versus 32%, p<0.01), with Aboriginal participants reporting discrimination on the basis of source of income, employment status, and race. Aboriginal participants were also more likely to live in unstable housing (i.e., live in hotels, shelters, motels, streets, parks, or couch-surf) (8% versus 2%, p<0.05). In terms of paying for housing, a nominally higher but not significant percentage of Aboriginal participants reported living in social housing or receiving rent subsidies; in contrast, Aboriginal participants were significantly less likely than Caucasian participants to report that paying rent was difficult or very difficult (55% versus 70%, p<0.01). This discrepancy may be due, in part, to higher access to rent subsidies or the lower cost of living and housing in the communities where Aboriginal participants lived (i.e., a large proportion lived in the Greater Toronto Area where there may be more affordable

Table 2. Factors Independently Associated With Aboriginal Ethnicity (N=521)

Factors	Adjusted Odds Ratio (AOR)	95% CI
Gender (female or transgender women)	2.2	1.26-3.74
Education (< HS completion)	1.7	0.98-2.86
Annual income (< $10,000)	2.2	1.16-4.13
History of homelessness (Yes)	1.9	1.12-3.30
Housing-related discrimination (Yes)	1.6	0.95-2.70

housing options). Aboriginal and Caucasian participants did not differ with respect to measures of satisfaction with their housing and neighbourhood (i.e., geographic location of residence, satisfaction with features of residence, and satisfaction with neighbourhood).

Multivariate logistic regression

Results of the fitted multivariate logistic regression model are presented in Table 2. After taking into account all significant differences, Aboriginal participants were more likely than Caucasian participants to be female or transgender women (Adjusted OR [AOR] 2.2; 95% CI 1.26-3.74), have an annual income of less than $10,000 (AOR 2.2; 95% CI 1.16-4.13), and have experienced homelessness (AOR 1.9; 95% CI 1.12-3.30).

DISCUSSION

This study primarily sought to explore the differences in determinants of health and housing-related characteristics between samples of Aboriginal and Caucasian persons with HIV in Ontario. Results of our bivariate analyses demonstrated that Aboriginal peoples with HIV in our sample were more likely to be younger, female or transgender women, and self-identify as heterosexual than Caucasian persons with HIV. They were also more likely to have low socio-economic status (i.e., have low education, be unemployed, and have low income) and have risky health behaviours (i.e., harmful use of alcohol and substances). With respect to housing and housing characteristics, we found that Aboriginal participants were more likely to have histories of incarceration or homelessness, to be homeless or live in unstable housing, and to experience housing-related discrimination. In multivariable analysis, gender, income, and history of homelessness remained strongly associated with Aboriginal ethnicity after controlling for other determinants.

Our study demonstrates that there are significant differences in the socio-demographic profile of Aboriginal individuals living with HIV/AIDS compared to Caucasian people living with HIV/AIDS in Ontario. The findings related to determinants of health and housing-related factors are consistent with existing knowledge about the challenging social, economic, and housing conditions that Aboriginal peoples in Canada face; in particular, Aboriginal individuals are more likely to be unemployed, have low income and have lower levels of educational attainment.[19] In terms of housing-related characteristics and conditions, Aboriginal peoples are more likely to have housing needs than non-Aboriginal Canadians and are over-represented in the homeless population.[20] The results are also consistent with a qualitative study that found that income security and housing were commonly cited concerns among Aboriginal women living with HIV/AIDS[21] in British Columbia.

The results of this study are particularly important in a province where HIV/AIDS surveillance programs do not collect adequate data on ethnicity. The socio-economic and housing-related characteristics of Aboriginal peoples with HIV highlight the challenges in prevention, treatment, care and overall health promotion efforts in a population for which, as emphasized by others,[22-24] HIV is one among many issues and challenges. The higher likelihood of Aboriginal peoples with HIV having a low income, a history of homelessness, and unstable housing is particularly concerning given research that has demonstrated links between poverty and unstable housing, and non-optimal adherence to treatment and adverse treatment outcomes.[8,21]

A key strength of this study is the population-based sample that includes a wide range of vulnerable and hard-to-reach populations, including individuals living in unstable housing conditions. Unlike other studies that focused on specific Aboriginal populations (i.e., injection drug users, women, and youth), our sample reflects the health, social, and economic situations of a diverse group of populations affected by HIV.[25] However, some limitations must be acknowledged. Our data come from the Positive Spaces, Healthy Places study, whose participants were recruited through community-based AIDS Organizations agencies (CBAOs) and which was designed to examine the association between housing and health-related quality of life. As such, the findings may not reflect the characteristics of all Aboriginal and Caucasian persons living with HIV in Ontario, including those not receiving services from CBAOs. Other studies have pointed to the considerable role that stigma and AIDS phobia play in the lives of Aboriginal peoples with HIV,[20,26] which may have affected recruitment for this study.

In addition, standard measures of health may not capture the experiences and circumstances of Aboriginal peoples, such as the need to consider the collective experience of social suffering,[27] which may limit our ability to understand the implications of, or put into context, the social and economic circumstances of Aboriginal peoples with HIV reported here.

Despite the limitations, our findings shed light on the inequalities that exist between Aboriginal and Caucasian persons living with HIV with respect to socio-economic and housing conditions. Thus, policies and services that integrate income and employment support along with affordable and stable housing may have the potential to reduce health disparities and improve health outcomes for Aboriginal peoples with HIV. All interventions and strategies aimed at preventing HIV infection and improving quality of life for Aboriginal peoples with HIV should take into account the differences in age, gender, and sexual orientation found in this and other studies. Research examining the unique conditions and challenges faced by Aboriginal peoples with HIV is required to better understand their experiences and the implications of these social, economic, and housing factors on programs, policies, and services that would optimally support and care for Aboriginal peoples with HIV in Ontario and throughout Canada.

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RÉSUMÉ

Objectifs : Les Canadiens autochtones (Premières Nations, Inuits et Métis) sont démesurément touchés par le VIH et le sida; ils sont aussi plus marginalisés sur le plan socioéconomique et ont des conditions de logement inférieures. Nous avons cherché à comprendre les différences dans les déterminants de la santé et les caractéristiques de l'habitat d'échantillons d'adultes autochtones et blancs vivant avec le VIH ou le sida en Ontario.

Méthode : Nous avons analysé les données de base (démographiques, socioéconomiques, sanitaires et liées au logement) de 521 sujets (79 Autochtones, 442 Blancs) vivant avec le VIH ou le sida et participant à l'étude *Positive Spaces, Healthy Places.* Les caractéristiques des participants autochtones et blancs ont été comparées afin de cerner les déterminants de la santé et les caractéristiques de l'habitat présentant une association indépendante avec l'ethnicité autochtone.

Résultats : Comparativement aux participants blancs vivant avec le VIH, les participants autochtones étaient plus susceptibles d'être des jeunes, des femmes ou des femmes transgenre, d'être moins scolarisés, sans emploi, sans abri ou de vivre dans un logement précaire. Ils étaient aussi plus susceptibles d'avoir un faible revenu et d'avoir été victimes de discrimination liée au logement. Dans notre modèle multivarié, le sexe, le revenu et les expériences d'itinérance présentaient des associations indépendantes avec l'ethnicité autochtone.

Conclusion : Les sujets autochtones vivant avec le VIH ou le sida dans notre échantillon composent avec des conditions socioéconomiques beaucoup plus difficiles et sont plus susceptibles d'éprouver des problèmes à se loger que le groupe témoin de sujets blancs vivant avec le VIH et le sida. Pour élaborer des stratégies de soins, de traitement et de soutien efficaces pour les Autochtones atteints du VIH, il est essentiel d'aborder et d'améliorer leurs conditions socioéconomiques et de logement.

Mots clés : VIH; inégalité; déterminants de la santé; logement; population d'origine amérindienne