



Correlates of Casual Sex Amidst Vulnerability to HIV Among ACB Heterosexual Men in Ottawa and Windsor, Ontario Canada

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Abstract

Heterosexual exposure is the second highest means of HIV transmission; and African, Caribbean, and Black (ACB) men face greater risks. Black men can reduce the disproportionately high HIV prevalence in their communities by changing their socially misconstrued masculine role. We analysed factors predisposing heterosexual ACB men to risky sexual behaviour, particularly multiple casual sex partnerships in Ottawa and Windsor, Ontario, Canada. We employed quantitative datasets from a broader mixed methods study within hierarchical logistic regression model to determine the association between psychosocial factors and casual sex partnerships. The model controlled for city level clustering effect and sociodemographic factors. Precisely 55.0% ($n = 52$) of men in Windsor and 70.2% ($n = 99$) in Ottawa had one or more casual sex partners within the past year. Some of them (Windsor, 32.1% [$n = 18$], and Ottawa, 34.3% [$n = 36$]) used condom always. HIV knowledge (OR = 0.80, $p < 0.01$, CI = 0.67/0.95) and pro-Black community attitudes (OR = 0.72, $p < 0.05$, CI = 0.56/0.94) decreased the odds of casual sex partnerships, while traditional masculinity scores (OR = 1.21, $p < 0.05$, CI = 1.01/1.46) increased it. The behavioural factors jointly predicted casual sex more than sociodemographic variables and city of residence. We conclude that heterosexual ACB men are predisposed to casual sex partnerships at differing magnitude across cities, and this may constitute a risk factor for HIV exposure. Hence, propagation of HIV knowledge, community attitudes and reconstruction of masculine ideology among ACB men, with due attention to geopolitical differences in city of residence, are recommended.

Keywords Behavioural vulnerability · Black men · Casual sex · Community · HIV risk · Masculinity

Introduction

Despite emerging COVID-19 pandemic drawing global attention, HIV/AIDS remains an interest because of the increasing new cases in Canada. More research and strategic interventions are necessary in Canada because HIV prevalence fluctuates within a range of values without the anticipated near-zero decline in the last decade. Although the national diagnosis rates (cases per 100,000 population) witnessed a downward trend between 2008

and 2015, there were increases between 2013 and 2018, with an increase of 2.5 in 2013, 3.2 in 2017, and 4.0 in 2018. The trend is similar in Ontario, with a rise from 6.5 per 100,000 population in 2016 to 7 per 100,000 population in 2017 [1]. Although the African, Caribbean, Black (ACB) people make up only 3.5% of Canadian population [2], they represented about 25% of all HIV cases in Ontario in 2016 [3]. In addition, ACB men represent the second largest percent of males living with HIV in Ontario, with increase from 15.4% in 2011 to 17% of in 2016 [2].

Statistics show that 93% of Black people from Africa and the Caribbean are from HIV endemic countries and are therefore 12.6 times more likely to contract HIV through heterosexual exposure than other adults in Canada [3]. Although it is true for a few cases, there are misconceptions that most of these immigrants acquire HIV from their countries of origin. A study of the source of HIV acquisition from 2013 to 2015 in nine European countries showed that 63% of cases were acquired after arriving in the new country of residence [4]. An earlier study of immigrants in New York City from 2006 to 2012 found that 61% of HIV cases acquired the virus after arrival in the USA [5]. The Joint United Nations Programme

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on HIV/AIDS and the Institute of Medicine linked increased postmigration risk of HIV infection to family and community disintegration [6], social exclusion, discrimination, increased sexual freedom and financial hardships in their new environments [6]. A Canadian study corroborates the preceding statement with results showing that immigrants are often challenged with social exclusion and discrimination, resulting in low self-esteem, unemployment and insufficient earnings [7].

HIV transmission through heterosexual contact increased by 3.1% between 2013 and 2018 and accounted for the second most (32.3%) reported exposure category to HIV infection after gbMSM among adult cases [1, 8]. With heterosexual contact becoming a major means of increased HIV infection, there is need for concerted effort to eliminate or alleviate the spread of the virus by targeting heterosexual ACB men. In this study, a heterosexual identity revealed by self-identification is an ACB man whose sexual relationship (including anal or vaginal sex) is with female sex partner(s). Although most ACB men self-identify as heterosexual, there are no race-based data from the recent Canadian HIV surveillance to show the precise statistics of prevalence rates among heterosexual Black men.

Perhaps, related HIV statistics of males and Black people in Canada can provide the indication of HIV prevalence rates among heterosexual ACB men. In 2018, males were accounted for 70.7% ($n = 1786$) of all reported cases of HIV [1]. Also, 57.0% of those who tested positive in immigration-related medical exams conducted for applicants within Canada in 2018 were males [1]. These statistics may be an underrepresentation as many Black men do not access HIV testing facilities [9], a situation that speaks to men's greater vulnerability to HIV.

Besides, heterosexual Black men may be infected with HIV via unanticipated avenues, and statistics show significant HIV exposure through non-sexual contacts. For example, 2018 Canadian HIV surveillance show that people who inject drugs accounted for 18.3% and made up the third most reported exposure category, while people with unknown exposure risk and unreported risk accounted for 39.6% of all HIV cases [1]. The exposure of Black men is further worsened by the lack of resources to navigate the sociocultural barriers that increase their vulnerabilities to HIV infection [10].

Increased vulnerability of Black men to HIV has necessitated research to identify predisposing factors. Studies focusing on heterosexual men have shown social and contextual factors [11], structural factors like neighbourhood quality [12], racial and ethnic identity [13], masculinity [10] and hypermasculinity [14] increased HIV risky behaviours among Black men [15, 16]. However, more recent study show that the increased capacity of ACB men in Canada to productively engage their own health related personal and interpersonal vulnerabilities (resourceful masculinities) is associated with reduced HIV risk [10, 15]. Conversely, inconclusive studies show that failure to disclose same sex relationships and occasionally having sex with a man or a transwoman [17] increase HIV vulnerability among

heterosexual Black men. Such contestable finding necessitates more directed research on HIV vulnerabilities and risk factors among Black heterosexual men. Risky sexual behaviour (unprotected anal and vaginal sex) is one of the most common means of HIV transmission [18]. Of concern also are the risky behaviours that include sexual concurrency [19], non-disclosure of same sex orientation [20] and sexual mixing [21]. Yet there is not enough evidence to prove a long-term debate about risky sexual behaviour as the main reason for HIV spread in the Black population.

There are social orientations accepting casual sex as a first step to seeking a stable relationship or for initiating new one. For example, migrants who have lost their social networks in their home countries may simply be seeking new long-term relationships after arrival in Canada, with casual sex as their dating option [22]. On the flip side, there are sociosexual beliefs that it is the most common avenue for the spread of HIV. This view premises on the fact that casual sex is not dependent on a well-established relationship and may often be motivated by the momentary and urgent need to gratify sexual desire without careful planning and protection. Casual sex is an ongoing series of sexual encounters between two individuals [23]. Casual sex relationship can take many different forms, including sex with a total stranger with no strings attached, with friends with benefits or with an ex, among others [24]. Casual sex relationships offer partners more freedom to explore each other sexually, meaning that they permit higher levels of kissing as well as intimate touching [25]. Studies showed that 30–50% of emerging adults had had at least one casual sexual relationship during college. The studies also found that men were more likely to report casual sexual relationships compared to women [26].

Although males who engaged in casual sex are less likely to be impacted emotionally, females experience depressive symptoms [24, 27]. This variation between gender arises because sexual scripts encourage both women and men to prioritise men's apparent desire and pleasure during heterosexual interactions over that of women and other gender identities [24]. Agentic, dominant men are expected to have the desire and to initiate sexual activity with submissive (or resistant) women who may or may not have the desire [28, 29]. This makes women to express ingenuine sexual disposition to their dominant male sexual partners. Casual sex characterised by unauthentic interactions may predispose both the giver and receiver to HIV risks; the situation may foster concealment of underlying safety issues associated with the intercourse at that time.

There are no precise data showing that casual sex is a riskier means of HIV transmission than sex with regular partner(s). However, studies have shown that casual sex can have negative consequences, particularly if it involves multiple or concurrent sexual relationships [18, 30]. Amidst other risk factors, prevalence of sexually transmitted infections (STIs) have been found to peak among emerging adults due to high rates of casual sex [18]. Also, multiple casual sex partnership were associated with higher odds of HIV diagnosis [30].

Worse still, risk of infection is amplified because odds of HIV status disclosure are much lower among partners in this kind of relationship [31]. Moreover, the use of alcohol and drugs by those who engage in casual sex hinders their sense of judgement, which predisposes them to riskier sexual behaviour [32]. Non-compliance casual sex behaviour due to alcohol intake may proliferate unwanted pregnancies and STIs, which also acts as avenues for HIV transmission [26].

Moreover, the risk of contracting HIV in casual sex depends on the type of exposure that the intercourse presents, but exposures with low risk of HIV transmission add up over time. Accordingly, relatively small risks add up over time to a high lifetime risk of getting HIV [33]. The risk of getting HIV in a single condom-less casual sexual encounter with an HIV positive partner may be relatively low. However, the risk associated with several repeated unprotected sexual encounters are much higher. A study of sexually active African, Caribbean and Black men in Canada found that 20.5% of them used condoms consistently [6]. Another study in the USA showed that although condom use decreases with age among White men, condom use among Black men increases until age 50, with condoms used in 41.3% of sexual encounters among men aged 40 to 49 [34]. Another study of non-migrant Black community in Tanzania found that 20% of men had ever used a condom and 13% used condom consistently [35]. However, other studies affirmed that Black men are not more engaged in unprotected sex than other races [36]. However, the higher prevalence rates of HIV within the Black community make one unprotected sex riskier than among other races. These highlighted issues necessitate a study to provide greater insight into HIV vulnerabilities and their associated factors, with Black heterosexual men as the critical focus.

In addition, part of the negativity of casual sex relationships often originates in legitimate causes; as such, the risk of HIV exposure from casual sex is not merely from the fact of having it [37]; it comes from sexual concurrency and the concealment of the casual sex experiences from other main or regular sex partners [20]. The social ideology that casual sex is a norm makes some young Black men who do not engage in it feel less of a real man. In contrast, women feel judged for engaging in casual sex experiences, rendering casual sex less pleasurable for women [37]. Gender roles therefore become a crucial aspect of sexual script theory, and scripts are not only sexualised but also gendered, with the resultant sexual messaging noticeably different for men and women [38]. For men, society sees sex as central to male identity, non-relational sex is preferred, and men are active sexual agents [38]. Generally, society views women as sexual objects, sexual gatekeepers and passive compared to men [39].

Again, there are philosophies that whether casual sex becomes “bad” or “good” is a function of “sociosexual orientation” [39]. Those with a restricted sociosexual orientation tend to prefer love, commitment or emotional intimacy before engaging in sex, and those with an unrestricted sociosexual orientation tend to be more comfortable engaging in sex without

love, commitment or emotional intimacy. Having sex against ones restricted sociosexual orientation can predispose one to lower self-esteem, anxiety [39] and the resultant psychosocial distress and consequently to vulnerability to HIV [40]. Studies have also shown that Black men do not engage in riskier sexual behaviour than other races [36]. However, societal construction of Black masculinity and sociosexual ascribed roles of Black men make them to succumb to the casual sex trap amidst relatively complex sexual networks and higher HIV prevalence in their community. Existing systemic and racial inequities further accentuate higher HIV prevalence in Black community, which makes casual sex riskier in the Black community [41].

Aside the systemic factors such as racial discrimination and social inequality at the macrolevel, risky sexual behaviour in a population may be a function of the community-level attributes, expressed as social trust, social cohesion and social participation. For, example, several studies have shown that participation in social clubs and community groups was associated with less risky sexual behaviour [42], higher odds of condom use, lower odds of casual sex partnership and lower odds of HIV positive status [43]. Hence, a more wholistic study addressing issues of HIV vulnerability will not consider individual level factors alone but will also address structural as well as micro-community attributes that foster behavioural vulnerabilities to HIV. Fewer studies have addressed HIV vulnerability in the context of casual sex relationships among ACB men in Canada, particularly in Ontario. This paper contributes to filling this gap by analysing the factors associated with casual sex partnership amidst HIV vulnerabilities among ACB heterosexual men in Ottawa and Windsor, Ontario.

Study Purpose

We compared experiences of ACB heterosexual men in the larger, capital city (Ottawa) with those in smaller border city Windsor to tease out differences. Such analyses aimed at providing more encompassing knowledge that would be useful for intervention programs. Specifically, this study hypothesised that ACB men’s HIV knowledge, pro-Black community attitudes, traditional masculine identity, condom attitudes and HIV testing behaviour are predicting their involvement in casual sex partnership while controlling for their city of residence and sociodemographic variables.

Methodology

Sampling, Recruitment and Instrument of Data Collection

This study was drawn from a larger weSpeak research program. The weSpeak program survey sample size was

estimated for each city based on the number of HIV tests among heterosexual ACB men over 5 years, 2007–2011. This targeted male ACB population 15 years and older in the respective cities from the 2011 National Household Survey at a desired level of precision of 5%. However, sample sizes in each of the cities were increased by 25% to achieve greater statistical power and to make allowances for questionnaires/cases that are incomplete or ineligible [44]. Sample sizes drawn for this analysis were Ottawa ($n = 210$) and Windsor ($n = 156$) giving a total of 366 self-identified heterosexual ACB men from the two cities.

The program recruited participants using venue and event-based sampling method. This approach involved a number of steps: (i) identifying days and times when ACB men gather for event at specific venues; (ii) designing a sampling frame with regard to venues, day and time of events; (iii) randomly selecting and visiting events at their specific venues and times; and (iv) systematically intercepting and collecting information from consenting ACB men at these events. It involved hierarchical sampling of geographic clusters, followed by the selection of samples for the survey from the clusters. Because this kind of sampling potentially introduces a degree of bias in the estimation of standard errors, we employed the hierarchical binary logistic regression analysis where geographic clusters were controlled to estimate unbiased regression estimates.

The survey instruments were closed ended questionnaires, some of which were psychometric response scales. Items in the questionnaires for which participants were assessed include the following:

1. Sociodemographic background: age, country of birth, residency status and immigration history, relationship status, living arrangement, level of education, self-rated health status, employment and income, among others.
2. Health status characteristics: HIV vulnerability and sexual practices (access to and use of HIV and health-related services, history of HIV/STI, condom use and number of sexual partners, among others).
3. Psychometric response scales were used to measure crucial attitudinal, psychological and structural correlates or characteristics: attitudes to condom use, traditional masculinity, resilience, pro-Black community attitude HIV knowledge and HIV testing behaviour. These measures are described the following subsection.

Descriptive statistics for the sample include frequencies and percentages for relevant demographics (ethnicity, marital status, region of residence, employment status, educational attainment). Inclusion criteria for sociodemographic variables into the model of analysis were absence of multicollinearity among them, statistical significance of their coefficients and their individual contributions to the model stability and

accuracy. Variables on health and sexual risk behaviours included in the analysis were as follows: HIV knowledge, condom attitudes and HIV testing behaviour. Psychosocial variables were traditional masculinity and pro-Black community attitude scores.

Measure of Variables

The dependent variable “casual sex partnership” was created from the survey question, “In the last 12 months, how many casual female sex partners have you had penetrative vaginal or anal sex with?”, with the following responses: none, one partner, two partners, three partners, 4 or 5 partners, 6 to 10 partners and more than ten partners. The casual sex partnership was dichotomised into a binary variable with responses variable recoded as 1 if the responses were 1 or more casual sex partners and recoded as 0 if the responses were none. Observations not used in analyses were ones indicating “choose not to answer, did not know or no response from the analysis”.

We measured two blocks of independent variables. The first block has the city of residence with a code of 1 for Windsor and 0 for Ottawa and other sociodemographic attributes. Country of birth was dichotomised as born in Canada = 1 and born in other countries = 0. Immigration status was coded as citizenship or permanent residence status = 1 and temporary resident status = 0. Religion was a dummy variable coded as Christianity = 1 and other religion = 0. The men’s ages were categorised and coded as follows: 11- 19 years = 1, 20 - 29 years = 2, 30 - 39 years = 3, 40 - 49 years = 4, 50 - 59 years = 5, 60 - 65 years = 6, and above 65 years = 7. Marital status was dummy coded for each category as follows: single (yes = 1, no = 0) and married (yes = 1, no = 0). We also transformed before-tax personal income into a binary variable as \$40,000 or more = 1 and less than \$40,000 = 0. The second block of independent variables includes perceived vulnerability variables (health and behavioural factors). They include HIV knowledge scores, pro-Black community attitudes, traditional masculinity, condom attitudes and HIV testing behaviour.

HIV knowledge was measured on a validated Demographic and Health Survey (DHS) scale which consists of 18 items [45] that assess the respondents’ knowledge about HIV. The response options were agree, disagree and do not know. The total score from the response scale served as a covariate in the multivariate analysis. The items on the DHS Subscale on HIV Knowledge include: coughing and sneezing do not spread HIV; a person can get HIV by sharing a glass of water with someone who has HIV; pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex; a woman can get HIV if she has anal sex with a man, showering or washing one’s genitals/private parts, after sex keeps a person from getting HIV; all pregnant women

infected with HIV will have babies born with AIDS; people who have been infected with HIV quickly show serious signs of being infected; there is a vaccine that can stop adults from getting HIV; people are likely to get HIV by deep kissing putting their tongue in their partner's mouth if their partner has HIV; a woman cannot get HIV if she has sex during her period; there is a female condom that can help decrease a woman's chance of getting HIV; a natural skin condom works better against HIV than does a latex condom; a person will not get HIV if she or he is taking antibiotics; having sex with more than one partner can increase a person's chance of being infected.

Pro-Black community attitudes were measured on adapted social capital scale [46], a 5-item Likert-scale that measures the ACB men's perceptions of people in their community in terms of trust, community cohesion and community support. Response options and their respective codes were strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). The scale had a maximum of 25 points score, and its internal consistency was acceptable ($\alpha = 0.81$). The five items on the scale were, in the city where you live: (1) Black people are willing to help one another, (2) Black people are a close-knit community, (3) Black people can be trusted, (4) there are many opportunities to work with Black people on issues that affect the Black community, and (5) Black community groups that support the community.

Masculinity was measured on the Masculine Role Identity Scale [47]. Participants rated 17 items of masculine attributes in terms of importance on a 5-point Likert-style scale from "not at all important" to "extremely important". Internal consistency was acceptable ($\alpha = 0.84$); higher scores on this measure indicate that an individual's role identity is informed more by traditional masculinity ideology. This scale was particularly developed for use with Black men, and it is the only non-pathology-based masculinity scale available.

The Condom Use Scale [48] consists of 10 items that measure condom use in 3 dimensions: sexual satisfaction, gender and sexual interest. Respondents rated items using a Likert-style response format with gradations from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was acceptable ($\alpha = 0.89$). The items on the rated scale included the following: (1) condoms are uncomfortable; (2) the idea of using condoms does not appeal to me; (3) using condoms make sex unenjoyable; (4) proper use of condoms enhances sexual pleasure; (5) I would avoid using condoms if possible; (6) I just don't like the idea of using condoms; (7) men who use condoms show concern and responsibility to their partner(s); (8) using condoms is unmanly; (9) condoms are the best way to protect myself from HIV and against other STIs; and (10) suggestion from a sexual partner to use a condom means that your partner does not trust you. HIV testing behaviour as an independent variable was coded as ever tested = 1 and never tested = 0.

Analytic Strategy

This study employed the bivariate and multivariate logistic regression analysis. This strategy was appropriate because the dependent variable casual sex partnership was transformed to a binary outcome as described earlier. The multivariate logistic regression analyses involved a hierarchical binary logistic regression modelling. In this modelling, model 1 controlled for the influence of geographic clusters (city of residence), which can potentially bias the regression estimates if not controlled. Casual sex partnership, *ab initio*, is expected to be associated with the city of residence. Other variables included in model 1 were sociodemographic factors including immigration status; and in model 2, the key parameters of interest were entered. They included HIV knowledge, pro-Black community attitudes, traditional masculinity, condom attitudes and HIV testing behaviour. The software for the analysis was the IBM SPSS Statistics 26, and decision criteria was at most 5% ($\alpha = 0.05$) significance level.

After the exponentiation of the beta coefficients, we presented them as odds ratios (ORs). An independent variable with an OR of greater than 1 increases the likelihood of casual sex partnership in the last one year (1) as opposed to no casual sex partnership (0). In other words, an OR greater than 1 implies a lower likelihood of falling into no casual sex (0) category compared to had casual sex (1) category. When the OR is less than 1, there is a decreased likelihood of heterosexual Black men falling into the reference category (casual sex) and an increased likelihood of belonging in the baseline group (no casual sex). Thus, had casual sex partnership (1) category is compared to the reference category (had no casual sex partnership (0) in the analysis.

Results

Descriptive Statistics of Sociodemographic Characteristics and Vulnerability Factors Among Participants

Table 1 shows the descriptive statistical analyses of the relevant study variables. These include proportions of participants categorised by city of residence, country of birth, immigration status and other sociodemographic characteristics, including average score and standard deviations on vulnerability factors (HIV knowledge, pro-Black community attitudes, traditional masculine identity, condom attitudes and HIV testing behaviour).

Exactly 42.68% ($n = 156$) of the participants indicated that they reside in Windsor, while 57.7% ($n = 210$) reported that they live in Ottawa. Of those with valid responses (Table 1) on their citizenship status, 60.13.4% ($n = 92$) in Windsor and 73.50% ($n = 147$) in Ottawa were Canadian citizens. A few,

Table 1 Descriptive statistics of sociodemographic and other key parameters

Variables	Windsor <i>n</i> (%)	Ottawa <i>n</i> (%)
City of residence	156 (42.60)	210 (57.40)
Residency status		
Canadian citizen	92 (60.13)	147 (73.50)
Landed immigrant or permanent resident	11 (7.19)	21 (10.50)
Temporary resident	49 (32.03)	31 (15.50)
Preferred not to answer	1 (0.65)	1 (0.50)
Total valid responses	153 (100)	200 (100)
Country of birth		
Canada	64 (41.56)	60 (28.85)
Abroad	90 (58.44)	148 (71.15)
Total valid responses	154 (100)	208 (100)
Religion		
None	13 (8.50)	20 (9.76)
Muslim	9 (5.88)	32 (15.60)
Christian	124 (81.05)	132 (64.39)
Others	3 (1.96)	9 (4.40)
Preferred not to answer	4 (2.61)	9 (4.39)
Did not know	0 (0.00)	3 (1.46)
Total valid responses	153 (100)	205 (100)
Age categories		
15–29 years old	68 (43.59)	108 (51.43)
30–49 years old	47 (30.13)	88 (41.90)
50 years or older	41 (26.28)	14 (6.67)
Total valid responses	156 (100)	210 (100)
Marital status		
Single	80 (51.28)	115 (54.76)
Married	44 (28.21)	60 (28.57)
Others	32 (20.51)	35 (16.67)
Total valid responses	156 (100)	210 (100)
Before-tax personal income in previous year		
No personal income	13 (8.44)	13 (6.37)
\$1–\$19,999	36 (23.38)	52 (25.50)
\$20,000–\$39,999	36 (23.38)	40 (19.61)
\$40,000 or more	50 (32.47)	68 (33.33)
Did not know	10 (6.49)	13 (6.37)
Prefer not to answer	9 (5.84)	18 (8.82)
Total valid responses	154 (100)	204 (100)
Other key parameters		
HIV knowledge score (m ± SD)	10.25 ± 5.55	10.63 ± 5.53
Positive pro-Black community attitude score (m ± SD)	16.08 ± 3.16	16.28 ± 3.97
Traditional masculinity score (m ± SD)	32.64 ± 5.07	31.57 ± 5.63
Negative condom attitudes score (m ± SD)	27.16 ± 6.04	26.17 ± 5.84
HIV testing behaviour		
Ever tested	92 (63.45)	113 (60.11)
Never tested	53 (36.55)	75 (39.89)

7.19% ($n = 11$) in Windsor and 10.5% ($n = 21$) in Ottawa, were landed immigrants or permanent residents of Canada. A percentage, 32.02% ($n = 49$) in Windsor and 15.5% ($n = 310$)

were Canadian temporary residents. Most of the participants (Windsor = 58.44% [$n = 64$] and Ottawa = 71.15% [$n = 148$]) were born abroad. A relatively smaller percentage of them

(Windsor [$n = 64$, 41.56%] and Ottawa [$n = 60$, 28.85%]) were born in Canada.

Majority of the ACB men practiced Christianity in Windsor, 84.05% ($n = 124$), and Ottawa, 64.39% ($n = 132$). A few others were either Muslims (Windsor [$n = 9$, 5.88%] and Ottawa [$n = 32$, 9.76%]) or non-religious (Windsor [$n = 13$, 8.5%] and Ottawa [$n = 20$, 15.6%]). In Windsor, 43.59% ($n = 68$) and, in Ottawa, 51.43% ($n = 108$) of the participants were 15 to 29 years of age. The next highest age categories were aged 30 to 49 years with Windsor and Ottawa having 30.13% ($n = 47$) and 44.90% ($n = 88$) in this category, respectively. Mean ages were 36.8 and 31.6 years in Windsor and Ottawa, respectively. Slightly more than half of the ACB heterosexual men were single in Windsor, 51.28% ($n = 80$), and Ottawa, 54.76% ($n = 115$). Total before-tax personal income earned in the previous year was \$1–\$19, 999 for 23.38% ($n = 36$) and 25.5% ($n = 52$) of the men in Windsor and Ottawa, respectively. Also, 23.38% ($n = 36$) in Windsor and 19.61% ($n = 40$) in Ottawa earned \$20,000–\$39,999. Participants who earned \$40,000 or more were 32.47% ($n = 50$) in Windsor and 33.33% ($n = 68$) in Ottawa. The previous year average before-tax personal income in Windsor was \$41,151.57 and \$42,18.80 in Ottawa, respectively.

Means and standard deviations of HIV knowledge scores were $M = 10.25$ and $SD = 5.55$ in Windsor and $M = 10.63$ and $SD = 5.53$ in Ottawa. Average pro-Black community attitude scores were $M = 16.08$ and $SD = 3.16$ in Windsor and $M = 16.28$ and $SD = 3.97$ in Ottawa. Mean “traditional masculinity” scores were $M = 32.64$ and $SD = 5.07$ in Windsor and $M = 31.57$ and $SD = 5.63$ Ottawa, and average condom attitude scores were $M = 27.16$ and $SD = 6.04$ in Windsor and $M = 26.17$ and $SD = 5.84$ in Ottawa. Lastly, on HIV testing behaviour, 63.45% ($n = 92$) and 60.11% ($n = 113$) of the men reported ever testing for HIV in Windsor and Ottawa, respectively.

Figures 1 and 2 provide comparative descriptive statistics of the frequencies of the participants’ “casual sex relationships” and “condom use with female casual sex partner over the past one year”. Most of the participants (Windsor, 55.0% [$n = 52$] and Ottawa, 70.2% [$n = 99$]) had at least one casual sex partner within the past 1 year. Participants with no casual sex relationship in the previous year were 44.0% ($n = 44$) in Windsor and 25.5% ($n = 36$) in Ottawa (Fig. 1). In comparison with condom use frequencies (Fig. 2), participants who used condom consistently (always) with their casual female sex partners in the past year were as follows: Windsor, 32.1% ($n = 18$), and Ottawa, 34.3% ($n = 36$). A few of the participants used condom most times in Windsor, 14.3% ($n = 8$), and Ottawa, 18.1% ($n = 19$). Those who use condom sometimes were Windsor, 23.2% ($n = 13$), and Ottawa, 25.7% ($n = 27$). Some of the ACB heterosexual men, 25.0% ($n = 14$) in Windsor and 18.1% ($n = 19$) in Ottawa, never used condom in the past year, perhaps because a significant proportion of

them also reported having no casual sex partners as described earlier and in Fig. 1.

Results of Bivariate Logistic Regression Analysis

Table 2 shows the results of bivariate logistic regression analyses with having at least one casual sex partner (1) relative to not having a casual sex partner (0) as the outcome variable. Five variables had statistically significant bivariate association with casual sex partnership. ACB heterosexual men who reside in Windsor ($OR = 0.24$, $p < 0.05$, $CI = 0.07/0.84$) were less likely to have at least one casual sex partner than those in Ottawa. The odds of casual sex partnership by Black men born in Canada ($OR = 0.17$, $p < 0.05$, $CI = 0.04/0.76$) was lower than for men born elsewhere. Black men who reported Christianity as their religion ($OR = 0.25$, $p < 0.01$, $CI = 0.10/0.66$) were less likely to engage in casual sex relationships than those who did not report Christianity.

Higher HIV knowledge score ($OR = 0.86$, $p < 0.001$, $CI = 0.78/0.93$) lowered the odds of casual sex relationship among the ACB heterosexual men. Also, pro-Black community attitudes ($OR = 0.81$, $p < 0.01$, $CI = 0.93/1.13$) reduced the odds of casual sex relationship among the ACB heterosexual men.

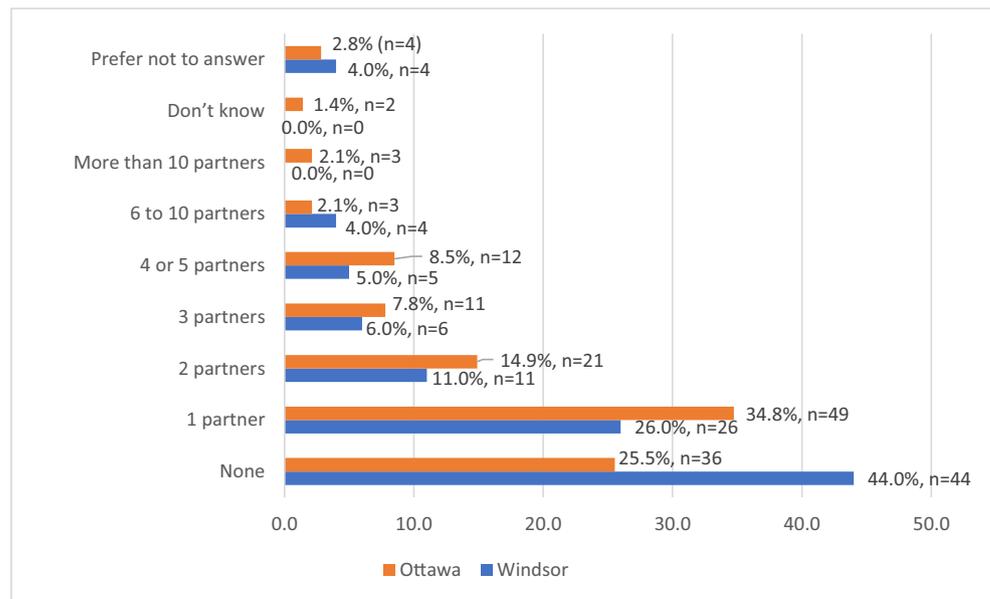
Results of Multivariate Hierarchical Logistic Regression Analysis

Table 3 displays the results of hierarchical multivariate logistic regression analysis of the association between HIV vulnerability factors and casual sex partnership (1 or more partner = 1, no partner = 0) in model 2. Model 1 was a control for city of residence and other sociodemographic variables.

In the unadjusted model 1 (Table 3), sociodemographic variables predicted casual sex relationship with high accuracy (92.6%) and at a statistically significant level ($X^2 = 5.71$, $p < 0.05$). However, there was a significant decrease in unexplained variation in casual sex partnership in model 2 ($-2LL = 55.70$) compared to model 1 ($-2LL = 80.71$). Hence, in model 2 where we controlled for sociodemographic variables, model accuracy increased to 95.77% and was statistically significant ($X^2 = 44.03$, $p < 0.001$). Inclusion of HIV risk factors in model 2, HIV knowledge, pro-Black community attitudes, traditional masculinity, condom attitudes and HIV testing behaviour, jointly accounted for some unexplained variation in casual sex relationship that was unaccounted for in model 1.

From the perspective of independent associations in model 2 (Table 3), increased HIV knowledge scores reduced the odds ($OR = 0.80$, $p < 0.01$, $CI = 0.67/0.95$) of casual sex partnerships among ACB heterosexual men. Also, increased pro-Black community attitudes scores ($OR = 0.72$, $p < 0.05$, $CI = 0.56/0.94$) decreased the likelihood of casual sex partnership. However, high traditional masculinity scores ($OR =$

Fig. 1 Percent of men with various number of female casual sex partners in the past year



1.21, $p < 0.05$, CI = 1.01/1.46) increased the odds of casual sex relationship.

Among the controlled variables in model 2, country of birth and personal income were statistically significant. Heterosexual ACB men born in Canada (OR = 0.05, $p < 0.05$, CI = 0.01/0.64) were less likely than those born elsewhere to be in a casual sex relationship. Casual sex partnership was more likely among ACB men with before-tax personal income of \$40,000 or greater (OR = 11.75, $p < 0.05$, CI = 1.33/103.51).

Discussion

Although city of residence was not a statistically significant factor in the adjusted model, it is in the bivariate analysis. This implied that unless moderated by other factors, city of residence predicts casual sex relationship. After adjusting for other factors, our study shows that the probability of casual sex relationship was more in Ottawa compared to Windsor. Ottawa is a transnational and bigger city hosting several international organizations including foreign country Embassies

and National High Commissions for generations with attendant influx of diverse immigrant population from many countries around the world. Moreover, Ottawa is a city with several institutions of higher education that play host to international students. Such institutions include the University of Ottawa, Carleton University and Algonquin College, among others.

All these make Ottawa a more significant hub of casual sex activities compared to Windsor. However, Windsor could still be considered a hub of sexual networking because it is a border city with Detroit, Michigan. Windsor shares at least a part of the feature of Ottawa as an international gateway to Detroit in the USA. However, the more massive influx of multicultural populations and multifaceted social networking environments in Ottawa may have created more significant opportunities for casual sex networking than in Windsor. Perhaps new immigrants in Ottawa feel “the thrill and excitement of being somewhere new, coupled with the thrill and excitement of hooking up with someone new” [49]. Existential social and economic disparities place ACB men in the cycle of sexual hookups in big cities [41].

ACB heterosexual men born in Canada had a lower probability of a casual sex partnership compared to those born

Fig. 2 Percentage of men with various frequencies of condom use with their female casual sex partners in the past year

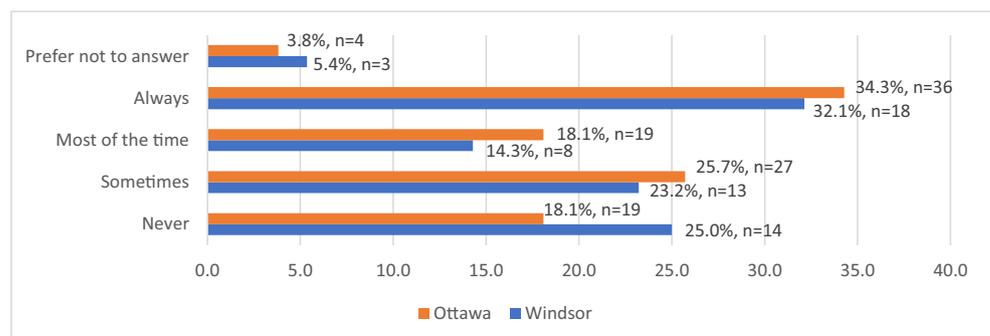


Table 2 Bivariate logistic regression analysis: results of correlates of casual sex partnership

Dependent variable: casual sex partnerships (one or greater = 1, none = 0)	OR	S.E.	95% C.I.
Independent variables			
City of residence (Windsor = 1, Ottawa = 0)	0.24*	0.644	0.07–0.84
Country of birth (Canada = 1, abroad = 0)	0.17*	0.761	0.04–0.76
Immigration status (citizen/PR = 1, TR = 0)	1.740	0.770	0.39–7.90
Religious affiliation (Christianity = 1, otherwise = 0)	0.25**	0.489	0.10–0.66
Age (15–19 years = 1, 20–29 years = 2, 30–39 years = 3, etc.)	0.860	0.180	0.61–1.22
Marital status (single = 1, otherwise = 0)	1.710	0.485	0.66–4.42
Before-tax income (\geq \$40,000 = 1, < \$40,000 = 0)	1.690	0.500	0.64–4.46
HIV knowledge (Score)	0.86***	0.040	0.78–0.93
Positive pro-Black community attitude (score)	0.81**	0.070	0.70–0.94
Traditional masculinity (score)	1.020	0.050	0.93–1.13
Condom attitude (score)	1.070	0.050	0.98–1.17
HIV testing behaviour (ever tested = 1, never tested = 0)	0.860	0.550	0.29–2.55

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

elsewhere. In other words, the immigrant populations were more likely to have a casual sex relationship. This perhaps confirms the earlier statements about the connections between migration and casual sex [27, 41]. Furthermore, the ACB heterosexual immigrant men encounter the complexity of the intersections of socioeconomic, psychosocial, cultural (traditional views of Black masculinity) and structural barriers to accessing resources for a gainful life [50]. Casual sex becomes a temporal relieve for many immigrant ACB heterosexual men facing distressing individual and systemic barriers.

Some may resort to alcohol drinking, which is as well associated with hookups, including casual sex relationships [32]. There are also views that immigrant ACB heterosexual men are more prone to the trap of the new world enticement to casual sex more than Canadian born Black men because they perceive HIV risks as much lower or non-existent in the North American countries compared to their country of origin [51].

Although younger Black men were more likely to be in casual sex relationship [26], our finding shows that it is not statistically significant. In young adults, casual sex tends to be

Table 3 Multivariate logistic regression analyses: adjusted model output showing of predictors of casual sex partnerships

Binary-dependent variable: casual sex partnerships (one or more = 1, none = 0)	Model 1		Model 2	
	OR (SE)	95% CI	OR (SE)	95% CI
Independent variables				
City of residence (Windsor = 1, Ottawa = 0)	0.48 (0.87)	0.09/2.62	0.23 (1.14)	0.03/2.13
Country of birth (Canada = 1, abroad = 1)	0.09* (1.10)	0.01/0.76	0.05* (1.26)	0.01/0.64
Immigration status (citizen/PR = 1, TR = 0)	4.82 (1.15)	0.51/45.98	6.64 (1.44)	0.40/110.89
Religious affiliation (Christianity = 1, otherwise = 0)	0.35 (0.62)	0.10/1.16	0.45 (0.770)	0.10/2.03
Age (1–19 years = 1, 20–29 years = 2, 30–39 years = 3, etc.)	1.11 (0.28)	0.65/1.91	0.97 (0.41)	0.44/2.17
Marital status (single = 1, otherwise = 0)	2.10 (0.71)	0.52/8.49	5.17 (1.06)	0.65/41.12
Before-tax income (\geq \$40,000 = 1, < \$40,000 = 0)	1.08 (0.64)	0.31/3.80	11.75* (1.11)	1.33/103.51
HIV knowledge (score)			0.80** (0.09)	0.67/0.95
Positive pro-Black community attitude (score)			0.72* (0.14)	0.56/0.94
Traditional masculinity (score)			1.21* (0.10)	1.01/1.46
Condom attitude (score)			1.08 (0.07)	0.95/1.23
HIV testing behaviour (ever tested = 1, never tested = 0)			0.21 (1.11)	0.02/1.84
Model summary				
Chi-square estimates	19.10**			44.03***
Error estimates (-2LL)	80.71			55.70
Accuracy (%)	92.6			95.77

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

more common and more readily accepted than later in life, especially if one gets married and starts a family. Again, the journey to adulthood often includes experimentation with sexual behaviours: Most adolescents first engage in intercourse before they graduate high school [27]. Nationally representative studies reveal that 70–85% of sexually experienced adolescents age 12–21 reported engaging in intercourse with a casual sex partner during the previous year [27]. Similarly, Grello's study of nature of casual sex in college students suggests that 70% of them engaged in intercourse with partners they did not consider romantic [27].

We found that heterosexual ACB men with high HIV knowledge scores were less likely to be in a casual sex relationship. Knowledge about HIV instils caution on risky sexual behaviour, including avoiding sexual relationship with someone with whom there is no committed romantic relationship. Conversely, a study found that sexually active men with knowledge of the protective effect of using condoms had 1.8 times higher odds of having two or more casual sex partners in the preceding year [52]. While the result may indicate a reversed causation (i.e. people having increased casual sex seeking more HIV knowledge), it is also probable that knowing the means of HIV risk reduction can foster more casual sex relationships. Hence, policies promoting HIV knowledge should be augmented with other HIV prevention strategies [52]. It is also worthy to note that HIV risk reduction by increased use of condom in casual sex is insufficient protection, consistency in its use needs to be emphasized.

Pro-Black community attitudes were associated with lower odds of casual sex partnership. This implied that in a community where social ties exist in terms of supports, knits, trust, opportunities and networking, the likelihood of engaging in casual sex is reduced. Pro-community attitudes can transcend to several opportunities for community members, e.g. employment and social supports (material and emotional), including stable relationships rather than a casual sex partnership. In line with this finding, literature has shown that community-level influences are important for behavioural change, as studies have found that interpersonal influences through social networks associate with smoking cessation. It is also found that after school communal program reduces the chances for risky behaviours among teenagers [53]. Pro-community attitudes in the form of organizational supports foster positive behavioural change through the principles of diffusion of innovation. For example, building community recreation centres and prohibiting operation of brothels enable positive behavioural change [53]. On the flip side, neighbourhood deterioration has been associated with the exposure to HIV through risky behaviours [12, 53]. Such behaviours include unprotected multiple casual sex relationships, injecting drugs, sharing injection needles and having

unprotected sex with risky partners (those who share injection needles).

In contrast to pro-community attitude scores, ACB men with high traditional masculinity scores had greater odds of having casual sex relationship. This finding conforms with earlier studies on how increased HIV risk behaviours is associated with agentic masculinities among Black heterosexual men in Canada [10]. This illuminates the common assumption that casual sex practices are explicitly masculine [54]. It also portrays the misconception in certain literature on African heterosexual masculinity that sex symbolizes manhood [55]. To assume this socially prescribed masculinity, some Black men set aside their desires and concerns to meet the sexual needs of casual partners' and societal expectations of their sexuality [11]. Also, there is a common notion that Black men irrespective of the social contexts are innately hypersexual and must engage in constant sexual experiences for their well-being [50, 56]. Hence, this socially ascribed traditional view of masculinity potentially influences patronage in casual sex partnerships among ACB men.

Conclusion and Recommendations

Casual sex partnership is common among the sexually active population, and ACB heterosexual men are not exempt. However, the associated HIV risks are more significant in ACB community because they are already disproportionately affected by the disease. HIV knowledge, pro-community attitudes and masculine ideology have profound association with casual sex partnership and may predict HIV risks among ACB heterosexual men in Ottawa and Windsor. Except when adjusted for other factors, levels of casual sex relationship differ between the national capital, Ottawa, and the smaller border city, Windsor. Hence, we recommend a program that addresses the vulnerabilities of ACB men associated within their city of residence. Also, aside from upscaling ACB men's HIV knowledge through workshop and HIV prevention programs, creating awareness about PrEP and PEP, especially among the young and single ACB men is imperative. Community-level capacity building is also necessary to foster pro-Black community attitudes in a way that will influence positive behavioural change among ACB men. There is also the need to advocate for societal reconstruction of Black masculinity into reorienting ACB men's view of their Black masculine identity.

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Data Availability Data analysis is still in progress and will be uploaded to a data repository in due course. To access the study data, contact the weSpeak Program nominated Principal Investigator.

Declarations

Ethics Approval and Consent to Participate The study was approved by Ethics review Board at Ryerson University (REB #2015-118), University of Ottawa (Certificate # H06-15-23), University of Toronto (Protocol #31973), University of Windsor (REB #32485), York University (REB # 2015-217) and University of Louisville (REB #15.0453).

Informed Consent Informed consent was obtained from all individual participants included in the study.

Competing interests The authors declare that they have no competing interests.

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