



# Love with HIV: A Latent Class Analysis of Sexual and Intimate Relationship Experiences Among Women Living with HIV in Canada

Allison Carter<sup>1,2,3</sup> · Saara Greene<sup>4</sup> · Deborah Money<sup>5,6</sup> · Margarite Sanchez<sup>7</sup> · Kath Webster<sup>1</sup> · Valerie Nicholson<sup>1</sup> · Lori A. Brotto<sup>5</sup> · Catherine Hankins<sup>8,9</sup> · Mary Kestler<sup>10</sup> · Neora Pick<sup>10,11</sup> · Kate Salters<sup>1,2</sup> · Karène Proulx-Boucher<sup>12</sup> · Nadia O'Brien<sup>12,13</sup> · Sophie Patterson<sup>1,14</sup> · Alexandra de Pokomandy<sup>12,13</sup> · Mona Loutfy<sup>15,16</sup> · Angela Kaida<sup>1</sup> on behalf of the CHIWOS Research Team

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## Abstract

Love remains hidden in HIV research in favor of a focus on risk. Among 1424 women living with HIV in Canada, we explored (1) whether eight facets of sex and intimacy (marital status, sexual activity, physical intimacy, emotional closeness, power equity, sexual exclusivity, relationship duration, and couple HIV serostatus) may coalesce into distinct relationship types, and (2) how these relationship types may be linked to love as well as various social, psychological, and structural factors. Five latent classes were identified: no relationship (46.5%), relationships without sex (8.6%), and three types of sexual relationships—short term (15.4%), long term/unhappy (6.4%), and long term/happy (23.2%, characterized by equitable power, high levels of physical and emotional closeness, and mainly HIV-negative partners). While women in long-term/happy relationships were most likely to report feeling love for and wanted by someone “all of the time,” love was not exclusive to sexual or romantic partners and a sizeable proportion of women reported affection across latent classes. Factors independently associated with latent class membership included age, children living at home, sexism/genderism, income, sex work, violence, trauma, depression, HIV treatment, awareness of treatment’s prevention benefits, and HIV-related stigma. Findings reveal the diversity of women’s experiences with respect to love, sex, and relationships and draw attention to the sociostructural factors shaping intimate partnering in the context of HIV. A nuanced focus on promoting healthy relationships and supportive social environments may offer a more comprehensive approach to supporting women’s overall sexual health and well-being than programs focused solely on sexual risk reduction.

**Keywords** Love · Sex · Relationships · Power · Feminism · Women · HIV

## Introduction

Positive aspects of sexual experience such as love are often invisible in the context of HIV. Silenced by public health discourses of danger and disease, existing research on sexuality among women living with HIV has primarily centered on preventing the transmission of HIV to sexual partners. When other aspects of women’s sexual lives are considered, physical aspects of sexual health such as sexual behaviors and dysfunctions are prioritized over emotions and intimate relationships (Carter, Greene, et al., 2017). The right to love, however, has been taken up by affected communities on a global scale (AIDES, 2016; Becker, 2014; Caballero,

2016; Cardinal et al., 2014; Fratti, 2017; Life and Love with HIV, 2017; McClelland & Whitbread, 2016; Nicholson, Sanchez, Webster, & Carter, 2016; Petretti, 2017; Sanchez, Webster, Salters, Kaida, & Carter, 2017), most recently through #LovePositiveWomen, an annual social media campaign, started in 2013 by Jessica Whitbread, a woman living with HIV in Toronto, to engage in acts of love and appreciation for women living with HIV in the first 14 days of February (Whitbread, 2017). In this analysis, which was guided by critical feminist quantitative epistemology (Harnois, 2013; Sprague, 2016), we sought to support community efforts in shifting HIV and sexual health discourse to a more affirming place by highlighting the diverse experiences of love, sex, and relationships among a cohort of 1424 women living with HIV in Canada.

✉ Angela Kaida  
kangela@sfu.ca

Extended author information available on the last page of the article

52 **Conceptual Analysis**53 **What Constitutes Love, Sex, and Relationships?**

54 Love, sex, and relationships can mean different things between  
 55 (and among) different men and women (Faulkner, 2003; Peter-  
 56 son & Muehlenhard, 2007; Rule-Groenewald, 2013; Wentland  
 57 & Reissing, 2011, 2014). Often, these constructs are viewed  
 58 dichotomously, whereby love is thought of as an emotion (Rule-  
 59 Groenewald, 2013) and sex a physical act (Peterson & Mue-  
 60 hlenhard, 2007). The expression of both, however, can involve  
 61 a range of emotional and physical experiences (e.g., kissing,  
 62 cuddling, feeling wanted) that contribute to various kinds of rela-  
 63 tionships—sexual, platonic, committed, unattached, familial,  
 64 and so forth (Floyd, 2002; Gullledge, Gullledge, & Stahmann,  
 65 2003; Sassler, 2010). Within the context of intimate relation-  
 66 ships, however, love has been described as “different,” “intense,”  
 67 and, at times, “irrational” (Reis & Aron, 2008). While often  
 68 coupled with positive dynamics such as intimacy and passion,  
 69 love can also intersect with power, poverty, and violence (Bhana,  
 70 2013; Haysom, 2013; Holland, Ramazanoglu, et al., 1992; Rule-  
 71 Groenewald, 2013; Schäfer, 2008), making how we experience  
 72 love and intimate relationships multidimensional. This is also  
 73 the reason why feminist scholars, while committed to legitimiz-  
 74 ing research on love and its possibilities, remain simultaneously  
 75 focused on interrogating the potential risks of love through its  
 76 connection to power and patriarchy.

77 **Theorizing Experiences Within the Larger Social Context**  
78 **of Women’s Lives**

79 For women, love is often idealized and marriage expected  
 80 (Msibi, 2011) owing to gender expectations about relation-  
 81 ships. For instance, Moran and Lee (2014a), writing in the  
 82 context of non-romantic sex among women, stressed how it  
 83 is frequently assumed that “everyone is in, or seeking, a life-  
 84 long, exclusive, committed, and loving relationship” (p. 221),  
 85 one that is stereotypically heterosexual. Without negating the  
 86 importance of long-term romantic relations for many women,  
 87 including those living with HIV (Squire, 2003), early feminist  
 88 scholars have argued that gender-based oppression on a struc-  
 89 tural level has the potential to be reflected in heterosexual love  
 90 relationships (Holland, Ramazonoglu, et al., 1992). Thus, a  
 91 feminist approach to research on this topic demands challenging  
 92 gender inequality and unearthing women’s expansive choices  
 93 around sexual pleasure (Fahs, 2014) and intimate relationships  
 94 (Bowleg, Lucas, & Tschann, 2004; Farvid & Braun, 2016),  
 95 including the decision to not have sex (Hayfield & Clarke,  
 96 2012) and to not date anyone (Bay-Cheng & Goodkind, 2016).

97 In the social context of HIV, these decisions are particularly  
 98 constrained for some women. This is, in part, because of histori-  
 99 cal discourses and criminal laws that have stigmatized love and

sex with HIV, positioning it as dirty, dangerous, and, under par-  
 ticular circumstances, even illegal (International Community  
 of Women Living with HIV/AIDS, 2015; Sontag, 1988). These  
 structural forms of oppression—together with heteronorma-  
 tive assumptions around gender, relationships, and sexuality—  
 carve out very specific conditions in HIV-positive women’s  
 sexual lives. Research by Gurevich, Mathieson, Bower, and  
 Dhayanandhan (2007), for example, highlighted many of these  
 impacts in terms of diminished sexual desire, satisfaction, and  
 freedom. Yet, this climate is at odds with recent policy state-  
 ments emphasizing the importance of sexual rights (World  
 Association for Sexual Health, 2014) and a growing body of  
 scientific literature showing that people who take combination  
 antiretroviral therapy (cART) as prescribed and achieve and  
 sustain viral load (VL) suppression have effectively no risk of  
 transmitting HIV to their HIV-negative partners (Prevention  
 Access Campaign, 2017; Rodger et al., 2016; Vernazza & Ber-  
 nard, 2016; Vernazza, Hirschel, Bernasconi, & Flepp, 2008). **AQ1**

**Literature Review: Key Findings and Issues**  
**Identified by Different Perspectives****Qualitative Research: Barriers to the Pursuit of Love, Sex,**  
**and Relationships**

Across diverse countries, ethnicities, and ages, a desire to find  
 love figures prominently in the narratives of women living with  
 HIV (Balaile, Laisser, Ransjo-Arvidson, & Hojer, 2007; Cooper,  
 Moore, & Mantell, 2013; Doyal & Anderson, 2005; Fair &  
 Albright, 2012; Grodensky et al., 2015; Gurevich et al., 2007;  
 Jarman, Walsh, & De Lacey, 2005; Keegan, Lambert, & Petrak,  
 2005; Nevedal & Sankar, 2015; Siegel, Schrimshaw, & Lekas,  
 2006; Squire, 2003). Sex also occupies an important place in  
 many, though not all, women’s lives (Gurevich et al., 2007;  
 Keegan et al., 2005; Siegel et al., 2006; Taylor et al., 2016).  
 However, findings from qualitative studies suggest women face a  
 number of interconnected barriers to pursuing pleasure (Closson  
 et al., 2015; Cooper et al., 2013; Cranston & Caron, 1998; Fair  
 & Albright, 2012; Gurevich et al., 2007; Jarman et al., 2005;  
 Keegan et al., 2005; Lawless, Crawford, et al. 1996; Lawless,  
 Kippax, et al., 1996; Maticka-Tyndale, Adam, & Cohen, 2002;  
 Mazanderani, 2012; Nevedal & Sankar, 2015; Persson, 2005;  
 Siegel et al., 2006; Siegel & Schrimshaw, 2003).

Despite medical advances, many women describe avoiding  
 sexual relationships or even flirting with others (which can often  
 give rise to gendered expectations of sex) because of persistent  
 fears of transmitting HIV to others (Closson et al., 2015; Cran-  
 ston & Caron, 1998; Keegan et al., 2005; Nevedal & Sankar,  
 2015; Persson, 2005; Wamoyi, Mbonye, Seeley, Birungi, &  
 Jaffar, 2011). Disclosure to sexual partners and their possible  
 reactions, including stigma, abuse, rejection, and breach of  
 privacy, is also a source of tremendous anxiety (Closson et al.,  
 2015; Cooper et al., 2013; Doyal & Anderson, 2005; Fair &

- 150 Albright, 2012; Greenhalgh, Evangeli, Frize, Foster, & Fidler, 2016; Gurevich et al., 2007; Jarman et al., 2005; Keegan et al., 2005; Maticka-Tyndale et al., 2002; Nevedal & Sankar, 2015; 201  
 152 Persson, 2005; Psaros et al., 2012; Siegel et al., 2006; Siegel & 202  
 153 Schrimshaw, 2003). This, combined with socially imposed feel- 203  
 154 ings of undesirability, can lead some women to settle for less in 204  
 155 current relationships (Gurevich et al., 2007; Jarman et al., 2005; 205  
 156 Lawless, Crawford, et al. 1996). Importantly, however, other 206  
 157 studies have highlighted positive counter-narratives, debunk- 207  
 158 ing cultural myths that sex and romance is incompatible, even 208  
 159 impossible, with HIV (Cooper et al., 2013; Grodensky et al., 209  
 160 2015; Psaros et al., 2012; Seeley et al., 2009; Siegel et al., 2006; 210  
 161 Squire, 2003). 211
- 163 **Quantitative Research: Hidden Complexities of Intimate**  
 164 **Relations Embedded in Social Context** 212
- 165 Quantitative research among women living with HIV, on the 213  
 166 other hand, has tended to ignore love and the historical, cul- 214  
 167 tural, and structural factors that may play a role in shaping its 215  
 168 expression (Carter, Greene, et al., 2017). Additionally, and of 216  
 169 particular relevance to current analysis, most studies have over- 217  
 170 simplified the complexity of women's intimate relationships, 218  
 171 reducing their experiences to a single construct (Carter, Greene, 219  
 172 et al., 2017)—usually women's marital status or couple dynam- 220  
 173 ics assumed to involve sexual risk, such as regular versus casual 221  
 174 partners (Hankins, Gendron, Tran, Lamping, & Lapointe, 1997; 222  
 175 Kaida et al., 2015) or mixed-status versus same-status relation- 223  
 176 ships (Peltzer, 2011; Wessman et al., 2015). Very rarely have 224  
 177 studies focused on pleasure, nor the risks women face from inti- 225  
 178 mate partners, such as violence and unequal power dynamics 226  
 179 (Beckerman & Auerbach, 2002; Gurevich et al., 2007; Persson, 227  
 180 2005; Squire, 2003). To the best of our knowledge, the quanti-  
 181 tative literature has also elided the issue that relationships are  
 182 multidimensional, encompassing many dynamics—sexually,  
 183 emotionally, socially, economically, corporeally, and spiritu-  
 184 ally—all at once (Bowleg et al., 2004; Devries & Free, 2011;  
 185 Farvid & Braun, 2016; Longfield, 2004; Moran & Lee, 2014a,  
 186 2014b; Nelson, Morrison-Beedy, Kearney, & Dozier, 2011;  
 187 Robertson et al., 2013; Sassler, 2010; Wentland & Reissing,  
 188 2014).
- 189 While full heterogeneity in relationships is difficult to cap-  
 190 ture statistically, one way to model how multiple dimensions  
 191 of relationship context may intersect in meaningful ways is to  
 192 use a person-centered approach like latent class analysis (LCA)  
 193 (Lanza, Bray, & Collins, 2013). LCA is a statistical method that  
 194 can uncover unobserved subgroups of people (i.e., latent classes)  
 195 using multiple observed variables (i.e., data collected in ques-  
 196 tionnaires) (Lanza et al., 2013). Unlike studies that use single  
 197 measures, LCA offers a more holistic approach to understanding  
 198 relationships by exploring the entire spectrum of sexual and  
 199 intimate dynamics concurrently. This has been endeavored in  
 200 a small number of studies outside the HIV field, though only
- among adolescents and young adults and solely in relation to 201  
 sexual risk behaviors (Espinosa-Hernández & Vasilenko, 2015; 202  
 Manlove, Welti, Wildsmith, & Barry, 2014; Vasilenko, Kugler, 203  
 Butera, & Lanza, 2014; Vasilenko, Kugler, & Lanza, 2015). 204  
 While there have been previous LCA studies among women 205  
 living with HIV, including our own investigating patterns of sub- 206  
 stance use (Carter, Roth, et al., 2017; Clum, Chung, Ellen, & The 207  
 Adolescent Medicine Trials Network for HIV/AIDS Interven- 208  
 tions, 2009), to the best of our knowledge, no LCA studies have 209  
 been conducted on sexual and intimate relationship patterns, let 210  
 alone for the purposes of exploring positive aspects of sexuality. 211
- Analysis Objectives** 212
- The current analysis had two specific objectives. Using LCA 213  
 applied to a cohort of 1424 women living with HIV in Canada, 214  
 we explored (1) whether eight facets of sex and intimacy may 215  
 coalesce into distinct relationship types; and (2) how these rela- 216  
 tionship types may be linked to love as well as various social, 217  
 psychological, and structural factors. In light of prior research 218  
 and consistent with a feminist lens, we paid particular atten- 219  
 tion to how sociostructural inequality may influence whether or 220  
 not women were in relationships as well as the different types 221  
 of relationships they experience. We had no prior hypotheses 222  
 regarding latent class structure since LCA depends largely on 223  
 model fit to the data. Further, while previous literature has illu- 224  
 minated some of the ways in women's relational lives may be 225  
 intertwined with love and social and cultural forces, these stud- 226  
 ies did not examined predictors of latent classes. 227
- Method** 228
- Study Design** 229
- Data for this analysis came from the baseline questionnaire 230  
 of the Canadian HIV Women's Sexual and Reproductive 231  
 Health Cohort Study (CHIWOS, [www.chiwos.ca](http://www.chiwos.ca)). CHIWOS 232  
 is grounded in community-based research principles (Israel, 233  
 Schulz, Parker, & Becker, 1998), involving women living 234  
 with HIV, academic researchers, care providers, and commu- 235  
 nity agencies in all aspects of the research, from questionnaire 236  
 design to data collection to publishing of results (Abelsohn et al., 237  
 2014; Kaida et al., 2014; Loutfy et al., 2016). Study inclusion 238  
 was defined as cis, trans, and gender-diverse women living 239  
 with HIV aged  $\geq 16$  years from British Columbia, Ontario, and 240  
 Quebec, the three provinces where the majority (81%) of the 241  
 16,600 women with HIV in Canada live (Public Health Agency 242  
 of Canada, 2014). 243
- Between August 2013 and May 2015, 1424 women living 244  
 with HIV were recruited into the study. To ensure diversity of 245  
 lived experiences, we used a variety of recruitment methods: 246



247 35% were recruited from peers, 34% from HIV clinics, 19%  
 248 AIDS Service Organizations and non-HIV locations (e.g.,  
 249 shelters), and 12% from word of mouth, online networks (e.g.,  
 250 [www.facebook.com/CHIWOS](http://www.facebook.com/CHIWOS); [www.twitter.com/CHIWO](http://www.twitter.com/CHIWO)  
 251 [Sresearch](http://Sresearch)), and other methods (Webster et al., 2018). Follow-  
 252 ing screening and informed consent, Peer Research Associates  
 253 (women living with HIV with research training) administered  
 254 online questionnaires in English or French using FluidSurveys™  
 255 software. Baseline study visits lasted a median time of 120 min  
 256 (IQR 90–150) and took place either at clinic/community sites,  
 257 women's homes, or via phone/Skype. Participants received \$50  
 258 cash for their involvement. The study received ethical approval  
 259 from Simon Fraser University, University of British Columbia/  
 260 Providence Health Care, Women's College Hospital, and McGill  
 261 University Health Centre, as well as recruiting hospitals and  
 262 AIDS Service Organizations where required.

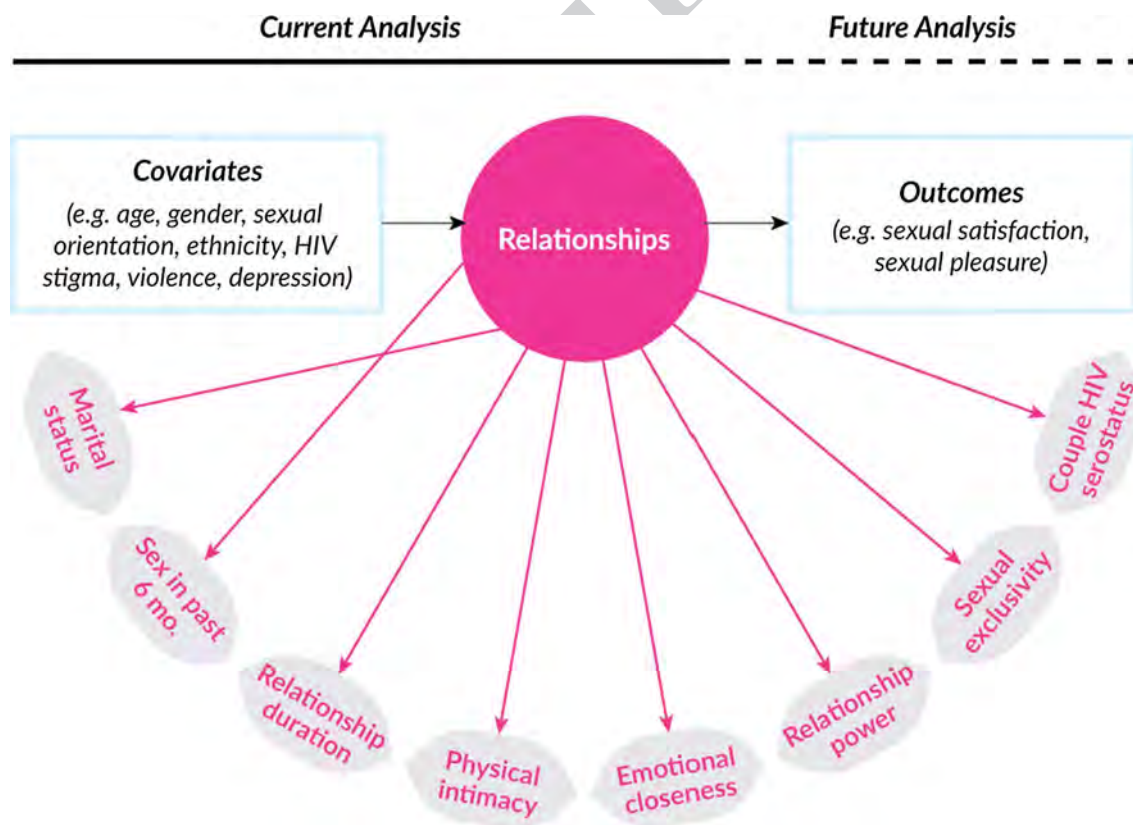
### 263 Analysis Variables

264 Figure 1 depicts the conceptual relationships between all  
 265 variables in this analysis, including the indicators and cor-  
 266 relates of latent class membership.

### Indicators of Latent Class Membership

267  
 268 We used seven sex and relationship measures for LCA, derived  
 269 from eight variables (Table 1). The first indicator was sexual  
 270 relationship status, resulting from a cross between two vari-  
 271 ables: current legal relationship status (single, separated,  
 272 divorced, or widowed vs. married, common law, or living-  
 273 apart relationship) and consensual oral, vaginal, or anal sex  
 274 with a regular partner of any gender in the past 6 months (no vs.  
 275 yes). In crossing these variables, we derived the four groupings  
 276 shown in Table 1, which, for simplicity, we called: no rela-  
 277 tionship (i.e., single, separated, divorced, or widowed and not  
 278 sexually active), relationship without sex (i.e., married, com-  
 279 mon law, or living-apart relationship and not sexually active),  
 280 unlabeled sexual relationship (i.e., single, separated, divorced,  
 281 or widowed and sexually active), and labeled sexual rela-  
 282 tionship (i.e., married, common law, or living-apart relationship  
 283 and sexually active).

284 The next two indicators measured contentment with physical  
 285 intimacy (“I feel content with how often I have sexual intimacy,  
 286 kissing, intercourse, etc. in my life”) and emotional closeness  
 287 (“I often feel I don't have enough emotional closeness in my  
 288 sex life”). Both items were from the Sexual Satisfaction Scale



**Fig. 1** A conceptual portrayal of latent class analysis of sexual and intimate relationship experiences among women living with HIV enrolled in CHIWOS, showing indicators (pink) and covariates (left

blue box) of latent class membership for the current analysis as well as positive and rewarding aspects of sexuality to be explored in a forthcoming analysis (right blue box)

**Table 1** Indicators of latent class membership, among women living with HIV enrolled in CHIWOS ( $N=1334$ )

Variable	Code	Label	$n$ (%)
Sexual relationship status			
	1	No relationship	621 (47.7)
	2	Relationship without sex	112 (8.6)
	3	Unlabeled sexual relationship	249 (19.1)
	4	Labeled sexual relationship	320 (24.6)
	.	Missing	37
Content with sexual intimacy (kissing, intercourse, etc.)			
	1	Agree	461 (34.9)
	2	Disagree	238 (18.0)
	3	No relationship	621 (47.1)
	.	Missing	19
Not enough emotional closeness in sex life			
	1	Agree	370 (27.9)
	2	Disagree	334 (25.2)
	3	No relationship	621 (46.9)
	.	Missing	14
Duration of sexual relationship*			
	1	< 1 year	120 (9.3)
	2	1 year to < 3 years	118 (9.1)
	3	3 years or more	321 (24.8)
	4	Not asked	735 (56.8)
	.	Missing	45
Couple HIV serostatus*			
	1	Same-status	156 (12.0)
	2	Mixed-status (i.e., partner's status is HIV-negative/unknown)	410 (31.5)
	3	Not asked	735 (56.5)
	.	Missing	33
Sexual exclusivity in the past 6 months*			
	1	Multiple partners	118 (9.1)
	2	Monogamous	442 (34.3)
	3	Not asked	735 (56.7)
	.	Missing	44
Sexual relationship power*			
	1	High/Medium	326 (25.0)
	2	Low	114 (8.8)
	3	Not asked	863 (66.2)
	.	Missing	36

CHIWOS: Canadian HIV Women's Sexual and Reproductive Health Cohort Study. No relationship: Single/separated/divorced/widowed, and no consensual sex with a regular sexual partner in the past 6 months. Relationship without sex: Married/common law/living-apart relationship, and no consensual sex with a regular sexual partner in the past 6 months. Unlabeled sexual relationship: Single/separated/divorced/widowed, and consensual sex with a regular sexual partner in the past 6 months. Labeled sexual relationship: Married/common law/living-apart, and consensual sex with a regular sexual partner in the past 6 months. Items with an asterisks (\*) were only asked to those with a regular sexual partner, and sexual relationship power was further limited to those who had sex in the past 1 month

for Women (SSS-W) (Meston & Trapnell, 2005). Responses were dichotomized into "agree" versus "disagree" and a third level created for those in no relationship (as derived in the first indicator).

The remaining four indicators were only asked of those reporting a regular partner, defined elsewhere (Kaida et al., 2015). These indicators included: relationship duration (< 1 year vs. 1 to < 3 years vs. 3 years or more); sexual exclusivity (monogamous vs. multiple partners); couple HIV serostatus (mixed-status vs. same-status); and power equity (high/medium vs. low), measured via the 15-item relationship control subscale of the Sexual Relationship Power Scale (SRPS) (Pulerwitz, Gortmaker, & DeJong, 2000). Total SRPS scores ranged from 15 to 60 (Cronbach's  $\alpha = .92$ ) and were categorized to demarcate the lower third ("low") from the upper two-thirds ("high/medium") of the score distribution. Regarding sexual exclusivity, women were coded as having multiple partners if, in addition to their regular partner, they also reported sex with a casual or paying sex partner, defined elsewhere (Kaida et al., 2015).

### Correlates of Latent Class Membership

Love was assessed by the following question: "How often do you have available someone to love and make you feel wanted?" This item was taken from the four-item scale of the Medical Outcome Study–Social Support Survey (MOS–SSS) (Gjesfjeld, Greeno, & Kim, 2007). Responses were on a five-point Likert scale, ranging from "all of the time" to "none of the time."

We also considered several other variables as correlates of latent class membership (see tables for full derivations and cited literature for scoring instructions). These were selected and grouped into three categories based on prior literature (Carter, Greene, et al., 2017; Tiefer, 2001).

At the level of the individual body, medical and physical health factors included: history of cART; most recent VL (Carter, de Pokomandy, et al., 2017); most recent CD4 cell count; and physical health-related quality of life, estimated using the SF-12 (score range 0–100, Cronbach's  $\alpha = .82$ ), with higher scores indicating higher physical health status (Carter, Loutfy, et al., 2017).

Psychological factors included: mental health-related quality of life, likewise estimated using the SF-12 (score range 0–100, Cronbach's  $\alpha = .82$ ); depression, assessed via the 10-item Centre for Epidemiologic Studies Depression Scale (CES-D 10), which scores depressive symptoms (e.g., "I felt depressed") in the past week on a three-point scale (score range 0–30 and a cutoff of  $\geq 10$  suggesting probable depression, Cronbach's  $\alpha = .74$ ) (Radloff, 1977; Zhang et al., 2012); posttraumatic stress disorder (PTSD), assessed using the six-item PTSD Checklist, which measures trauma symptoms (e.g., "repeated, disturbing memories, thoughts, or images of a stressful experience from the past") in the past month on a five-point scale (score range

6–30 and a cutoff of  $\geq 14$  indicating likely PTSD, Cronbach's  $\alpha = .91$ ) (Lang & Stein, 2005; Lang et al., 2012); and any type of violence as an adult, child, or during war/violent conflict.

Finally, factors relating to social identity, economic status, and larger political contexts included: age; sexual orientation; gender; ethnicity; annual personal income; education; current transactional sex (i.e., exchanged sex for money, drugs, shelter, food, gifts, or other items); history of illicit drug use (i.e., street drugs or prescription medications taken in excess of the directions); presence of biological children at home; time living with HIV; mode of HIV acquisition; provider discussions about and personal perceptions of how VL/cART changes HIV transmission risk; and three scales: sexism/genderism, racism, and HIV stigma.

Sexism/genderism (score range 8–48, Cronbach's  $\alpha = .94$ ) and racism (score range 8–48, Cronbach's  $\alpha = .95$ ) were assessed by the Everyday Discrimination (EDD) Scale (Williams, Yan, Jackson, & Anderson, 1997), which measure on 6-point scale how often (“never” to “almost everyday”) sexist or racist events occur because of their gender or race (e.g., “You are treated with less courtesy,” “You receive poorer service”). HIV stigma was measured over one's lifetime via the validated 10-item HIV Stigma Scale (HSS), with items scored on a scale of 1–5 (“Strongly disagree” to “Strongly agree”) and summed and scaled to range from 0 to 100 (Cronbach's  $\alpha = .84$ ), with higher scores indicating higher stigma (Berger, Ferrans, & Lashley, 2001; Wright, Naar-King, Lam, Templin, & Frey, 2007). Both the overall scale and subscale components were examined. Subscales included: personalized or enacted stigma (e.g., “I have stopped socializing with some people because of their reactions to my having HIV”), internalized stigma (e.g., “I feel that I am not as good a person as others because I have HIV”), disclosure concerns (e.g., “I am very careful who I tell that I have HIV”), and public attitudes (e.g., “Most people think that a person with HIV is unclean”).

## Analysis Plan

### Final Analytic Sample

Of the 1424 women living with HIV enrolled in CHIWOS, we excluded 85 participants who chose to not complete the sexual health section of the questionnaire and 5 without at least one valid response to the indicators of latent class membership described above. This resulted in a final analytic sample of 1334 for LCA (96% of total sample). For the subsequent multivariable analyses, only those with complete data for all covariates were included ( $n = 1099$ ).

### Latent Class Analysis

Based on the sex and relationship indicators described above, we modeled latent classes using the PROC LCA software package

in SAS (<https://methodology.psu.edu>) (Lanza, Collins, Lemmon, & Schafer, 2007; Lanza, Dziak, Huang, Xu, & Collins, 2015). We considered solutions with two to seven latent classes, and assessed model identification for each using an expectation–maximization (EM) algorithm (Dempster, Laird, & Rubin, 1977; Lanza et al., 2007). The maximum number of iterations through which the EM algorithm was allowed to proceed was set to 5000. We performed 1000 repetitions of model estimation for each solution, using 1000 random sets of starting values to find the global maximum log-likelihood (ML) solution (Lanza et al., 2007). In selecting the final model, we relied on information criteria indicating relative model fit including Akaike information criterion (AIC) (Akaike, 1987), Bayesian information criterion (BIC) (Schwarz, 1978), consistent AIC (CAIC) (Bozdogan, 1987), and adjusted BIC (aBIC) (Schlove, 1987) (Lanza et al., 2007). We also examined the percentage of starting values that converged to the ML solution (i.e., solution stability, which indicates adequacy of model identification) and the quality of latent class separation (i.e., entropy) (Lanza et al., 2007).

As shown in Table 2, entropy was high across all models and model identification was adequate until the seven-class solution. Fit statistics indicated the four- or five-class models were optimal. After comparing the interpretability of the classes, we selected the five-class solution as two conceptually distinct classes of relationships defined by longer duration emerged, whereas in the four-class solution these groups were combined. Using this model, we assigned women to one latent class based on posterior class membership probabilities. Assignments were highly accurate (i.e., two classes had mean posterior probabilities of 1 and the others had probabilities of .86, .88, and .76). While this can attenuate associations, it allowed for multivariable regression modeling with numerous covariates without affecting the LCA structure, unlike the one-step approach that combines LCA with regression into a joint model (Vermunt, 2010).

## Descriptive, Bivariable, and Multivariable Analyses

We described baseline characteristics for the cohort overall using frequencies ( $n$ ) and proportions (%) for categorical variables, and medians and interquartile ranges (IQR) for continuous measures. We then examined the prevalence of love and other correlates across the latent classes, using Chi-square or Fisher's exact test (categorical) and Kruskal–Wallis test (continuous) to test for significant differences. Finally, we used unadjusted and adjusted multinomial logistic regression to examine independent correlates of latent class membership (UCLA Institute for Digital Research and Education, 2015a, 2015b). For this step, bivariable results were used to screen variables (Rentsch et al., 2014), excluding ones from further examination if their crude association's  $p$  value with the latent classes was  $> .2$  (Kaida et al., 2015). As some variables were highly correlated (age and time living with HIV; perception of how cART impacts HIV



**Table 2** Fit statistics for latent class analysis models of sexual and intimate relationship experiences with two through seven classes, among women living with HIV enrolled CHIWOS ( $N=1334$ )

Number of classes	$G^2$	AIC	BIC	CAIC	aBIC	Entropy	Solution stability (%)
2	1927.05	1993.05	2164.54	2197.54	2059.71	1.00	93.4
3	686.02	786.02	1045.85	1095.85	887.02	0.99	61.8
4	403.12	537.12	885.29	952.29	672.46	0.92	72.4
<b>5</b>	<b>333.51</b>	<b>501.51</b>	<b>938.03</b>	<b>1022.03</b>	<b>671.2</b>	<b>0.90</b>	<b>50.4</b>
6	303.43	505.43	1030.29	1131.29	709.46	0.89	19.7
7	278.49	514.49	1127.7	1245.7	752.86	0.85	5.6

CHIWOS: Canadian HIV Women's Sexual and Reproductive Health Cohort Study. AIC Akaike Information Criteria; BIC Bayesian Information Criteria; CAIC Consistent Akaike Information Criteria; aBIC Adjusted Bayesian Information Criteria; Solution % is the percentage of times the solution was selected out of a 1000 random sets of starting values. The bolded class solution indicates the selected model

438 transmission risk and discussed this with provider; depression  
439 and mental health quality of life), only the former variable of  
440 each set were examined. All remaining variables were combin-  
441 ed in the multivariable model. Model selections were then  
442 conducted using a backward stepwise elimination technique  
443 based on two criteria (AIC and Type III  $p$  values), with the  
444 least significant variable dropped until the final model had the  
445 optimum (minimum) AIC while maintaining covariates with  
446 type III  $p$  values below .2 (Akaike, 1974).

## 447 Results

### 448 Participants' Social Circumstances

449 Of the 1334 participants included in this analysis (Table 3),  
450 the median age was 42 years (IQR 35, 50; range 16–74) and  
451 4.3% identified as trans and gender diverse, 12.5% as lesbian,  
452 gay, bisexual, two-spirited, or queer, and 22.3% as Indigenous,  
453 28.9% as African, Caribbean, or Black, and 41.2% as White.  
454 With regard to social and economic conditions, 71.3% reported  
455 an annual personal income < \$20,000 CAD, 18.1% reported  
456 current use of illicit drugs, and 6.2% reported transactional sex  
457 in the past 6 months. Depression (48.6%) and PTSD (47.7%)  
458 were common, and most reported experiencing violence as a  
459 child (68.7%) or adult (81.4%), with 15.3% of women recount-  
460 ing experiences of violence at war. While many had been diag-  
461 nosed with HIV more than a decade ago (median 10.8 years;  
462 IQR 5.9, 16.8 years), the cohort included some women who  
463 were newly diagnosed and others who were long-term survi-  
464 vors (range 1 month to 33.7 years). Most were currently taking  
465 cART (82.8%) and had an undetectable VL (77.3%) and, overall,  
466 66.5% believed treatment made the risk of transmitting HIV “a  
467 lot lower.”

### 468 Latent Classes of Sexual and Intimate Relationship 469 Experiences

470 The relationship patterns associated with the five-class model  
471 are displayed in Table 4. These included: no relationship (46.5%  
472 of sample,  $n=621$ ), relationships without sex (8.6%,  $n=115$ ),  
473 and three types of sexual relationships: short term (15.4%,  
474  $n=205$ ), long term/unhappy (6.4%,  $n=85$ ), and long term/  
475 happy (23.1%,  $n=308$ ). The first latent class was comprised  
476 of women who reported being single, separated, widowed, or  
477 divorced and had not engaged in any oral, vaginal, or anal sex  
478 with a regular partner in the past 6 months. The second latent  
479 class likewise consisted of women who had no recent sex with  
480 a regular partner but were married, common law, or in a non-  
481 cohabiting relationship. Of note, the vast majority of women  
482 not having sex with a regular partner were simply not sexually  
483 active with anyone ( $n=671/735$ , or 91%). Sixty-four women,  
484 however, reported having sex but not with a regular partner (i.e.,  
485 with a casual or paying sex partner); most (i.e., 58) fell into the  
486 “no relationship” latent class, reflecting how sex can happen  
487 without a relationship, while few (i.e., 6) were classified under  
488 relationships without sex. This shows some misclassification  
489 error, which may tend to bias estimates toward the null.

490 The final three latent classes represented distinct types of con-  
491 sensual sexual relationships with a regular partner. Relative to  
492 women in short-term relationships, women in the longer-term  
493 latent classes had much higher probabilities of reporting that they  
494 were in a sexually monogamous relationship (88%—happy vs.  
495 90%—unhappy vs. 60%—short term), were married, common  
496 law, or non-cohabiting (72%—happy vs. 100%—unhappy vs.  
497 15%—short term) and had been with their partner for  $\geq 3$  years  
498 duration (62%—happy vs. 89%—unhappy vs. 35%—short term).  
499 All classes including those in long-term relationships diverged,  
500 however, on contentment with physical intimacy (97%—happy  
501 vs. 44%—unhappy vs. 46%—short term vs. 43%—relationships

**Table 3** Baseline characteristics of women living with HIV enrolled CHIWOS ( $N=1334$ )

Variables	$n$ (%) or Median ( $Q1$ , $Q3$ )
<i>Social, cultural, political, and economic factors</i>	
Factors beyond HIV	
Age (years), continuous	42.0 (35.0, 50.0)
Sexual orientation	
Heterosexual	1163 (87.5)
Lesbian, gay, bisexual, two-spirited, queer (LGBTQ)	166 (12.5)
Gender identity	
Cisgender women	1277 (95.7)
Trans and gender-diverse women	57 (4.3)
Genderism/sexism, continuous	17.0 (10.0, 28.0)
Ethnicity	
White	550 (41.2)
Indigenous	298 (22.3)
African, Caribbean, Black	386 (28.9)
Other/multiple ethnicities	100 (7.5)
Racism, continuous	16.0 (8.0, 28.0)
Annual personal income (CAD)	
Less than \$20,000	929 (71.3)
\$20,000 to less than \$40,000	233 (17.9)
\$40,000 or more	140 (10.8)
Education	
Lower than high school	202 (15.2)
High school	573 (43.2)
Higher than high school	552 (41.6)
Transactional sex in the past 6 months	
No	1227 (93.8)
Yes	81 (6.2)
Illicit drug use history	
Never	708 (53.9)
Previously	366 (27.9)
Currently (past 3 months)	238 (18.1)
Have biological children at home	
Yes	305 (22.8)
No	562 (42.1)
No biological children	415 (31.1)
Not biologically female	52 (3.9)
Factors related to HIV	
Time living with HIV (years), continuous	10.8 (5.9, 16.8)
Transmission risk category	
Consensual sex	649 (48.7)
Non-consensual sex	205 (15.4)
Sharing needles	259 (19.4)
Perinatal exposure	49 (3.7)
Blood transfusion or other	74 (5.5)
Don't know or prefer not to answer	98 (7.3)
Discussed with provider how viral load impacts HIV transmission risk	
Yes	906 (68.8)
No	411 (21.2)
Perception of how treatment changes HIV transmission risk	
Makes the risk a lot lower	881 (66.5)
All other responses (i.e., a little lower, no difference, higher, don't know)	443 (33.5)
HIV stigma scale (HSS), continuous	57.5 (42.5, 70.0)



Table 3 (continued)

Variables	n (%) or Median (Q1, Q3)
Subscale 1 (personalized stigma), continuous	20 (12.5, 25.0)
Subscale 2 (disclosure), continuous	15 (12.5, 20.0)
Subscale 3 (internalized stigma), continuous	7.5 (2.5, 15.0)
Subscale 4 (public attitudes), continuous	15 (10.0, 17.5)
<i>Mental health and violence factors</i>	
Mental health-related quality of life, continuous	42.2 (31.4, 52.5)
Posttraumatic stress disorder, categorical	
Score < 14	692 (52.3)
Score ≥ 14 (likely PTSD)	632 (47.7)
Depression, categorical	
Score < 10	662 (51.3)
Score ≥ 10 (depressive symptoms)	628 (48.6)
Any violence as an adult	
Never	251 (19.6)
Previously	754 (58.7)
Currently (past 3 months)	278 (21.7)
Any violence as a child	
No	399 (31.3)
Yes	876 (68.7)
Any violence at war	
No	1083 (84.7)
Yes	196 (15.3)
<i>Physical health factors</i>	
Physical health-related quality of life, continuous	47.9 (33.6, 55.5)
History of antiretroviral therapy	
Never	168 (12.6)
Previously	61 (4.6)
Currently	1099 (82.8)
Most recent viral load	
Undetectable	1031 (77.3)
Detectable	193 (15.5)
Never accessed medical care/never received results	42 (3.2)
Don't know	68 (5.1)
Most recent CD4 cell count	
< 200	72 (5.4)
200 to < 500	360 (27.0)
500 or more	665 (49.9)
Never accessed medical care/never received results	37 (2.8)
Don't know	198 (14.9)

CHIWOS: Canadian HIV Women's Sexual and Reproductive Health Cohort Study

502 without sex), satisfactory emotional closeness (86%—happy vs.  
 503 24%—unhappy vs. 16%—short term vs. 27%—relationships with-  
 504 out sex), power equity (among those who had sex in past 1 month:  
 505 93%—happy vs. 52%—unhappy vs. 51%—short term), and mixed  
 506 HIV status (71%—happy vs. 59%—unhappy vs. 81%—short  
 507 term). In ad hoc analyses (data not shown), disclosure was high  
 508 across all sexual relationships but less common for those of shorter  
 509 length (86% vs. longer term 95–97%). Also, 37% of shorter-term

relationships had ended at time of interview, while most relation- 510  
 ships classified as longer-term were currently ongoing (96–99%). 511

### Patterns of Love and Social and Structural Factors 512 by Latent Classes 513

Women reported a range of experiences with love, both 514  
 between and within latent classes (Table 5). Women in long- 515  
 term/happy sexual relationships (66.8%) and relationships 516

**Table 4** Latent class membership- and item-response probabilities for the five-class model of sexual and intimate relationship experiences, among women living with HIV enrolled in CHIWOS ( $N=1334$ )

	No relationship ( $n=621$ , 46.5%)	Relationship without sex ( $n=115$ , 8.6%)	Short-term sexual relationship ( $n=205$ , 15.4%)	Long-term “unhappy” sexual relationship ( $n=85$ , 6.4%)	Long-term “happy” sexual relationship ( $n=308$ , 23.1%)
Class membership probabilities	0.465	0.086	0.154	0.064	0.231
Item-response probabilities					
Sexual relationship status					
No relationship	<b>1.00</b>	0.00	0.00	0.00	0.00
Relationship without sex	0.00	<b>1.00</b>	0.00	0.00	0.00
Unlabeled sexual relationship	0.00	0.00	<b>0.85</b>	0.00	0.28
Labeled sexual relationship	0.00	0.00	0.15	<b>1.00</b>	<b>0.72</b>
Content with sexual intimacy (kissing, intercourse, etc.)					
Agree	0.00	0.43	0.46	0.44	<b>0.97</b>
Disagree	0.00	<b>0.57</b>	<b>0.54</b>	<b>0.57</b>	0.03
No relationship/not asked	<b>1.00</b>	0.00	0.00	0.00	0.00
Not enough emotional closeness					
Agree	0.00	<b>0.73</b>	<b>0.84</b>	<b>0.76</b>	0.14
Disagree	0.00	0.27	0.16	0.24	<b>0.86</b>
No relationship/not asked	<b>1.00</b>	0.00	0.00	0.00	0.00
Duration of sexual relationship*					
< 1 year	0.00	0.00	0.40	0.00	0.16
1 year to < 3 years	0.00	0.00	0.25	0.11	0.22
3 years or more	0.00	0.00	0.35	<b>0.89</b>	<b>0.62</b>
No relationship/not asked	<b>1.00</b>	<b>1.00</b>	0.00	0.00	0.00
Couple HIV serostatus*					
Concordant	0.00	0.00	0.19	0.41	0.29
Discordant	0.00	0.00	<b>0.81</b>	<b>0.59</b>	<b>0.71</b>
No relationship/not asked	<b>1.00</b>	<b>1.00</b>	0.00	0.00	0.00
Sexual exclusivity in the past 6 months*					
Multiple	0.00	0.00	0.40	0.10	0.12
Monogamous	0.00	0.00	<b>0.60</b>	<b>0.90</b>	<b>0.88</b>
No relationship/not asked	<b>1.00</b>	<b>1.00</b>	0.00	0.00	0.00
Sexual relationship power*					
High/Medium	0.00	0.00	0.30	0.44	<b>0.82</b>
Low	0.00	0.00	0.29	0.40	0.06
No relationship/not asked	<b>1.00</b>	<b>1.00</b>	0.41	0.16	0.12

CHIWOS: Canadian HIV Women’s Sexual and Reproductive Health Cohort Study. Class membership probabilities estimate the prevalence of the latent classes within the entire sample. Item-response probabilities are class conditional, estimating the percentage of individuals who reported the responses indicated given membership in a particular latent class. Probabilities  $> .5$  are in bold to facilitate interpretation. No relationship: Single/separated/divorced/widowed, with no consensual sex with a regular sexual partner in the past 6 months. Relationship without sex: Married/common law/living-apart relationship, with no consensual sex with a regular sexual partner in the past 6 months. Unlabeled sexual relationship: Single/separated/divorced/widowed, with consensual sex with a regular sexual partner in the past 6 months. Labeled sexual relationship: Married/common law/living-apart, with consensual sex with a regular sexual partner in the past 6 months. Items with an asterisks (\*) were only asked to those with a regular sexual partner, and sexual relationship power was further limited to those who had sex in the past 1 month

without sex (50%) were most likely to report feeling love for and wanted by someone “all of the time” compared to women in long-term/unhappy sexual relationships (33.3%), short-term sexual relationships (24.8%), and no relationship (23.5%) ( $p < .0001$ ). Significant proportions also reported “most” or “some of the time.” Relatively fewer women across classes reported an absence of love (i.e., “none” or “a little of the time”), though this was most prevalent among those in no relationship (36.8%) and short-term sexual relationships (27.7%).

Bivariable analyses also indicated considerable heterogeneity in latent class membership along several social and structural factors (see Table 5 for complete description). For example, women in no relationship and relationships without sex had higher median ages (46.0 [IQR 38.0, 53.0] and 42.0 [IQR 36.0, 50.0], respectively) versus latent classes defined by sexual activity with a regular partner (i.e., long term/happy: 39.0 [IQR 32.0, 46.0]). While gender was not significant, sexism/genderism was, with median scores lowest for long-term happy relationships (16.0 [IQR 8.0, 26.0]) and highest for short-term (22.0 [IQR 13.0, 29.0]) and long-term/unhappy (22.5 [IQR 12.0, 30.0]) relationships. Race ( $p = .44$ ) and racism ( $p = .06$ ) showed similar patterns. The short-term (36.3%) and long-term/unhappy (40.9%) latent classes also demonstrated the highest proportions of current violence versus remaining classes (16.8–23.0%), while only those in short-term relationships were more likely to report current sex work (18.6%) and drug use (30%) relative to all other classes (2.6–4.7% and 15.6–19.1%, respectively).

Other factors that were significantly related to latent class membership in bivariable analyses included income, education, children at home, depression, PTSD, mental and physical health-related quality of life, provider discussions and personal perceptions about HIV transmission risk, and HIV-related stigma. For instance, women in long-term/happy relationships were most likely to believe that treatment makes the risk of HIV transmission “a lot lower” (77.1%) versus all other latent classes (60.0–65.9%). Women in long-term/happy relationships also reported the lowest median HIV stigma scores (i.e., 52.5 [IQR 40.0, 65.0] vs. short-term: 62.5 [IQR 47.5, 72.5]), with two subscales (i.e., enacted and internalized stigma) showing significant differences.

## Unadjusted and Adjusted Associations Between Latent Classes and Social Covariates

Table 6 presents the unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) between the latent classes and social covariates, with the largest class (“no relationship”) used as the reference. After controlling for the effects of all covariates shown, we found that for every 10-year increase in age, the odds of being in any kind of relationship reduced by 28–60%. Consistent with bivariable results, while age was significant across every class, the greatest effect was seen in the odds of membership in

the three types of sexual relationships (e.g., long term/happy: AOR: 0.40 [95% CI 0.33, 0.49] vs. relationships without sex: AOR: 0.72 [95% CI 0.56, 0.92]). Having no biological children at home was also significantly associated with being in any kind of relationship, as was higher personal incomes, though the effects of income were greatest for those in long-term/unhappy sexual relationships. Specifically, compared to women reporting incomes < \$20,000 CAD, those with incomes at \$40,000 or more had 4.03 higher adjusted odds of belonging to the long-term/unhappy latent class with effects ranging from 1.74 to 9.34.

Sexism/genderism was only associated with membership in long-term/unhappy relationships (1.50 [95% CI 1.02, 2.22], per 10-unit increase), while current sex work was significantly related to short-term relationships (AOR: 3.45 [95% CI 1.68, 7.07]). Current violence, depression, and PTSD, however, were significantly associated with all three types of sexual relationships. The magnitude of the association (and possible range of effects) between current violence and relationship type was strongest (and widest) for the short-term (AOR: 5.56 [2.61, 11.83]) and long-term/unhappy (AOR: 6.33 [2.26, 17.70]) latent classes, though nonetheless elevated for long-term/happy relationships (AOR: 2.49 [1.38, 4.51]). Also, for both depression and PTSD, adjusted ORs were increased (i.e., above 1) for the short-term and long-term/unhappy latent classes and reduced (i.e., below 1) for those in long-term/happy relationships, compared to women in no relationship.

In terms of HIV-related factors, those who believed cART made the risk of HIV transmission “a lot lower” had increased odds of membership in long-term/happy relationships (AOR: 1.49 [1.02, 2.17]). Additionally, for every 10-point increase in HIV stigma scores, the odds of membership in long-term/happy relationships, relative to no relationship, were reduced by 13% (AOR: 0.87 [0.79, 0.96]). Finally, current and previous cART users (vs. never) were more likely to be in the short-term latent class (vs. no relationship). All other variables including, for example, gender identity, sexual orientation, racism, violence as a child, and physical health-related quality of life were either not statistically significant (i.e., 95% CIs included the null value of “1”) or were not selected for in the final multiple-adjusted model.

## Discussion

Our results advance understandings of sexual and intimate relationships among women living with HIV by moving beyond a reductionist and risk-based lens toward an approach that characterizes relationship complexity and attends to love, diversity, and inequity. We found that nearly half of women living with HIV in Canada were not in relationships, and those who were could be described by four distinct profiles in LCA (i.e., relationships involving no sex and three relationships involving sex with a regular partner: short term, long term/unhappy, and long term/

**Table 5** Bivariable associations with relationship latent classes among women living with HIV enrolled in CHIWOS ( $N=1335$ ), with column percentages shown

Variables	No relationship ( $n=621, 46.5\%$ )	Relationship with- out sex ( $n=115,$ $8.6\%$ )	Short-term sexual relationship ( $n=205,$ $15.4\%$ )	Long-term “unhappy” sexual relationship ( $n=85,$ $6.4\%$ )	Long-term “happy” sexual relationship ( $n=308, 23.1\%$ )	<i>p</i> value
	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	
<i>Love</i>						
All of the time	143 (23.5)	56 (50.0)	50 (24.8)	28 (33.3)	203 (66.8)	< .0001
Most of the time	136 (22.3)	22 (19.6)	44 (21.8)	28 (33.3)	74 (24.3)	
Some of the time	106 (17.4)	15 (13.4)	52 (25.7)	18 (21.4)	19 (6.3)	
A little of the time	79 (13.0)	10 (8.9)	34 (16.8)	7 (8.3)	<5 (1.3)	
None of the time	145 (23.8)	9 (8.0)	22 (10.9)	<5 (3.6)	<5 (1.3)	
<i>Social, cultural, political, and eco- nomic factors</i>						
<i>Factors beyond HIV</i>						
Age (years), con- tinuous	46.0 (38.0, 53.0)	42.0 (36.0, 50.0)	40.0 (34.0, 46.0)	40.0 (34.0, 47.0)	39.0 (32.0, 46.0)	< .0001
<i>Sexual orientation</i>						
Heterosexual	548 (88.7)	101 (87.8)	167 (81.9)	74 (87.1)	273 (88.9)	.1206
Lesbian, gay, bisexual, queer, two-spirited (LGBTQ)	70 (11.3)	14 (12.2)	37 (18.1)	11 (12.9)	34 (11.1)	
<i>Gender</i>						
Cisgender women	594 (95.7)	113 (98.3)	190 (92.7)	82 (96.5)	298 (96.8)	.1178
Trans and gender- diverse women	27 (4.3)	<5 (1.7)	15 (7.3)	<5 (3.5)	10 (3.2)	
Genderism/Sexism, continuous	17.0 (8.0, 27.0)	17.0 (10.0, 29.0)	22.0 (13.0, 29.0)	22.5 (12.0, 30.0)	16.0 (8.0, 26.0)	.0001
<i>Ethnicity</i>						
Indigenous	130 (20.9)	35 (30.4)	45 (22.0)	12 (14.1)	76 (24.7)	.4425
African, Carib- bean, Black	186 (29.9)	30 (26.1)	63 (30.7)	28 (32.9)	79 (25.6)	
White	254 (40.9)	42 (36.5)	85 (41.5)	39 (45.9)	130 (42.2)	
Other/multiple	51 (8.2)	8 (7.0)	12 (5.9)	6 (7.1)	23 (7.5)	
Racism, continuous	16.0 (8.0, 27.0)	18.5 (9.0, 28.0)	19.0 (8.0, 31.0)	16.0 (8.0, 29.0)	14.5 (8.0, 26.0)	.0603
<i>Annual personal income (CAD)</i>						
Less than \$20,000	454 (74.3)	81 (71.7)	143 (73.0)	49 (61.3)	202 (66.9)	.0708
\$20,000 to less than \$40,000	95 (15.5)	25 (22.1)	34 (17.3)	17 (21.2)	62 (20.5)	
\$40,000 or more	62 (10.2)	7 (6.2)	19 (9.7)	14 (17.5)	38 (12.6)	
<i>Education</i>						
Lower than high school	95 (15.4)	19 (16.5)	34 (16.6)	15 (17.7)	39 (12.8)	.0253
High school	268 (43.3)	64 (55.7)	86 (41.9)	26 (30.6)	129 (42.3)	
Higher than high school	254 (41.2)	32 (27.8)	85 (41.5)	44 (51.8)	137 (44.9)	
<i>Transactional sex in the past 6 months</i>						
No	590 (95.3)	111 (97.4)	158 (81.4)	82 (97.6)	286 (96.3)	< .0001
Yes	29 (4.7)	<5 (2.6)	36 (18.6)	<5 (2.4)	11 (3.7)	



Table 5 (continued)

Variables	No relationship ( <i>n</i> = 621, 46.5%)	Relationship with- out sex ( <i>n</i> = 115, 8.6%)	Short-term sexual relationship ( <i>n</i> = 205, 15.4%)	Long-term “unhappy” sexual relationship ( <i>n</i> = 85, 6.4%)	Long-term “happy” sexual relationship ( <i>n</i> = 308, 23.1%)	<i>p</i> value
	<i>n</i> (%) or <i>M</i> ( <i>Q</i> 1, <i>Q</i> 3)	<i>n</i> (%) or <i>M</i> ( <i>Q</i> 1, <i>Q</i> 3)	<i>n</i> (%) or <i>M</i> ( <i>Q</i> 1, <i>Q</i> 3)	<i>n</i> (%) or <i>M</i> ( <i>Q</i> 1, <i>Q</i> 3)	<i>n</i> (%) or <i>M</i> ( <i>Q</i> 1, <i>Q</i> 3)	
Illicit drug use history						< .0001
Never	363 (59.4)	63 (57.8)	81 (39.9)	41 (48.8)	160 (52.5)	
Previously	153 (25.0)	29 (26.6)	61 (30.0)	27 (32.1)	96 (31.5)	
Currently (past 3 months)	95 (15.6)	17 (15.6)	61 (30.0)	16 (19.1)	49 (16.1)	
Have biological children at home						.0180
Yes	144 (23.2)	20 (17.4)	46 (22.4)	19 (22.4)	76 (24.7)	
No	240 (38.7)	54 (47.0)	87 (42.2)	51 (60.0)	130 (42.2)	
No biological children	211 (34.0)	39 (33.9)	60 (29.3)	13 (15.3)	92 (29.8)	
Not biologically female	26 (4.2)	<5 (1.7)	12 (5.9)	<5 (2.4)	10 (3.3)	
Factors related to HIV						
Time living with HIV (years), continuous	11.5 (6.4, 17.3)	10.8 (4.1, 17.2)	10.4 (5.9, 16.8)	9.9 (6.0, 15.6)	10.4 (5.8, 16.1)	.1927
Transmission risk category						.6891
Consensual sex	306 (49.3)	53 (46.1)	103 (50.2)	45 (52.9)	142 (46.1)	
Non-consensual sex	96 (15.5)	19 (16.5)	28 (13.7)	13 (15.3)	49 (15.9)	
Sharing needles	119 (19.2)	27 (23.5)	47 (22.9)	13 (15.3)	53 (17.2)	
Perinatal expo- sure	23 (3.7)	<5 (1.7)	<5 (1.9)	<5 (2.4)	18 (5.8)	
Blood transfusion or other	33 (5.3)	7 (6.1)	8 (3.9)	7 (8.2)	19 (6.2)	
Don't know or prefer not to answer	44 (7.1)	7 (6.1)	15 (7.3)	5 (5.9)	27 (8.8)	
Discussed with provider how viral load impacts HIV transmis- sion risk						
Yes	377 (61.7)	73 (64.6)	144 (71.3)	65 (77.4)	247 (80.5)	< .0001
No	234 (38.3)	40 (35.4)	58 (28.7)	19 (22.6)	60 (19.5)	
Perception of how treatment changes HIV transmission risk						.0004
Makes the risk a lot lower	392 (63.7)	69 (60.0)	129 (63.2)	56 (65.9)	235 (77.1)	
All other responses (i.e., a little lower, no difference, higher, don't know)	223 (50.3)	46 (40.0)	75 (36.8)	29 (34.1)	70 (22.9)	
HIV stigma scale (HSS), continu- ous	57.5 (42.5, 72.5)	60.0 (45.0, 72.5)	62.5 (47.5, 72.5)	60.0 (42.5, 72.5)	52.5 (40.0, 65.0)	.0001

Table 5 (continued)

Variables	No relationship ( <i>n</i> = 621, 46.5%)	Relationship with- out sex ( <i>n</i> = 115, 8.6%)	Short-term sexual relationship ( <i>n</i> = 205, 15.4%)	Long-term “unhappy” sexual relationship ( <i>n</i> = 85, 6.4%)	Long-term “happy” sexual relationship ( <i>n</i> = 308, 23.1%)	<i>p</i> value
	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	
Subscale 1 (personalized stigma), con- tinuous	20.0 (12.5, 27.5)	22.5 (15.0, 22.5)	20.0 (15.0, 30.0)	20.0 (11.3, 28.8)	17.5 (10.0, 22.5)	.0002
Subscale 2 (disclo- sure), contin- uous	15.0 (12.5, 20.0)	15.0 (12.5, 20.0)	17.5 (12.5, 20.0)	17.5 (12.5, 20.0)	15.0 (12.5, 20.0)	.2618
Subscale 3 (inter- nalized stigma), continuous	7.5 (5.0, 15.0)	7.5 (5.0, 15.0)	7.5 (5.0, 15.0)	7.5 (5.0, 15.0)	7.5 (0, 12.5)	.0002
Subscale 4 (public attitudes), con- tinuous	15.0 (10.0, 17.5)	15.0 (10.0, 17.5)	15.0 (10.0, 17.5)	15.0 (10.0, 17.5)	15.0 (10.0, 15.0)	.3937
<i>Mental health and violence factors</i>						
Mental health- related quality of life	43.4 (32.0, 53.2)	41.8 (32.3, 51.8)	35.5 (27.9, 46.1)	37.7 (26.7, 48.6)	48.8 (37.0, 55.9)	<.0001
PTSD, categorical						<.0001
Score < 14	322 (52.3)	60 (52.2)	68 (33.5)	34 (40.0)	208 (30.1)	
Score ≥ 14 (likely PTSD)	294 (47.7)	55 (47.8)	135 (66.5)	51 (60.0)	97 (31.8)	
Depression, cat- egorical						<.0001
Score < 10	289 (48.3)	51 (45.5)	78 (39.0)	28 (34.2)	216 (72.7)	
Score ≥ 10 (depressive symptoms)	310 (51.8)	61 (54.5)	122 (61.0)	54 (65.9)	81 (27.3)	
Any violence as an adult						<.0001
Never	144 (24.2)	21 (18.6)	15 (7.8)	8 (9.6)	63 (21.1)	
Previously	354 (59.4)	66 (58.4)	108 (55.9)	41 (49.4)	185 (62.1)	
Currently (past 3 months)	98 (16.4)	26 (23.0)	70 (36.3)	34 (40.9)	50 (16.8)	
Any violence as a child						<.0001
No	214 (36.2)	24 (21.4)	38 (19.9)	20 (24.1)	103 (34.7)	
Yes	378 (63.8)	88 (78.6)	153 (80.1)	63 (75.9)	194 (65.3)	
Any violence at war						.6799
No	501 (84.1)	96 (86.5)	160 (83.3)	68 (81.9)	258 (86.9)	
Yes	95 (15.9)	15 (13.5)	32 (16.7)	15 (18.1)	39 (13.1)	
<i>Physical health factors</i>						
Physical health- related quality of life	45.9 (32.5, 54.9)	48.5 (30.6, 55.9)	46.9 (33.9, 55.6)	40.6 (32.8, 52.8)	52.3 (39.8, 56.7)	<.0001
History of antiret- roviral therapy						.1323
Never	81 (13.1)	16 (13.9)	22 (10.7)	7 (8.3)	42 (13.7)	
Previously	18 (2.9)	7 (6.1)	12 (5.9)	8 (9.5)	16 (5.2)	

Table 5 (continued)

Variables	No relationship ( <i>n</i> = 621, 46.5%)	Relationship with- out sex ( <i>n</i> = 115, 8.6%)	Short-term sexual relationship ( <i>n</i> = 205, 15.4%)	Long-term “unhappy” sexual relationship ( <i>n</i> = 85, 6.4%)	Long-term “happy” sexual relationship ( <i>n</i> = 308, 23.1%)	<i>p</i> value
	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	<i>n</i> (%) or <i>M</i> (Q1, Q3)	
Currently	519 (84.0)	92 (80.0)	171 (83.4)	69 (82.1)	248 (81.1)	
Most recent viral load						.6506
Undetectable	483 (77.8)	83 (72.2)	158 (77.1)	69 (81.2)	239 (77.3)	
Detectable	85 (13.7)	20 (17.4)	30 (14.6)	14 (16.5)	44 (14.3)	
Never accessed medical care/ never received results	17 (2.7)	< 5 (3.5)	8 (3.9)	0 (0.0)	13 (4.2)	
Don't know	36 (5.8)	8 (7.0)	9 (4.4)	< 5 (2.3)	13 (4.2)	
Most recent CD4 cell count						.2848
< 200	35 (5.7)	< 5 (3.5)	10 (4.9)	8 (9.4)	15 (4.9)	
200 to < 500	178 (28.8)	26 (22.6)	55 (26.8)	16 (18.8)	85 (27.6)	
500 or more	303 (49.0)	58 (50.4)	97 (47.3)	47 (55.3)	160 (52.0)	
Never accessed medical care/ never received results	14 (2.3)	< 5 (3.5)	7 (3.4)	0 (0.0)	12 (3.9)	
Don't know	89 (14.4)	23 (20.0)	36 (17.6)	14 (16.5)	36 (11.7)	

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happy), marked by differences in marital status, sexual activity, physical intimacy, emotional closeness, power equity, sexual exclusivity, relationship duration, and couple HIV serostatus. Across all latent classes, a sizeable proportion of women reported experiences of love, including those in no relationship, though this varied considerably by relational contexts. Also, consistent with feminist theorizing around love, sex, and relationships, we uncovered several associations between latent class membership and factors related to sociostructural context, trauma, and mental health. As a whole, these findings demonstrate the utility of a critical feminist approach to quantitative sex and relationships research with women living with HIV and help to move knowledge forward in several important ways.

The finding that 46.5% of women were not in a relationship and that this was associated with HIV-related stigma but also reduced violence suggests that ongoing stigmatization of HIV remains a significant impediment to pursuing safe and healthy relationships for many women living with HIV. Enacted stigma and internalized stigma appeared to be driving this effect. As noted in the Introduction, past qualitative research has documented the judgment, abuse, and rejection many women experience upon disclosure to partners (Closson et al., 2015; Cooper et al., 2013; Jarman et al., 2005; Keegan et al., 2005; Maticka-Tyndale et al., 2002; Nevedal & Sankar, 2015; Persson, 2005; Psaros et al., 2012; Siegel et al., 2006;

Siegel & Schrimshaw, 2003), particularly in heterosexual communities where HIV knowledge is low and stigma is high (Persson, 2005). Prior research has also revealed that public discourses that depict women as vectors of transmission influence women's self-esteem, ultimately inhibiting their desires to enter into relationships (Gurevich et al., 2007; Jarman et al., 2005; Lawless, Crawford, et al. 1996; Lawless, Kippax, et al., 1996). It is important to note, however, that not all women with HIV desire a relationship. From wanting to protect oneself from HIV non-disclosure laws (International Community of Women Living with HIV/AIDS, 2015; Kaida et al., 2017), to preventing the physical and emotional stresses and trauma of relationships with HIV (Psaros et al., 2012; Siegel et al., 2006), to concentrating on other priorities (e.g., work, earning money, or furthering children's education) (Cooper et al., 2013; Psaros et al., 2012; Seeley et al., 2009; Siegel & Schrimshaw, 2003), these alternative narratives demonstrate women's resistance against discriminatory structures and debunk broad cultural assumptions that a romantic relationship is necessary for a happy life (Day, Kay, Holmes, & Napier, 2011; DePaulo & Morris, 2005).

In addition to HIV stigma, older women were less likely to be in any kind of relationship, especially sexually active relationships. Desexualization, or the forced imposition of nonsexuality (Kim, 2010), is a tool that has been used by societies for decades to control and marginalize older women's desire for

**Table 6** Unadjusted and adjusted odds ratios (OR and AOR) and 95% confidence intervals (95% CI) from multinomial logistic regression analysis assessing predictors of latent class membership, in reference to “no relationship,” among women living with HIV enrolled in CHIWOS (N = 1099)

Variables	Relationship type							
	Relationship without sex		Short-term sexual relationship		Long-term “unhappy” sexual relationship		Long-term “happy” sexual relationship	
	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
<i>Social, cultural, political, and economic factors</i>								
Factors beyond HIV								
Age (years) (per 10-unit increase)	<b>0.58 (0.49, 0.70)</b>	<b>0.72 (0.56, 0.92)</b>	<b>0.82 (0.66, 1.01)</b>	<b>0.46 (0.37, 0.58)</b>	<b>0.62 (0.48, 0.79)</b>	<b>0.39 (0.28, 0.54)</b>	<b>0.53 (0.45, 0.62)</b>	<b>0.40 (0.33, 0.49)</b>
Sexual orientation								
Heterosexual	1	Not selected	1	Not selected	1	Not selected	1	Not selected
Lesbian, gay, bisexual, two-spirited, queer	0.91 (0.46, 1.81)		1.50 (0.92, 2.45)		1.26 (0.61, 2.60)		0.97 (0.61, 1.54)	
Gender								
Cisgendered women	1	Not selected	1	Not selected	1	Not selected	1	Not selected
Trans and gender-diverse women	0.22 (0.03, 1.64)		1.44 (0.67, 3.09)		0.65 (0.15, 2.81)		<b>0.34 (0.12, 0.99)</b>	
Genderism/Sexism (per 10-unit increase)	1.08 (0.87, 1.34)	0.96 (0.67, 1.36)	<b>1.26 (1.05, 1.51)</b>	1.21 (0.91, 1.60)	<b>1.35 (1.05, 1.74)</b>	<b>1.50 (1.02, 2.22)</b>	0.93 (0.79, 1.09)	1.15 (0.88, 1.49)
Racism (per 10-unit increase)	1.16 (0.96, 1.41)	1.11 (0.82, 1.51)	1.11 (0.95, 1.31)	0.86 (0.67, 1.09)	1.08 (0.86, 1.36)	0.75 (0.54, 1.05)	0.98 (0.85, 1.12)	0.96 (0.76, 1.21)
Annual personal income (CAD)								
Less than \$20,000	1	1	1	1	1	1	1	1
\$20,000 to less than \$40,000	<b>1.69 (1.00, 2.86)</b>	<b>2.37 (1.35, 4.15)</b>	1.08 (0.66, 1.75)	1.32 (0.77, 2.27)	1.64 (0.85, 3.15)	<b>2.74 (1.32, 5.68)</b>	<b>1.48 (1.00, 2.19)</b>	<b>1.63 (1.04, 2.55)</b>
\$40,000 or more	0.76 (0.33, 1.74)	1.20 (0.49, 2.96)	1.08 (0.60, 1.94)	1.64 (0.83, 3.22)	<b>2.34 (1.18, 4.66)</b>	<b>4.03 (1.74, 9.34)</b>	1.37 (0.85, 2.21)	1.52 (0.87, 2.67)
Education								
Lower than high school	1	1	1	1	1	1	1	1
High school	0.75 (0.45, 1.25)	1.04 (0.55, 1.95)	1.11 (0.61, 2.04)	0.91 (0.51, 1.60)	0.61 (0.28, 1.30)	0.55 (0.24, 1.24)	0.94 (0.60, 1.48)	0.85 (0.51, 1.42)
Higher than high school	0.63 (0.33, 1.21)	0.61 (0.30, 1.24)	0.80 (0.49, 1.32)	1.22 (0.67, 2.22)	1.08 (0.53, 2.17)	1.03 (0.46, 2.30)	1.08 (0.69, 1.68)	0.91 (0.53, 1.55)
Transactional sex in the past 6 months								
No	1	1	1	1	1	1	1	1
Yes	0.46 (0.11, 2.00)	0.29 (0.06, 1.34)	4.39 (2.41, 7.99)	<b>3.45 (1.68, 7.07)</b>	0.68 (0.16, 2.96)	0.39 (0.08, 1.96)	0.91 (0.42, 1.95)	0.66 (0.28, 1.58)



Table 6 (continued)

Variables	Relationship type							
	Relationship without sex		Short-term sexual relationship		Long-term “unhappy” sexual relationship		Long-term “happy” sexual relationship	
	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
<b>Illicit drug use history</b>								
Never	1	Not selected	1	Not selected	1	Not selected	1	Not selected
Previously	1.01 (0.61, 1.67)		<b>1.75 (1.14, 2.67)</b>		1.56 (0.88, 2.77)		1.28 (0.91, 1.79)	
Currently (past 3 months)	1.17 (0.64, 2.16)		<b>3.36 (2.13, 5.29)</b>		1.86 (0.94, 3.67)		1.33 (0.87, 2.04)	
<b>Have biological children at home</b>								
Yes	1	1	1	1	1	1	1	1
No	1.61 (0.90, 2.87)	<b>2.16 (1.15, 4.06)</b>	1.16 (0.73, 1.83)	<b>1.72 (1.02, 2.91)</b>	1.55 (0.83, 2.90)	<b>3.65 (1.77, 7.52)</b>	1.11 (0.76, 1.62)	<b>2.22 (1.42, 3.48)</b>
No biological children	1.12 (0.61, 2.08)	1.15 (0.60, 2.17)	0.80 (0.49, 1.30)	0.83 (0.48, 1.42)	0.51 (0.24, 1.13)	0.58 (0.25, 1.35)	0.79 (0.53, 1.19)	0.70 (0.45, 1.11)
Not biologically female	0.31 (0.04, 2.43)	0.49 (0.06, 4.07)	1.23 (0.51, 3.01)	0.71 (0.23, 2.18)	0.37 (0.05, 2.91)	0.82 (0.09, 7.52)	0.36 (0.12, 1.09)	0.49 (0.14, 1.70)
<b>Factors related to HIV</b>								
<b>Perception of how treatment changes HIV transmission risk</b>								
All other responses	1	1	1	1	1	1	1	1
Makes the risk a lot lower	0.81 (0.52, 1.25)	0.81 (0.51, 1.30)	1.13 (0.78, 1.64)	1.00 (0.66, 1.53)	1.09 (0.65, 1.86)	0.92 (0.51, 1.66)	<b>1.96 (1.40, 2.75)</b>	<b>1.49 (1.01, 2.17)</b>
HIV stigma scale (HSS) (per 10-unit increase)	1.04 (0.93, 1.16)	1.01 (0.88, 1.14)	1.06 (0.97, 1.16)	0.99 (0.89, 1.11)	1.08 (0.95, 1.23)	0.97 (0.83, 1.13)	<b>0.89 (0.82, 0.96)</b>	<b>0.87 (0.79, 0.96)</b>
<b>Mental health and violence factors</b>								
<b>PTSD, categorical</b>								
Score < 14	1	1	1	1	1	1	1	1
Score ≥ 14 (likely PTSD)	0.88 (0.57, 1.35)	0.62 (0.36, 1.07)	<b>2.02 (1.39, 2.92)</b>	<b>1.74 (1.07, 2.82)</b>	<b>1.89 (1.12, 3.18)</b>	1.05 (0.54, 2.06)	<b>0.55 (0.40, 0.75)</b>	0.85 (0.57, 1.28)
<b>Depression, categorical</b>								
Score < 10	1	1	1	1	1	1	1	1
Score ≥ 10 (depressive symptoms)	1.20 (0.78, 1.86)	1.25 (0.74, 2.12)	1.30 (0.91, 1.87)	0.69 (0.43, 1.10)	<b>2.07 (1.20, 3.56)</b>	1.52 (0.77, 3.01)	<b>0.37 (0.27, 0.51)</b>	<b>0.39 (0.26, 0.59)</b>
<b>Any violence as an adult</b>								
Never	1	1	1	1	1	1	1	1
Previously	1.36 (0.77, 2.39)	1.57 (0.85, 2.90)	<b>3.09 (1.63, 5.84)</b>	<b>3.12 (1.57, 6.20)</b>	2.24 (0.92, 5.50)	<b>2.76 (1.04, 7.29)</b>	<b>1.52 (1.03, 2.24)</b>	<b>2.43 (1.53, 3.85)</b>
Currently (past 3 months)	1.95 (0.99, 3.83)	2.01 (0.95, 4.28)	<b>7.49 (3.79, 14.76)</b>	<b>5.56 (2.61, 11.83)</b>	<b>7.62 (3.04, 19.09)</b>	<b>6.33 (2.26, 17.70)</b>	1.49 (0.91, 2.44)	<b>2.49 (1.38, 4.51)</b>
<b>Any violence as a child</b>								
No	1	Not selected	1	Not selected	1	Not selected	1	Not selected

Table 6 (continued)

Variables	Relationship type							
	Relationship without sex		Short-term sexual relationship		Long-term “unhappy” sexual relationship		Long-term “happy” sexual relationship	
	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Yes	<b>1.96 (1.18, 3.25)</b>		<b>2.22 (1.45, 3.40)</b>		<b>2.61 (1.36, 4.99)</b>		1.15 (0.84, 1.58)	
<i>Physical health factors</i>								
Physical health-related quality of life (per 10-unit increase)	1.07 (0.92, 1.24)	Not selected	1.06 (0.94, 1.20)	Not selected	0.94 (0.79, 1.11)	Not selected	<b>1.23 (1.11, 1.38)</b>	Not selected
<i>History of antiretroviral therapy</i>								
Never	1	1	1	1	1	1	1	1
Previously	2.94 (0.99, 8.77)	2.55 (0.81, 8.08)	<b>4.10 (1.44, 11.67)</b>	<b>3.31 (1.04, 10.49)</b>	<b>5.46 (1.52, 19.58)</b>	2.77 (0.66, 11.53)	<b>2.39 (1.01, 5.66)</b>	2.38 (0.92, 6.15)
Currently	1.00 (0.53, 1.89)	0.93 (0.45, 1.93)	<b>1.89 (1.00, 3.59)</b>	<b>2.22 (1.08, 4.56)</b>	1.53 (0.64, 3.69)	1.17 (0.44, 3.12)	1.08 (0.69, 1.70)	1.26 (0.74, 2.15)

CHIWOS: Canadian HIV Women’s Sexual and Reproductive Health Cohort Study. Estimates with 95% CIs that exclude the null value of 1 are in bold

sex and entitlement to pleasure, among many other groups of women (Rheume & Mitty, 2008; Somes & Donatelli, 2012). As HIV activist Welbourn (2013) persuasively argued, HIV exacerbates this experience through “laws and practices which make us fearful of even thinking about our rights to sexual pleasure, let alone acting on them” (p. 157). Sexist and ageist ideas of how women “should” look are also intensified in the context of HIV for women, some of who report significant changes in body shape with menopause and cART as contributing to reduced desirability and a reason why partners have ended relationships (Psaros et al., 2012). However, these sexual stereotypes of older women with HIV as not desirous nor desired sexual beings are challenged when one considers that 17.2% of women in long term/happy, loving, intimate, and sexually active relationships in our study are over 50. This corroborates qualitative research with African American and Latina older women with HIV, who describe sexual pleasure as important and improving with age (Taylor et al., 2016).

Just as stigma and age may limit the possibility of pursuing a new relationship, our results also illustrate how knowledge about HIV and the circumstances of everyday life can impact dynamics within already established relationships. The prevalence of women in relationships without sex in this study was 8.6%. While knowledge about the impact of cART on HIV transmission was generally high, consistent with the latest science (Rodger et al., 2016), mixed perceptions were evident and its endorsement was lowest among this latent class. This, combined with discourses that position HIV-positive women as both irresponsible for acquiring HIV and responsible for preventing its

spread (Gurevich et al., 2007), may contribute to women’s fears of transmitting HIV to partners and may help to explain why some women in this latent class were in committed relationships but not having sex (Beckerman & Auerbach, 2002; Cranston & Caron, 1998; Keegan et al., 2005; Lawless, Crawford, et al. 1996; Nevedal & Sankar, 2015; Rispel, Metcalf, Moody, Cloete, & Caswell, 2011; Siegel & Schrimshaw, 2003; van der Straten, Vernon, Knight, Gomez, & Padian, 1998; VanDevanter, Thacker, Bass, & Arnold, 1999). However, these findings may also be explained by several other unrelated reasons. For example, some women in this latent class may be at the beginning of their relationship, which has not yet progressed to a sexual one. Others may have been together for some time and sexual inactivity may be situational (e.g., work, stress, kids, other illness, or long-distance relationships). Still, others may not want to have oral, vaginal, or anal intercourse, preferring and enjoying other forms of intimacy and connection, similar to the accounts of women without HIV (Hayfield & Clarke, 2012). Normalizing rather than exceptionalizing their experiences in important, and qualitative research on the intimate life of non-sexual couples is needed. Dating as a mother with HIV could also be explored in future analyses since our findings show that those with children living at home were less likely to be in this or any kind of relationship relative to those without children in the home.

Three distinct multidimensional classes of sexually active relationships with a regular partner were also uncovered in this analysis. First, nearly one-quarter of were in long-term/happy relationships, most commonly with HIV-negative partners (71%). These relationships were characterized by longer

726 duration (i.e.,  $\geq 3$  years), higher physical (97%) and emotional (86%) intimacy, and equitable power (93%). They also  
 727 reported the greatest amount of love and affection compared to  
 728 all other relationship types. These findings challenge dominant  
 729 research narratives that position love in the context of HIV  
 730 as inherently negative, even dangerous, especially for mixed  
 731 HIV status couples, whose traditional name of serodiscordance  
 732 implies tension (Beckerman & Auerbach, 2002; Bunnell et al., 2005; Hughes & Truong, 2017; Lawless, Crawford, et al. 1996; Miller, 2014; Patel et al., 2016; Rispel et al., 2011; Siegel et al., 2006; van der Straten et al., 1998). On the contrary, there is evidence that women with HIV-negative partners report greater sexual satisfaction (Peltzer, 2011) and feelings of normalcy in such relationships (Keegan et al., 2005; Lawless, Crawford, et al. 1996; Persson, 2005), as well as considerable within-group diversity on the basis of many dynamics including the timing and circumstances around diagnosis (Hughes & Truong, 2017). Significantly, we also found that women in long-term/happy relationships, compared to their counterparts in no relationship, were less likely to experience stigma, PTSD, and probable depression. It may be that longer-term, loving, and sexually active relationships are protective against these traumas, or that women facing more HIV stigma and coping with PTSD and depression are less likely to pursue, establish, and continue such romantic relationships. Regardless, these findings add to the health literature cross-sectionally linking love and intimacy to psychological well-being (Jakubiak & Feeney, 2016).

754 Relatively fewer women in our cohort (6.4%) were in long-term/unhappy sexual relationships, defined by lower levels of power (52%) and physical (44%) and emotional (24%) intimacy. HIV-positive partners were also more likely in these relationships. Whereas some research has shown HIV seroconcordance to be a source of support and reduced burdens in relation to disclosure, discrimination, and education of partners (Cooper et al., 2013; Jarman et al., 2005; Keegan et al., 2005; Lawless, Crawford, et al. 1996; Mazanderani, 2012; Seeley et al., 2009; Wamoyi et al., 2011), other research has found that some women may settle for less in such relationships out of fears of the possible social consequences of being single. Specifically, in addition to worries about loss of income and increased loneliness, consistent with findings among women without HIV (Spielmann et al., 2013), HIV-positive women have also reported anxieties about the challenges of re-disclosing, re-educating, and re-negotiating sex with a new partner (Keegan et al., 2005; Lawless, Crawford, et al. 1996; Nevedal & Sankar, 2015). Membership in this latent class was significantly related to higher income, as well as sexism/genderism and violence. While qualitative research should investigate these links more deeply, these findings may suggest that the benefits of economic power in terms of increasing women's autonomy and choice (including the option to leave unhappy and unsafe relationships) may be lessened in the context of

HIV and gendered pressures to conform to committed, love relationships (Holland, Ramazanoglu, et al., 1992; Moran & Lee, 2014a; Msibi, 2011; Rule-Groenewald, 2013; Singh, 2013).

Another 15% of our cohort was in shorter-term sexual relationships (i.e.,  $< 3$  years). They had similar levels of contentment with sexual intimacy as the previous latent class but were less satisfied in terms of emotional closeness (16%). Our finding that disclosure was less common among women in shorter relationships is consistent with qualitative research (Keegan et al., 2005; Lawless, Crawford, et al. 1996). While typically constructed as sexually "risky," some women living with HIV report preferring shorter relationships, as they allow for more control over condom use, enabling them to avoid disclosure and (some of) its associated risks (e.g., rejection) (Keegan et al., 2005; Lawless, Crawford, et al. 1996; Maticka-Tyndale et al., 2002). Women in these relational contexts, however, along with those in long-term/unhappy arrangements, were not immune to other harms and had the greatest odds (i.e., sixfold) of experiencing violence in the past 3 months. Sex work also predicted membership in short-term relationships. These findings suggest that women in positions of lower social power are most likely to be navigating shorter relationships and disproportionately impacted by violence. Those currently and previously on cART (vs. never on cART) were also more likely to be in this latent class. This may be because more marginalized women are often connected to outreach services (Carter et al., 2015), though these relationships warrant further study.

Finally, in addition to showing how relationships are multifaceted and embedded within diverse social contexts, a key objective of this analysis was to make visible experiences of love with HIV. Consistent with qualitative work (Grodensky et al., 2015; Gurevich et al., 2007; Squire, 2003), many of the women in our study reported giving and receiving love. Our findings also revealed how love, sex, and intimate relationships are not the same phenomenon, as love may be felt without either sexual interaction or a romantic partner. For example, women in relationships without sex reported higher levels of love than those in some sexual relationships, and about one-quarter of women in no relationship reported experiencing love "all of the time." These findings are consistent with theories of love as encompassing different components depending on the relationship context (Sternberg, 1986). They are also reflective of qualitative reports from women living with HIV who describe their children, grandchildren, and friends as important sources of closeness, connectedness, and attachment (Grodensky et al., 2015). While romantic love is certainly not wanted by all, past studies have found that many women living with HIV report a deep desire to love and be loved (Squire, 2003). Feminist scholars (Gurevich et al., 2007; Persson, 2005; Squire, 2003) have revealed, however, how discourses of HIV contradict discourses of romance and can disrupt women's quests for love. While our findings show some of that disruption, they also depart from

832 previous literature by demonstrating that many women living  
833 with HIV can and do find love and belonging in several differ-  
834 ent ways.

### 835 Limitations and Strengths

836 Our ability to construct meaningful relationship typologies was  
837 limited by the data collected. While we were able to employ sev-  
838 eral measures common in the literature, numerous other indica-  
839 tors warrant future study (e.g., interests shared, communication,  
840 affectionate touch, and intimacy outside of intercourse). Further,  
841 despite the heterogeneity shown, our LCA contained some mis-  
842 classification bias; specifically, we were unable to tease apart  
843 and separately study the experiences of women who reported  
844 non-relationship sex, which likely minimized the associations  
845 reported. While our analysis shows critical nuance among  
846 women reporting regular partners, future research employing  
847 LCA is needed in the realm of casual partnerships as well as  
848 intimate partnerships of sex workers. Further, our analysis also  
849 concealed the experiences of women in relationships without  
850 sex, as many of our survey questions (e.g., duration, power, cou-  
851 ple HIV serostatus) were only asked to those in sexual relation-  
852 ships, exposing a hidden bias that remains prominent within HIV  
853 research—namely, that relationships matter only insofar as they  
854 involve sexual risk. Finally, we missed critical nuance among  
855 women who were single and satisfied versus single and dissatis-  
856 fied, which also bares further study.

857 Although we operationalized intersectionality with regard  
858 to relationships, we were unable to investigate the multidim-  
859 ensionality of love and how experiences of relationships  
860 and love were shaped by the whole of women’s identities (e.g.,  
861 age, sexual orientation, and race simultaneously) (Bowleg,  
862 2008). Qualitative research could address this and improve  
863 understandings of the numerical data found in our study. It is  
864 also important to acknowledge that the cross-sectional nature  
865 of this analysis precluded us from understanding the direction-  
866 ality of the associations seen. This design also prevented us  
867 from exploring how women’s relationships may change over  
868 time, and associated influences and impacts. Future research  
869 should investigate this through latent transition analysis  
870 (LTA), a longitudinal extension of LCA involving multiple  
871 waves of data collection (Lanza & Collins, 2008).

872 Even though we were unable to illuminate full relational  
873 diversity and complexity, the questions were informed, tested,  
874 and selected in collaboration with women living with HIV, which  
875 is not typical of quantitative research in this field (Carter, Greene,  
876 et al., 2017). Women also played a critical role in administering  
877 the questionnaire and framing the results, which may have reduced  
878 social desirability bias (Brizay et al., 2015) and improved analy-  
879 sis interpretations. In addition, this is the first study to analyze  
880 relationships patterns of women living with HIV using LCA and  
881 we hope the results, in combination with critical feminist theory,  
882 offer a new methodological direction for quantitative researchers

working in the area of HIV, sexual health, and even relationship  
883 science more broadly. 884

### 885 Implications

886 This study has important implications for women living with  
887 HIV, providers, and policy-makers. Perhaps most importantly,  
888 to support women’s lives and relationships (for those who  
889 desire them), continued programmatic and policy efforts at  
890 the structural level aimed at de-stigmatizing HIV (Canadian  
891 HIV/AIDS Legal Network, 2014; International Community  
892 of Women Living with HIV/AIDS, 2015) and reducing and  
893 responding to violence against women living with the virus  
894 (Bair-Merritt et al., 2014; García-Moreno et al., 2015) are cru-  
895 cial. Clinical and community-based initiatives should also be  
896 prioritized in order to offer women compassionate, individual-  
897 ized, and contextualized supports around trauma, sexuality, and  
898 relationships, with referrals to specialists where needed (Taylor  
899 & Davis, 2006). Comprehensive peer-driven interventions in  
900 this area are also lacking and needed (Fernet et al., 2017). Pro-  
901 grams mustn’t only target women, though. Sex and intimate  
902 relationships involve (at least) two people, and are shaped by  
903 broader historical, social, and cultural contexts. Thus, educat-  
904 ing current and prospective partners around gender equality,  
905 structural inequities, and sex and intimacy in the context of  
906 HIV is critical, including effectively no risk of transmission  
907 with consistent treatment and VL suppression and monitoring,  
908 among other safer sex strategies (Rodger et al., 2016). Creating  
909 more opportunities for women to connect with other women  
910 and couples affected by HIV, both in-person and online (Life  
911 and Love with HIV, 2017), is another important strategy. By  
912 making their stories (both happy and difficult) more visible, we  
913 can support women in their efforts to combat stigma, alleviate  
914 isolation, and find support in others’ experiences (International  
915 Community of Women Living with HIV/AIDS, 2017).

### 916 Conclusions

917 As feminist scholar Squire (2003) once said, because of the  
918 stigma of HIV, “a romance told in the context of HIV is, in a  
919 sense, a story told *against* HIV” (p. 79). Without negating the  
920 challenges that an HIV diagnosis raises for women in their lives  
921 and in their relationships, there is a critical need to show more  
922 positive and holistic stories of women’s experiences with rela-  
923 tionships and sexuality. By attempting just that in our analysis,  
924 we hope to offer women with HIV a new narrative that affirms,  
925 in the words of HIV activist and co-author Sanchez, “women  
926 are multidimensional beings and have the power and the rights  
927 to live fulfilling lives complete with love and intimacy, if they  
928 choose to.” Enabling this, however, requires significant changes  
929 in society.



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Carrie Martin (Canadian Aboriginal AIDS Network), Renee Masching (Canadian Aboriginal AIDS Network), Lyne Massie (Université du Québec à Montréal), Melissa Medjuck (formerly of the Positive Women's Network), Brigitte Ménard (McGill University Health Centre), Cari L. Miller (formerly of Simon Fraser University), Judy Mitchell (Positive Living North), Gerardo Mondragon (British Columbia Centre for Excellence), Deborah Money (Women's Health Research Institute and Faculty of Medicine at UBC), Ken Monteith (COCQ-SIDA), Marvelous Muchenje (Women's Health in Women's Hands CHC), Florida Mukandamutsa (CASM), Mary Ndung'u (African Partnership Against AIDS), Valerie Nicholson (Simon Fraser University), Kelly O'Brien (University of Toronto), Nadia O'Brien (McGill University Health Centre and McGill University), Gina Ogilvie (University of British Columbia, Women's Health Research Institute), Susanna Ogunnaike-Cooke (Public Health Agency of Canada), Joanne Otis (Université du Québec à Montréal), Rebeccah Parry (Simon Fraser University), Sophie Patterson (Simon Fraser University), Angela Paul (Positive Living North), Doris Peltier (Canadian Aboriginal AIDS Network), Neora Pick (Oak Tree Clinic, BC Women's Hospital and Health Centre), Alie Pierre (McGill University Health Centre), Jeff Powis (Michael Garron Hospital), Karène Proulx-Boucher (McGill University Health Centre), Corinna Quan (Windsor Regional Hospital), Jesleen Rana (Women's Health in Women's Hands CHC), Eric Roth (University of Victoria), Danielle Rouleau (Centre Hospitalier de l'Université de Montréal), Geneviève Rouleau (Centre Hospitalier de l'Université de Montréal), Sergio Rueda (Centre for Addiction and Mental Health), Kate Salters (Simon Fraser University, British Columbia Centre for Excellence in HIV/AIDS), Margarite Sanchez (ViVA, Southern Gulf Islands AIDS Society, Simon Fraser University), Roger Sandre (Haven Clinic), Jacqueline Sas (CIHR Canadian HIV Trials Network), Édénia Savoie (McGill University Health Centre), Paul Sereda (British Columbia Centre for Excellence in HIV/AIDS), Stephanie Smith (Women's College Research Institute), Marcie Summers (formerly of the Positive Women's Network), Wangari Tharao (Women's Health in Women's Hands CHC), Christina Tom (Simon Fraser University), Cécile Tremblay (Centre Hospitalier de l'Université de Montréal), Jason Trigg (British Columbia Centre for Excellence in HIV/AIDS), Sylvie Trottier (Centre Hospitalier Universitaire de Québec), Angela Underhill (Women's College Research Institute), Anne Wagner (Ryerson University), Sharon Walmsley (University Health Network), Clara Wang (British Columbia Centre for Excellence), Kath Webster (Simon Fraser University), Wendy Wobeser (Queen's University), Denise Wozniak (Positive Living Society of British Columbia), Mark Yudin (St. Michael's Hospital), Wendy Zhang (British Columbia Centre for Excellence in HIV/AIDS), Julia Zhu (British Columbia Centre for Excellence in HIV/AIDS). All other CHIWOS Research Team Members who wish to remain anonymous.

## References

- Abelsohn, K., Benoit, A. C., Conway, T., Cioppa, L., Smith, S., Kwaramba, G., ... CHIWOS Research Team. (2014). "Hear(ing) new voices": Peer reflections from community based survey development with women living with HIV. *Progress in Community Health Partnerships: Research Education and Action*, 9(4), 561–569. <https://doi.org/10.1353/cpr.2015.0079>.
- AIDES. (2016). #Révélation. Retrieved from <http://www.aides.org/campagne/revelation>.
- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, 19(6), 716–723.
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, 52(3), 317–332.
- Bair-Merritt, M. H., Lewis-O'Connor, A., Goel, S., Amato, P., Ismailji, T., Jelley, M., ... Cronholm, P. (2014). Primary care-based interventions for intimate partner violence: A systematic review.

- 1058 *American Journal of Preventive Medicine*, 46(2), 188–194. <https://doi.org/10.1016/j.amepre.2013.10.001>.
- 1059
- 1060 Balaille, G., Laisser, R., Ransjo-Arvidson, A. B., & Hojer, B. (2007).  
1061 Poverty and devastation of intimate relations: Tanzanian women's  
1062 experience of living with HIV/AIDS. *Journal of the Association*  
1063 *of Nurses in AIDS Care*, 18(5), 6–16. <https://doi.org/10.1016/j.jana.2007.07.005>.
- 1064
- 1065 Bay-Cheng, L. Y., & Goodkind, S. A. (2016). Sex and the single (neoliberal)  
1066 girl: Perspectives on being single among socioeconomically  
1067 diverse young women. *Sex Roles*, 74(5–6), 181–194.
- 1068 Becker D. (2014). The dating game: Accepting the past and living in  
1069 the present. *Positive Living Newsletter: Girl Talk*, 6–7. [http://positivelivingbc.org/wp-content/uploads/2015/2003/issue2091\\_lowres.pdf](http://positivelivingbc.org/wp-content/uploads/2015/2003/issue2091_lowres.pdf).
- 1070
- 1071 Beckerman, N. L., & Auerbach, C. (2002). Couples of mixed HIV status:  
1072 Psychosocial issues affecting intimacy. *Journal of Couple*  
1073 *& Relationship Therapy*, 1(4), 73–85. [https://doi.org/10.1300/j398v01n04\\_04](https://doi.org/10.1300/j398v01n04_04).
- 1074
- 1075 Berger, B. E., Ferrans, C. E., & Lashley, F. R. (2001). Measuring stigma  
1076 in people with HIV: Psychometric assessment of the HIV stigma  
1077 scale. *Research in Nursing & Health*, 24(6), 518–529. <https://doi.org/10.1002/nur.10011>.
- 1078
- 1079 Bhana, D. (2013). Introducing love: Gender, sexuality and  
1080 power. *Agenda*, 27(2), 3–11. <https://doi.org/10.1080/10130950.2013.822688>.
- 1081
- 1082 Bowleg, L. (2008). When Black + lesbian + woman ≠ Black lesbian  
1083 woman: The methodological challenges of qualitative and quantitative  
1084 intersectionality research. *Sex Roles*, 59(5–6), 312–325.  
1085 <https://doi.org/10.1007/s1199-008-9400-z>.
- 1086
- 1087 Bowleg, L., Lucas, K. J., & Tschann, J. M. (2004). “The ball was  
1088 always in his court”: An exploratory analysis of relationship  
1089 scripts, sexual scripts, and condom use among African American  
1090 women. *Psychology of Women Quarterly*, 28(1), 70–82.  
1091 <https://doi.org/10.1111/j.1471-6402.2004.00124.x>.
- 1092
- 1093 Bozdogan, H. (1987). Model selection and Akaike's information  
1094 criterion (AIC): The general theory and its analytical extensions.  
1095 *Psychometrika*, 52(3), 345–370.
- 1096
- 1097 Brizay, U., Golob, L., Globerman, J., Gogolishvili, D., Bird, M., Rios-  
1098 Ellis, B., ... Heidari, S. (2015). Community-academic partnerships  
1099 in HIV-related research: A systematic literature review of theory  
1100 and practice. *Journal of the International AIDS Society*,  
1101 18(1), 19354. <https://doi.org/10.7448/IAS.18.1.19354>.
- 1102
- 1103 Bunnell, R. E., Nassozi, J., Marum, E., Mubangizi, J., Malamba, S.,  
1104 Dillon, B., ... Mermin, J. H. (2005). Living with discordance:  
1105 Knowledge, challenges, and prevention strategies of HIV-discordant  
1106 couples in Uganda. *AIDS Care*, 17(8), 999–1012. <https://doi.org/10.1080/09540120500100718>.
- 1107
- 1108 Caballero, M. (2016). Pleasure is a human right. *HIV Equal*. Retrieved  
1109 from <http://www.hivequal.org/hiv-equal-online/feature-pleasure-is-a-human-right>.
- 1110
- 1111 Canadian HIV/AIDS Legal Network. (2014). The criminalization of  
1112 HIV non-disclosure in Canada and internationally. Retrieved  
1113 from [http://www.aidslaw.ca/site/wp-content/uploads/2014/09/CriminalInfo2014\\_ENG.pdf](http://www.aidslaw.ca/site/wp-content/uploads/2014/09/CriminalInfo2014_ENG.pdf).
- 1114
- 1115 Cardinal, C., Lee, M., Nicholson, V., Webster, K., Carter, A., &  
1116 Kaida, A. (2014). Women! It's our time to talk about sexuality.  
1117 In *Positive gathering conference 2014*, Vancouver, BC.
- 1118
- 1119 Carter, A., de Pokomandy, A., Loutfy, M., Ding, E., Sereda, P., Webster,  
1120 K., ... Kaida, A. (2017). Validating a self-report measure  
1121 of HIV viral suppression: An analysis of linked questionnaire  
1122 and clinical data from the Canadian HIV Women's Sexual and  
1123 Reproductive Health Cohort Study. *BMC Research Notes*,  
10(1), 138–145. <https://doi.org/10.1186/s13104-017-2453-8>.
- for understanding and enhancing women's sexual lives. *Sex*  
1124 *Roles*, 77(11–12), 779–800. <https://doi.org/10.1007/s11199-017-0826-z>.
- 1125
- 1126 Carter, A., Greene, S., Nicholson, V., O'Brien, N., Dahlby, J., de  
1127 Pokomandy, A., ... CHIWOS Research Team. (2015). 'It's a  
1128 very isolating world': The journey to HIV care for women living  
1129 with HIV in British Columbia, Canada. *Gender, Place & Culture*,  
1130 23(7), 941–954. <https://doi.org/10.1080/0966369x.2015.1073701>.
- 1131
- 1132 Carter, A., Loutfy, M., de Pokomandy, A., Colley, G., Zhang, W.,  
1133 Sereda, P., ... On behalf of the CHIWOS Research Team. (2017).  
1134 Health-related quality-of-life and receipt of women-centred HIV  
1135 care among women living with HIV in Canada. *Women and*  
1136 *Health*. <https://doi.org/10.1080/03630242.2017.1316346>.
- 1137
- 1138 Carter, A., Roth, E. A., Ding, E., Milloy, M.-J., Kestler, M., Jabbari,  
1139 S., ... Kaida, A. (2017). Substance use, violence, and antiretroviral  
1140 adherence: A latent class analysis of women living with  
1141 HIV in Canada. *AIDS and Behavior*, 22(3), 971–985. <https://doi.org/10.1007/s10461-017-1863-x>.
- 1142
- 1143 Closson, E. F., Mimiaga, M. J., Sherman, S. G., Tangmunkongvorakul,  
1144 A., Friedman, R. K., Limbada, M., ... HPTN063 Study Team.  
1145 (2015). Intimacy versus isolation: A qualitative study of sexual  
1146 practices among sexually active HIV-infected patients in HIV care  
1147 in Brazil, Thailand, and Zambia. *PLoS ONE*, 10(3), 16. <https://doi.org/10.1371/journal.pone.0120957>.
- 1148
- 1149 Clum, G., Chung, S.-E., Ellen, J. M., & The Adolescent Medicine Trials  
1150 Network for HIV/AIDS Interventions. (2009). Mediators of HIV-  
1151 related stigma and risk behavior in HIV infected young women.  
1152 *AIDS Care*, 21(11), 1455–1462. <https://doi.org/10.1080/09540120902883069>.
- 1153
- 1154 Cooper, D., Moore, E., & Mantell, J. E. (2013). Renegotiating intimate  
1155 relationships with men: How HIV shapes attitudes and experiences  
1156 of marriage for South African women living with HIV:  
1157 'Now in my life, everything I do, looking at my health'. *Acta*  
1158 *Juridica*, 2013, 218–238.
- 1159
- 1160 Cranson, D. A., & Caron, S. L. (1998). An investigation of the effects  
1161 of HIV on the sex lives of infected individuals. *AIDS Education*  
1162 *and Prevention*, 10(6), 506–522.
- 1163
- 1164 Day, M. V., Kay, A. C., Holmes, J. G., & Napier, J. L. (2011). System  
1165 justification and the defense of committed relationship ideology.  
1166 *Journal of Personality and Social Psychology*, 101(2), 291–306.  
1167 <https://doi.org/10.1037/a0023197>.
- 1168
- 1169 Dempster, A., Laird, N., & Rubin, D. (1977). Maximum likelihood  
1170 estimation from incomplete data. *Journal of the Royal Statistical*  
1171 *Society: Series B (Methodological)*, 39(1), 1–38.
- 1172
- 1173 DePaulo, B. M., & Morris, W. L. (2005). Singles in society and in  
1174 science. *Psychological Inquiry*, 16(2–3), 57–83.
- 1175
- 1176 Devries, K. M., & Free, C. J. (2011). Boyfriends and booty calls: Sexual  
1177 partnership patterns among Canadian Aboriginal young people.  
1178 *Canadian Journal of Public Health*, 102(1), 13–17. <https://doi.org/10.17269/cjph.102.2112>.
- 1179
- 1180 Doyal, L., & Anderson, J. (2005). 'My fear is to fall in love again...':  
1181 How HIV-positive African women survive in London. *Social Science*  
1182 *and Medicine*, 60(8), 1729–1738. <https://doi.org/10.1016/j.socscimed.2004.08.041>.
- 1183
- 1184 Espinosa-Hernández, G., & Vasilenko, S. A. (2015). Patterns of relationship  
1185 and sexual behaviors in Mexican adolescents and associations with  
1186 well-being: A latent class approach. *Journal of Adolescence*, 44,  
1187 280–290. <https://doi.org/10.1016/j.adolescence.2015.08.011>.
- 1188
- 1189 Fahs, B. (2014). 'Freedom to' and 'freedom from': A new vision for  
1190 sex-positive politics. *Sexualities*, 17(3), 267–290. <https://doi.org/10.1177/1363460713516334>.
- 1191
- 1192 Fair, C., & Albright, J. (2012). “Don't tell him you have HIV unless  
1193 he's 'the one'”: Romantic relationships among adolescents and



- 1189 young adults with perinatal HIV infection. *AIDS Patient Care and*  
 1190 *STDs*, 26(12), 746–754. <https://doi.org/10.1089/apc.2012.0290>. 1255
- 1191 Farvid, P., & Braun, V. (2016). Unpacking the “pleasures” and “pains” 1256  
 1192 of heterosexual casual sex: Beyond singular understandings. *Journal of Sex Research*, 54(1), 73–90. [https://doi.org/10.1080/00224](https://doi.org/10.1080/00224499.2016.1143442) 1257  
 1193 [499.2016.1143442](https://doi.org/10.1080/00224499.2016.1143442). 1258
- 1194 Faulkner, S. L. (2003). Good girl or flirt girl: Latinas’ definitions of 1259  
 1195 sex and sexual relationships. *Hispanic Journal of Behavioral* 1260  
 1196 *Sciences*, 25(2), 174–200. [https://doi.org/10.1177/0739986032](https://doi.org/10.1177/073998603253803) 1261  
 1197 [53803](https://doi.org/10.1177/073998603253803). 1262
- 1198 Fernet, M., Otis, J., Massie, L., St-Pierre-Gagné, S., Nengeh Mensah, 1263  
 1199 M., de Pokomandy, A., ... Hot, A. (2017). *PLURIELLES: Evaluation of a Quebec-based program aimed at improving HIV-positive* 1264  
 1200 *women’s sexual health beyond HIV*. Paper presented at the 26th 1265  
 1201 Canadian Association of HIV Research (CAHR) Conference, 1266  
 1202 Montreal, Canada. 1267
- 1203 Floyd, K. (2002). Human affection exchange: V. Attributes of the highly 1268  
 1204 affectionate. *Communication Quarterly*, 50(2), 135–152. <https://doi.org/10.1080/01463370209385653>. 1269
- 1205 Fratti, K. (2017). I am HIV positive. This is what it’s like to date. *Red-* 1270  
 1206 *book Magazine*. Retrieved from <http://www.redbookmag.com/love-sex/relationships/a48131/dating-with-hiv/>. 1271
- 1207 García-Moreno, C., Hegarty, K., d’Oliveira, A. F. L., Koziol-McLain, J., 1272  
 1208 Colombini, M., & Feder, G. (2015). The health-systems response 1273  
 1209 to violence against women. *The Lancet*, 385(9977), 1567–1579. 1274  
 1210 [https://doi.org/10.1016/S01406736\(14\)61837-7](https://doi.org/10.1016/S01406736(14)61837-7). 1275
- 1211 Gjesfeld, C. D., Greeno, C. G., & Kim, K. H. (2007). A confirmatory 1276  
 1212 factor analysis of an abbreviated social support instrument: The 1277  
 1213 MOSS-SSS. *Research on Social Work Practice*, 18(3), 231–237. 1278  
 1214 <https://doi.org/10.1177/1049731507309830>. 1279
- 1215 Greenhalgh, C., Evangelini, M., Frize, G., Foster, C., & Fidler, S. (2016). 1280  
 1216 Intimate relationships in young adults with perinatally acquired 1281  
 1217 HIV: A qualitative study of strategies used to manage HIV disclosure. *AIDS Care*, 28(3), 283–288. [https://doi.org/10.1080/09540](https://doi.org/10.1080/09540121.2015.1093594) 1282  
 1218 [121.2015.1093594](https://doi.org/10.1080/09540121.2015.1093594). 1283
- 1219 Grodensky, C. A., Golin, C. E., Jones, C., Mamo, M., Dennis, A. C., 1284  
 1220 Abernethy, M. G., & Patterson, K. B. (2015). “I should know better”: 1285  
 1221 The roles of relationships, spirituality, disclosure, stigma, 1286  
 1222 and shame for older women living with HIV seeking support in 1287  
 1223 the South. *Journal of the Association of Nurses in AIDS Care*, 26(1), 12–23. <https://doi.org/10.1016/j.jana.2014.01.005>. 1288
- 1224 Gullede, A. K., Gullede, M. H., & Stahmann, R. F. (2003). Romantic 1289  
 1225 physical affection types and relationship satisfaction. *The* 1290  
 1226 *American Journal of Family Therapy*, 31(4), 233–242. <https://doi.org/10.2466/pr0.95.2.609-614>. 1291
- 1227 Gurevich, M., Mathieson, C. M., Bower, J., & Dhayanandhan, B. (2007). 1292  
 1228 Disciplining bodies, desires and subjectivities: Sexuality and 1293  
 1229 HIV-positive women. *Feminism & Psychology*, 17(1), 9–38. <https://doi.org/10.1177/0959353507072910>. 1294
- 1230 Hankins, C., Gendron, S., Tran, T., Lamping, D., & Lapointe, N. (1997). 1295  
 1231 Sexuality in Montreal women living with HIV. *AIDS Care*, 9(3), 1296  
 1232 261–272. <https://doi.org/10.1080/713613156>. 1297
- 1233 Harnois, C. E. (2013). *Feminist measures in survey research*. Thousand 1298  
 1234 Oaks, CA: SAGE Publications. 1299
- 1235 Hayfield, N., & Clarke, V. (2012). “I’d be just as happy with a cup of 1300  
 1236 tea”: Women’s accounts of sex and affection in long-term hetero- 1301  
 1237 sexual relationships. *Women’s Studies International Forum*, 35(2), 67–74. <https://doi.org/10.1016/j.wsif.2012.01.003>. 1302
- 1238 Haysom, L. (2013). Love: Gender, sexuality and power. *Agenda*, 27(2), 1303  
 1239 1–2. <https://doi.org/10.1080/10130950.2013.824179>. 1304
- 1240 Holland, J., Ramazonoglu, C., Scott, S., Sharpe, S., & Thomson, R. 1305  
 1241 (1992). Risk, power and the possibility of pleasure: Young 1306  
 1242 women and safer sex. *AIDS Care*, 4(3), 273–283. <https://doi.org/10.1080/09540129208253099>. 1307
- 1243 Holland, J., Ramazonoglu, C., Sharpe, S., & Thomson, R. (1992). 1308  
 1244 Pleasure, pressure and power: Some contradictions of gendered 1309  
 1245 sexuality. *Sociological Review*, 40(4), 645–674. <https://doi.org/10.1111/j.1467-954X.1992.tb00406.x>. 1310
- 1246 Hughes, S. D., & Truong, H.-H. M. (2017). Sero-discovering versus 1311  
 1247 sero-cognisant: Initial challenges and needs of HIV-serodiscordant 1312  
 1248 couples in Porto Alegre, Brazil. *Culture, Health & Sexuality*, 19(8), 888–902. <https://doi.org/10.1080/13691058.2016.1269366>. 1313
- 1249 International Community of Women Living with HIV/AIDS. (2015). 1314  
 1250 *Criminalization of women living with HIV: Non-disclosure, exposure and transmission*. Retrieved from <http://www.iamicw.org/resources/document-library/criminalization-of-women-living-with-hiv-non-disclosure-exposure-and-transmission>. 1315
- 1251 International Community of Women Living with HIV/AIDS. (2017). 1316  
 1252 *Love positive women*. Retrieved from <http://www.icwglobal.org/women-in-action/all-campaigns/love-positive-women>. 1317
- 1253 Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). Review 1318  
 1254 of community-based research: Assessing partnership approaches 1319  
 1255 to improve public health. *Annual Review of Public Health*, 19(1), 173–202. <https://doi.org/10.1146/annurev.publhealth.19.1.173>. 1320
- 1256 Jakubiak, B. K., & Feeney, B. C. (2016). Affectionate touch to promote 1321  
 1257 relational, psychological, and physical well-being in adulthood: A theoretical model and review of the research. *Personality and Social Psychology Review*, 21(3), 228–252. <https://doi.org/10.1177/1088868316650307>. 1322
- 1258 Jarman, M., Walsh, S., & De Lacey, G. (2005). Keeping safe, keeping 1323  
 1259 connected: A qualitative study of HIV-positive women’s experiences of partner relationships. *Psychology & health*, 20(4), 533–551. <https://doi.org/10.1080/14768320500083667>. 1324
- 1260 Kaida, A., Carter, A., Lemay, J., O’Brien, N., Greene, S., Nicholson, V., ... CHIWOS Research Team. (2014). *Hiring, training, and supporting peer researchers: Operationalizing community-based research principles within epidemiological studies by, with, and for women living with HIV (Abstract O106)*. Paper presented at the Canadian conference on HIV/AIDS research, St. John’s, Newfoundland. [http://www.chiwos.ca/wp-content/uploads/2014/05/May-3\\_15\\_15\\_Social-Sciences\\_Kaida\\_O106\\_2-web.pdf](http://www.chiwos.ca/wp-content/uploads/2014/05/May-3_15_15_Social-Sciences_Kaida_O106_2-web.pdf). 1325
- 1261 Kaida, A., Nicholson, V., Patterson, S., Carter, A., Ding, E., Sereda, P., ... CHIWOS Research Team. (2017). *The influence of the criminalization of HIV non-disclosure on intentional sexual inactivity among women living with HIV in Canada*. Paper presented at the Canadian Conference on HIV/AIDS Research, Montreal, QC. 1326
- 1262 Kaida, A., Carter, A., de Pokomandy, A., Patterson, S., Proulx-Boucher, K., Nohpal, A., ... on behalf of the CHIWOS Research Team. (2015). Sexual inactivity and sexual satisfaction among women living with HIV in Canada in the context of growing social, legal and public health surveillance. *Journal of the International AIDS Society*, 18(5), 20284–20294. <https://doi.org/10.7448/IAS.18.6.20284>. 1327
- 1263 Keegan, A., Lambert, S., & Petrak, J. (2005). Sex and relationships for HIV-positive women since HAART: A qualitative study. *AIDS Patient Care & STDs*, 19(10), 645–654. <https://doi.org/10.1089/apc.2005.19.645>. 1328
- 1264 Kim, E. (2010). The melodrama of virginity and sex drive: The gendered discourse of “the sexual oppression of disabled people” and its “solutions”. *Sexuality Research and Social Policy*, 7(4), 334–347. <https://doi.org/10.1007/s13178-010-0026-x>. 1329
- 1265 Lang, A. J., & Stein, M. B. (2005). An abbreviated PTSD checklist for use as a screening instrument in primary care. *Behaviour Research and Therapy*, 43(5), 585–594. <https://doi.org/10.1016/j.brat.2004.04.005>. 1330
- 1266 Lang, A. J., Wilkins, K., Roy-Byrne, P. P., Golinelli, D., Chavira, D., Sherbourne, C., ... Stein, M. B. (2012). Abbreviated PTSD Checklist (PCL) as a guide to clinical response. *General Hospital Psychiatry*, 34(4), 332–338. <https://doi.org/10.1016/j.genhosppsych.2012.02.003>. 1331

- 1320 Lanza, S., Bray, B., & Collins, L. (2013). An introduction to latent class  
1321 and latent transition analysis. In I. B. Weiner, J. A. Schinka, & W.  
1322 F. Velicer (Eds.), *Handbook of psychology* (Vol. 2, pp. 691–716).  
1323 Hoboken, NJ: Wiley.
- 1324 Lanza, S. T., & Collins, L. M. (2008). A new SAS procedure for latent  
1325 transition analysis: Transitions in dating and sexual risk behavior.  
1326 *Developmental Psychology, 44*(2), 446.
- 1327 Lanza, S. T., Collins, L. M., Lemmon, D. R., & Schafer, J. L. (2007).  
1328 PROC LCA: A SAS procedure for latent class analysis. *Structural*  
1329 *Equation Modeling, 14*(4), 671–694.
- 1330 Lanza, S. T., Dziak, J. J., Huang, L., Xu, S., & Collins, L. M. (2015).  
1331 *PROC LCA and PROC LTA user's guide (Version 1.3.2)*. University  
1332 Park: The Methodology Center, Pennsylvania State  
1333 University.
- 1334 Lawless, S., Crawford, J., Kippax, S., & Spongberg, M. (1996a). 'If it's  
1335 not on...': Heterosexuality for HIV-positive women. *Venereol-*  
1336 *ogy, 9*(1), 15–23.
- 1337 Lawless, S., Kippax, S., & Crawford, J. (1996b). Dirty, diseased  
1338 and undeserving: The positioning of HIV positive women.  
1339 *Social Science and Medicine, 43*(9), 1371–1377. [https://doi.](https://doi.org/10.1016/0277-9536(96)00017-2)  
1340 [org/10.1016/0277-9536\(96\)00017-2](https://doi.org/10.1016/0277-9536(96)00017-2).
- 1341 Life and Love with HIV. (2017). Retrieved from [www.lifeandlovewith](http://www.lifeandlovewithhiv.ca)  
1342 [hiv.ca](http://www.lifeandlovewithhiv.ca).
- 1343 Longfield, K. (2004). Rich fools, spare tyres and boyfriends: Partner  
1344 categories, relationship dynamics and Ivorian women's risk for  
1345 STIs and HIV. *Culture, Health & Sexuality, 6*(6), 483–500. [https](https://doi.org/10.1080/13691050410001701920)  
1346 [://doi.org/10.1080/13691050410001701920](https://doi.org/10.1080/13691050410001701920).
- 1347 Loutfy, M., Greene, S., Kennedy, V. L., Lewis, J., Thomas-Pavanel,  
1348 J., Conway, T., ... on Behalf of the CHIWOS Research Team.  
1349 (2016). Establishing the Canadian HIV Women's Sexual and  
1350 Reproductive Health Cohort Study (CHIWOS): Operationaliz-  
1351 ing community-based research in a large national quantitative  
1352 study. *BMC Medical Research Methodology, 16*(1), 101–110.  
1353 <https://doi.org/10.1186/s12874-016-0190-7>.
- 1354 Manlove, J., Welti, K., Wildsmith, E., & Barry, M. (2014). Rela-  
1355 tionship types and contraceptive use within young adult dating  
1356 relationships. *Perspectives on Sexual & Reproductive Health,*  
1357 *46*(1), 41–50. <https://doi.org/10.1363/46e0514>.
- 1358 Maticka-Tyndale, E., Adam, B. D., & Cohen, J. (2002). Sexual desire  
1359 and practice among people living with HIV and using combi-  
1360 nation anti-retroviral therapies. *Canadian Journal of Human*  
1361 *Sexuality, 11*(1), 33–40.
- 1362 Mazanderani, F. (2012). An ethics of intimacy: Online dating, viral-  
1363 sociality and living with HIV. *BioSocieties, 7*(4), 393–409. [https](https://doi.org/10.1057/biosoc.2012.24)  
1364 [://doi.org/10.1057/biosoc.2012.24](https://doi.org/10.1057/biosoc.2012.24).
- 1365 McClelland, A., & Whitbread, J. (2016). PosterVirus: Claiming sexual  
1366 autonomy for people with HIV through collective action.  
1367 In C. Kelly & M. Orsini (Eds.), *Mobilizing metaphor: Art, culture,*  
1368 *and disability activism in Canada* (pp. 76–97). Vancouver:  
1369 UBC Press.
- 1370 Meston, C., & Trapnell, P. (2005). Development and validation of  
1371 a five-factor sexual satisfaction and distress scale for women:  
1372 The Sexual Satisfaction Scale for Women (SSS-W). *Journal of Sexual Medicine,*  
1373 *2*(1), 66–81. [https://doi.org/10.1111](https://doi.org/10.1111/j.1743-6109.2005.20107.x)  
1374 [j.1743-6109.2005.20107.x](https://doi.org/10.1111/j.1743-6109.2005.20107.x).
- 1375 Miller, J. M. (2014). *When love becomes dangerous: An in-depth look*  
1376 *into heterosexual relationships in Saint Vincent and the Gren-*  
1377 *adines and their link to HIV transmission amongst Vincentian*  
1378 *women*. Birmingham: University of Birmingham.
- 1379 Moran, C., & Lee, C. (2014a). Australian women talk about non-  
1380 romantic sex. *Psychology & Sexuality, 5*(3), 210–231. [https://](https://doi.org/10.1080/19419899.2012.748685)  
1381 [doi.org/10.1080/19419899.2012.748685](https://doi.org/10.1080/19419899.2012.748685).
- 1382 Moran, C., & Lee, C. (2014b). Women's constructions of hetero-  
1383 sexual non-romantic sex and the implications for sexual  
1384 health. *Psychology & Sexuality, 5*(2), 161–182. [https://doi.](https://doi.org/10.1080/19419899.2012.715588)  
1385 [org/10.1080/19419899.2012.715588](https://doi.org/10.1080/19419899.2012.715588).
- Msibi, T. (2011). They are worried about me: I am also wor- 1386  
ried. *Agenda, 25*(1), 22–28. [https://doi.org/10.1080/10130](https://doi.org/10.1080/10130950.2011.575578) 1387  
[950.2011.575578](https://doi.org/10.1080/10130950.2011.575578). 1388
- Nelson, L. E., Morrison-Beedy, D., Kearney, M. H., & Dozier, A. 1389  
(2011). Sexual partner type taxonomy use among black adoles- 1390  
cent mothers in the United States. *Canadian Journal of Human* 1391  
*Sexuality, 20*(1), 1–10. 1392
- Nevedal, A., & Sankar, A. (2015). The significance of sexuality and 1393  
intimacy in the lives of older African Americans with HIV/AIDS. 1394  
*The Gerontologist, 56*(4), 762–771. [https://doi.org/10.1093/geron](https://doi.org/10.1093/geronol/gnu160) 1395  
[ol/gnu160](https://doi.org/10.1093/geronol/gnu160). 1396
- Nicholson, V., Sanchez, M., Webster, K., & Carter, A. (2016) *Life and* 1397  
*love after HIV: A woman's sharing circle*. In *Positive gathering* 1398  
*conference 2016*, Vancouver, BC. 1399
- Patel, S. N., Hennink, M., Yount, K. M., Wingood, G., Kosambiya, 1400  
J., McCarty, F., & Windle, M. (2016). Relationship dynamics 1401  
and challenges of safer sex in an HIV serodiscordant couple in 1402  
India: A case review from the positive Jeevan Saathi study. *Journal* 1403  
*of HIV/AIDS & Social Services, 15*(3), 319–329. [https://doi.](https://doi.org/10.1080/15381501.2016.1165158) 1404  
[org/10.1080/15381501.2016.1165158](https://doi.org/10.1080/15381501.2016.1165158). 1405
- Peltzer, K. (2011). Sexual dissatisfaction and associated factors in a 1406  
sample of patients on antiretroviral treatment in KwaZulu-Natal, 1407  
South Africa. *South African Journal of Psychiatry, 17*(3), 74–80. 1408
- Persson, A. (2005). *Women, HIV, and the heterosexual encounter*. Paper 1409  
presented at The Pozhet Women's Forum, Sydney, Australia. 1410
- Peterson, Z. D., & Muehlenhard, C. L. (2007). What is sex and why 1411  
does it matter? A motivational approach to exploring individuals' 1412  
definitions of sex. *Journal of Sex Research, 44*(3), 256–268. 1413  
<https://doi.org/10.1080/00224490701443932>. 1414
- Petretti, S. (2017). *Love positive women*. Retrieved from [https://hivpo](https://hivpoliceyspeakup.wordpress.com/2017/02/16/love-positive-women/) 1415  
[licyspeakup.wordpress.com/2017/02/16/love-positive-women/](https://hivpoliceyspeakup.wordpress.com/2017/02/16/love-positive-women/). 1416  
Prevention Access Campaign. (2017). *Undetectable = untransmittable*. Retrieved from [https://www.preventionaccess.org/undet](https://www.preventionaccess.org/undetectable) 1417  
[ectable](https://www.preventionaccess.org/undetectable). 1418
- Pсарos, C., Barinas, J., Robbins, G. K., Bedoya, C. A., Safren, S. 1419  
A., & Park, E. R. (2012). Intimacy and sexual decision mak- 1420  
ing: Exploring the perspective of HIV positive women over 1421  
50. *AIDS Patient Care & STDs, 26*(12), 755–760. [https://doi.](https://doi.org/10.1089/apc.2012.0256) 1422  
[org/10.1089/apc.2012.0256](https://doi.org/10.1089/apc.2012.0256). 1423
- Public Health Agency of Canada. (2014). *HIV/AIDS epi updates: 1424*  
*National HIV prevalence and incidence estimates for 2011*. 1425  
Retrieved from [https://www.canada.ca/en/public-health/servi](https://www.canada.ca/en/public-health/services/hiv-aids-publications/epi-updates/chapter-1-national-hiv-prevalence-incidence-estimates-2011.html) 1426  
[ces/hiv-aids-publications/epi-updates/chapter-1-national-hiv-](https://www.canada.ca/en/public-health/services/hiv-aids-publications/epi-updates/chapter-1-national-hiv-prevalence-incidence-estimates-2011.html) 1427  
[prevalence-incidence-estimates-2011.html](https://www.canada.ca/en/public-health/services/hiv-aids-publications/epi-updates/chapter-1-national-hiv-prevalence-incidence-estimates-2011.html). 1428
- Pulerwitz, J., Gortmaker, S. L., & DeJong, W. (2000). Measuring 1429  
sexual relationship power in HIV/STD research. *Sex Roles,* 1430  
*42*(7–8), 637–660. <https://doi.org/10.1023/A:1007051506972>. 1431
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale 1432  
for research in the general population. *Applied Psychological* 1433  
*Measurement, 1*(3), 385–401. [https://doi.org/10.1177/01466](https://doi.org/10.1177/014662167700100306) 1434  
[2167700100306](https://doi.org/10.1177/014662167700100306). 1435
- Reis, H. T., & Aron, A. (2008). Love: What is it, why does it matter, 1436  
and how does it operate? *Perspectives on Psychological Science,* 1437  
*3*(1), 80–86. [https://doi.org/10.1111/j.1745-6916.2008.00065](https://doi.org/10.1111/j.1745-6916.2008.00065.x) 1438  
[.x](https://doi.org/10.1111/j.1745-6916.2008.00065.x). 1439
- Rentsch, C., Bebu, I., Guest, J. L., Rimland, D., Agan, B. K., & Marconi, 1440  
V. (2014). Combining epidemiologic and biostatistical tools to 1441  
enhance variable selection in HIV cohort analyses. *PLoS ONE,* 1442  
*9*(1), e87352. <https://doi.org/10.1371/journal.pone.0087352>. 1443
- Rheume, C., & Mitty, E. (2008). Sexuality and intimacy in older adults. 1444  
*Geriatric Nursing, 29*(5), 342–349. [https://doi.org/10.1016/j.](https://doi.org/10.1016/j.gernurse.2008.08.004) 1445  
[gernurse.2008.08.004](https://doi.org/10.1016/j.gernurse.2008.08.004). 1446
- Rispel, L. C., Metcalf, C. A., Moody, K., Cloete, A., & Caswell, G. 1447  
(2011). Sexual relations and childbearing decisions of HIV- 1448  
discordant couples: An exploratory study in South Africa and 1449  
1450



- 1451 Tanzania. *Reproductive Health Matters*, 19(37), 184–193. [https://doi.org/10.1016/S0968-8080\(11\)37552-0](https://doi.org/10.1016/S0968-8080(11)37552-0).
- 1452
- 1453 Robertson, A. M., Syvertsen, J. L., Amaro, H., Martinez, G., Rangel, M.
- 1454 G., Patterson, T. L., & Strathdee, S. A. (2013). Can't buy my love:
- 1455 A typology of female sex workers' commercial relationships in
- 1456 the Mexico–U.S. border region. *Journal of Sex Research*, 51(6),
- 1457 711–720. <https://doi.org/10.1080/00224499.2012.757283>.
- 1458 Rodger, A., Cambiano, V., Bruun, T., Vernazza, P., Collins, S., van
- 1459 Lunzen, J., & Beloukas, A. (2016). Sexual activity without
- 1460 condoms and risk of HIV transmission in serodifferent couples
- 1461 when the HIV-positive partner is using suppressive antiretroviral
- 1462 therapy. *Journal of the American Medical Association*, 316(2),
- 1463 171–181. <https://doi.org/10.1001/jama.2016.5148>.
- 1464 Rule-Groenewald, C. (2013). “Just knowing you found the person
- 1465 that you're ready to spend your life with”: Love, romance
- 1466 and intimate relationships. *Agenda*, 27(2), 30–37. <https://doi.org/10.1080/10130950.2013.809922>.
- 1467
- 1468 Sanchez, M., Webster, K., Salters, K., Kaida, A., & Carter, A. (2017)
- 1469 *Life, love and lunch: A pleasurable pre-positive gathering for*
- 1470 *women*. In *Positive gathering conference*, Vancouver, BC.
- 1471
- 1472 Sessler, S. (2010). Partnering across the life course: Sex, relationships,
- 1473 and mate selection. *Journal of Marriage and Family*, 72(3), 557–
- 1474 575. <https://doi.org/10.1111/j.1741-3737.2010.00718.x>.
- 1475
- 1476 Schäfer, G. (2008). Romantic love in heterosexual relationships: Women's
- 1477 experiences. *Journal of Social Sciences*, 16(3), 187–197.
- 1478 <https://doi.org/10.1080/09718923.2008.11892617>.
- 1479
- 1480 Schwarz, G. (1978). Estimating the dimension of a model. *Annals of*
- 1481 *Statistics*, 6(2), 461–464.
- 1482
- 1483 Sclove, S. L. (1987). Application of model-selection criteria to some
- 1484 problems in multivariate analysis. *Psychometrika*, 52(3), 333–
- 1485 343. <https://doi.org/10.1007/BF02294360>.
- 1486
- 1487 Seeley, J., Russell, S., Khana, K., Ezati, E., King, R., & Bunnell,
- 1488 R. (2009). Sex after ART: Sexual partnerships established by
- 1489 HIV-infected persons taking anti-retroviral therapy in Eastern
- 1490 Uganda. *Culture, Health & Sexuality*, 11(7), 703–716. <https://doi.org/10.1080/13691050903003897>.
- 1491
- 1492 Siegel, K., & Schrimshaw, E. W. (2003). Reasons for the adoption
- 1493 of celibacy among older men and women living with HIV/
- 1494 AIDS. *Journal of Sex Research*, 40(2), 189–200. <https://doi.org/10.1080/00224490309552180>.
- 1495
- 1496 Siegel, K., Schrimshaw, E., & Lekas, H.-M. (2006). Diminished sexual
- 1497 activity, interest, and feelings of attractiveness among HIV-
- 1498 infected women in two eras of the AIDS epidemic. *Archives of*
- 1499 *Sexual Behavior*, 35(4), 437–449. <https://doi.org/10.1007/s10508-006-9043-5>.
- 1500
- 1501 Singh, S. (2013). Women want love, men want wives: The discourse
- 1502 of romantic love in young adults' future marriage goals. *Agenda*,
- 1503 27(2), 22–29. <https://doi.org/10.1080/10130950.2013.808798>.
- 1504
- 1505 Somes, J., & Donatelli, N. S. (2012). Sex and the older adult. *Journal*
- 1506 *of Emergency Nursing*, 38(2), 168–170. <https://doi.org/10.1016/j.jen.2011.11.007>.
- 1507
- 1508 Sontag, S. (1988). *Illness as metaphor and AIDS and its metaphors*.
- 1509 New York: Picador.
- 1510
- 1511 Spielmann, S. S., MacDonald, G., Maxwell, J. A., Joel, S., Peragine,
- 1512 D., Muise, A., & Impett, E. A. (2013). Settling for less out of fear
- 1513 of being single. *Journal of Personality and Social Psychology*,
- 1514 105(6), 1049–1073. <https://doi.org/10.1037/a0034628>.
- 1515
- 1516 Sprague, J. (2016). How feminists count: Critical strategies for quantitative
- 1517 methods. In J. Sprague (Ed.), *Feminist methodologies for critical*
- 1518 *researchers: Bridging differences* (pp. 94–143). London:
- 1519 Rowman and Littlefield.
- 1520
- 1521 Squire, C. (2003). Can an HIV-positive woman find true love? Romance
- 1522 in the stories of women living with HIV. *Feminism & Psychology*,
- 1523 13(1), 73–100. <https://doi.org/10.1177/0959353503013001009>.
- 1524
- 1525 Sternberg, R. J. (1986). A triangular theory of love. *Psychological Review*,
- 1526 93(2), 119–135. <https://doi.org/10.1037/0033-295X.93.2.119>.
- 1527
- 1528 Taylor, B., & Davis, S. (2006). Using the extended PLISSIT model
- 1529 to address sexual healthcare needs. *Nursing Standard*, 21(11),
- 1530 35–40. <https://doi.org/10.7748/ns2006.11.21.11.35.c6382>.
- 1531
- 1532 Taylor, T. N., Munoz-Plaza, C. E., Goparaju, L., Martinez, O., Hol-
- 1533 man, S., Minkoff, H. L., & Golub, E. T. (2016). “The pleasure is
- 1534 better as I've gotten older”: Sexual health, sexuality, and sexual
- 1535 risk behaviors among older women living with HIV. *Archives*
- 1536 *of Sexual Behavior*, 46(4), 1137–1150. <https://doi.org/10.1007/s10508-016-0751-1>.
- 1537
- 1538 Tiefer, L. (2001). A new view of women's sexual problems: Why
- 1539 new? Why now? *Journal of Sex Research*, 38, 89–96. <https://doi.org/10.1080/00224490109552075>.
- 1540
- 1541 UCLA Institute for Digital Research and Education. (2015a). *SAS data*
- 1542 *analysis examples: Logit regression*. Retrieved from <http://www.ats.ucla.edu/stat/sas/dae/logit.htm>. Archived at <http://www.webcitation.org/6fECIh3yp>.
- 1543
- 1544 UCLA Institute for Digital Research and Education. (2015b). *SAS data*
- 1545 *analysis examples: Multinomial logistic regression*. Retrieved
- 1546 from <http://www.ats.ucla.edu/stat/sas/dae/mlogit.htm>. Archived at <http://www.webcitation.org/6fECKRmaI>.
- 1547
- 1548 van der Straten, A., Vernon, K. A., Knight, K. R., Gomez, C. A., &
- 1549 Padian, N. S. (1998). Managing HIV among serodiscordant hetero-
- 1550 sexual couples: Serostatus, stigma and sex. *AIDS Care*, 10(5),
- 1551 533–548. <https://doi.org/10.1080/09540129848406>.
- 1552
- 1553 VanDevanter, N., Thacker, A. S., Bass, G., & Arnold, M. (1999). Hetero-
- 1554 sexual couples confronting the challenges of HIV infection. *AIDS*
- 1555 *Care*, 11(2), 181–193. <https://doi.org/10.1080/09540129948072>.
- 1556
- 1557 Vasilenko, S. A., Kugler, K. C., Butera, N. M., & Lanza, S. T. (2014).
- 1558 Patterns of adolescent sexual behavior predicting young adult
- 1559 sexually transmitted infections: A latent class analysis approach.
- 1560 *Archives of Sexual Behavior*, 44(3), 705–715. <https://doi.org/10.1007/s10508-014-0258-6>.
- 1561
- 1562 Vasilenko, S. A., Kugler, K. C., & Lanza, S. T. (2015). Latent classes of
- 1563 adolescent sexual and romantic relationship experiences: Implica-
- 1564 tions for adult sexual health and relationship outcomes. *Journal*
- 1565 *of Sex Research*, 53(7), 742–753. <https://doi.org/10.1080/00224499.2015.1065952>.
- 1566
- 1567 Vermunt, J. K. (2010). Latent class modeling with covariates: Two
- 1568 improved three-step approaches. *Political Analysis*, 18(4),
- 1569 450–469.
- 1570
- 1571 Vernazza, P., & Bernard, E. (2016). HIV is not transmitted under
- 1572 fully suppressive therapy: The Swiss Statement—Eight years
- 1573 later. *Swiss Medical Weekly*, 146(w14246), 1–6. <https://doi.org/10.4414/sm.w.2016.14246>.
- 1574
- 1575 Vernazza, P., Hirschel, B., Bernasconi, E., & Flepp, M. (2008). Les
- 1576 personnes séropositives ne souffrant d'aucune autre MST et suivant
- 1577 un traitement antirétroviral efficace ne transmettent pas le VIH
- 1578 par voie sexuelle. *Bulletin des Médecins Suisses*, 89(5), 165–169.
- 1579
- 1580 Wamoyi, J., Mbonye, M., Seeley, J., Birungi, J., & Jaffar, S. (2011).
- 1581 Changes in sexual desires and behaviours of people living with
- 1582 HIV after initiation of ART: Implications for HIV prevention
- 1583 and health promotion. *BMC Public Health*, 11, 1–11. <https://doi.org/10.1186/1471-2458-11-633>.
- 1584
- 1585 Webster, K., Carter, A., Proulx-Boucher, K., Dubuc, D., Nicholson, V.,
- 1586 Beaver, K., & Kaida, A. (2018). Strategies for recruiting women
- 1587 living with human immunodeficiency virus in community-
- 1588 based research: Lessons from Canada. *Progress in Community*
- 1589 *Health Partnerships*, 12(1), 21–34. <https://doi.org/10.1353/cpr.2018.0003>.
- 1590
- 1591 Welbourn, A. (2013). Desires denied: Sexual pleasure in the context
- 1592 of HIV. In S. Jolly, A. Cornwall, & K. Hawkins (Eds.), *Women,*
- 1593 *sexuality and the political power of pleasure* (pp. 142–161). Lon-
- 1594 don: Zed Books.
- 1595
- 1596

- 1581 Wentland, J. J., & Reissing, E. D. (2011). Taking casual sex not too  
1582 casually: Exploring definitions of casual sexual relationships.  
1583 *Canadian Journal of Human Sexuality*, 20(3), 75–91.  
1584 Wentland, J. J., & Reissing, E. (2014). Casual sexual relationships: Identifying  
1585 definitions for one night stands, booty calls, fuck buddies,  
1586 and friends with benefits. *Canadian Journal of Human Sexuality*,  
1587 23(3), 167–177. <https://doi.org/10.3138/cjhs.2744>.  
1588 Wessman, M., Aho, I., Thorsteinsson, K., Storgaard, M., Johansen, I.  
1589 S., Lunding, S., & Weis, N. (2015). Perception of sexuality and  
1590 fertility in women living with HIV: A questionnaire study from  
1591 two Nordic countries. *Journal of the International AIDS Society*,  
1592 18(19962), 1–10. <https://doi.org/10.7448/ias.18.1.19962>.  
1593 Whitbread, J. (2017). Love positive women. *Jessica Whitbread*.  
1594 Retrieved from <http://jessicawhitbread.com/project/love-positive-women/>.  
1595 Williams, D. R., Yan, Y., Jackson, J. S., & Anderson, N. B. (1997).  
1596 Racial differences in physical and mental health: Socio-economic  
1597 status, stress and discrimination. *Journal of Health Psychology*,  
1598 2(3), 335–351. <https://doi.org/10.1177/135910539700200305>.  
1599 World Association for Sexual Health. (2014). *Declaration of sexual  
1600 rights*. Retrieved from <http://www.worldsexology.org>.  
1601 Wright, K., Naar-King, S., Lam, P., Templin, T., & Frey, M. (2007).  
1602 Stigma scale revised: Reliability and validity of a brief measure  
1603 of stigma for HIV+ youth. *Journal of Adolescent Health*, 40(1),  
1604 96–98. <https://doi.org/10.1016/j.jadohealth.2006.08.001>.  
1605 Zhang, W., O'Brien, N., Forrest, J. I., Salters, K. A., Patterson, T. L.,  
1606 Montaner, J. S., & Lima, V. D. (2012). Validating a shortened  
1607 depression scale (10 item CES-D) among HIV-positive people  
1608 in British Columbia, Canada. *PLoS ONE*, 7(7), e40793. <https://doi.org/10.1371/journal.pone.0040793>.  
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## Affiliations

Allison Carter<sup>1,2,3</sup> · Saara Greene<sup>4</sup> · Deborah Money<sup>5,6</sup> · Margarite Sanchez<sup>7</sup> · Kath Webster<sup>1</sup> · Valerie Nicholson<sup>1</sup> · Lori A. Brotto<sup>5</sup> · Catherine Hankins<sup>8,9</sup> · Mary Kestler<sup>10</sup> · Neora Pick<sup>10,11</sup> · Kate Salters<sup>1,2</sup> · Karène Proulx-Boucher<sup>12</sup> · Nadia O'Brien<sup>12,13</sup> · Sophie Patterson<sup>1,14</sup> · Alexandra de Pokomandy<sup>12,13</sup> · Mona Loutfy<sup>15,16</sup> · Angela Kaida<sup>1</sup> on behalf of the CHIWOS Research Team

<sup>1</sup> Faculty of Health Sciences, Simon Fraser University, Blusson Hall Room 10522, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

<sup>2</sup> Epidemiology and Population Health, British Columbia Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada

<sup>3</sup> Kirby Institute, Faculty of Medicine, University of New South Wales, Sydney, NSW, Australia

<sup>4</sup> School of Social Work, McMaster University, Hamilton, ON, Canada

<sup>5</sup> Department of Obstetrics and Gynecology, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada

<sup>6</sup> Department of Medicine, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada

<sup>7</sup> ViVA, Positive Living Society of British Columbia, Vancouver, BC, Canada

<sup>8</sup> Amsterdam Institute for Global Health and Development (AIGHD), Department of Global Health, University of Amsterdam, Amsterdam, The Netherlands

<sup>9</sup> Department of Epidemiology, Biostatistics, and Occupational Health, Faculty of Medicine, McGill University, Montreal, QC, Canada

<sup>10</sup> Division of Infectious Diseases, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada

<sup>11</sup> Oak Tree Clinic, British Columbia Women's Hospital and Health Centre, Vancouver, BC, Canada

<sup>12</sup> Chronic Viral Illness Service, McGill University Health Centre, Montreal, QC, Canada

<sup>13</sup> Department of Family Medicine, McGill University, Montreal, QC, Canada

<sup>14</sup> Department of Public Health and Policy, University of Liverpool, Liverpool, UK

<sup>15</sup> Women's College Research Institute, Women's College Hospital, Toronto, ON, Canada

<sup>16</sup> Department of Medicine, University of Toronto, Toronto, ON, Canada