

# BMJ Open Integrating gender and sex to unpack trends in sexually transmitted infection surveillance data in British Columbia, Canada: an ethno-epidemiological study

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## ABSTRACT

**Objectives:** Surveillance data frequently indicate that young men and women experience high—yet considerably different—reported rates of sexually transmitted infections (STIs), including bacterial infections such as chlamydia. We examined how several sex-based (eg, biological) and gender-based (eg, sociocultural) factors may interact to influence STI surveillance data trends.

**Methods:** Employing ethno-epidemiological techniques, we analysed cross-sectional qualitative data collected between 2006 and 2013 about young people's experiences accessing STI testing services in five communities in British Columbia, Canada. These data included 250 semistructured interviews with young men and women aged 15–24 years, as well as 39 clinicians who provided STI testing services.

**Results:** The findings highlight how young women are socially and medically encouraged to regularly test, while young men are rarely offered similar opportunities. Instead, young men tend to seek out testing services: (1) at the beginning or end of a sexual relationship; (2) after a high-risk sexual encounter; (3) after experiencing symptoms; or (4) based on concerns about 'abnormal' sexual anatomy. Our results illustrate how institutions and individuals align with stereotypical gender norms regarding sexual health responsibilities, STI testing and STI treatments. While these patterns reflect social phenomena, they also appear to intersect with sex-based, biological experiences of symptomatology in ways that might help to further explain systematic differences between young men's and women's patterns of testing for STIs.

**Conclusions:** The results point to the importance of taking a social and biological view to understanding the factors that contribute to the gap between young men's and women's routine engagement in STI care.

## INTRODUCTION

Globally, sexually transmitted infection (STI) surveillance data indicate that young men and women experience high—yet

## Strengths and limitations of this study

- This is the first study to explore and identify how gender norms interact with sex-based symptomatology to influence how men and women engage with testing and end up 'counted' in sexually transmitted infection (STI) surveillance data.
- The complexity of 'how' various biological, social and epidemiological phenomena interact with pathogen-specific characteristics (eg, natural STI history) needs to be underscored as a caution when interpreting our results.
- While the results are not generalisable to other settings, these findings may hold relevance for settings with similar STI testing policies (eg, UK).

considerably different—rates of STIs, including bacterial STIs. For example, in 2013 in the Canadian province of British Columbia (BC), surveillance data indicated that rates of chlamydia among young women aged 15–19 years were almost fivefold higher than male rates (1841 cases per 100 000 women, compared to 380 cases per 100 000 men).<sup>1</sup> Among those aged 20–24 years, women experienced the highest chlamydia rates in the province at 2880 per 100 000, while reported male rates were 1410 per 100 000 men—a twofold difference.<sup>1</sup> Other STIs, including gonorrhoea and syphilis, tend to have an inverse pattern. For example, syphilis rates in BC among men aged 20–24 years were nine times higher than those of females of the same age (17.6 cases per 100 000 men compared to 1.9 cases per 100 000 women).<sup>1</sup>

STI surveillance patterns are frequently attributed to 'core groups' of men and women that share specific risk profiles. For example, syphilis outbreaks in Canadian urban centres are largely attributed to men who have sex with men (MSM) who

concurrently have high numbers of sex partners.<sup>2</sup> These differences are also partly attributed to biological or anatomical differences between males and females and their effects on STI transmission, acquisition and symptomatology.<sup>3 4</sup> Patterns in how young men and women are routinely tested for asymptomatic STIs are also thought to influence how STIs are counted and reported based on sex. For example, STI testing policies and conventions of clinical practice tend to concentrate routine case-finding efforts within women's health services (eg, gynaecological care). Emerging evidence indicates that dominant masculine norms (eg, norms that require stoicism, independence, self-reliance and avoidance of help-seeking behaviour) can also serve as barriers to young men's engagement with routinely accessing STI testing.<sup>5-9</sup>

To better understand if and how these issues manifest in the STI testing experiences and practices of young people, we analysed 250 in-depth interviews with young men and women as well as interviews with 39 clinicians who provided STI testing services in BC. During the analyses, we examined interactions between sex-based (eg, symptomatology) and gender-based (eg, sociocultural norms about health-seeking behaviour) factors to generate hypotheses as to how those interconnections may influence differences between men and women's STI testing patterns and, ultimately, influence how STIs are counted and reported.

## METHODS

This cross-sectional qualitative study draws on ethno-epidemiological techniques,<sup>10 11</sup> which integrate theory-based and methodological approaches from the social sciences. Specifically, our study draws on techniques associated with ethnography (eg, interviews, grounded theory) to generate nuanced understandings of the production of health outcomes and to add a deeper social dimension to conventional quantitative measures (eg, STI surveillance data).

### Study setting

In-depth, semistructured interview data were collected between 2006 and 2013 in the following five communities in BC. The following details reflect data derived from the Canadian Census in 2011:<sup>12</sup>

1. Metro Vancouver (population 2 313 328) is located on Canada's Pacific Southwest. STI testing is offered at numerous sexual health clinics, medical clinics, public health units and hospitals, which are accessible by car or public transport throughout the week, including evenings and weekends at some locations. Home to western Canada's largest LGBTQ community, there are ~304 275 youth aged 15 to 24.
2. Richmond (population 190 473), a suburban community contiguous with Vancouver, is easily accessible to Vancouver via rapid transit. Sexual health services in Richmond included youth clinics, walk-in clinics,

public health units and a hospital, some of which are available during evenings and weekends. There are ~26 215 youth aged 15-24 years.

3. Prince George (population 71 974) is a northern city that serves as a hub for BC's northern health authority. There are ~11 935 youth aged 15-24 years.
4. Fort St. John (population 18 609) is 478 km north-east from Prince George and is an economic hub for oil/gas in northern BC. There are ~3960 youth aged 15-24 years.
5. Quesnel (population 10 007) is a northern rural community located 115 km south of Prince George. There are ~1295 youth aged 15-24 years.

During the study period, STI testing was available in each community through specialised sexual health clinics (by appointment or drop-in), general practitioner offices or hospital emergency rooms. In Prince George, Quesnel and Fort St. John, testing was available at the public health unit and private clinics, but not during weekends. While the Canadian healthcare system is publicly funded, residents of BC pay a monthly premium to the province's Medical Services Plan (MSP) on a scale based on income level, with a per-person cost that ranged between \$0 and \$66.50 monthly during the course of this study. The youth clinics in our study did not require proof of having current MSP coverage.

### Data collection and analysis

We employed a stratified purposive sampling strategy to recruit young people from varying socioeconomic and cultural backgrounds, as well as diverse sexual identities. To be eligible, young people had to be: 15-25 years of age, sexually active and English speaking. Throughout the study, we were particularly interested in young men's low participation rate with STI testing and purposefully 'oversampled' men to allow us to more fully investigate the various factors that influenced their experiences with testing. Research staff recruited youth by posting advertisements (eg, posters, pamphlets) at clinical (eg, sexual health clinics, walk-in clinics) and non-clinical (eg, bus stops, universities/colleges) sites, in addition to online postings on a variety of websites that youth told us they access (eg, Facebook and Craigslist ads). Prospective participants contacted our research office (by email or phone) and were screened for eligibility. Clinicians were recruited from clinics where the young people reported that they accessed STI testing services. Clinicians were also invited to complete interviews via written invitation and in-person clinic visits. Interviews were conducted in private office spaces in each community.

Experienced research staff conducted the interviews, and participants had the option of choosing a male or a female interviewer. Participants were informed that the purpose of the study was to better understand the experiences of young people who had undergone or considered STI testing, with the ultimate aim of informing STI testing services. While topics changed broadly

over the 7-year duration of the study (eg, to identify trends with new interventions that were becoming available, including HIV Treatment as Prevention and Pre-Exposure Prophylaxis), an aim that remained constant throughout the duration of data collection was a set of questions related to young people's experiences and perspectives with STI testing. We asked the youth participants to describe their experiences and/or perspectives with STI testing, and how they went about accessing STI testing in their respective communities. We also asked clinicians about the services they provide to young men and women. Participants completed a signed consent form and a brief sociodemographic questionnaire. Interviews lasted ~1-hour and covered topics including experiences with testing and perceptions about sociocultural norms. Youth participants received a CDN\$25 honorarium.

Interviews were transcribed, checked for accuracy and uploaded to the software NVivo to organise and manage the data. An initial set of coding schemes were developed by the research team to inductively derive themes related to sociocultural norms (eg, gender expressions, roles and identity), as well as biological descriptions of sexual health (eg, experiences with symptoms). During this phase of our analysis, we coded the data line by line, first using broad codes to label each major idea represented in the text (eg, gender relations, experiences with testing, sociocultural norms regarding sexual health-seeking practices among young men and women). As our analysis progressed, we continued to read and re-read the interviews to identify new and emergent themes pertaining to young men and women's STI testing patterns. Using constant comparative techniques,<sup>13</sup> emergent analytic themes were compared and contrasted within and across the youth participants and clinicians. At this phase, we identified various recurring, converging and contradictory themes within and across the entire data set that related to our key analytical question: 'How do gender norms interact with experiences of symptomatology to influence how men and women engage with testing services?' Data collection and analysis occurred in an iterative fashion, whereby new interviews gathered throughout the study duration were used to further identify how sex-based and gender-based factors influence differences between men and women's STI testing patterns.

## RESULTS

We interviewed a total of 250 young men and women aged 15–25 years and 39 clinicians between 2006 and 2013. Sample demographics are presented in tables 1 and 2. Below, the findings are presented within three themes highlighting how interactions between sex and gender influence how STIs are identified, counted and reported among young men and women. We present quotes to illustrate key aspects of our analysis, followed by a chosen or assigned pseudonym.

### Routine testing opportunities

As expected, most of the young women first experienced regular STI testing through routine annual Papanicolaou (Pap) testing. Several reported that they only found out that they were being tested for STIs after the procedure was completed, while others did not know the difference between an STI test and a Pap test. The most frequently cited reason for starting with routine engagement with sexual health services was to get a prescription for oral contraceptives, as described by a 22-year-old straight woman:

I had gone to the [*name of clinic*] before becoming sexually active to get birth control and [...] So yeah, I went a year later and then every subsequent year, kept going back because that's what I was told to do. (*Veronica*)

Contraception-seeking behaviour also featured in some of the young men's interviews; and, for some, their first (or *only*) experience with STI testing had been through their female partner's efforts to obtain birth control, as described by a 19-year-old straight man:

She was on birth control and because of that she had to get a Pap smear every year. So that's really my only exposure to sexual transmitted infection testing. I don't know what the Pap smear involves, really, but I went at least once to the clinic with her. (*Frank*)

Clinicians in our study also described Pap testing as an 'early' way to begin regular STI testing practices with young women and contrasted that sharply with comparably absent efforts to routinely engage young men in regular STI testing. For example, one female nurse described:

Women are socially and medically encouraged to get Pap smears every year, which then translates into a lot of sexual health discussion. But there are no recommendations like: "You are a guy. You should come in once a year." We aren't going to do this to men until they're 40, then we're just gonna say 'get your prostate checked'. (*Susan*)

### Factors influencing young men's decisions to test

Most of the young men in our study explained that when they did consider or decide to seek STI testing, they would do so under one of four conditions: (1) on entering a long-term sexual relationship; (2) after having a sexual encounter that they perceived as being 'high risk'; (3) when they experience STI symptoms; or (4) based on concerns about 'abnormal' sexual anatomy. As one 24-year-old straight man explained:

When I was getting into a long-term relationship, I figure if I am going to be with my girlfriend for a little while, I should probably make sure things are going to be good. You know, especially, when you're thinking of unprotected sex. (*Merrick*)

Equivalating long-term relationships with unprotected sex (ie, condomless sex) was a common explanation for

**Table 1** Characteristics of youth participants

	Gender identity					
	Men (n=155, 62%)		Women (n=90, 36%)		Other (n=5, 2%)	
	(n)	Per cent	(n)	Per cent	(n)	Per cent
Age (years)						
15–18	27	17.4	19	21.1	0	0.0
19–25	128	82.6	71	78.9	5	100.0
Ethnicity						
Aboriginal	28	18.1	15	16.7	2	40.0
Black	5	3.2	2	2.2	0	0.0
East Asian	20	12.9	12	13.3	1	20.0
South Asian	10	6.5	2	2.2	0	0.0
South East Asian	4	2.6	3	3.3	0	0.0
Latino/a	5	3.2	1	1.1	0	0.0
White	83	53.6	55	61.1	2	40.0
Community						
Greater Vancouver	128	82.6	62	68.9	5	100.0
Other BC cities	27	17.4	28	31.1	0	0.0
Times tested						
Never	38	24.5	23	25.6	2	40.0
1 or more	105	67.7	48	53.3	3	60.0
Don't know	0	0.0	6	6.7	0	0.0
Unknown	12	7.7	13	14.4	0	0.0
Sexual orientation						
Heterosexual	109	70.3	57	63.3	0	0.0
Lesbian	0	0.0	2	2.2	1	20.0
Gay	21	13.6	0	0.0	0	0.0
Bisexual	12	7.7	15	16.7	2	40.0
Pansexual	0	0.0	1	1.1	0	0.0
Two-spirit	1	0.7	1	1.1	2	40.0
Unknown	12	7.7	14	15.6	0	0.0

BC, British Columbia.

**Table 2** Characteristics of clinicians

	Gender identity			
	Men (n=8, 20.5%)		Women (n=31, 79.5%)	
	(n)	Per cent	(n)	Per cent
Occupation				
Nurse	3	37.5	19	61.0
Physician	5	62.5	4	12.9
Social worker	0	0.0	1	3.2
Youth worker	0	0.0	4	12.9
Other	0	0.0	2	6.5
Unknown	0	0.0	1	3.2
Community				
Vancouver	4	50.0	9	29.0
Other BC cities	4	50.0	22	71.0

BC, British Columbia.

seeking STI testing by young men—on a one-time only basis. Typically, testing was not sought after a long-term relationship had ended, unless a ‘high risk’ situation arose (eg, infidelity). Infidelities in a long-term relationship, as well as ‘one-night stands’ or ‘hook-ups’, were also frequently described as a reason for young men to get tested, as this 23-year-old straight man indicated:

I've slept with a lot of girls, man. Lot of girls. Just like too many, man. Sometimes I'd be drunk and sometimes I wouldn't use protection. And then, you know, it's just like playing Russian roulette. (*Cody*)

Third, the young men described how they were more likely to access testing after experiencing symptoms, including having difficulty or experiencing pain with urinating or if they noticed any sores on or near their genitals. For example, a 20-year-old straight man described how he had previously experienced potential symptoms that led him to contemplate testing, though he did not ultimately seek help fearing the STI procedure in and of itself:

I remember once it was like really hurting to pee so I was like, “Ok, maybe I should go [*for STI testing*]”[...] I don't know, I didn't really think about it too much, but I was definitely considering going. But every time I considered it, I was like, the rod is gonna hurt, you know? (*George*)

The responses from clinicians corroborated the motivations for testing that arose within the interviews with young men. As one female nurse summarised the reasons that young men seek or avoid STI testing in her practice:

Oh, we do see a fair number of clients that they're just in a new relationship and they're coming in to have testing done [...] But the younger guys, usually they have a symptom and it's something that they're worried about. They just want to get it checked.[...] For the young men in our clinic, I'd say, no, they're either the 'worried well' or the in new relationships. [...] There are the odd guys that will say "Yeah, my girlfriend said I had to get tested." (Theresa)

Among the men who were characterised as the 'worried well' (eg, those who have elevated anxieties coupled with low levels of STI risk behaviour) who did seek testing, another female nurse described how this group tended to access testing because they did not have information to appraise and/or discern potential 'irregularities' or aesthetic features of their genitals. As she described the reasons she sees some young men in her practice:

Like being obsessive, "What is this?" kind of a thing and also actually with younger guys, there's lack of information that they have about their bodies and normal anatomy. For example: the pearly penile papules. You know, I've had many young guys come in thinking "Oh my gosh, I have genital warts! That must be what this is! I've had them my whole life!" [...] It's just a lack of understanding of their bodies. (Helen)

While most clinicians in our study estimated that only 5–10% of their youth clientele were men and that most of these men presented based on the four factors described above, a subset of the young men described that they accessed STI testing on a regular schedule. These participants tended to identify as MSM who were either gay or bisexual, live in middle-class or upper-class neighbourhoods in the Vancouver setting, be over the age of 19 years and report multiple concurrent sex partners on a fairly regular basis. In most cases, these participants linked their routine testing practices to their elevated perceptions of risk—particularly for HIV—due to their same-sex sexual behaviour. For example, one 22-year-old gay man described how his regular engagement with STI testing is ancillary to his desire to be tested for HIV:

I just go four times a year, and every time I go, I book an appointment for three months later. [...] There are times when I have unprotected sex and I get a bit worried about STIs. But, the main thing I'm worried about is HIV and it's kind of ridiculous to go get an HIV test right after you've had unprotected sex if you're worried about contracting the virus, right? (Zachary)

Among the MSM who regularly engaged with testing, most described the services they received as being highly specialised (eg, within a sexual health clinic) and competent.

### Getting treated, but not getting tested (or counted)

While clinical practice guidelines recommend a test to confirm STIs for clients presenting in person at a clinic,<sup>14</sup> some youth and clinicians reported instances in which antibiotics are dispensed to confirmed positive clients to give to their sexual partners—a practice referred to as expedited partner therapy (EPT). In many instances, the confirmed positive client was a woman who delivered the treatment directly to her (male) sex partner(s), without the need for the sex partner(s) to be confirmed as testing positive. This approach provided an effective means for treating potentially infected partners, but it also bypassed opportunities to include positive partners in the surveillance data or to provide the partners with other elements of STI care (eg, pretest or post-test counselling). In our interview data, several women described experiences in which they distributed treatment medications to their male partners; meanwhile, none of the male study participants reported being asked to distribute antibiotics to their sex partners (male or female). A 22-year-old straight woman chronicled her post experience of being diagnosed with Chlamydia:

I gave him [*my boyfriend*] the pills that they'd given me to give to him. And he didn't have to go and get a prescription or anything like that. Like, the nurse just gave me what I needed, and she's like "Do you have a partner?" "Yes." And she's like "Okay, here's some for him, he needs to take them like this". It's like "Okay". [...] He was actually experiencing symptoms too, but he didn't understand what it was. (Ann)

Clinicians' experiences of EPT reveal how their clinical judgements can involve serving many young men who indirectly access STI treatment through their (female) sex partners. For example, a male physician explained:

The question is: what do you do? [...] The guys are gone. You can't find them. There's no way to trace them. So you have to make a decision about how you can treat those guys at least. (Cameron)

## DISCUSSION

Our analysis underscores how gender norms around sexual health responsibilities interact with sex-based experiences of symptomatology to affect how young men and women engage with STI testing services and, ultimately, influence the reported male–female STI rates in BC's population-level surveillance data. Among many of the young women in our study, gender norms and expectations that emphasised regular health-seeking practices, coupled with service provision models that recommend routine sexual and reproductive care (eg, regular Pap testing that 'linked' young women to STI care), tended to 'affirm' and 'enhance' opportunities for young women to engage with regular STI testing. Conversely, norms regarding young men's health-seeking

practices tended to emphasise an avoidance of sexual health services and/or the self-monitoring of symptoms. When young men did access testing, they tended to do so for reactive—rather than proactive—reasons (eg, after having a ‘high risk’ sexual encounter, after experiencing symptoms). Concurrently, the sexual health services that young men did access tended to be somewhat ‘complicit’ and ‘conceding’ to their relatively low uptake of testing. As such, these findings provide an important glimpse into why many asymptomatic young men are less likely to seek STI testing or be offered routine sexual healthcare than young women.

There was, however, a subset of young gay, bisexual and other MSM within Vancouver that reported more routine engagement with STI testing (eg, 3–6-month intervals), and these participants tended to report high levels of satisfaction with the testing services that they received. In doing so, these findings highlight how the provision of specialised and competent STI testing services (including services that recommend regular HIV and STI testing for MSM) can provide opportunities to enhance young MSM’s increased uptake of regular STI testing practices. Importantly, these data also reveal how young MSM’s engagement with STI testing tends to manifest along a social gradient. For example, subgroups of MSM in our study (eg, those from the northern and rural communities, those under 19 years of age) reported avoiding or delaying testing in large part due to their understandings of hyper-masculinised social norms. A more context-sensitive view illustrates that MSM’s engagement with STI care may vary across social groupings of MSM and that the social factors that influence the uptake of STI testing may be anything but ‘routine’.

While the degree to which the gendered STI testing patterns identified in our findings influence STI surveillance data is debatable, the fact that these issues systematically influence how STI surveillance data are counted and reported is irrefutable. Renewed public health efforts to provide young men with more routine testing opportunities will have important implications for both future trends in STI surveillance measures, as well as population health. For example, previous research suggests limiting routine STI testing to young heterosexual females without sufficiently accounting for the latent reservoir in males may be counterproductive.<sup>15</sup> New evidence points to internet-based STI/HIV testing services as holding promise for enhancing male participation.<sup>16</sup> Other emerging strategies and technologies may also advance opportunities for men to access ‘low threshold’ STI testing services, including new diagnostic testing technologies (eg, rapid diagnostic tests for syphilis) and self-tests/mail-order kits. Scaling up these promising interventions may enhance case-finding ‘success’ rates among young men, as well as providing men with additional opportunities to proactively engage in the STI continuum of care. Making these sorts of testing services available will inevitably lead to new trends in how young

men and women access testing and is also likely to lead to different patterns in how male–female STIs are counted and reported. Our results point to the importance of taking a social and biological view to understanding the factors that contribute to the gap between young men’s and women’s testing patterns and therefore systematically influence how STIs are counted and reported.

Our findings also highlight how the provision of ‘empiric treatment’ (eg, the provision of clinical services in the absence of a confirmed diagnosis) may also influence sex-based STI surveillance data. While EPT practices have been shown to be efficacious at decreasing the risk of reinfection of patients by up to 20%,<sup>17</sup> the impact of this practice on surveillance data is not formally known. As our findings underscore, women are engaging more regularly with testing and are therefore more likely to be invited and affirmed by clinicians to engage in EPT practices. Future quantitative analyses in this area are warranted.

### Strengths and limitations

The complexity of ‘how’ various biological, social and epidemiological phenomena interact with pathogen-specific characteristics (eg, natural STI history) needs to be underscored as a caution when interpreting our results. For example, gonorrhoea and syphilis are more symptomatic in men and are also the infections most frequently reported among men, as well as infections which are largely attributed to MSM.<sup>4 18 19</sup> While we might expect, based on our findings, that the rates of chlamydia among men are somewhat higher than reported (eg, some men do not get tested and therefore counted in the surveillance data), given the complexity of these issues, it is unlikely that ‘actual’ male–female rates would align in parity. In addition, while our large sample of in-depth interviews with men, women and clinicians provides a unique opportunity to identify and triangulate patterns in how young men and women engage in testing, we are limited in our ability to identify or account for temporal trends across the 7-year study duration (eg, evolving gender stereotypes, policies) due to the cross-sectional study design. There are several limitations to the study design, including its vulnerability to sampling and selection biases that may have influenced our findings. Finally, while new insights were not further produced towards the end of our study (thereby indicating theoretical saturation was attained), the results are not generalisable to other settings. However, these findings may hold relevance for settings where similar STI testing policies and availability of services exist (eg, UK).

### CONCLUSION

Taken as a whole, these findings highlight how STI testing policies and service delivery practices have yet to fully engage young men in STI testing and treatment, thereby influencing how male–female STIs are

systematically counted and reported in STI surveillance data. Our findings contribute to the growing need to re-evaluate public health policies and service delivery practices regarding the enhancement of young men's participation with STI testing.

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