Characterizing non-monosexual women at risk for poor mental health outcomes: A mixed methods study

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ABSTRACT

OBJECTIVES: Non-monosexual women – those who report attraction to or sexual relationships with individuals of more than one gender – have elevated risk for poor mental health outcomes. We aimed to examine which elements of non-monosexual experience are associated with this elevated risk.

METHODS: We conducted a sequential exploratory mixed methods analysis of qualitative interview and survey data from 39 non-monosexual women recruited consecutively through prenatal care providers. Qualitative analyses identified distinguishing features, and quantitative analyses tested associations between these features and mental health symptoms.

RESULTS: Nine qualitative themes were identified to describe distinguishing features of non-monosexual women. Of these, current and past five years partner gender, lack of LGBTQ community connection, and low centrality of sexual minority identity were associated with anxiety symptoms. Latent class analysis revealed significantly higher levels of anxiety symptoms among non-monosexual women partnered with men relative to those partnered with women.

CONCLUSION: Sexual minority women who partner with men may be particularly at risk for poor mental health. Considering this group's invisibility in public health research and practice, interventions are needed to address this disparity.

KEY WORDS: Bisexuality; mental health; qualitative research; questionnaire design

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

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Sexual minority women (SMW; e.g., lesbian, bisexual) report higher rates of mental health problems compared to heterosexual women,[1,2] and bisexual women in particular report higher rates of poor outcomes than both lesbian and heterosexual women.[3,4] More limited evidence suggests that these disparities also extend to people of other sexual identities who report sexual attraction to or behaviour with both men and women. For example, studies have found elevated levels of outcomes such as psychological distress among "mostly heterosexual" individuals.[5,6] Considering that the identified health disparities appear to be associated with a variety of sexual orientation self-identities (including bisexual, mostly heterosexual, and queer, among others), recent research has turned to trying to understand the health status and predictors for the broader group of individuals reporting sexual attraction to and/or behaviour with both men and women – a group that has been collectively termed non-monosexual[7] or plurisexual[8] people.

One challenge to this emerging body of research is the diversity of experience that is included within non-monosexual groupings. For example, non-monosexual categories may be defined on the basis of self-identity, sexual behaviour across a particular time period, or self-reported sexual attraction. Each of these definitions will capture a different group of women,[9,10] and may include women with a variety of sexual orientation identities, women who are currently partnered with people of various genders, and women who have recently, historically, or never had same-sex partners. It is therefore possible that subgroups of non-monosexual women are differentially at risk for poor mental health outcomes. In this context, there is a need for research to characterize the diversity of identities and experiences within non-monosexual categories, and to examine which elements of non-monosexual identity or experience are associated with poor mental health outcomes.

In order to address this research gap, the current study draws from a mixed-methods, multi-site study of non-monosexual women during the transition to parenthood in order to: a) identify salient sexual identity, relationship, and social context characteristics of non-monosexual women, and b) determine whether different "types" of non-monosexual women (as defined on the basis of these distinguishing characteristics) exhibit

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different patterns of mental health outcomes (depression, anxiety, positive and negative affect).

Theoretical framework

This study was conceptualized through the lens of the minority stress framework,[11] which posits that mental health disparities associated with minority sexual orientations are attributable to minority-specific stressors, such as prejudice events, identity concealment and internalized homophobia. Further, the model proposes that the psychological impact of these stressors may be moderated by characteristics of the minority identity (e.g., salience) and experiences of social support (e.g., from a sexual minority community). This framework has been widely used in the study of mental health among sexual minority people,[12,13] and so guided our choice of instruments in quantitative data collection, and attention to minority stress constructs in our qualitative analysis.

METHODS

Participants

Data were drawn from the late pregnancy time point of our study of mental health among sexual minority women across the transition to parenthood (Figure 1). Consecutive women attending prenatal care between August 2013 and February 2015 at 10 sites in Toronto, Ontario, Canada and Boston, Massachusetts, USA completed a demographic screening questionnaire including information about sexual orientation, sexual behaviour and partner status. All English-speaking partnered women aged ≥18 years who met our definition of "sexual minority" (self-identification as other than heterosexual and/or report of any sexual relationship with a woman in the past five years) and a random selection of women who met our definition for "heterosexual" (self-identification as heterosexual and no report of sexual relationship with a woman in the past five years) were invited to participate.

Because consecutive recruitment yielded insufficient numbers of female-partnered women, convenience sampling was used to supplement this group. Between June 2014 and February 2015, flyers recruiting women who were currently pregnant, partnered with a woman, and living in one of the study regions were distributed broadly to services for perinatal and/or sexual minority women. Seventeen women responded, all of whom were eligible and consented to participate.

Two women became ineligible to participate before the first assessment: one heterosexual woman who was identified to have insufficient English language fluency, and one sexual minority woman who delivered her baby prior to completing the first assessment. One additional heterosexual woman completed only half of the survey and therefore could not be included in the analysis. The final sample for the quantitative portion of this study was therefore composed of 96 women (62 sexual minority, 34 heterosexual).

For the qualitative portion of the study, women who consented to the quantitative arm who reported that their current partner was male or transgender identified were invited to participate in a longitudinal qualitative interview study. We focused on this subsample for the qualitative strand because our pilot data identified non-monosexual women with different gender partners as a particularly high-risk group for poor mental health outcomes.[14] Of the 31 participants eligible to participate in the qualitative portion, 29 (93.5%) consented.

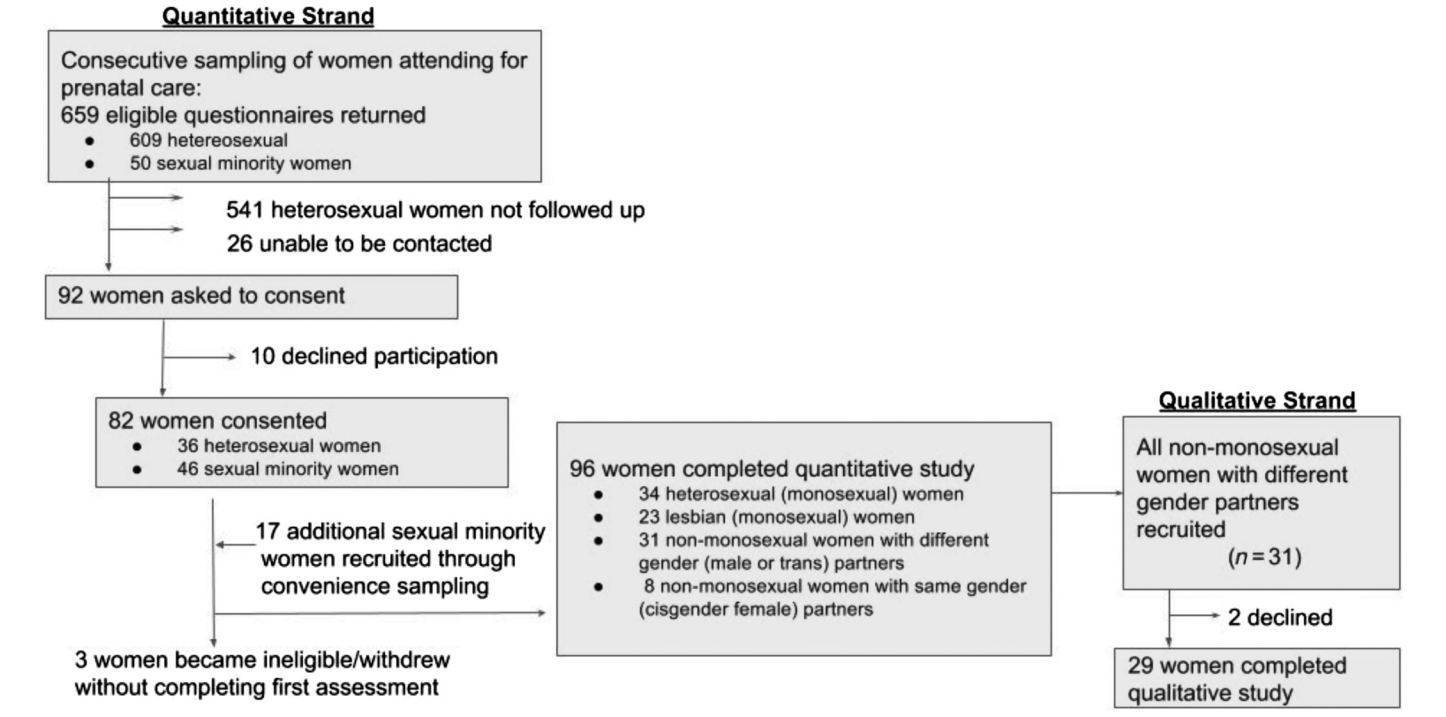

Figure 1. Recruitment and sampling for a mixed methods study of mental health among sexual minority women

Data collection

Quantitative data were collected via Internet survey, constructed using the *Qualtrics* software application, during the last trimester of pregnancy. The survey was pilot tested for ease of use and technical functionality by 3–5 members of the target population. The mean time for completion was 47 minutes for sexual minority women (who completed additional instruments, described below) and 39 minutes for heterosexual women. Included were demographic and self-reported relationship/sexual history questions that have previously been administered to this population,[9] and the following standardized instruments:

a) Klein Sexual Orientation Grid (KSOG)[15] assesses five domains of sexual orientation (attraction, behaviour, fantasy, emotional preference and social preference) on a 7-point Likert scale ranging from "other sex only" to "same sex only". Participants were asked to rate each domain for their past self and present self; mean scores were calculated by averaging across the five domains, wherein higher scores reflect greater same-sex orientation.
b) Outness Inventory: This 11-item scale assesses the extent to which sexual minority people are open about their orientation with key individuals.[16] Total scores are calculated by averaging across the 11 items; higher scores indicate greater disclosure.
c) Concealment Scale:[17] This 6-item scale assesses the extent to which sexual minority people actively conceal their identity from others. Mean scores were calculated, with higher scores reflecting greater concealment.
d) Lesbian, Gay, and Bisexual Identity Scale (LGBIS):[18] This 27-item measure assesses six dimensions of sexual minority identity. Only the identity centrality subscale was used for the current analysis. Scores were calculated by computing the mean of five items, with higher scores reflecting greater identity centrality.
e) Connectedness to the LGBT Community Scale (LGBTCS):[19] This 8-item scale measures perceived sense of connection to a sexual minority community. We modified one item to reflect "connection to women of your sexual identity group" (from the original item referencing lesbians/gay men) and modified the geographic range to read "your area" (from the original scale referencing New York City). Total scores were calculated by computing the mean across all items, with higher scores reflecting less connection to community.
f) Edinburgh Postnatal Depression Scale (EPDS),[20] a widely used self-report screening tool for perinatal depression.[21] Scores for the 10 items are summed; higher scores indicate higher levels of depression. Cronbach's alpha in our sample was 0.80.
g) State-Trait Anxiety Inventory (STAI), State component:[22] This 20-item instrument measures state (i.e., "right now, at this moment") symptoms of anxiety with good internal consistency. Scores for the 20 items are summed, with higher scores indicating higher levels of anxiety; Cronbach's alpha for our sample was 0.93.
h) Positive and Negative Affect Schedule (PANAS):[23] This is a 20-item, widely-used measure consisting of 10 items assessing positive and 10 items assessing negative affect.[24] Subscale scores were computed by summing the 10 positive/negative affect items, with higher scores reflecting higher levels of positive/negative affect; Cronbach's alpha values were 0.91 (positive) and 0.84 (negative) in our sample.

Qualitative data were collected via semi-structured interviews conducted by one of the authors or trained graduate students in psychology (with a team of interviewers located in each of the two sites). Interviews were predominantly conducted in person, with the exception of five interviews that were conducted via telephone due to scheduling challenges. In-person interviews were conducted at the participant's home or another private location. Interviews were a mean of 81 minutes in duration and followed a semi-structured interview guide which was flexibly applied to permit detailed exploration of topics pertinent to each individual participant. The interview guide was developed to explore topics previously identified in the literature that could be contributors to sexual minority women's mental health, and probed areas such as sexual orientation self-identification; sexual and relationship history; support/non-support from partner, family, friends, LGBT community, and health care workers; and degree of openness regarding sexual identity/history. All interviews were audio recorded and transcribed verbatim.

Data analysis

We utilized a sequential exploratory mixed methods design,[25] wherein qualitative data were analyzed first, and the results were used to develop the quantitative data analysis plan.

Qualitative Data Analysis

Qualitative analysis followed a grounded theory approach,[26] modified for integration of our theoretical framework. Specifically, we engaged in open coding to identify potentially relevant words or phrases, which were narrowed to those relevant to multiple interviews and describing patterns that differed between participants. This narrowed list was developed into a preliminary coding framework, applied using axial coding. Summary documents were created to provide descriptions of participants' experiences in relation to the codes. In the final (selective) phase of coding, the first author utilized these summary documents (with reference to full transcripts as needed) to prepare a draft theory of the data (i.e., distinguishing characteristics of non-monosexual women relevant to mental health). Review, discussion and consensus among co-authors resulted in the finalized version of the theory of the data.

Quantitative Data Analysis

For variables corresponding to the themes identified in qualitative analyses, we conducted bivariate analyses (using analysis of variance, Kruskal–Wallis tests, and Pearson and Spearman correlation coefficients as appropriate) to examine associations with the mental health outcome variables (EPDS, STAI, PANAS) in the non-monosexual women ($n = 39$, Table 1). We defined monosexual women to include those participants who a) identified as lesbian and reported only female partners in the past five years, and b) identified as heterosexual and reported only male partners in the past five years. All other participants were categorized as non-monosexual.

Table 1. Selected demographic characteristics of monosexual (n = 57) and non-monosexual (n = 39) participants

Demographic variable	Non-monosexual, *n* (% of 39)	Monosexual heterosexual, *n* (% of 34)	Monosexual lesbian, *n* (% of 23)	All monosexual, *n* (% of 57)	Total, *n* (% of 96)
Race					
White	32 (82.1)	31 (91.2)	21 (91.3)	52 (91.2)	84 (87.5)
Of colour*	7 (17.9)	3 (8.8)	2 (8.7)	5 (8.8)	12 (12.5)
Education					
High school or less	4 (10.3)	4 (11.8)	0 (0)	4 (7.0)	8 (8.3)
Some college or technical certificate	3 (7.7)	1 (2.9)	0 (0)	1 (1.8)	4 (4.2)
Associate or bachelor's degree	13 (33.3)	19 (55.9)	8 (34.8)	27 (47.4)	40 (41.7)
Higher degree	19 (48.7)	10 (29.4)	15 (65.2)	25 (43.9)	44 (45.8)
Employment					
Full-time	22 (56.4)	21 (61.8)	19 (82.6)	40 (70.2)	62 (64.6)
Other	17 (43.6)	13 (38.2)	4 (17.4)	17 (29.8)	34 (35.4)
Household income					
<$30,000	8 (20.5)	2 (5.9)	0 (0)	2 (3.5)	10 (10.4)
$30,000–$59,999	7 (17.9)	5 (14.7)	2 (8.7)	7 (12.3)	14 (14.6)
$60,000–$99,999	10 (25.6)	14 (41.2)	8 (34.8)	22 (38.6)	32 (33.3)
$100,000+	14 (35.9)	13 (38.2)	13 (56.5)	26 (45.6)	40 (41.7)
Current partner gender					
Woman	9 (23.1)	0 (0)	23 (100)	23 (40.4)	32 (33)
Man	30 (76.9)	34 (100)	0 (0)	34 (59.6)	64 (67)
			Mean (SD)		
Age (years)	31.56 (4.65)	32.18 (5.10)	34.00 (4.23)	32.91 (4.82)	32.36 (4.77)

* This category includes four Latina participants, one East Indian/South Asian participant, and two Asian/Asian-American participants (one of whom is also Native Hawaiian or Pacific Islander) within the non-monosexual group, and one participant who is mixed race, one Asian/Latina, one Asian/White, one Japanese, and one who self-identified as "Indian" in the monosexual group.

On the basis of the bivariate analysis, variables that were associated with one or more of the mental health outcomes at a trend level or higher ($p < 0.1$) were included in a latent class analysis (LCA) of non-monosexual participants only. LCA is a multivariate analytical technique for identifying unmeasured (i.e., latent) subgroups within a heterogeneous population on the basis of measured variables;[27] it is therefore ideally suited to address our quantitative aim to identify different types of non-monosexual women on the basis of variables identified in the qualitative strand. The Bayesian Information Critierion (BIC) and bootstrap likelihood ratio test (BLRT) were used to determine the best fitting solution.[28] All quantitative analyses were carried out using SAS v.3.4 and MPlus v.7.4.

This study was approved by the Research Ethics Boards of the Centre for Addiction and Mental Health and St. Michael's Hospital, Toronto, ON; and of Clark University, Worchester, MA. Survey consent was indicated online before participants proceeded to pages for data collection. Interview participants provided written informed consent.

RESULTS

Qualitative findings

We identified nine themes (Table 2) that can broadly be organized into two meta-themes: a) themes relevant to the minority stress framework,[11] and b) themes relevant to women's sexual identity development across the lifespan that may be particular to or uniquely experienced by non-monosexual women. In the sections that follow, we provide brief overviews of these two meta-themes; all names presented are pseudonyms.

Themes Relevant to the Minority Stress Framework

Of the nine identified themes, four could be directly connected to the minority stress framework.[11] Specifically, significance of same-sex identity/experience is aligned with the minority stress construct of *identity prominence*, degree of openness about sexual identity and/or history is aligned with the construct of *concealment*, and both partner support for identity and LGBT (lesbian, gay, bisexual, transgender) community and friendships are aligned with the construct of *individual and community social support*. Within each of these themes, our data illustrate how the minority stress constructs manifest in particular ways in the context of non-monosexual identities.

There was substantial diversity in the extent to which participants considered their same-sex identity/experience to be a salient component of their sense of self. Some, like Gina, explicitly described it as significant:

> *"It [bisexuality] is a significant part. I mean, there is a tiny bit of me that is like, not quite guilty or something, but like, do I still get to claim it if I haven't slept with a woman in 14 years? But I do."* (Gina, bisexual, 44 years old, Canada)

As Gina's quote illustrates, however, even women who considered their sexual minority identities to be a significant part of their sense of self often experienced conflict between this felt sense and societal perceptions of its significance (i.e., when others treated their sexual minority identity/history as irrelevant in light of their current different-gender relationship). Other participants, however, explicitly described their same-sex identity or experience as insignificant to their overall sense of themselves:

> *"I don't feel like [my sexual identity] identifies who I am, and I don't even think that sexual preference should identify anybody, like, who they are. Love is love and whatever you're attracted to is what you're attracted to."* (Stacey, bisexual, 25 years old, US)

For some women, like Stacey, the lack of significance of their same-sex identity or experience was connected to a broader

Table 2. Illustrative quotations

Meta-theme	Theme	Subthemes	Corresponding quantitative variables
Minority stress framework	Significance of same-sex identity/experience	1) Explicitly noted as significant to sense of self 2) Not explicitly noted as significant but neither is it noted as non-significant 3) Explicitly noted as not being significant to sense of self	Lesbian, Gay and Bisexual Identity Scale: Identity Centrality Subscale (Cronbach's alpha: 0.86)
	Degree of openness about sexual identity and/or history	1) Very out to most people, important for them to be out 2) Out to most people only if it came up or on a "need to know" basis 3) Somewhat or mostly out to most people, but don't feel strongly either way 4) Not out to most people and feels strongly about avoiding disclosure	Outness Inventory (Cronbach's alpha: 0.93) Concealment Scale (Cronbach's alpha: 0.62)
	Partner support for sexual identity/history	1) Partner is explicitly supportive 2) Partner is implicitly supportive 3) Partner has some ambivalence 4) Partner feels threatened or is explicitly unsupportive	No quantitative data available
	LGBT community and friendships	1) Considers herself part of an LGBT community where she currently lives and/or has mostly LGBT friends 2) Would like to be part of an LGBT community where she currently lives but is not connected to one 3) Doesn't consider herself part of or mention a desire to be part of an LGBT community where she currently lives	Connectedness to the LGBT Community Scale (Cronbach's alpha: 0.90)
Sexual identity development across the life course	Life stage of first same-sex experience or attraction	1) High school or earlier (<18 years) 2) College/university (18–25 years) 3) Later in life (>25 years)	No quantitative data available
	Sexual orientation self-identity	1) Identifies as heterosexual or prefers not to label 2) Identifies as bisexual or queer 3) Identifies as a non-monosexual label other than bisexual or queer (e.g., heteroflexible, bicurious) 4) Unsure about self-identity	Self-reported sexual orientation self-identity
	Sexual and relationship history	1) More and/or more significant relationships with women 2) More and/or more significant relationships with men 3) No apparent difference in number and/or significance of relationships with each gender	Self-reported gender of current partner Self-reported gender of partners in the past five years Klein Sexual Orientation Grid (current subscale: Cronbach's alpha = 0.88; past subscale: Cronbach's alpha = 0.88)
	Length of current primary relationship	1) <3 years 2) 3–10 years 3) >30 years	Self-reported length of current primary relationship
	Future projections for same-sex relationships	1) Yes, possibility for future attractions to or relationships with women 2) No, do not want or predict possibility for future attractions to or relationships with women 3) No information provided	No quantitative data available

rejection of the notion of sexual identity categories or labels as significant. Others, however, differentiated between a same-sex identity that could be significant for people who identified as gay or lesbian, and their own (non-monosexual) experience. This was particularly the case for women who did not endorse a sexual minority identity label and/or had only sexual encounters, but not dating relationships, with women.

Women's choices regarding degree of openness about their same-sex identity/experience were similarly complex, particularly at the intersection between non-monosexual identity and current male partnership (described in detail elsewhere[29]). Many participants reported that although they had not explicitly disclosed their identity/experience to everyone in their lives, this was mainly because it hadn't come up and/or didn't seem relevant in most relationships:

> *"I'm not gonna meet someone and be like, "and I'm bisexual" … But I'm definitely not one of those people that make a point to hide."* (Jess, bisexual, 36 years old, US)

Women's discussions illuminated the challenges of managing issues of identity disclosure in a context where their same-sex identity/experience could not be inferred on the basis of their partner's gender, and therefore required very explicit disclosure in ways that often did not feel comfortable or natural. As a result of this context, many women chose to disclose only on a "need-to-know" basis, while simultaneously feeling discomfort with how this perpetuated the invisibility of their sexual identity/experience.

Finally, our participants reported substantial diversity in social support, specifically with respect to partner support (described in full elsewhere[30]) and LGBT community support. The majority of

participants' partners were supportive of their sexual identities, though a minority had partners who were unsupportive or felt threatened:

> *"In the beginning of our relationship, he [partner] used to say, "oh well you can have me but you can have a girl on the side too, mess around with another girl" (laughs). So at first it worked out. I mean – and then the jealousy kind of kicked in with him. And then he wanted a threesome, so I did that with him. And then he like – I don't know. After a while it just felt a little uncomfortable."* (Alexa, bisexual, 22 years old, US)

The concerns women described on the part of their partners could often be linked to common stereotypes about bisexual people (e.g., as hypersexual or unwilling to commit to a monogamous relationship[31]), illustrating how non-monosexual women can experience minority stress even in the context of an intimate relationship.

With respect to LGBT community support, a few study participants described active involvement in a formal LGBT community, although in some cases this was "on hold" as a result of the demands associated with pregnancy:

> *"I haven't been able to do it [be involved in LGBT community events] lately especially due to the pregnancy, so I haven't been quite as hands on, but drag shows, fashion shows, karaoke. The scene is a lot of fun especially with the friends that I have made in the community."* (Tina, bisexual/pansexual, 24 years old, US)

Many participants, however, were not involved in formalized community, but instead described an informal network of LGBT-identified friends. In some cases, women's lack of involvement with a formal LGBT community was attributed to a sense that their involvement would not be welcome or their motivations would be questioned as a result of their current partnership with a man. In other cases, however, women expressed that they felt no need of or desire for involvement in an LGBT community; as for the data regarding significance of same-sex identity/experience, this was most often true of participants who did not self-identify with a sexual minority label (i.e., identified as heterosexual though with a recent history of sexual relationships with women) or reported that their relationships with women were exclusively sexual in nature.

Themes Relevant to Women's Sexual Identity Development Across the Lifespan

The remaining five themes identified – life stage at first same-sex experience or attraction, sexual orientation self-identity, sexual and relationship history, length of current primary relationship, and future projections for same-sex relationships – we conceptualized as inter-related through their connection to participants' sexual identity development. This, in turn, we theorized could be relevant to mental health through women's differential exposure to minority stress processes across these developmental stages and their associated identities/experiences.

The majority of participants reported their first same-sex attractions during high school or college/university, although for many, adoption of a minority identity label followed later in life due to stigma associated with non-monosexual identities:

> *"I identify as bisexual and I guess I've kind of felt that way for a long time. Just as a teenager it was very confusing because I didn't want to be bisexual, I wanted to be one or the other."* (Ellie, bisexual, 30 years old, US)

For a few participants, their same-sex identities/experiences came later in life, usually with a shift in context that opened up such possibilities:

> *"[It was] something that didn't even come up in my life too much before we moved to [city on US west coast]. You know, growing up in [US state] it's not – I didn't go to a school that had any non-white kids, never mind any kids that identified any differently."* (Laura, bisexual, 31 years old, US)

While the majority of participants currently self-identified as bisexual or queer, there were also women in our sample who used another non-monosexual identity label (e.g., heteroflexible), identified as heterosexual, preferred not to label their sexual identity, or stated that they were unsure of their sexual identity. Participants described a variety of reasons for their self-identity choices:

> *"I primarily identify as queer, but I use the term bisexual when it helps people understand."* (Sarah, bisexual/queer, 33 years old, Canada)

This diversity in sexual orientation self-identity was also reflected in women's sexual and relationship histories (as described in detail elsewhere[32]). While the majority of women in the sample reported more and/or more significant relationships with men over their lifetimes, others described approximately equivalent relationships with men and women, and a minority reported more and/or more significant relationships with women. The following quotes illustrate the diversity of women's experiences in this regard:

> *"I wouldn't call any of [my relationships with women] meaningful … I've always been emotionally attracted to men; I've never had, like, a relationship with a woman – like, a romantic [relationship] – I've had sex with women … I think women are attractive but, like, I could never – I don't think I could ever see myself being happy with a woman long-term or something like that."* (Carla, heterosexual, 31 years old, US)

> *"I would say that I'm as often attracted to women as I am to men, and my emotional attachments to women are stronger than most of my emotional attachments to men."* (Tara, queer, 32 years old, Canada)

The duration of participants' current relationships (with a different gender partner) ranged from over a decade (including women who had been in relationships that preceded even their coming out as non-monosexual) to only a few years (including women whose current pregnancy with their male partner was unplanned).

Finally, participants also varied in their reports of whether they conceived of future relationships with women. For some participants, future relationships with women seemed very possible:

> *"God forbid, if anything happens to our relationship and I get to a point where I'm interested in other people, I would date*

women before I dated men." (Gina, bisexual, 44 years old, Canada)

For other participants, however, their relationships with women were seen as a part of their past, but not their future:

"I notice as I get older I become less and less, like, I'm not even interested in sex with women, like, I'd be fine if I never had sex with another woman again in my life." (Carla, heterosexual, 31, US)

As Carla's quote illustrates, it was primarily women who did not identify with a non-monosexual self-identity and/or reported that their relationships with women were only sexual in nature who predicted that they would not have future relationships with women.

Data transformation and quantitative findings

Of the nine themes, six could be represented by survey variables, while three (partner support, age at first same-sex attraction/experience, and future projections for same-sex relationships) could not be included in quantitative analyses (Table 2).

Of the nine variables examined, four were associated with one of the mental health outcomes at $p < 0.1$ among the non-monosexual women in the sample (see Table 3). In each case, significant associations were with STAI scores; there were no statistically significant associations with the EPDS or PANAS for any variables (data not shown). Specifically, STAI scores differed according to both current and past five years partner gender, with women who reported male partners reporting higher levels of anxiety than those reporting female partners (both $p < 0.01$). STAI scores were correlated with LGBT community connectedness scores, with higher levels of anxiety associated with lower levels of community connectedness ($p = 0.05$). Finally, there was a significant association between Identity Centrality subscale scores of the LGBIS, wherein higher levels of anxiety were associated with lower levels of identity centrality ($p < 0.05$).

LCA of the non-monosexual participants including these four variables (current and past five years partner gender, LGBT community connectedness, LGBIS Identity Centrality subscale) yielded a series of solutions with 1–3 identified classes; fit statistics converged on the two-class solution (BIC = 328.3 for two class; 360.1 for one class; 344.9 for three class; BLRT < 0.0001). The two classes were defined entirely by the current partner gender variable, wherein one class was composed of the 9 participants currently partnered with a woman, and the other class was composed of the 30 participants currently partnered with a man. Characteristics of these classes are summarized in Table 4. The two classes differ on almost every predictor variable examined, with male-partnered women exhibiting a more diverse pattern of sexual orientation identities, lower levels of sexual orientation disclosure, lower levels of LGBT community connectedness, lower levels of identity centrality, and higher levels of anxiety.

Since current partner gender dominated the LCA, we repeated the analysis excluding this variable. In this case, fit statistics again converged on a two-class solution, this time with classes of $n = 18$ and $n = 21$ (data not shown). Classes appeared to be predominantly defined on the basis of past five years partner gender, in that none of the women in Class One reported only female partners in the past five years, and only one participant in Class Two reported only male partners in the past five years. Again, women reporting predominantly male partners in the past five years (Class Two) reported significantly lower levels of connection to LGBT community, sexual orientation disclosure, and identity centrality, and significantly higher STAI scores (data available upon request).

DISCUSSION

In this study, we have identified variables that may distinguish non-monosexual women in ways that may have important implications for their mental health. We found that current and past five years partner gender, connectedness to LGBT community and centrality of sexual minority identity were all associated with anxiety symptoms. Our multivariate analyses indicate that non-monosexual women who partner with men appear to be a distinct subgroup of non-monosexual women who may be at particular risk for psychological distress.

Table 3. Bivariate associations between relationship and identity indicators and anxiety symptoms among a sample of non-monosexual women ($n = 39$)

Indicator	STAI-state total score	*p*-value
Sexual orientation identity	Bisexual: 37.3 ± 10.7 Queer: 32.0 ± 7.9 Heterosexual: 37.0 ± 16.2	0.4466
Current partner gender	**Male: 37.7 ± 11.8** **Female: 29.8 ± 3.8**	**0.0031**
Gender of partners over past five years	**Women only: 29.6 ± 4.3** **Men only: 46.6 ± 12.9** **Mixed: 34.6 ± 10.0**	**0.0068**
Current relationship duration (years)	$r = -0.03$	0.8493
Outness Inventory (mean scores)	$r = 0.07$	0.6583
Klein Sexual Orientation Grid (past subscale mean scores)	$r = -0.04$	0.7899
Klein Sexual Orientation Grid (present subscale mean scores)	$r = -0.10$	0.5400
Concealment Scale (mean scores)	$r = -0.18$	0.2865
Connectedness to LGBT Community Scale (mean scores)	$r = 0.32$	0.0532
LGB Identity Scale – Identity Centrality (mean subscale scores)	**$r = -0.36$**	**0.0234**

Note: Statistically significant findings ($p < 0.05$) indicated in bold. STAI = State Trait Anxiety Inventory.

Table 4. Latent class analysis of subgroups of non-monosexual women classified on the basis of current partner gender, gender of partners over the past five years, connection to LGBT community, and identity centrality ($n = 39$): Predictor, outcome and socio-demographic characteristics

Variable	Class 1 ($n = 9$): Current female partner	Class 2 ($n = 30$): Current male partner	p-value
Predictor variables			
Sexual orientation identity	**Bisexual: 0 (0%) Queer: 9 (100%) Heterosexual: 0 (0%)**	**Bisexual: 23 (77%) Queer: 1 (3%) Heterosexual: 6 (20%)**	**<0.0001**
Current partner gender	**Male: 0 (0%) Female: 9 (100%)**	**Male: 30 (100%) Female: 0 (0%)**	**<0.0001**
Gender of partners over past five years	**Women only: 7 (78%) Men only: (0%) Mixed: 2 (22%)**	**Women only: 0 (0%) Men only: 7 (23%) Mixed: 23 (77%)**	**<0.0001**
Current relationship duration (years)	6.5 ± 3.8	6.4 ± 5.0	0.6886*
Outness Inventory (mean scores)	**6.4 ± 0.8**	**4.1 ± 1.7**	**<0.0001**
Klein Sexual Orientation Grid (past subscale mean scores)	**4.9 ± 0.9**	**3.5 ± 1.0**	**0.0006**
Klein Sexual Orientation Grid (present subscale mean scores)	**5.7 ± 0.3**	**3.1 ± 0.9**	**<0.0001**
Concealment Scale (mean scores)	1.2 ± 0.3	1.5 ± 0.5	0.0650*
Connectedness to LGBT Community Scale (mean scores)	**1.4 ± 0.5**	**2.5 ± 0.6**	**0.0002***
LGB Identity Scale – Identity Centrality (mean subscale scores)	**4.9 ± 1.1**	**3.6 ± 1.4**	**0.0125**
Mental health outcome variables			
Edinburgh Postnatal Depression Scale (mean scores)	6.4 ± 2.8	7.6 ± 4.0	0.4375
State Trait Anxiety Inventory (State scale mean scores)	**29.8 ± 3.8**	**37.7 ± 11.8**	**0.0031**
Positive and Negative Affect Scale: Positive Affect (mean scores)	34.1 ± 7.6	30.6 ± 9.0	0.4133*
Positive and Negative Affect Scale: Negative Affect (mean scores)	13.2 ± 3.8	15.1 ± 4.7	0.3397*
Demographic variables			
Race	White: 7 (78%) Of colour: 2 (22%)	White: 25 (83%) Of colour: 5 (17%)	0.6526*
Education	Less than Bachelor's degree: 1 (11%) Bachelor's degree or higher: 8 (89%)	Less than Bachelor's degree: 12 (40%) Bachelor's degree or higher: 18 (60%)	0.2252*
Employment	Full-time: 7 (78%) Other: 2 (22%)	Full-time: 15 (50%) Other: 15 (50%)	0.2512*
Household income	<$60,000: 1 (11%) $60,000+: 8 (89%)	<$60,000: 14 (47%) $60,000+: 16 (53%)	0.1152*
Age (years)	33.44 ± 2.4	31.00 ± 5.0	0.1697

Note: Statistically significant findings ($p < 0.05$) indicated in bold.
* Indicates non-parametric tests were used.

Some of our findings align with the suppositions of the minority stress framework, and confirm other research with sexual minorities. For example, the minority stress framework suggests that support from a sexual minority community will moderate the effects of minority stress on mental health among sexual minority people.[11] One study of 396 LGB adults found that LGBT community connectedness and sexual identity valence were important mediators of social well-being among bisexual people.[33] Low sense of belonging to the lesbian community has also been associated with depression among self-identified lesbians.[34] To our knowledge, however, quantitative research has not previously investigated a potential relationship between LGBT community connectedness and mental health among non-monosexual women specifically, although Frost and Meyer[19] report lower mean levels of LGBT community connectedness among the bisexual participants in their sample relative to gay/lesbian participants. This is consistent with other qualitative research with bisexual people, which has identified biphobia within lesbian/gay communities as a significant barrier to LGBT community support for bisexual people.[31]

In this study, lower centrality of sexual minority identity predicted higher anxiety scores. This finding was unexpected, as previous work on invisible stigmatized identities suggests that high identity centrality is typically associated with poorer health outcomes, particularly in the presence of internalized stigma and low social support.[35] This finding may suggest that women with more central identities view their sexual identities as a positive internal resource and may in turn have access to unique or additional forms of social support (e.g., partner and friend support around same-sex history; LGBT community support), leading to their lower anxiety symptoms.

Our finding that sexual minority women partnered with men may be particularly at risk for poor mental health outcomes is novel, and perhaps unexpected based on the minority stress framework,[11] in that these women are presumed to be heterosexual by many people they interact with, and therefore experience few overt acts of discrimination associated with their minority status. However, qualitative research has identified unique forms of discrimination that may be encountered by individuals who partner with people of more than one gender, including particular stereotypes associated with bisexuality.[31] Psychological stress may also be associated with managing an invisible stigmatized identity.[35] Our qualitative data begin to illustrate how these unique forms of minority stress are experienced by non-monosexual women; further research is warranted to examine how non-monosexual-specific stressors may impact mental health. This could lead to enhancements of the minority stress framework as it applies to individuals whose minority status cannot be known without explicit self-disclosure.[11]

Strengths and limitations

The mixed methods design of this study is a notable strength, in that it permits both contextualized analyses of women's experiences and investigation of statistical relationships between the identified variables. In the absence of our qualitative analysis, we would have relied on prior literature to inform variable selection, with the possible consequence of a less informative set of findings. However, some important limitations should be noted. First, convenience sampling methods were required to supplement recruitment of female-partnered women; however, there were no statistically significant demographic differences between female-partnered women recruited via consecutive versus convenience sampling (data not shown). Second, the qualitative data were collected from different-gender-partnered non-monosexual women only. It is possible that inclusion of non-monosexual women with same-gender partners would have generated additional themes. Third, because the study from which these data were drawn focuses on perinatal women, all participants were pregnant at the time of interview. Although none of the themes identified were specific to the perinatal context, it is possible that non-childbearing women would describe additional determinants of mental health, and additional research including a broader sample of non-monosexual women will therefore be important. At the same time, our findings may be of particular interest to public health providers who work with pregnant women, considering that this is a time of elevated risk for mental health problems.[36] Finally, the parent study was powered to detect between-group (sexual minority versus heterosexual) but not within-group (between subcategories of non-monosexual) differences, and our analyses were likely underpowered for some statistical comparisons.

CONCLUSION

This study offers important research and practice implications. First, these data indicate that non-monosexual women are worthy of increasing research attention, in order to understand and address their health disparities relative to monosexual women. To address this gap, researchers may need to alter their approaches to sampling sexual minority women, in order to ensure that non-monosexual women are included, considering that some of the most vulnerable women in this group are not strongly connected to LGBT communities and organizations, and so may not be reached through convenience sampling.

Our data suggest that non-monosexual women, and particularly those who predominantly partner with men, may benefit from public health interventions. However, in order to deliver such interventions, practitioners will first need to be able to identify this invisible group of sexual minority women. This may require changes to public health practice, in that practitioners would need to ask their clients about both sexual orientation identity and sexual history, in order to fully identify which of their clients may be at particular risk for poor mental health outcomes. In order to accomplish this, practitioners may require training and support in working effectively with sexual minority clients; resources for public health practitioners have been developed to meet this need.[37] Finally, as for all sexual minority people, public health practitioners can play a role in addressing health disparities through advocating for policy and practice interventions that address discrimination associated with sexual orientation, including non-monosexual orientations.

REFERENCES

1. Institute of Medicine. *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding*. Washington, DC: The National Academies Press, 2011.
2. Strutz KL, Herring AH, Halpern CT. Health disparities among young adult sexual minorities in the US. *Am J Prev Med* 2015;48(1):76–88. PMID: 25241194. doi: 10.1016/j.amepre.2014.07.038.
3. Steele LS, Ross LE, Dobinson C, Veldhuizen S, Tinmouth JM. Women's sexual orientation and health: Results from a Canadian population-based survey. *Women Health* 2009;49(5):353–67. doi: 10.1080/03630240903238685.
4. Colledge L, Hickson F, Reid D, Weatherburn P. Poorer mental health in UK bisexual women than lesbians: Evidence from the UK 2007 Stonewall Women's Health Survey. *J Public Health* 2015;37(3):427–37. doi: 10.1093/pubmed/fdu105.
5. Vrangalova Z, Savin-Williams RC. Psychological and physical health of mostly heterosexuals: A systematic review. *J Sex Res* 2014;51(4):410–45. PMID: 24754361. doi: 10.1080/00224499.2014.883589.
6. Kuyper L, Bos H. Mostly heterosexual and lesbian/gay young adults: Differences in mental health and substance use and the role of minority stress. *J Sex Res* 2016;53(7):731–41. PMID: 26515026. doi: 10.1080/00224499.2015.1071310.
7. Persson TJ, Pfaus JG, Ryder AG. Explaining health disparities for non-monosexual women: Abuse history and risky sex, or the burdens of non-disclosure? *Soc Sci Med* 2015;128:366–73. PMID: 25223831. doi: 10.1016/j.socscimed.2014.08.038.
8. Mitchell RC, Davis KS, Galupo MP. Comparing perceived experiences of prejudice among self-identified plurisexual individuals. *Psychol Sex* 2015;6(3):245–57. doi: 10.1080/19419899.2014.940372.
9. Bauer GR, Brennan DJ. The problem with 'behavioral bisexuality': Assessing sexual orientation in survey research. *J Bisex* 2013;13(2):148–65. doi: 10.1080/15299716.2013.782260.
10. Bauer GR, Jairam JA. Are lesbians really women who have sex with women (WSW)? Methodological concerns in measuring sexual orientation in health research. *Women Health* 2008;48(4):383–408. PMID: 19301530. doi: 10.1080/03630240802575120.
11. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychol Bull* 2003;129(5):674–97. PMID: 12956539. doi: 10.1037/0033-2909.129.5.674.
12. Mustanski BS, Garofalo R, Emerson EM. Mental health disorders, psychological distress, and suicidality in a diverse sample of lesbian, gay, bisexual, and transgender youths. *Am J Public Health* 2010;100(12):2426–32. doi: 10.2105/AJPH.2009.178319.
13. Wight RG, LeBlanc AJ, De Vries B, Detels R. Stress and mental health among midlife and older gay-identified men. *Am J Public Health* 2012;102(3):503–10. doi: 10.2105/AJPH.2011.300384.
14. Flanders C, Gibson M, Goldberg AE, Ross LE. Postpartum depression among visible and invisible sexual minority women: A pilot study. *Arch Women Ment Health* 2016;19(2):299–305. doi: 10.1007/s00737-015-0566-4.
15. Klein F, Sepekoff B, Wolf TJ. Sexual orientation: A multi-variable dynamic process. *J Homosex* 1985;11(1–2):35–49. PMID: 4056393. doi: 10.1300/J082v11n01_04.
16. Mohr J, Fassinger R. Measuring dimensions of lesbian and gay male experience. *Meas Eval Couns Dev* 2000;33(2):66–90.
17. Blair AD. Development of a sexual orientation concealment scale. Unpublished doctoral dissertation. Baltimore, MD: Loyola College, 2006.
18. Mohr JJ, Kendra MS. Revision and extension of a multidimensional measure of sexual minority identity: The Lesbian, Gay, and Bisexual Identity Scale. *J Couns Psychol* 2011;58(2):234–45. PMID: 21319899. doi: 10.1037/a0022858.
19. Frost DM, Meyer IH. Measuring community connectedness among diverse sexual minority. *J Sex Res* 2012;49(1):36–49. doi: 10.1080/00224499.2011.565427.
20. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry* 1987;150:782–86. PMID: 3651732. doi: 10.1192/bjp.150.6.782.
21. Eberhard-Gran M, Eskild A, Tambs K, Opjordsmoen S, Samuelsen SO. Review of validation studies of the Edinburgh Postnatal Depression Scale. *Acta Psychiatr Scand* 2001;104(4):243–49. doi: 10.1034/j.1600-0447.2001.00187.x.
22. Spielberger CD, Gorsuch RL, Lushene RE. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press, 1970.
23. Watson D, Clark LA, Tellegan A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol* 1988;54(6):1063–70. PMID: 3397865. doi: 10.1037/0022-3514.54.6.1063.
24. Crawford JR, Henry JD. The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *Br J Clin Psychol* 2004;43:245–65. doi: 10.1348/0144665031752934.

25. Creswell JW, Plano Clark VL. *Designing and Conducting Mixed Methods Research*, 2nd ed. Thousand Oaks, CA: Sage Publications, Inc., 2011.
26. Corbin J, Strauss A. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 4th ed. New York, NY: SAGE Publications, 2014.
27. Jung T, Wickrama KAS. An introduction to latent class growth analysis and growth mixture modeling. *Soc Personal Psychol Compass* 2008;2(1):302–17. doi: 10.1111/j.1751-9004.2007.00054.x.
28. Nylund KL, Asparouhov T, Muthén BO. Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Struct Equ Modeling* 2007;14(4):535–69. doi: 10.1080/10705510701575396.
29. Goldberg AE, Allen K, Ellawalla T, Ross LE. Male-partnered bisexual women's perceptions of disclosing sexual orientation to family across the transition to parenthood: Intensifying heteronormativity or queering family? *J Marital Fam Ther* 2017; May 24. doi: 10.1111/jmft.12242 [Epub ahead of print].
30. Ross LE, Goldberg AE, Tarasoff LA. Perceptions of partner support among pregnant plurisexual women: A qualitative study (manuscript under review).
31. Ross LE, Dobinson C, Eady A. Perceived determinants of mental health for bisexual people: A qualitative examination. *Am J Public Health* 2010;100(3):496–502. doi: 10.2105/AJPH.2008.156307.
32. Ross LE, Tarasoff LA, Goldberg AE, Flanders CE. Pregnant plurisexual women's sexual and relationship histories across the life span: A qualitative study. *J Bisexuality* (in press).
33. Kertzner RM, Meyer IH, Frost DM, Stirratt MJ. Social and psychological well-being in lesbians, gay men, and bisexuals: The effects of race, gender, age, and sexual identity. *Am J Orthopsychiat* 2009;79(4):500–10. doi: 10.1037/a0016848.
34. McLaren S. Sense of belonging to the general and lesbian communities as predictors of depression among lesbians. *J Homosex* 2009;56(1):1–13. doi: 10.1080/00918360802551365.
35. Quinn DM, Williams MK, Quintana F, Gaskins JL, Overstreet NM, Pishori A, et al. Examining effects of anticipated stigma, centrality, salience, internalization, and outness on psychological distress for people with concealable stigmatized identities. *PLoS ONE* 2014;9(5):e96977. doi: 10.1371/journal.pone.0096977.
36. Rosenthal L, Earnshaw VA, Lewis TT, Reid AE, Lewis JB, Stasko EC, et al. Changes in experiences with discrimination across pregnancy and postpartum: Age differences and consequences for mental health. *Am J Public Health* 2015;105(4):686–93. doi: 10.2105/AJPH.2014.301906.
37. The Public Health Alliance for Lesbian, Gay, Bisexual, Transsexual, Transgender, Two-Spirit, Intersex, Queer and Questioning Equity. *Making Your Community Health Centre, Public Health Unit, or Community Agency Inclusive to Those of All Sexual Orientations and Gender Identities*. Toronto, ON: Ontario Public Health Association. Available at: http://opha.on.ca/getmedia/125e32e7-f9cb-48ed-89cb-9d954d76537b/SexualHealthPaper-Mar11.pdf.aspx?ext=.pdf (Accessed September 12, 2016).

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RÉSUMÉ

OBJECTIFS : Les femmes non monosexuelles – celles qui disent ressentir de l'attirance pour plus d'un sexe ou avoir des relations sexuelles avec des hommes et des femmes – courent un plus grand risque de présenter des problèmes de santé mentale. Nous avons voulu déterminer quels éléments de l'expérience non monosexuelle sont associés à ce risque plus élevé.

MÉTHODE : Nous avons mené une analyse séquentielle exploratoire à méthodes mixtes à partir des données d'entretiens qualitatifs et d'enquêtes auprès de 39 femmes non monosexuelles recrutées successivement par l'entremise de dispensateurs de soins prénatals. Une analyse qualitative a permis de cerner leurs traits distinctifs, et une analyse quantitative a servi à tester les associations entre ces traits et des symptômes de maladie mentale.

RÉSULTATS : Nous avons dégagé neuf thèmes qualitatifs pour décrire les traits distinctifs des femmes non monosexuelles. De ces thèmes, le sexe des partenaires actuels et des partenaires des cinq dernières années, l'absence de liens avec la communauté LGBT+ et la faible centralité de l'identité de minorité sexuelle étaient associés à des symptômes d'anxiété. Une analyse de structure latente a mis au jour des niveaux sensiblement plus élevés de symptômes d'anxiété chez les femmes non monosexuelles en couple avec des hommes que chez celles qui étaient en couple avec des femmes.

CONCLUSION : Les femmes membres de minorités sexuelles qui sont en couple avec des hommes peuvent être particulièrement vulnérables aux problèmes de santé mentale. Étant donné l'invisibilité de ce groupe dans la recherche et la pratique en santé publique, des interventions s'imposent pour aborder la disparité constatée.

MOTS CLÉS : bisexualité; santé mentale; recherche qualitative; conception de questionnaires