



Risk Behaviors and Perceptions Among Self-identified Men Who Have Sex with Men (MSM), Bisexuals, Transvestites, and Transgender Women in Western Guatemala

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Abstract

Guatemala has a concentrated HIV epidemic disproportionately affecting men who have sex with men (MSM) and transgender women. We recruited 205 self-identified MSM, bisexuals, transvestites, and transgender women in western Guatemala using long-chain peer referral, wherein “seed” participants were asked to invite as many as three acquaintances to participate in the study. Self-reported sexual or gender identity was MSM, 46%; bisexual, 28%; transvestite, 21%, and transgender woman, 5%. Median age of the participants was 23 years, and 36% self-identified as being indigenous. Indigenous persons were more likely to self-identify as transvestite (32.9% vs 13.8%, $P=0.04$), strongly perceive themselves at risk for HIV (87.7% vs 51.5%, $P=0.001$), have had an HIV test in the last 12 months and know the result (97.3% vs 85.4%, $P=0.008$), and experience barriers to testing and treatment (86.3% vs 67.7%, $P=0.004$). HIV prevention services for indigenous MSM should especially target transvestites and how to overcome stigmatization and barriers to care.

Keywords MSM · Transgender women · HIV · Indigenous · Guatemala

Resumen

Guatemala enfrenta una epidemia de VIH, que afecta desproporcionadamente a hombres que tienen relaciones sexuales con hombres (HSH) y mujeres transgénero. Reclutamos 205 participantes quienes se auto-identificaron como HSH, bisexual, travestis y transgenero, en el Occidente de Guatemala usando como referencias de pares de cadena larga (long-chain peer referral), en donde se pidió a los participantes ‘semillas’ que invitarán hasta tres conocidos a participar en el estudio. Los auto-identificados fueron: el 46% HSH, el 28% bisexuales, el 21% travesti y el 5% transgénero. La edad media fue de 23 años y el 36% se auto-identificó como indígenas. Las personas indígenas son más probables para auto-identificarse como travesti (32.9% vs. 13.8%, $P=0.04$), se perciben fuertemente en riesgo del VIH (87.7% vs 51.5%, $P=0.001$), se han realizado la prueba de VIH en los últimos 12 meses y conocen su resultado (97.3% vs 85.4%, $P=0.008$), y experimentan barreras para el testeo y el tratamiento (86.3% vs 67.7% $P=0.004$). Los servicios de prevención del VIH para HSH indígena deberían dirigirse especialmente a los travestis y superar el estigma y las barreras a la atención.

Palabras Claves HSH · Mujeres transgénero · VIH · Indígena · Guatemala

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Introduction

Guatemala is a multicultural, plurilingual, lower-middle-income country that had 15,607,640 inhabitants [1, 2] in 2014, of which 40% had indigenous ancestry [1]. The mountainous terrain in Guatemala delimits the highlands from the temperate and coastal zones and defines the social, economic, and cultural geography of the country [3]. Guatemala recognizes four cultures: Mestizo, Mayan, Garifuna, and Xinka (the last three are indigenous

populations) [4]. Of the country's 6,243,056 indigenous people, 79% live in poverty, 40% live in extreme poverty [5], and 75% reside in rural areas [6]. Guatemala has one of the highest poverty rates in Latin America and the most unequal distribution of income [7]. The rural highland departments (equivalent to states) of Quetzaltenango and San Marcos in western Guatemala have large indigenous populations and Gini coefficients of 0.58 and 0.61, respectively, which are higher than the national average (0.52), indicating extremely unequal distribution of income [5]. Studies point to a close relationship of ethnicity, poverty, and poor health [5, 6, 8].

The health sector in Guatemala has suffered from organizational inefficiencies, institutional fragmentation, and widespread underfinancing of the hospitals, health centers, and posts in the Ministry of Health and Social Welfare that are supposed to provide free, basic health coverage for 83% of the population [8]. Statistics show an unequal distribution of trained health professionals; there are 25.6 trained health workers per 10,000 inhabitants in urban areas but only three per 10,000 inhabitants in rural areas, and few health care workers who speak indigenous languages [8]. This may explain the low utilization of public health services in rural areas [8]. However, the lack of disaggregated data for indigenous and nonindigenous populations, and the lack of clear definitions for indigenous peoples within national demographic and health studies in Guatemala, make it a challenge for researchers to define the unique health risks that indigenous peoples face [9, 10].

Among the 22 departments of the country, 8 reported HIV cases above the national rate of 291.8 per 100,000 inhabitants [11]. Four of these departments are primarily rural and located in the western part of the country, the target region of the current study. Studies conducted in the last 18 years have shown that men who have sex with men (MSM) and transgender women have the highest prevalence of HIV in Guatemala [1, 12, 13]. In the most recent Integrated Bio-behavioral Surveillance (IBBS) study in 2017 [14], overall HIV prevalence among adults aged 15–49 years was 0.8%, compared with 10.5% (95% CI 6.8–14.2) among MSM in Guatemala City, 3.3% (95% CI 0.9–5.7) among MSM in Coatepeque (western part of the country), and 24.0% (95% CI 15.2–32.8) among transgender women in Guatemala City [14]. The IBBS found a higher prevalence of syphilis among MSM in Guatemala City (15.9%, 95% CI 12.0–19.7) and a lower prevalence among MSM in Coatepeque (0.4%, 95% CI 0.0–1.1) and among transgender women in Guatemala City (2.7%, 95% CI 0.6–4.4) [14]. The IBBS studies do not measure ethnicity and therefore cannot examine distinct risk behaviors among indigenous and nonindigenous populations that might influence differentiated care models for HIV prevention, treatment, and care. However, the national center of epidemiology reported 1499 new HIV/AIDS cases in the last

5 years (2012–2016) among indigenous persons, accounting for 15.8% of all cases.

The lack of national surveys disaggregated by ethnicity may be due to the multiple definitions for “indigenous people.” One in particular is the International Labor Organization (ILO) Indigenous Peoples and Tribal Peoples Convention 169, ratified by Guatemala in 1996, which refers to the importance of “self-identification” in being considered indigenous [15].

Characterizing HIV risk among MSM within semi-urban and rural populations is complicated because men in these communities may be especially likely to engage in sex with other men without self-identifying as homosexual or gay [14], and there is significant social stigmatization regarding male–male sex. Guatemala has no explicit legal prohibitions against homosexual behavior [16]; however, strong social prejudices often result in violence, unemployment, and inadequate social assistance for MSM [14, 17]. In the IBBS study in 2013, 32.7 and 27.9% of MSM in Guatemala City and Coatepeque, respectively, self-identified as heterosexual or bisexual [18]. In Coatepeque, more than a quarter (27.9%) of participants in the 2013 IBBS identified as transgender, transvestite, or transsexual. Although HIV studies have characterized the differences among gay, bisexual, and hidden MSM in Guatemala, few of these studies differentiated the subgroups by ethnicity [18–20].

The aim of the present study was to measure HIV sexual risk behaviors and perceptions among self-identified MSM, bisexuals, transvestites, and transgender women in western Guatemala, paying particular attention to the role of ethnicity, to inform HIV prevention providers about specific characteristics among indigenous and nonindigenous populations that may improve program design to reach hidden populations. We used an audio computer-assisted self-interviewing (ACASI) system so that the populations could provide ethnic and sexual self-identities in “confidence” without the presence of a peer educator. We used long-chain peer referral methodology [21, 22] to access these diverse hidden populations and to understand social-network approaches to recruitment among sexual and gender identities.

Methods

Setting and Context

We conducted a cross-sectional study among network groups of MSM and transgender women at six sites in the departments of Quetzaltenango, Retalhuleu, and San Marcos in western Guatemala (Fig. 1), all of which have reported levels of HIV above the national average. Two sites—1 in Quetzaltenango (highland) and 1 in Retalhuleu (coastal)—are semi-urban, while the other 4 sites are in rural settings.

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Mapa Lingüístico de Guatemala

Idiomas mayas, xinka y garífuna

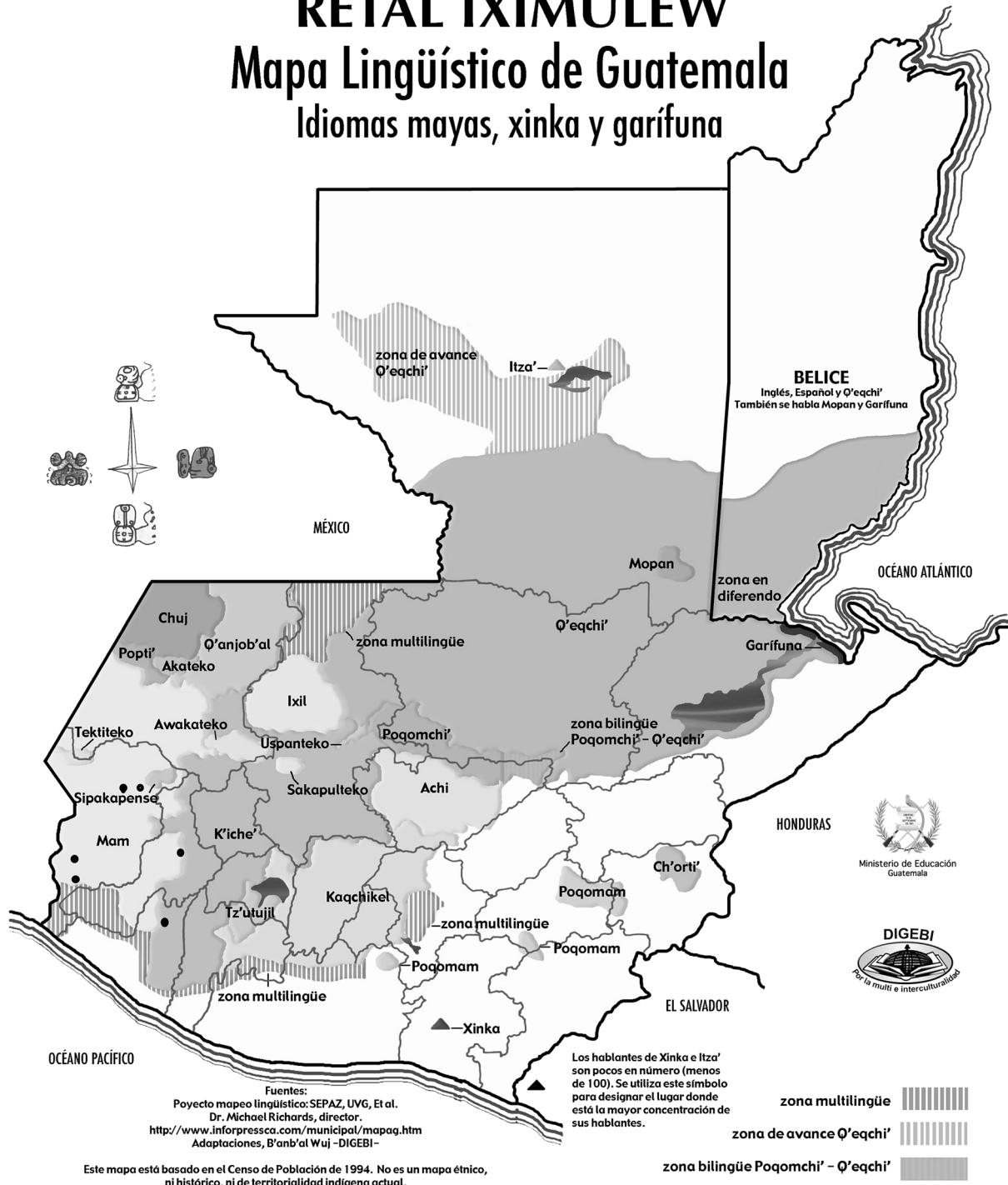


Fig. 1 Guatemala ethnicity map and study site locations

Our hypothesis was that there would be more gay men and transgender women in urban centers, and more hidden populations (transvestites and bisexuals) in rural areas, so we included both semi-urban and rural settings in the study. The

MSM and transgender-women populations in these areas often migrate from 1 municipality to another [18] in search of employment [23] and sexual partners [14, 18].

Study Design

We used the long-chain peer referral (LCPR) strategy [21, 22] to recruit MSM and transgender women to complete a questionnaire using an ACASI system. LCPR is similar to the respondent-driven sampling (RDS) strategy [24], with flexibility to better direct referrals to different strata or locations or for when the underlying assumptions of RDS do not hold up (e.g., small and less-connected groups). Six seeds were used to initiate the recruitment process. The general principles of seed selection were that each be (1) diverse with respect to demographic characteristics (e.g., marital status, age, education), (2) diverse in subgroup membership (e.g., indigenous vs nonindigenous; sexual or gender identity), (3) “sociometric stars” (i.e., well-connected socially, socially active), (4) articulate (i.e., able to explain to others the purpose of the study), and (5) motivated (i.e., in agreement with the aims of the project, enthusiastic, willing to positively promote the project). Seeds also met the study eligibility criteria of (1) being aged 18 years or older, (2) being biologically male, and (3) having had oral or anal sex with at least one man in the last year. Recruits other than the seeds also had to have a valid study recruitment coupon, given to them by another study participant, to be eligible. Eligible participants received an explanation of the survey’s purpose, procedures, risks, and benefits; gave informed consent; and completed the ACASI questionnaire. Each respondent was given three coupons to give to other persons within their social network. This process was followed until sampling was completed for each seed group.

The ACASI questionnaire was administered in Spanish using a laptop computer, with color coding to facilitate responses by illiterate participants. ACASI allows a participant to listen to a sound file of each question then a sound file of each possible closed-end answer. Participants were asked to read each question and its possible answers on the laptop screen (or listen to the sound files) and to click the mouse for the correct answer. The ACASI questionnaire required approximately 40 minutes to complete. For participants who might not be comfortable with the technology, we offered an interviewer-based survey option; however, it was never requested. The questionnaire was pretested with 10 volunteers prior to implementation in the study, to determine acceptability, completeness, and logicity.

Measurements

Epidemiological measurements included demographic characteristics, self-identified sexuality or gender, self-identified ethnicity, and educational attainment. A primary outcome of interest in this analysis was the number of casual sex partners in the last 6 months, with response options of 0, 1–3, 4–6, 7–9, and ≥ 10 . This approach was taken because, during

pretesting of the instrument, participants said they had better recall using ranges rather than continuous numbers for this variable. A 5-point Likert scale to determine perception of HIV risk asked whether a participant was “at risk for HIV” (from strongly agree to strongly disagree). Other outcomes of interest: “Have you taken an HIV test in the last 12 months and know your status? (yes/no)” and “Since you heard of HIV, have you changed your sexual behavior to protect yourself from HIV? (yes/no).”

We evaluated the participants’ perceptions of HIV testing and treatment (benefits and barriers) and their experience of homophobic stigmatization and discrimination. The perceived benefits of HIV testing and treatment were measured using a 5-point Likert scale of three questions (from strongly agree to strongly disagree), for a total of 15 points. The questions were “If I get an HIV test and nothing is found, I do not worry as much about HIV”; “If I take the HIV test and the test comes back positive, I am going to protect my partner”; and “If I take ART [antiretroviral therapy], I can live healthy.” The perceived barriers to HIV testing and treatment were also measured with a 5-point Likert scale (from strongly agree to strongly disagree). Items included: “I do not want to get an HIV test because I am afraid that the test will be positive and I do not have the money to travel to the HIV clinic for treatment.” Experiences of homophobic stigmatization and discrimination were measured with three questions using a 4-point Likert scale (from “never” to “many times”). Items included “How often have you lost your friends because of your homosexuality?”, “How often have you been called ‘queer’?”, and “How often have you lost your job due to your homosexuality?”

The main variable of interest was self-reported ethnic identity, assessed as either “indigenous” or “nonindigenous.” Other variables of interest included age, self-identified sexuality or gender, marital status, educational attainment, and religion. Response options for level of educational attainment were, (1) incomplete primary school, (2) completed primary school, (3) junior high school, (4) high school, and (5) university. Marital status was queried using 3 options: single, living with a partner, married. Self-identified sexuality or gender options were (1) men who have sex with men, (2) bisexual, (3) transvestite, and (4) transgender woman. Religion options were Catholic, Evangelical, no religion. Residence options: reside in a different municipality than the interview site or reside in the same municipality as the interview site. The interview municipality and department, as well as the municipality and department where the participant resided, had a standardized 3- to 4-digit government code.

Table 1 Demographic characteristics among self-identified indigenous and nonindigenous men who have sex with men (MSM), bisexuals, transvestites, and transgender women, western Guatemala, 2016

Demographic characteristic	Overall N = 205 n (%)	Indigenous N = 73 n (%)	Nonindigenous N = 130 n (%)	P value
Age, median years (IQR)	23 (21–27)	23 (21–27)	23 (20–27)	–
Self-reported sexual or gender identity				0.04
MSM	94 (45.9)	31 (42.5)	63 (48.5)	
Bisexual	57 (27.8)	15 (20.5)	41 (31.5)	
Transvestite	43 (21.0)	24 (32.9)	18 (13.8)	
Transgender woman	11 (5.4)	3 (4.1)	8 (6.2)	
Marital status				0.80
Single	192 (93.7)	70 (95.9)	120 (92.3)	
Living with a partner	6 (2.9)	2 (2.7)	4 (3.1)	
Married to a woman	7 (3.4)	1 (1.4)	6 (4.6)	
Educational attainment				0.11
Incomplete primary school	7 (3.4)	4 (5.5)	3 (2.3)	
Completed primary school	12 (5.9)	3 (4.1)	9 (6.9)	
Junior high school	29 (14.1)	11 (15.0)	18 (13.8)	
High school	135 (65.9)	54 (74.0)	79 (60.8)	
University	22 (10.7)	1 (1.4)	21 (16.2)	
Religion				0.39
Catholic	126 (61.5)	46 (63.0)	79 (60.8)	
Evangelical	39 (19.0)	18 (24.7)	21 (16.2)	
No religion	36 (17.6)	8 (11.0)	27 (20.8)	
Residence				0.002
Reside in a different municipality than the interview site	55 (26.8)	29 (39.7)	26 (20.0)	
Reside in the same municipality the interview site	148 (72.2)	44 (60.3)	104 (80.0)	

Categories do not always add up to 100% due to missing responses

Statistical Analysis

Descriptive analyses were conducted for demographic variables, using measures of central tendency (including mean, median, and frequency) overall and stratified by self-identified sexuality or gender: MSM, bisexual, transvestite, transgender woman. Further descriptive analyses were conducted for overall risk behaviors and perceptions and stratified by self-identified sexuality or gender. Differences between indigenous and nonindigenous participants were assessed using the Chi square test for categorical variables and Fisher's exact test when expected cell sizes were < 5. Data were analyzed using STATA version 11.2 (Stata Corp, College Station, Texas, USA).

Ethical Review and Approval

The Ethical Review Committee of the Guatemalan Ministry of Health and Social Welfare approved this study protocol (approval number 54-2015). Data were collected anonymously and not linked to any personal identifiers.

Results

A total of 205 MSM and transgender women participated in the study. More than one-third ($n = 73$, 35.6%) self-identified as indigenous. Table 1 shows overall demographic characteristics of the study participants as well as differences between indigenous and nonindigenous participants. Participants were young, with a median age of 23 years (interquartile range [IQR] 21–27). Self-reported sexual or gender identity was MSM, 94 (45.9%); bisexual, 57 (27.8%); transvestite, 43 (21.0%); and transgender woman, 11 (5.4%). Two-thirds (65.9%) had completed high school. Few reported being married to a woman (3.4%) or living with a partner (2.9%). Two of the participants (1 bisexual and 1 transvestite) did not self-identify as either indigenous or nonindigenous. There was a significant difference in sexual and gender identities, with self-identification as transvestite being higher among indigenous participants compared with non-indigenous (32.9% vs 13.8%, respectively; $P = 0.04$). There was also a significant difference in whether a participant resided in a different municipality than the interview site: the rate was

Table 2 HIV risk and testing perceptions among self-identified men who have sex with men (MSM), bisexuals, transvestites, and transgender women, western Guatemala, 2016

Measure (scale)	Overall N = 205 n (%)
Casual sex partners, overall (previous 6 months)	
0	51 (24.9)
1–3	84 (41.0)
4–6	41 (20.0)
7–9	18 (8.7)
10 or more	11 (5.4)
Casual sex partners, by self-reported sexual or gender identity (previous 6 months)	
MSM	n = 94
0	27 (28.7)
1–3	39 (41.5)
4–6	17 (18.1)
7–9	7 (7.4)
10 or more	4 (4.3)
Bisexual	n = 57
0	10 (17.5)
1–3	26 (45.6)
4–6	15 (26.3)
7–9	5 (8.8)
10 or more	1 (1.8)
Transvestite	n = 43
0	14 (32.6)
1–3	15 (34.9)
4–6	9 (20.9)
7–9	5 (11.6)
10 or more	0
Transgender woman	n = 11
0	0
1–3	4 (36.4)
4–6	0
7–9	1 (9.1)
10 or more	6 (54.5)
Measure (scale)	Overall
MSM (n = 94)	N = 205
Bisexual (n = 57)	n (%)
Transvestite (n = 43)	
Transgender woman (n = 11)	
Strongly agree about HIV risk perception	
MSM	131 (63.9)
Bisexual	54 (57.4)
Transvestite	34 (59.6)
Transgender woman	35 (81.4)
MSM	8 (72.7)
Had an HIV test in the last 12 months and know the result	
MSM	182 (88.8)
Bisexual	85 (90.4)
Transvestite	48 (84.2)
Transgender woman	38 (88.4)
MSM	11 (100)
Changed sexual-behavior after acquiring HIV knowledge	
MSM	192 (93.7)

Table 2 (continued)

Measure (scale)	Overall N=205 n (%)
MSM (n=94)	
Bisexual (n=57)	
Transvestite (n=43)	
Transgender woman (n=11)	
MSM	84 (89.4)
Bisexual	55 (96.5)
Transvestite	42 (97.7)
Transgender woman	11 (100)
Strongly agree about perceived benefits of HIV testing and treatment	140 (68.3)
MSM	65 (69.1)
Bisexual	38 (66.7)
Transvestite	33 (76.7)
Transgender woman	4 (36.4)
Strongly agree about perceived barriers to HIV testing and treatment	151 (73.7)
MSM	72 (76.6)
Bisexual	41 (71.9)
Transvestite	35 (81.4)
Transgender woman	3 (27.3)
Strong experience of homophobic stigmatization and discrimination	150 (73.2)
MSM	59 (62.8)
Bisexual	48 (84.2)
Transvestite	41 (95.3)
Transgender woman	2 (18.2)
Reside in a different municipality than the interview site	57 (27.8)
MSM	18 (19.1)
Bisexual	17 (29.8)
Transvestite	21 (48.8)
Transgender woman	1 (9.1)

39.7% among indigenous participants, compared with 20.0% among nonindigenous ($P=0.002$).

Table 2 compares the differences in perception of HIV risk and of HIV testing and treatment, by self-reported sexual or gender identity. Three-quarters (75.1%) of the participants had had 1 or more casual sex partners within the previous 6 months, with 41.0% reporting that they had had 1–3 partners. A higher proportion of self-identified bisexual participants reported having 1–3 casual sex partners in the previous 6 months, followed in order by participants who were MSM, transgender woman, and transvestite. Bisexual participants also had a higher rate of having 4–6 casual sex partners in the previous 6 months, followed in order by transvestite and MSM participants. More than half (54.5%) of the transgender woman participants reported having 10 or more casual sex partners within the previous 6 months.

Nearly two-thirds (63.9%) of all participants strongly believed that they were at risk for HIV. Of these, 81.4% of self-identified transvestites and 72.7% of transgender women felt strongly that they were at risk for HIV, compared with 59.6% of bisexuals and 57.4% of MSM. When asked who

had had an HIV test within the last 12 months and knows the result, 88.8% responded affirmatively. Transgender women (100%) and MSM (90.4%) were most likely to have had an HIV test in the last 12 months and know the result, followed by transvestite (88.4%) and bisexual (84.2%) participants.

Almost all (93.7%) of the participants reported having changed their sexual behavior after acquiring HIV knowledge. Responses to a question about HIV testing and treatment services showed that more than two-thirds (68.3%) of participants strongly agreed about the perceived benefits. The rate of agreement was 76.7% among transvestites, 69.1% among MSM, 66.7% among bisexuals, but only 36.4% among transgender women. Perceived benefits included worrying less if an HIV test was negative and protecting their partner if an HIV test was positive.

Most (73.7%) of the participants, however, perceived individual and structural barriers to HIV testing and treatment services. More than four-fifths (81.4%) of self-identified transvestites, 76.6% of MSM, 71.9% of bisexuals, but only 27.3% of transgender women strongly agreed that there were such barriers, including the fear of testing HIV

Table 3 HIV risk and testing perceptions among self-identified indigenous and nonindigenous men who have sex with men (MSM), bisexuals, transvestites, and transgender women, western Guatemala, 2016

Measure (scale)	Indigenous n=73 n (%)	Nonindigenous n=130 n (%)	P value
Casual sex partners, overall (previous 6 months)			0.001
0	20 (27.4)	31 (23.8)	
1–3	18 (24.7)	64 (49.2)	
4–6	21 (28.8)	20 (15.4)	
7–9	10 (13.7)	8 (6.2)	
10 or more	4 (5.5)	7 (5.4)	
Casual sex partners, by self-reported sexual or gender identity (previous 6 months)			
MSM	n=31	n=63	0.003
0	10 (32.3)	17 (27.0)	
1–3	6 (19.4)	33 (52.4)	
4–6	8 (25.8)	9 (14.3)	
7–9	6 (19.4)	1 (1.6)	
10 or more	1 (3.2)	3 (4.8)	
Bisexual	n=15	n=41	0.001
0	4 (26.7)	6 (14.6)	
1–3	4 (26.7)	21 (51.2)	
4–6	6 (40.0)	9 (22.0)	
7–9	1 (6.7)	4 (9.8)	
10 or more	0	1 (2.4)	
Transvestite	n=24	n=18	0.580
0	6 (25.0)	8 (44.4)	
1–3	8 (33.3)	6 (33.3)	
4–6	7 (29.2)	2 (11.1)	
7–9	3 (12.5)	2 (11.1)	
10 or more	0	0	
Transgender woman	n=3	n=8	0.179
0	0	0	
1–3	0	4 (50.0)	
4–6	0	0	
7–9	0	1 (12.5)	
10 or more	3 (100)	3 (37.5)	
Measure (scale)	Indigenous n=73 MSM (n=31) Bisexual (n=15) Transvestite (n=24) Transgender woman (n=3) n (%)	Nonindigenous n=130 MSM (n=63) Bisexual (n=41) Transvestite (n=18) Transgender woman (n=8) n (%)	P value
Strongly agree about HIV risk perception	64 (87.7)	67 (51.5)	0.001
MSM	25 (80.6)	29 (46.0)	0.001
Bisexual	13 (86.7)	21 (51.2)	0.016
Transvestite	23 (95.8)	12 (66.7)	0.012
Transgender woman	3 (100)	5 (62.5)	0.491
Had an HIV test in the last 12 months and know the result	71 (97.3)	111 (85.4)	0.008
MSM	30 (96.8)	55 (87.3)	0.143
Bisexual	15 (100)	33 (80.5)	0.065

Table 3 (continued)

Measure (scale)	Indigenous n = 73 MSM (n = 31) Bisexual (n = 15) Transvestite (n = 24) Transgender woman (n = 3) n (%)	Nonindigenous n = 130 MSM (n = 63) Bisexual (n = 41) Transvestite (n = 18) Transgender woman (n = 8) n (%)	P value
Transvestite	23 (95.8)	15 (83.3)	0.172
Transgender woman	3 (100)	8 (100)	0.999
Changed sexual-behavior after acquiring HIV knowledge	71 (97.3)	119 (91.5)	0.110
MSM	29 (93.5)	55 (87.3)	0.356
Bisexual	15 (100)	39 (95.1)	0.384
Transvestite	24 (100)	17 (94.4)	0.811
Transgender woman	3 (100)	8 (100)	0.999
Strongly agree about perceived benefits of HIV testing and treatment	58 (79.5)	82 (63.1)	0.035
MSM	23 (74.2)	42 (66.7)	0.458
Bisexual	13 (86.7)	25 (61.0)	0.068
Transvestite	21 (87.5)	12 (66.7)	0.104
Transgender woman	1 (33.3)	3 (37.5)	0.574
Strongly agree about perceived barriers to HIV testing and treatment	63 (86.3)	88 (67.7)	0.004
MSM	25 (80.6)	47 (74.6)	0.515
Bisexual	13 (86.7)	28 (68.3)	0.169
Transvestite	23 (95.8)	12 (66.7)	0.012
Transgender woman	2 (66.7)	1 (12.5)	0.151
Strong experience of homophobic stigmatization and discrimination	54 (74.0)	94 (72.3)	0.798
MSM	17 (54.8)	42 (66.7)	0.265
Bisexual	13 (86.7)	34 (82.9)	0.736
Transvestite	24 (100)	16 (88.9)	0.094
Transgender woman	0	2 (25.0)	0.999
Reside in a different municipality than the interview site	29 (39.7)	26 (20.0)	0.002
MSM	8 (25.8)	10 (15.9)	0.250
Bisexual	4 (26.7)	12 (29.3)	0.849
Transvestite	17 (70.8)	3 (16.7)	0.001
Transgender woman	0	1 (12.5)	0.521

Categories do not always add up to 100% due to missing responses

positive and of not having enough money to travel to an HIV clinic for ART.

Most participants (73.2%) had experienced homophobic stigmatization and discrimination. Of these, the hidden populations of self-identified transvestites (95.3%) and bisexuals (84.2%) reported the highest rates. Almost two-thirds (62.8%) of MSM but only 18.2% of transgender women reported strong experiences in which they had been bullied, called names, or lost their jobs due to their sexual or gender identity. More than a quarter of the participants (27.8%) resided in a different municipality than the interview site. The rate was highest among transvestites (48.8%) and bisexuals (29.8%).

There were significant differences between self-identified indigenous and nonindigenous participants in their

number of casual sex partners during the last 6 months (Table 3). A significantly higher proportion of nonindigenous participants reported multiple casual partners (i.e., 4 or more).

There were also differences between self-identified indigenous and nonindigenous participants in the rate at which they strongly agreed about HIV risk perception (87.7% vs 51.5%, respectively; $P=0.001$), which suggests that indigenous participants were either at higher risk or more likely to perceive themselves that way. Indigenous MSM ($P=0.001$), bisexual ($P=0.016$), and transvestite ($P=0.012$) participants were significantly more likely to report strong agreement regarding HIV risk perception than their nonindigenous counterparts, whereas indigenous transgender women

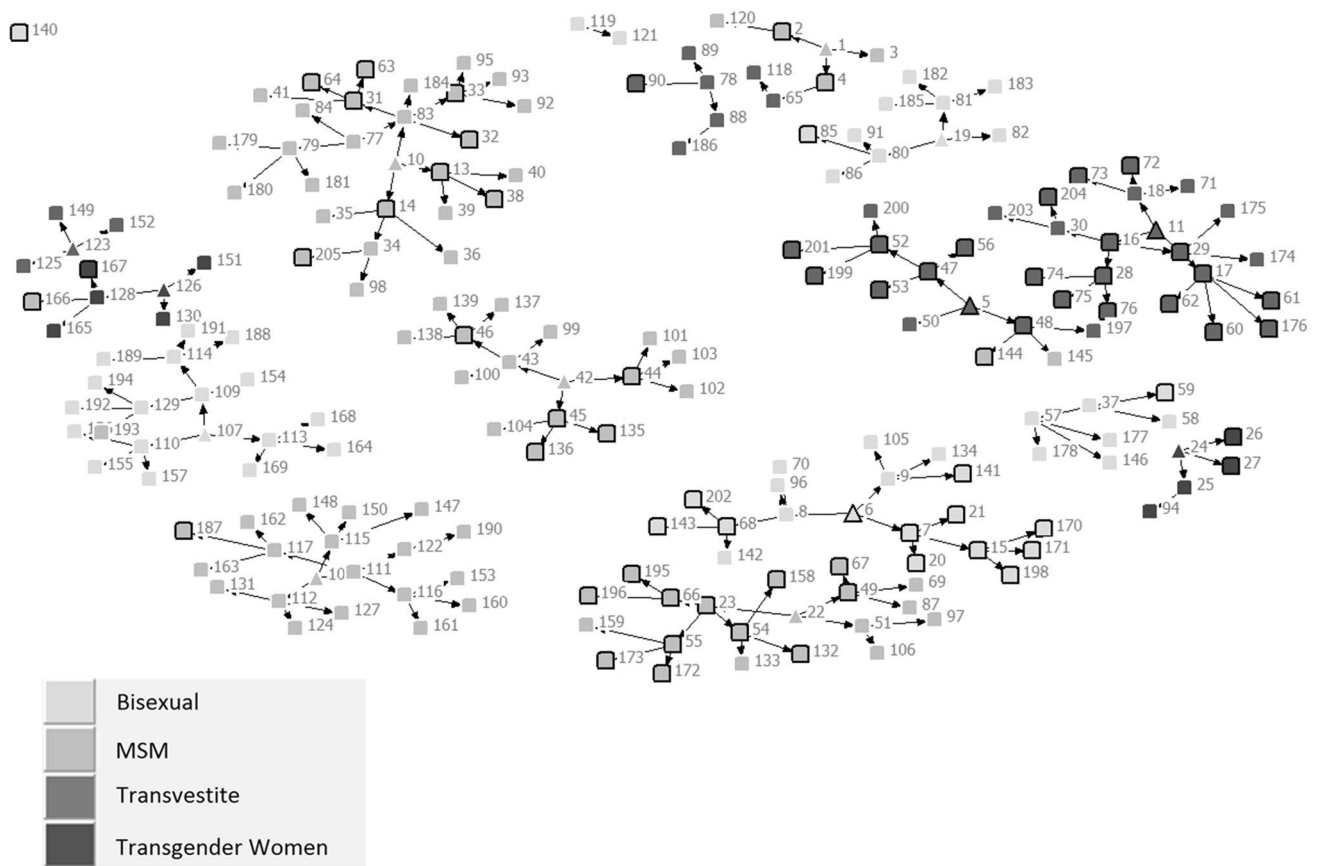


Fig. 2 Recruitment patterns among self-identified men who have sex with men (MSM), bisexuals, transvestites, and transgender women, in western Guatemala, 2016. Initial seeds are represented by triangles

gles. Black squares represent participants, by self-identified ethnicity (indigenous vs nonindigenous)

were not more likely to agree compared to non-indigenous transgender women ($P=0.491$).

The difference was less significant in the proportion of self-identified indigenous and nonindigenous participants who reported having an HIV test within the last 12 months and knew the result. A higher proportion of indigenous participants, compared with nonindigenous, strongly agreed about the perceived benefits of HIV testing and treatment (79.5% vs 63.1%, respectively) (Table 3). Indigenous participants were also more likely to perceive barriers to HIV testing and treatment, compared with nonindigenous participants (86.3% vs 67.7%, respectively; $P=0.004$); among these, transvestites ($P=0.012$) were most likely to not want to take an HIV test because they feared a positive result. A slightly higher proportion of indigenous (74.0%) than nonindigenous (72.3%) participants reported having experienced homophobic stigmatization and discrimination, with the rate reaching 100% among indigenous transvestites. A higher proportion of indigenous (39.7%) than nonindigenous (20.0%) participants resided in a different municipality than the interview site. This rate was highest among indigenous transvestite participants (70.8%), suggesting that distance

from HIV testing and treatment services makes it difficult to engage with this hidden population.

In further review of the differences in social linkages among self-identified indigenous transvestites and their MSM, bisexual, and transgender woman counterparts, we present the “referral chains” in our study, by indigenous and nonindigenous ethnicity, in Fig. 2 (NetDraw, Analytic Technologies, Lexington, Kentucky, USA). The majority of seeds (represented as triangles) reached 2 or 3 referrals in the first-ring referral chains. Social networks of MSM and transvestites reached referrals in the first- and second-ring referral chains. In San Marcos and in Retalhuleu, social networks included third-ring referral chains. The referral chains for transgender women were small and focused mainly in the 2 semi-urban sites. Indigenous transvestites were localized primarily in 2 chains in the highland communities. Non-indigenous transvestites were more spread out among the 6 seed collection sites. Social networks of bisexuals were spread throughout the 6 sites, in both semi-urban and rural areas. The majority of social networks for MSM, bisexuals, and transgender women were in the same municipality as the

interview site, with the exception of indigenous transvestites, who mostly resided in a different municipality.

Discussion

This study is among the first to measure high-risk sexual behaviors and perceptions of HIV testing and treatment services among self-identified indigenous MSM, bisexual, transvestite, and transgender woman participants in western Guatemala. In particular, this study highlights the risk behaviors and perceptions among indigenous transvestites. These men are sometimes referred to as *vestidos*, which is a pejorative term in Guatemala. Our study found that the majority of indigenous transvestites (70.8%) resided in a different municipality than the interview site, agreed strongly about HIV risk perception, and faced barriers to HIV testing and treatment that included fear of an HIV-positive result and worry about transportation costs to reach HIV treatment centers. The LCPR methodology proved effective in reaching indigenous transvestites for this study.

Our study provides evidence that HIV/AIDS prevention and testing programs should include efforts to target indigenous hidden populations of self-identified transvestites and bisexuals, who differ from their nonindigenous counterparts in risk behaviors and perceptions of individual and structural barriers to HIV testing and treatment. For example, indigenous MSM are more likely to describe their sexual or gender identity as “transvestite,” or one who likes to cross-dress, while nonindigenous MSM tend to describe themselves as “bisexual” at a similar rate. Differentiated care models can include mobile sexually transmitted infection and HIV testing services and at-home HIV testing, to better reach indigenous transvestite populations and steer HIV-positive key populations to the nearest facility for ART and HIV care.

The few studies that distinguish between indigenous and nonindigenous MSM—for example, in Peru—have had similar findings of higher rates of sexual risk behavior and more fluid sexual culture among indigenous MSM [25, 26]. A study of the indigenous *muxes* in Juchitan, Mexico, focuses on indigenous men who dress in traditional costumes and belong to communities that accept *muxes* as being both male and female or a third gender from an early age [27]. The acceptance of *muxes* has taken more than 10 years, and shows that culture is dynamic and can include protective attitudes that fight stigmatization and discrimination.

The strengths of our peer-referral method and setting outside the capital enabled us to recruit substantial numbers of self-identified indigenous participants. Prior studies had low numbers of indigenous participants [16], did not disaggregate epidemiological data by ethnic group [10, 11, 13, 17], or did not rigorously measure indigenous status [19]. We recognize the limitations of this study. It was conducted in 2

semi-urban and 4 rural sites that had high rates of HIV infection. Although overall there was a high rate of HIV testing within the previous 12 months and knowledge of the results, we did not query participants regarding HIV status, nor did we query HIV-infected participants who were already aware of their serostatus about whether they are receiving care. HIV-result status should be added to future questionnaires for this population. Another limitation is that we did not include a multivariate analysis to examine potential confounding variables. Also, the majority of participants were recruited by persons who had the same sexual or gender identity. During the training, we emphasized that seeds should refer acquaintances who were similar to them. They may have interpreted “similar” as having the same sexual or gender identity, rather than being in their broader social network.

Conclusions

Despite these limitations, this study provides some of the first information about HIV risk behaviors and perceptions among indigenous hidden populations in western Guatemala and dispels a common misconception that self-identified indigenous men do not engage in high-risk sex with other men. Hidden populations, such as indigenous transvestites, may intentionally conceal their behaviors and presence from public view because of the way they have been treated by society at large [28]. Differentiated care models for HIV prevention, treatment, and care services need to be accessible and mobile in order to target indigenous transvestites who behave differently than their nonindigenous counterparts.

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Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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

References

1. INE. Caracterización Estadística de la República de Guatemala. Instituto Nacional de Estadística de Guatemala, 2013.
2. INE. Demografía y Estadísticas Vitales. Instituto Nacional de Estadística de Guatemala, 2015.
3. McBryde FW. Cultural and Historical Geography of Southwest Guatemala. Washington, DC: Institute of Social Anthropology Ed; 1947. p. 184.
4. Collado WR. Ley de Idiomas Nacionales, Decreto Numero 19-2003. <https://www.mineduc.gob.gt/DIGebi/documents/leyes/19-2003.pdf>. Accessed January 20, 2016. Diario Centro America, Congreso de la Republica de Guatemala 2003.
5. INE. Encuesta Nacional de Condiciones de Vida (ENCOVI). Instituto Nacional de Estadísticas de Guatemala, 2015.
6. MRG. State of the World's Minorities and Indigenous Peoples Minority Rights Group International, 2013. <https://www.minorityrightsorg/wp-content/uploads/old-site-downloads/download-1293-State-of-the-Worlds-Minorities-and-Indigenous-Peoples-2013.pdf>. Accessed March 10, 2017.
7. CEPAL. Los Pueblos Indígenas en América Latina: Síntesis. Comisión Económica para América Latina y el Caribe, 2014.
8. Carlos Ávila RB, Gutiérrez JC, Hoadley K, Coite Manuel, Romero N, Rodríguez MP. Guatemala: Analisis del Sistema de Salud, 2015.
9. Bartlett JG, Madariaga-Vignudo L, O'Neil JD, Kuhnlein HV. Identifying indigenous peoples for health research in a global context: a review of perspectives and challenges. *Int J Circumpolar Health*. 2007;66(4):287–307.
10. MRG. Indigenous Peoples and Poverty: The Cases of Bolivia, Guatemala, Honduras and Nicaragua. Minority Rights Group International, 2003. p. 16. <https://www.minorityrightsorg/wp-content/uploads/old-site-downloads/download-77-Indigenous-Peoples-and-Poverty-The-Cases-of-Bolivia-Guatemala-Honduras-and-Nicaragua.pdf>.
11. CNE. Informe Nacional de Estatica sobre Casos Acumulados de VIH/sida en Guatemala. Enero 1984 a Septiembre 2012.
12. PSI. Estudio TRaC de VIH/SIDA Hombres que tienen sexo con otros Hombres en Guatemala, Quetzaltenango, Escuintla, Suchitepéquez e Izabal, 2009. http://www.pasca.org/sites/default/files/07_gt_trac_hsh.pdf. Accessed January 31, 2013.
13. Soto RJ, Ghee AE, Nunez CA, et al. Sentinel surveillance of sexually transmitted infections/HIV and risk behaviors in vulnerable populations in 5 Central American countries. *J Acquir Immune Defic Syndr*. 2007;46(1):101–11.
14. TEPHINET, MSPAS, HIVOS. Integrated Bio-behavioral and Surveillance Survey (IBBS). March 2017.
15. King M, Smith A, Gracey M. Indigenous health part 2: the underlying causes of the health gap. *Lancet*. 2009;374(9683):76–85.
16. PASCA. Estigma y discriminación en relación al VIH y sida en Guatemala. Encuesta de opinión pública 2009–2011. 2012.
17. Reding A. Sexual Orientation and Human Rights in the Americas. Project for Global Democracy and Human Rights, World Policy Institute. 2003. <http://www.worldpolicynewschooledu/wpi/globalrights/sexorient/2003-LGBT-Americaspdf>. Accessed August 16, 2013.
18. Morales-Miranda S, Alvarez-Rodríguez B, Aguilar J, Aramburo A. Encuesta Centroamericana de Vigilancia de Comportamiento Sexual y Prevalencia de ITS y VIH. Integrated Bio-behavioral and Surveillance Survey 2013.
19. Taylor TM, Hembling J, Bertrand JT. Ethnicity and HIV risk behaviour, testing and knowledge in Guatemala. *Ethn Health*. 2015;20(2):163–77.
20. Caal Diaz JM, Boror Ramirez LA, Lujan Lunsford R, Rendon CL. Caracterización de riesgo para poblaciones en condiciones de vulnerabilidad al VIH: Hombre que tienen sexo con Hombres. Guatemala City: HIVOS; 2016.
21. He Q, Wang Y, Li Y, et al. Accessing men who have sex with men through long-chain referral recruitment, Guangzhou, China. *AIDS Behav*. 2008;12(suppl 4):S93–6.
22. Yan H, Yang H, Zhao J, et al. Long-chain peer referral of men who have sex with men: a novel approach to establish and maintain a cohort to measure HIV incidence, Nanjing, China. *J Acquir Immune Defic Syndr*. 2012;59(2):177–84.
23. Taylor MJ, Moran-Taylor MJ, Ruiz DR. Land, ethnic, and gender change: transnational migration and its effects on Guatemalan lives and landscapes. *Geoforum*. 2006;37:41–61.
24. Malekinejad M, Johnston LG, Kendall C, Kerr LR, Rifkin MR, Rutherford GW. Using respondent-driven sampling methodology for HIV biological and behavioral surveillance in international settings: a systematic review. *AIDS Behav*. 2008;12(suppl 4):S105–30.
25. Zavaleta C, Fernandez C, Konda K, Valderrama Y, Vermund SH, Gotuzzo E. High prevalence of HIV and syphilis in a remote native community of the Peruvian Amazon. *Am J Trop Med Hyg*. 2007;76(4):703–5.
26. Minichiello V, Rahman S, Hussain R. Epidemiology of sexually transmitted infections in global indigenous populations: data availability and gaps. *Int J STD AIDS*. 2013;24(10):759–68.
27. Mirande A. The Muxes of Juchitan: a preliminary look at transgender identity and acceptance. *California West Int Law J*. 2011;42(2):30. <https://www.scholarlycommons.law.cwsl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1059&context=cwilj>. Accessed January 10, 2018.
28. LeCompte ME, Schensul JJ, Singer M, Trotter RT, Cromley EK. Mapping social networks, spatial data, and hidden populations. Lanham: Altamira Press: Division of Rowman and Littlefield Publishers Inc; 1999. p. 191.