

## Knowledge and perceptions on the existence of Voluntary Counseling and Testing (VCT) Centers and associated factors among Brazilian LGBT+ individuals

Conhecimento e percepções sobre a existência dos Centros de Testagem e Aconselhamento (CTA) e fatores associados em pessoas LGBT+ brasileiras

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**Abstract** *In Brazil, the advent of voluntary and counseling testing (VCT) has provided many benefits in the fight against AIDS. A sectional open web survey was conducted to investigate the Brazilian LGBT+ individuals' knowledge and perceptions of the existence of VCT centers and their associations with risk behavior and other variables of interest. The study instrument included questions on sociodemographic and behavioral variables, knowledge on VCT, access to and use of it, beliefs about HIV infection, test results, and risk perception. The Risk Behavior Score for HIV infection (RBS) was also used. A total of 1,630 volunteers participated in the survey, of whom 56.8% were men. Of these, 96.1% declared themselves as (MSM). Almost 50% of the participants had never heard about the existence of VCT, which was a higher knowledge score among MSM. A low frequency of participants had a clear perception of the risks to which they are exposed, whereas those with higher RBS were aware of the existence of VCT. As VCT is critical for the implementation of policies to combat and prevent HIV and other sexually transmitted diseases, our results can contribute to a better understanding of the influence of VCT on the frequency of testing, serological surveillance, and routine counseling for key populations.*

**Key words** *Sexual and gender minorities, Public health, Health risk behaviors*

**Resumo** *No Brasil, o advento dos centros de testagem e aconselhamento (CTA) trouxe muitos benefícios na luta contra a Aids. Um estudo transversal do tipo web survey foi realizado para investigar o conhecimento e as percepções dos indivíduos LGBT+ brasileiros sobre a existência dos CTAs e suas associações com comportamentos de risco e outras variáveis de interesse. O questionário incluiu questões sociodemográficas e comportamentais, conhecimento sobre o CTA, acesso e uso, crenças sobre a infecção pelo HIV, resultados de testes e percepção de risco. O escore de comportamento de risco (RBS) também foi utilizado. Participaram 1.630 voluntários (56,8% homens). Destes, 96,1% se autodeclararam homens que fazem sexo com homens (HSH). Quase 50% dos participantes não conhecem os CTAs, sendo este conhecimento maior entre os HSHs. Uma baixa frequência de participantes tem percepção clara dos riscos a que estão expostos, e os HSHs com maior pontuação no RBS estão cientes da existência dos CTAs, que são fundamentais na implementação de políticas de combate e prevenção ao HIV e outras doenças sexualmente transmissíveis. Nossos resultados contribuem para a melhor compreensão da sua influência na frequência de testagem, na vigilância do status sorológico e no aconselhamento em populações-chave.*

**Palavras-chave** *Minorias sexuais e de gênero, Saúde pública, Comportamentos de risco à saúde*

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## Introduction

Aiming to contain the HIV epidemic, in the late 1980s the Brazilian Ministry of Health created a system of anonymous testing, which included offering free serological tests as a strategy for AIDS control. These services were then called voluntary counseling and testing centers (VCT), which aimed to assist people at risk of infections such as homosexuals, sex workers and injecting drug users<sup>1</sup>. VCT was part of AIDS programs developed within the Sistema Único de Saúde (SUS) – National Health System in Brazil – and motivated by sanitary movements for prevention and free access to care<sup>2-4</sup>.

Considering the changes in the AIDS epidemic observed in the mid of 1990s, which showed an increase in the number of new cases among heterosexuals, women, low-income people and those living in medium-sized municipalities<sup>5</sup>, VCT centers expanded the availability and accessibility of services to the general population and became a reference for universal access to testing, counseling and prevention of HIV, and other sexually transmitted infections (STI)<sup>6</sup>.

The first VCT center in Brazil was established in 1988 in Porto Alegre, State of Rio Grande do Sul, and the second one was established in the city of São Paulo in 1989<sup>1</sup>. There are currently 460 VCT centers in Brazil<sup>4</sup>, mostly preferentially implemented in cities with medium and high rates of HIV incidence. Consequently, the Brazilian Ministry of Health estimates that the rate of HIV incidence is 1.4 times greater in cities with VCT than in those where these services are unavailable<sup>6</sup>. Since 2005, the Ministry of Health has developed guidelines for HIV/AIDS care in public primary care services, including counseling and incentive for providing HIV diagnosis<sup>7</sup>. In 2012, rapid tests for detection of HIV, syphilis and other diseases began to be offered in primary health care services<sup>8</sup>. Despite this expansion in the availability of testing and diagnosis of HIV infection, VCT centers remain being important for promoting physical, emotional and social health of individuals by contributing to preventing, diagnosing and assisting with sexually transmitted infections.

Despite these efforts, Brazil stands out in Latin America for its continued growth in the AIDS epidemic among young homosexual and heterosexual populations<sup>9,10</sup>. According to the Annual Epidemiological Bulletin on HIV/AIDS, there were 41,919 new cases of HIV and 37,308 of AIDS diagnosed in 2019. Of these, 51.6% are

concentrated in homosexual and bisexual men, compared to 31.3% of heterosexuals and 1.9 % of injecting drug users (IDUs). Among women, 86.6% of the cases fall into the category of heterosexual exposure and 1.3% into the category of IDU. In addition, the highest concentration of AIDS cases is among young people aged from 25 to 39 years old of both genders, with 492,800 records. The cases in this age group correspond to 52.4% of male individuals and to 48.4% of female ones<sup>11</sup>.

Many benefits in the fight against AIDS, mainly concerning the early diagnosis of HIV infection, are associated with the advent of VCT in Brazil. However, studies have pointed out several limitations to the service, mainly vulnerabilities and access difficulties in different Brazilian regions<sup>12,13</sup>. In addition, the literature on counseling and testing services concentrates on the health professionals' experiences and gives less attention to their practices and population's perceptions on access and use.

In light of the above, the objective of the present study was to investigate the knowledge and perceptions of Brazilian LGBT+ individuals on the existence of VCT centers and their association with risk behavior and other variables of interest. As VCT centers are critical for the implementation of policies to combat and prevent HIV and other STIs, the results of this study can contribute to a better understanding of the influence of VCTs on the frequency of testing, serological surveillance and routine counseling for key populations. Furthermore, the knowledge of the LGBT+ population on the existence of VCT and their perceptions on the services provided have never been studied, and these are the gaps the present study aims to fill.

## Methods

### Study Design and Settings

This was a cross-sectional study based on an open web survey. Data were collected as part of a larger research project aimed at assessing the LGBT+ population's perceptions, attitudes and practices regarding blood donation and other health activities. Data collection occurred between October 2019 and March 2020 by using an online questionnaire. All the data were collected before the period of social distancing and isolation measures due to the coronavirus disease 2019 (COVID-19) pandemic in Brazil.

Eligibility criteria included considering themselves as a member of the LGBT+ community, being 18 years of age or older, living in Brazil and being Portuguese-speaking. Dissemination of the study and invitation to participate in it were achieved through ads posted on social media such as Twitter, Facebook and WhatsApp. The ads contained a link to an article published by the University of São Paulo news agency, which included general information about the study, inclusion criteria and an email address for interested people to contact the researchers and access the online questionnaire.

### Variables

Sociodemographic and behavioral variables were included. The respondents were asked to provide their profile information, including age, gender, sexual orientation, occupation, education level, marriage status, monthly income and self-perception of health (i.e. good, regular or poor). Questions on knowledge, access, use and previous experiences with VCT services were also included. As for HIV infection, we included questions on beliefs about being infected with HIV, previous test results, self-perception of risk and risk behavior score (RBS)<sup>14</sup>.

RBS for HIV infection was proposed by Rocha et al.<sup>14</sup> for use in a population of men who have sex with men (MSM). This score considers number of sexual partners, type of sexual partner (i.e. stable, casual or commercial) and condom use in the past 12 months for risk classification. RBS values range from zero to 48 points, in which the participants are classified into three categories: low (0-2 points), median (3-8 points) and high-risk behavior (9 points or more).

### Ethical issues

This study was reviewed and approved by the Research Ethics Committee of the Ribeirão Preto Medical School of the University of São Paulo under registration number CAAE 06415519.7.0000.5440. An informed consent form was the first page of the online questionnaire. Participants could end their participation at any time, and the answer categories to all questions included the option "I prefer not to answer". Participation in the survey was voluntary, and we did not give the participants any financial incentives or gifts to participate because this practice is not allowed by the Brazilian ethical norms (Resolution CNS 466/12) for studies on human subjects.

The survey was designed in accordance with the checklist for reporting results of Internet e-surveys (CHERRIES) guidelines<sup>15</sup>. Data were collected and managed by using REDCap electronic data capture tools hosted by the Ribeirão Preto Medical School. The participants could select "I agree" if they wished to continue with the survey or otherwise they could select "I do not agree".

### Statistical analysis

Data from REDCap were exported to R software, version 3.6.2, for descriptive analysis. For presentation of the results, the participants were divided into MSM, MDSM (LGBT men who do not have sex with other men) and women (lesbians, bisexuals, asexual and pansexual). The strength of the association between knowledge on the existence of VCT centers and beliefs about being infected with HIV, previous test of HIV, self-perception of HIV risk and RBS was measured by using the Cramér's V coefficient<sup>16</sup>. Effect sizes were interpreted according to Rea and Parker<sup>17</sup>, in which associations with standards of reference below 0.10 are "negligible"; between 0.10 and 0.20 are "weak"; between 0.20 and 0.40 are "moderate", and between 0.40 and 0.60 are "relatively strong". P-values for these associations were computed for a Cochran-Mantel-Haenszel test stratified by groups (MSM, MDSM, and women). When considering only MSM participants, P-values were computed for a Monte Carlo test with 20.000 replicates, as proposed by Hope<sup>18</sup>. The functions "mantelhaen.test" and "chisq.test" from the R software, the latter with the argument "simulate.p.value = TRUE", were used to obtain these p-values at a significance level of 0.05.

### Results

Between October 2019 and February 2020, 2,064 volunteers answered the online questionnaire, but 434 were excluded from the study because they did not meet the inclusion criteria or because they did not complete all the questions. Thus, 1,630 participants were included in the present study. Of those, 926 (56.8%) were men and 704 (43.2%) women. Among men, 890 (96.1%) declared themselves as MSM. Table 1 describes the participants (MSM, MDSM, and women) according to sociodemographic and behavioral variables. In all groups, most participants were between 18 and 25 years old (72.2%,

**Table 1.** Description of the participants according to sociodemographic and behavioral variables. Brazil, 2020.

	Total <i>n</i> (%)	Women <i>n</i> (%)	MDSM <i>n</i> (%)	MSM <i>n</i> (%)
Age in years				
18-25	1008 (61.8)	508 (72.2)	30 (83.3)	470 (52.8)
26-35	515 (31.6)	156 (22.2)	5 (13.9)	354 (39.8)
> 35	106 (6.5)	39 (5.5)	1 (2.8)	66 (7.4)
Didn't want to answer	1 (0.1)	1 (0.1)	0 (0.0)	0 (0.0)
Sexual orientation				
Homosexual (gay or lesbian)	1054 (64.7)	275 (39.1)	18 (50.0)	761 (85.5)
Bisexual	502 (30.8)	376 (53.4)	16 (44.4)	110 (12.4)
Asexual	16 (1.0)	15 (2.1)	1 (2.8)	0 (0.0)
Pansexual	55 (3.4)	38 (5.4)	1 (2.8)	16 (1.8)
Didn't want to answer	3 (0.2)	0 (0.0)	0 (0.0)	3 (0.3)
Occupation				
Student	591 (36.3)	298 (42.3)	23 (63.9)	270 (30.3)
Teacher	92 (5.6)	29 (4.1)	1 (2.8)	62 (7.0)
Lawyer	36 (2.2)	8 (1.1)	0 (0.0)	28 (3.1)
Trainee	61 (3.7)	32 (4.5)	1 (2.8)	28 (3.1)
Physician	44 (2.7)	12 (1.7)	0 (0.0)	32 (3.6)
Psychologist	33 (2.0)	14 (2.0)	1 (2.8)	18 (2.0)
Researcher	21 (1.3)	9 (1.3)	0 (0.0)	12 (1.3)
Other health professional	81 (5.0)	30 (4.3)	0 (0.0)	51 (5.7)
Unemployed	64 (3.9)	27 (3.8)	3 (8.3)	34 (3.8)
Other	474 (29.1)	168 (23.9)	3 (8.3)	303 (34.0)
Didn't want to answer	133 (8.2)	77 (10.9)	4 (11.1)	52 (5.8)
Region				
Center-West	63 (3.9)	29 (4.1)	3 (8.3)	31 (3.5)
Northeast	88 (5.4)	28 (4.0)	1 (2.8)	59 (6.6)
North	30 (1.8)	11 (1.6)	0 (0.0)	19 (2.1)
Southeast	1261 (77.4)	555 (78.8)	28 (77.8)	678 (76.2)
South	168 (10.3)	76 (10.8)	3 (8.3)	89 (10.0)
Didn't want to answer	20 (1.3)	5 (0.7)	1 (2.8)	14 (1.6)

it continues

83.3%, and 52.8%, among women, MDSM and MSM, respectively), single (76.5%, 94.4% and 79.6%, respectively) and classified their health as good (67.2%, 63.9% and 81.2%, respectively). Despite the greater participation of individuals from the southeast region of Brazil (76.2%), all the Brazilian regions were represented.

Table 2 shows the participants' answers according to their knowledge on the existence of VCT centers, use of the service provided and reasons of satisfaction or dissatisfaction with it. Considering the total sample, almost 50% of the participants had never heard about the existence of VCT centers. Among those who know what a VCT is, almost 70% reported that there is a VCT in their city and the majority have already been in a VCT. The main reason for never visiting a

VCT was a lack of feeling the need for the service both in total sample and different groups. When asked about their satisfaction with VCT, most participants who already used the service reported that they are satisfied (45.6%) or very satisfied (47.1%). Among those dissatisfied, the main reasons for their dissatisfaction were having to wait a long time to be attended (41.4%), lack of trust in the tests or in the staff's capacity (31.0%) and lack of privacy (41.4%).

Table 3 shows the participants' beliefs about being infected with HIV, previous test for HIV, self-perception of HIV risk and RBS according to their knowledge on the existence of VCT centers. Differences were observed in the frequencies of knowledge on the existence of VCT centers, which were higher in MSM than in women and

**Table 1.** Description of the participants according to sociodemographic and behavioral variables. Brazil, 2020.

	Total n (%)	Women n (%)	MDSM n (%)	MSM n (%)
<b>Marital status</b>				
Single	1280 (78.5)	538 (76.4)	34 (94.4)	708 (79.6)
Married/stable union	285 (17.5)	125 (17.8)	2 (5.6)	158 (17.8)
Divorced	11 (0.7)	8 (1.1)	0 (0.0)	3 (0.3)
Other	48 (2.9)	28 (4.0)	0 (0.0)	20 (2.2)
Didn't want to answer	6 (0.4)	5 (0.7)	0 (0.0)	1 (0.1)
<b>Complete higher education</b>				
No	851 (52.3)	432 (61.5)	32 (88.9)	387 (43.5)
Yes	776 (47.7)	269 (38.3)	4 (11.1)	503 (56.5)
Didn't want to answer	1 (0.1)	1 (0.1)	0 (0.0)	0 (0.0)
<b>Living arrangement</b>				
With parents	717 (44.0)	327 (46.4)	23 (63.9)	367 (41.2)
With husband/boyfriend/partner	256 (15.7)	109 (15.5)	2 (5.6)	145 (16.3)
With other relatives	59 (3.6)	29 (4.1)	2 (5.6)	28 (3.1)
In a student housing	259 (15.9)	115 (16.3)	4 (11.1)	140 (15.7)
Alone	308 (18.9)	110 (15.6)	5 (13.9)	193 (21.7)
Other	28 (1.7)	11 (1.6)	0 (0.0)	17 (1.9)
Didn't want to answer	3 (0.2)	3 (0.4)	0 (0.0)	0 (0.0)
<b>Income<sup>(a)</sup></b>				
Without income	202 (12.4)	107 (15.2)	7 (19.4)	88 (9.9)
Less than 1 MW	199 (12.2)	110 (15.6)	5 (13.9)	84 (9.4)
From 1 to 2 MW	457 (28.0)	193 (27.4)	8 (22.2)	256 (28.8)
From 3 to 4 MW	354 (21.7)	142 (20.2)	4 (11.1)	208 (23.4)
From 5 to 8 MW	197 (12.1)	56 (8.0)	2 (5.6)	139 (15.6)
From 9 to 15 MW	107 (6.6)	44 (6.2)	3 (8.3)	60 (6.7)
> 15 MW	45 (2.7)	16 (2.2)	1 (2.8)	28 (3.1)
Didn't want to answer	69 (4.3)	36 (5.2)	6 (16.7)	27 (3.0)
<b>Self-perception of health</b>				
Good	1218 (74.7)	472 (67.0)	23 (63.9)	723 (81.2)
Regular	383 (23.5)	211 (30.0)	13 (36.1)	159 (17.9)
Poor	26 (1.6)	18 (2.6)	0 (0.0)	8 (0.9)
Didn't want to answer	3 (0.2)	3 (0.4)	0 (0.0)	0 (0.0)

MDSM: men who do not have sex with men; MSM: men who have sex with men; MW: minimum wage. <sup>(a)</sup> At the time of data collection, the MW was 1045 Brazilian Reals per month, which is equivalent to 226.8 US Dollars.

Source: Athors.

MDSM ( $P < 0.01$ , Cramér's  $V = 0.237$ ). Both total ( $P < 0.01$ ,  $V = 0.116$ ) and MSM samples ( $P < 0.01$ ,  $V = 0.128$ ) had a weak association between beliefs on HIV and knowing what a VCT is. Also, the frequencies of participants who had already been tested for HIV were higher among those who knew what a VCT is. The correspondent Cramér's coefficients suggest moderate associations ( $V = 0.246$  and  $V = 0.212$ , respectively, corresponding  $P$ -values  $< 0.01$ ). In addition, it was observed a low frequency of participants with a clear perception of the risks to which they are exposed considering the total sample as most of

them knew the VCT services. On the other hand, according to the RBS applied to MSM individuals, those who had higher scores of risk behavior knew about the existence of VCT centers ( $P < 0.01$ ,  $V = 0.124$ ).

## Discussion

The results of the present study pointed out that MSM individuals appear to have a greater knowledge on the existence of VCT centers and familiarity with the services provided. Recent studies

**Table 2.** Distribution of the participants according to their knowledge on the existence of VCT centers, use of the service and reasons of satisfaction or dissatisfaction with it. Brazil, 2020.

	Total n (%)	Women n (%)	MDSM n (%)	MSM n (%)
Do you know what a VCT is?				
Yes	603 (38.0)	135 (20.4)	4 (11.1)	464 (52.1)
No, but I've heard about it	231 (14.6)	127 (19.2)	3 (8.3)	101 (11.3)
No, never heard about it	751 (47.3)	398 (60.2)	29 (80.6)	324 (36.4)
I do not want to answer	2 (0.1)	1 (0.2)	0 (0.0)	1 (0.1)
Is there a VCT in your city? <sup>(a)</sup>				
Yes	583 (69.9)	142 (54.2)	5 (71.4)	436 (77.2)
No	31 (3.7)	7 (2.7)	0 (0.0)	24 (4.2)
I don't know	220 (26.4)	113 (43.1)	2 (28.6)	105 (18.6)
Have you ever been to a VCT? <sup>(b)</sup>				
Yes	395 (65.5)	53 (39.3)	2 (50.0)	340 (73.3)
No	208 (34.5)	82 (60.7)	2 (50.0)	124 (26.7)
Reason for never going to a VCT <sup>(c)</sup>				
I never felt the need to look for a VCT	163 (78.4)	70 (85.4)	2 (100.0)	91 (73.4)
I need more information on a VCT	24 (11.5)	8 (9.8)	0 (0.0)	16 (12.9)
There are no VCT near where I live	14 (6.7)	2 (2.4)	0 (0.0)	12 (9.7)
I don't trust the people who work at VCT	1 (0.5)	0 (0.0)	0 (0.0)	1 (0.8)
There are many people who criticize the VCT	1 (0.5)	0 (0.0)	0 (0.0)	1 (0.8)
Other	22 (10.6)	7 (8.5)	0 (0.0)	15 (12.1)
Satisfaction level with VCT <sup>(d)</sup>				
Very unsatisfied	8 (2.0)	0 (0.0)	0 (0.0)	8 (2.4)
Unsatisfied	21 (5.3)	3 (5.7)	0 (0.0)	18 (5.3)
Satisfied	180 (45.6)	24 (45.3)	1 (50.0)	155 (45.6)
Very satisfied	186 (47.1)	26 (49.1)	1 (50.0)	159 (46.8)
Reasons for dissatisfaction <sup>(e)</sup>				
I waited a long time to be attended	12 (41.4)	0 (0.0)	0 (0.0)	12 (46.2)
The results took a long time to be delivered	1 (3.4)	0 (0.0)	0 (0.0)	1 (3.8)
It was too crowded	7 (24.1)	0 (0.0)	0 (0.0)	7 (26.9)
The VCT is too far from my home	5 (17.2)	1 (33.3)	0 (0.0)	4 (15.4)
Lack of trust in the tests or team's capability	9 (31.0)	1 (33.3)	0 (0.0)	8 (30.8)
Lack of privacy	12 (41.4)	1 (33.3)	0 (0.0)	11 (42.3)
The length of the consultation was too long	8 (27.6)	1 (33.3)	0 (0.0)	7 (26.9)
Other	9 (31.0)	1 (33.3)	0 (0.0)	8 (30.8)

MDSM: men who do not have sex with men; MSM: men who have sex with men; VCT: Voluntary and Counseling Testing Center. <sup>(a)</sup> Answered only by those who declared that they know what a VCT is or have heard about it. <sup>(b)</sup> Answered only by those who declared that they know what a VCT is. <sup>(c)</sup> Answered only by those who reported never having attended a VCT (more than one option may be selected). <sup>(d)</sup> Answered only by those who reported having gone to a VCT. <sup>(e)</sup> Answered only by those who declared very unsatisfied or unsatisfied with the VCT (more than one option may be selected).

Source: Authors.

on the characterization of users of VCT in Brazil show regional differences regarding the profile of the people who seek assistance, mainly related to sex and socioeconomic characteristics<sup>19</sup>. Some studies have found greater use of VCT services by male individuals who self-declared as MSM and/or bisexuals<sup>13,19</sup>. However, it is important to emphasize that the users' profile is closely related to the type of service offered by each unit. For

example, those units providing prenatal services in cases of high exposure to infection risks tend to receive a larger female audience than other units<sup>19</sup>.

In this way, another point observed is that almost 50% of the total of participants never heard about the existence of VCT centers, and approximately 25% have never had an HIV test or do not remember. Considering that the study was

**Table 3.** Beliefs about being infected with HIV, previous test of HIV, self-perception of HIV risk and the risk behavior score (RBS) according to the knowledge on the existence of VCT centers. Brazil, 2020.

	Do you know what a VCT is?			Cramér's V	P value
	Yes n (%)	No, but I've heard about it n (%)	No, never heard about it n (%)		
Beliefs about being infected with HIV					
Total					
Certainly not	442 (76.2)	173 (76.5)	553 (76.9)	0.116	< 0.01 <sup>(a)</sup>
Probably not	96 (16.6)	43 (19.0)	146 (20.3)		
Not sure	7 (1.2)	7 (3.1)	15 (2.1)		
Yes, but undetectable by tests	26 (4.5)	3 (1.3)	4 (0.6)		
Certainly yes	9 (1.6)	0	1 (0.1)		
MSM					
Certainly not	330 (74.2)	72 (72.0)	214 (70.2)	0.128	< 0.01 <sup>(b)</sup>
Probably not	74 (16.6)	20 (20.0)	74 (24.3)		
Not sure	6 (1.3)	5 (5.0)	12 (3.9)		
Yes, but undetectable by tests	26 (5.8)	3 (3.0)	4 (1.3)		
Certainly yes	9 (2.0)	0	1 (0.3)		
Has been tested for HIV					
Total					
Yes	542 (93.1)	161 (71.2)	433 (60.2)	0.246	< 0.01 <sup>(a)</sup>
No	37 (6.4)	62 (27.4)	275 (38.2)		
I don't remember	3 (0.5)	3 (1.3)	11 (1.5)		
MSM					
Yes	427 (95.5)	87 (87.0)	224 (73.4)	0.212	< 0.01 <sup>(b)</sup>
No	19 (4.3)	12 (12.0)	77 (25.2)		
I don't remember	1 (0.2)	1 (1.0)	4 (1.3)		
Self-perception of HIV risk					
Total					
Yes	112 (19.5)	26 (11.6)	73 (10.2)	0.127	0.02 <sup>(a)</sup>
No	461 (80.5)	199 (88.4)	640 (89.8)		
MSM					
Yes	94 (21.4)	19 (19.2)	46 (15.2)	0.073	0.11 <sup>(b)</sup>
No	346 (78.6)	80 (80.8)	257 (84.8)		
RBS classification <sup>(c)</sup>					
MSM					
Low	107 (23.7)	35 (35.4)	114 (37.7)	0.124	< 0.01 <sup>(b)</sup>
Median	241 (53.3)	54 (54.5)	146 (48.3)		
High	104 (23.0)	10 (10.1)	42 (13.9)		

<sup>(a)</sup> Cochran-Mantel-Haenszel test with adjustment for group (MSM, MDSM and women). <sup>(b)</sup> P-value < 0.05, computed for a Monte Carlo significance test. <sup>(c)</sup> RBS is a tool proposed only for MSM individuals.

Source: Authors.

focused on the LGBT+ population and that the average age of the participants corresponds to the age group with the highest growth of HIV/AIDS in the past years, this result deserves further attention. According to the Brazilian Ministry of Health, the cascade of HIV care shows that 85% of the people living with HIV were diagnosed in

Brazil by the end of 2018, with 66% being under treatment and 62% having viral suppression<sup>4</sup>. Although these data show that access to diagnosis appears to be effective as the stage of infection in which this occurs is still late for 27% of the individuals, especially in the most vulnerable groups of the population<sup>20</sup>. In addition, according to

estimates from the Ministry of Health, around 135,000 people in Brazil are infected with HIV and do not know it. Thus, despite the efforts, there should be an alert that there are cases which are not always diagnosed on time. This points out to the need for improving the dissemination of the services performed at the VCT centers, especially those aimed at the early diagnosis of HIV and other sexually transmitted infections.

As for health status and beliefs about HIV, the answer “not sure” for serological status of HIV among MSM individuals was more frequent compared to those who do not know what VCT is. Among the few participants who clearly perceived the risks they are exposed to, a great part of them know the VCT services. Furthermore, we observed in both total and MSM samples that those participants with higher RBS knew about the existence of VCT centers. In this sense, the reason for seeking VCT services is a common finding reported by the most recent studies on this topic in Brazil. In most VCT centers, spontaneous demand is still very low, that is, most users seek assistance only after some situation is per-

ceived as a high risk of infection. This fact rules out the possibility that individuals frequently exposed to risky behavior are being tested preventively and routinely, which reinforces the importance of counseling<sup>19</sup>.

The present study, however, is not free from limitations. Firstly, the cross-sectional nature of the study does not allow making cause-and-effect interpretations. The questionnaires were administered by means of self-report, which may underestimate or overestimate the prevalence of risk behaviors. Due to the lack of demographic studies characterizing the LGBT+ population in Brazil and the difficulties of accessing this population at a national level, a convenience sample of Brazilian MSM participants was recruited from social media. Thus, it is important to emphasize the difficulties in determining whether the participants represent the Brazilian LGBT+ population. In addition, the sampling method might increase the self-selection of participants. Despite this problem, Weigold *et al.*<sup>21</sup> showed that self-report survey-based instruments can generally be administered through the Internet with good results.

## Collaborations

ML Zucoloto contributed in the study design and plan, coordinated the data collection and drafted the first version of the manuscript. G Galdino contributed in the project idea, data collection and revised the final version of the manuscript. EZ Martinez contributed in the study design and plan, coordinated the data collection, conducted the statistical analysis and revised the final version of the manuscript.

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