

## Chemsex practice among men who have sex with men (MSM) during social isolation from COVID-19: multicentric online survey

Prática de *chemsex* entre homens que fazem sexo com homens (HSH) durante período de isolamento social por COVID-19: pesquisa *online* multicêntrica

Práctica de *chemsex* entre hombres que practican sexo con hombres (HSH) durante período de aislamiento social por la COVID-19: una encuesta multicéntrica en línea

Álvaro Francisco Lopes de Sousa <sup>1</sup>  
Artur Acelino Francisco Luz Nunes Queiroz <sup>2</sup>  
Shirley Verônica Melo Almeida Lima <sup>3</sup>  
Priscilla Dantas Almeida <sup>2</sup>  
Layze Braz de Oliveira <sup>1</sup>  
Jeremias Salomão Chone <sup>4</sup>  
Telma Maria Evangelista Araújo <sup>2</sup>  
Sandra Mara Silva Brignol <sup>5</sup>  
Anderson Reis de Sousa <sup>6</sup>  
Isabel Amélia Costa Mendes <sup>1</sup>  
Sônia Dias <sup>4</sup>  
Inês Fronteira <sup>4</sup>

doi: 10.1590/0102-311X00202420

### Abstract

The aim of this study was to investigate factors associated with sex practice under the effect of drugs (*chemsex*) among men who have sex with men (MSM) during the period of social isolation in the context of the COVID-19 pandemic. A multicenter online survey was applied to Brazil and Portugal in April 2020 when the two countries were under restrictive health measures due to the pandemic. Participants were recruited with an adaptation of the respondent driven sampling (RDS) method in the online environment. Data were collected using social networks and dating apps for MSM. We used bivariate and multivariate logistic regression to produce crude (OR) and adjusted odds ratios (aOR). In a universe of 2,361 subjects, 920 (38.9%) reported engaging in *chemsex* practice, which involved casual partners in 95% of the cases. Higher OR of engaging in *chemsex* were associated with Brazil (aOR = 15.4; 95%CI: 10.7-22.1), not being in social isolation (aOR = 4.9; 95%CI: 2.2-10.9), engaging in casual sex during social distancing (aOR = 52.4; 95%CI: 33.8-81.4), group sex (aOR = 2.9; 95%CI: 2.0-4.4), not presenting any symptom of COVID-19 (aOR = 1.3; 95%CI: 1.1-1.8), not living with the sex partner (aOR = 1.8; 95%CI: 1.2-2.6), and using pre-exposure prophylaxis (aOR = 2.6; 95%CI: 1.8-3.7). The occurrence of *chemsex* was high, especially in Brazil, where the proposed social distancing did not gain adherence by MSM.

COVID-19; Sexual Behavior; Men Who Have Sex with Men; HIV; AIDS

### Correspondence

A. F. L. Sousa  
Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo.  
Av. dos Bandeirantes 3900, Campus Universitário, Ribeirão Preto, SP 14040-902, Brasil.  
sousa.alvaromd@gmail.com

<sup>1</sup> Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, Brasil.

<sup>2</sup> Universidade Federal do Piauí, Teresina, Brasil.

<sup>3</sup> Universidade Federal do Sergipe, Aracaju, Brasil.

<sup>4</sup> Instituto de Higiene e Medicina Tropical, Universidade NOVA de Lisboa, Lisboa, Portugal.

<sup>5</sup> Instituto de Saúde Coletiva, Universidade Federal da Bahia, Salvador, Brasil.

<sup>6</sup> Escola de Enfermagem, Universidade Federal da Bahia, Salvador, Brasil.



## Introduction

The social distancing implemented worldwide in recent months is a public health measure recommended by epidemiologists and adopted by many policymakers in previous pandemics to reduce the probability of an infectious agent's spread in the population, thus slowing the pace of transmission of a disease <sup>1</sup>. In addition to the intended impact of reducing transmission, social distancing can produce impacts on the mental and sexual health of individuals that adhere to it, besides reducing social support, which is particularly important and necessary for a large share of the LBTQ+ population <sup>2</sup>.

Men who have sex with men (MSM) are among the populations for whom the restrictive measures adopted by governments have created difficulties for executing or maintaining affective and sexual practices <sup>2,3</sup>. A recent survey found that Brazilian and Portuguese MSM experience difficulty in remaining socially isolated, since 53% reported engaging in casual sex during social distancing, despite the growing risk of acquiring SARS-CoV-2, the cause of COVID-19. They also reported increased consumption of alcohol and other drugs <sup>3,4</sup>, sometimes associated with sex, thus chemsex <sup>5,6</sup>, or sexual practice under the influence of drugs and chemical substances. Widely reported among MSM <sup>7</sup> before the pandemic, this practice has the purpose of prolonging and enhancing pleasure from the sex act.

The combined use of psychoactive substances during chemsex significantly increases the exposure to sexually transmissible infections (STIs), including in anal sex without condoms, exchanging sex partners during group sex, desiccation, dehydration, and loss of sensitivity, increasing the odds of lesions and bleeding <sup>8</sup>. Meanwhile, the impairment of reasoning can often decrease the capacity and disposition to use condoms, to adopt pre-exposure prophylaxis (PrEP) properly, and to take protective measures to minimize the risk of SARS-CoV-2 infection <sup>8,9</sup>.

Since this scenario of social isolation with its current proportions is a recent and unprecedented experience for the population, particularly for MSM, and given the lack of studies on this topic in the literature, our objective was to investigate the factors associated with chemsex among MSM during social isolation in the context of the COVID-19 pandemic.

## Methods

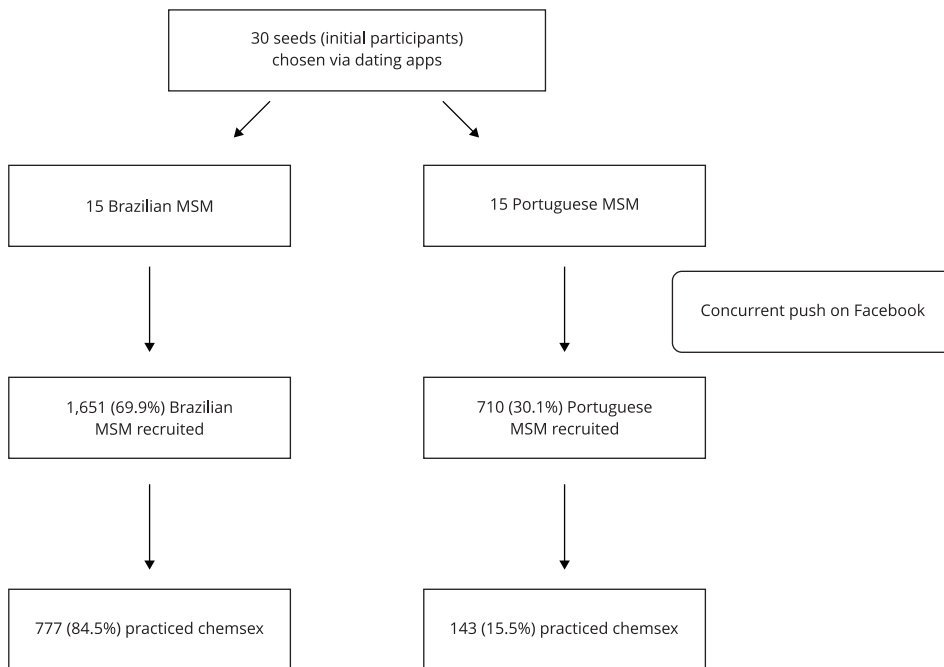
The results are from the project entitled *40tena*, derived from the cohort study *In\_PrEP Brazil/Portugal*, led by the Institute of Hygiene and Tropical Medicine, NOVA University of Lisbon (IHMT-NOVA), Portugal, and the University of São Paulo (USP), Brasil. It is an online multicenter survey applied to all 26 states of Brazil and the Federal District as well as to 15 of Portugal's 18 districts. The data were collected dynamically in two weeks of April 2020, while the two countries were experiencing restrictive health measures such as social distancing and isolation. The research project and presentation of these manuscripts were oriented by the STROBE (checklist of items that should be included in reports of observational studies) tool and the CHERRIES (The Checklist for Reporting Results of Internet E-Surveys).

Participation in the survey included 2,361 MSM, 1,651 (69.9%) from Brazil and 710 (30.1%) from Portugal. For this study, 920 (38.9%) MSM were eligible, having practiced chemsex during social distancing and isolation.

Participants were recruited using the respondent driven sampling (RDS) method in the online environment. In this method, the participant himself is responsible for recruiting other individuals from their same category, using social networks. To meet the method's requirements, we selected 15 MSM with different characteristics in relation to: location in the country (divided according to the two countries' regions); race/color (white and non-white); age (youth, adults, and elderly); and schooling. These 15 individuals were the first participants and were called "seeds". Each participant received the link and was oriented to announce the survey and invite MSM from their social network until a significant sample was obtained. The seeds were identified through two dating apps based on geolocation (*Grindr* and *Hornet*), by direct chat with users online, through an adaptation of the time location sampling (TLS) technique based on previous methods <sup>10,11,12</sup>, as shown in Figure 1.

**Figure 1**

Fluxograma de coleta de dados.



MSM: men who have sex with men.

The researchers also used push on the Facebook social network to address the MSM population from 18 to 60 years of age (the age limit imposed by the social network). Through a fixed posting on the official survey webpage (<https://www.facebook.com/taafimdeque/>), accompanied by an electronic link, access was provided to the free and informed consent form and the survey questionnaire. We only enrolled individuals that identified as men (cis or trans), 18 years or older, and living in Brazil or Portugal. People that did not speak Portuguese and tourists were excluded.

A data collection form was created and validated in its European Portuguese and Brazilian Portuguese versions (face-content) by a team of three experts from the two countries. This form was hosted in a specific data collection site that only allowed one answer per IP (internet protocol), for security reasons. The instrument was divided into four sections with 46 questions, mostly multiple choice, some mandatory before proceeding to the next item. The questions addressed:

- (1) Sociodemographic information (age; gender identity; schooling; sexual orientation; type of relationship; country; state; place of residence);
- (2) Social well-being and coping during social distancing;
- (3) Sexual practices and activities during the pandemic (casual sex; sex under the effect of drugs; group sex; sex with condoms; protective strategies; partner-seeking strategies; sexual frequency; and protective measures against COVID-19);
- (4) sexual practices and activities prior to the pandemic (use of prep and pep – post-exposure prophylaxis; partner-seeking strategies; knowledge on stis; and testing);

To describe the target factors, we conducted descriptive analyses of the numerical and categorical variables. We then developed a multivariate model with variables previously associated with the outcome in the bivariate analysis: “practiced chemsex”. The binary dependent variable was sex under the effect (1) or not under the effect (0) of legal and/or illegal drugs.

The bivariate and multivariate logistic regression generated odds ratios (OR) and adjusted odds ratios (aOR) with the explanatory variables and the respective 95% confidence intervals (95%CI) indicating the odds of practicing chemsex, categorized as yes or no. The analysis considers the multivariate model's best performance in terms of accuracy, sensitivity, and specificity (receiver operating characteristic – ROC), proving that the resulting statistic performance was superior to chance.

The primary project obtained the proper authorizations and ethical approvals in Brazil and Portugal, and due to the addition of questions, an amendment was submitted and approved, allowing to conduct the study. Free and informed consent was obtained online.

## Results

Mean age of participants was 31.03 years (18-66), and the median number of sex partners was 2.0 (1 to 32) during social isolation. Chemsex practice in Brazil (69.9%) was more than twofold that of Portugal (30.1%), and nearly all of the participants (95%) engaged in casual sex. Group sex was reported by 31.4%, and sex without condoms was reported by 47.6% (Table 1).

Multivariate analysis of factors associated with chemsex evidenced that MSM in Brazil show 15.4 higher odds (95%CI: 10.7-22.1) of practicing sex under the effect of drugs when compared to those living in Portugal. Independently of living in Portugal or Brazil, MSM that claimed they were not in social isolation presented 4.9 higher odds (95%CI: 2.2-10.9) of practicing chemsex. Meanwhile, MSM that reported casual sex during the social distancing period presented 52.4 higher odds (95%CI: 33.8-81.4) of engaging in sex under the effect of drugs, a result corroborated by the strong correlation (0.7) between the variables.

Those who reported group sex during the social distancing period presented 2.9 higher odds (95%CI: 2.0-4.4) of engaging in chemsex. We found that MSM who reported occasions when they did not want or could not adopt any protective measure against COVID-19 showed 2.2 higher odds (95%CI: 1.7-3.1) of practicing chemsex, and those with no symptoms of COVID-19 had 1.3 higher

**Table 1**

Descriptive analysis of target factors during social isolation and strategies understood/used as protective against COVID-19 infection by men who have sex with men (MSM) that practiced chemsex. Brazil and Portugal, 2020 (n = 920).

Target factors	n	%
Gender identity		
Man	911	91.0
Trans or non-binary man	9	9.0
Country of residence		
Brazil	777	84.5
Portugal	143	15.5
Lives in metropolitan area		
Yes	667	72.5
No	253	27.5
Type of relationship		
Single	674	24.9
In a fixed relationship	229	1.8
In a polyamorous relationship	17	73.3
Serological status		
HIV-positive	113	12.3
HIV-negative	694	75.4
Don't know	113	12.3

(continues)

**Table 1 (continued)**

Target factors	n	%
Are you in social isolation?		
No	62	6.7
Partially	303	32.9
Yes	555	60.3
How long have you been in isolation? (days)		
Less than 29	173	20.6
30 to 45	537	64.1
More than 45	128	15.3
How would you classify the impact of social isolation on your life?		
Low impact	115	12.5
Medium impact	328	35.7
High impact	477	51.8
With whom do you usually have sex?		
Casual partner	612	66.5
Fixed partner	186	20.2
Casual/Fixed partner	122	13.3
Do you live with your sex partner?		
No	782	85.0
Yes	138	15.0
<b>During this period of social distancing</b>		
Have you had casual or occasional sex?		
Yes	874	95.0
Have you looked for paid sex?		
Yes	47	5.1
Have you had sex simultaneously with 2 or more people (ménage)?		
Yes	289	31.4
Have you had sex without protection?		
Yes	438	47.6
<b>To protect from cross-transmission of SARS-CoV-2</b>		
Have you avoided kissing during sexual relations?		
Yes	219	23.8
Have you washed your hands with soap and water for at least 20 seconds before and after sex?		
Yes	386	42.0
Have you disinfected the environment before and after sex?		
Yes	195	21.2
Have you checked whether the partner is also in isolation?		
Yes	480	52.2
Have you checked whether he had symptoms?		
Yes	438	47.6
Did you use PrEP/Truvada?		
Yes	201	21.8
Have you adopted more common protective measures (mask wearing, handwashing)?		
Yes	363	39.5
Were there times when you didn't want or couldn't adopt any protective measures?		
Yes	352	38.3

PrEP: pre-exposure prophylaxis.

odds (95%CI: 1.1-1.8) of practicing sex under the effect of psychoactive substances. Not living with the partner (aOR = 1.8; 95%CI: 1.2-2.6) and using PrEP (aOR = 2.6; 95%CI: 1.8-3.7) also substantially increased the odds of engaging in chemsex (Table 2).

## Discussion

This was the first study so far to analyze chemsex practice associated with sociodemographic factors and sexual behaviors during the social distancing period caused by the COVID-19 pandemic in Brazil and Portugal. A significant portion (95%) of MSM that engaged in chemsex did so in sex with casual partners during the pandemic's upward epidemiological curve in both countries (April 2020).

Engaging in casual sex was the factor with the highest odds of chemsex practice according to the study's findings and may be related to the false feeling of security in the adoption of some so-called protective practices against COVID-19. Corroborating this hypothesis, users of PrEP/Truvada showed higher odds of engaging in chemsex, and a relevant share of MSM (21.8%) adopted PrEP/Truvada as a measure they viewed as protection against SARS-CoV-2. A possible explanation for this practice may be the incorrect understanding of the discussion on the potential effect of prophylactic

**Table 2**

Bivariate and multivariate analysis of factors associated with chemsex during social isolation. Brazil and Portugal, 2020.

Factors	OR	aOR	95%CI	p-value
Resident of Brazil or Portugal?				
Portugal (reference)				
Brazil	3.5	15.4	10.7-22.1	< 0.001
Are you practicing social distancing?				
Yes (reference)				< 0.001
Partially	2.5	1.1	0.8-1.4	0.823
No	3.3	4.9	2.2-10.9	< 0.001
Casual sex during the quarantine?				
No (reference)				
Yes	53.4	52.4	33.8-81.4	< 0.001
Group sex during the quarantine?				
No (reference)				
Yes	7.5	3.0	2.0-4.4	< 0.001
Were there times when you didn't want or couldn't adopt any protective measures?				
No (reference)				
Yes	0.7	2.3	1.7-3.1	< 0.001
Have you had symptoms during the quarantine?				
Yes (reference)				0.062
No	2.3	1.3	1.1-1.8	
Are you using PrEP?				
No (reference)				
Yes	1.2	2.6	1.8-3.7	< 0.001
Do you live with your sex partner?				
Yes (reference)				
No	0.9	1.8	1.2-2.6	< 0.004

95%CI: 95% confidence interval; PrEP: pre-exposure prophylaxis; OR: odds ratio; aOR: adjusted odds ratio.

Omnibus tests:  $p < 0.001$ /Nagelkerke  $R^2$ : 0.589/overall percentage: 83.1%/ROC curve: 0.88 ( $p < 0.001$ ; 95%CI: 0.870-0.905).

drugs for SARS-CoV-2 in the popular media<sup>13</sup>. Some MSM may have confused PrEP as a strategy, that is, pre-exposure prophylaxis, as having a similar mechanism for SARS-CoV-2, which may have motivated the maintenance of sexual relations during the pandemic. This attitude may also have been influenced by the publication of preliminary results of recent studies<sup>14,15</sup> in Brazil on the potential of tenofovir, one of the antiretrovirals used in Truvada, to decrease the length of hospitalization for SARS-CoV-2. This situation merits watching among MSM who access PrEP in the healthcare system, in order to strengthen health education activities. In the absence of evidence of efficacy for the prevention of COVID-19, the assumption runs the risk of inducing people using PrEP to neglect efficacious measures to protect against SARS-CoV-2 infection that are recommended by health agencies during social isolation<sup>3</sup>.

Another mistaken measure was to verify the presence of symptoms between the sex partners. The mechanism of infection in COVID-19 makes this measure basically useless, because COVID-19 has a high proportion of asymptomatic individuals (80%)<sup>16</sup>, there is transmission during the incubation period<sup>17</sup> (1 to 14 days after contact with the virus), and after improvement in the signs and symptoms, the virus can still be found in the rectal canal for up to 15 days, with the risk of transmission through oral-rectal sex (rimming or anilingus)<sup>18</sup>. Such findings indicate the need for implementation of high-impact measures directed to sexual healthcare for MSM, in order to reduce the knowledge gaps and stereotypes in health and raise the awareness of these men to care for their health.

Our results show that chemsex practice in Brazil exceeded that in Portugal by more than twofold, which may explain why living in Brazil was associated with higher odds of chemsex practice. Studies prior to the onset of the COVID-19 pandemic already showed that sex under the effect of psychoactive substances was quite common among Brazilian MSM<sup>19</sup>, and that maintenance of this practice at high levels raises concern, potentially reinforcing the thought that social isolation was not effective in the country, especially among MSM. Although social distancing is currently the most effective non-pharmacological measure to prevent SARS-CoV-2 infection, it is still happening with a heterogenous and only partially effective pattern in Brazil's states<sup>20</sup>, which are seeing their social distancing rates decreasing while the mortality curve and the curve of new cases are only slightly flattened<sup>21</sup>, so that "not practicing social distancing" was a factor associated with engaging in chemsex.

However, Brazilians' situation appears to be particularly emblematic, since the continuous growth of cases has already forced them to stay at home for more than two months (at the time this survey was being conducted), pressuring the population into social isolation. Thus, during the prolonged "quarantine", moments of casual sex with anonymous partners under the effect of drugs and with multiple partners may be interpreted as a brief moment of "relaxation" and escape from reality<sup>22,23</sup>.

The search, even though hedonistic, also involves acknowledging limits<sup>24</sup> and balancing risk reduction strategies, although of dubious effectiveness. Thus, the search for physical pleasure may be a response to a prolonged period of stress and isolation, in which mentally exhausted persons seek to cope with an "invisible" danger<sup>25</sup>. In the attempt to release these tensions, the search for psychoactive substances reflects the desire for pleasure and for release from worries/search for control<sup>26</sup>.

Historically, periods of mandatory quarantine have been met with resistance, especially among the male population, since the transgression of norms may be associated with the social construction of masculinities, which may also influence affective and sexual standards<sup>27</sup>.

In fact, the pandemic has caused an abrupt break in persons' social interaction, jeopardizing daily flows, practices, and affective and sexual encounters. Both in Brazil and Portugal, no educational and/or instructive measures have been taken by the governments to present alternative strategies for dealing with the repercussions on sexual and reproductive health imposed by social isolation, unlike other countries such as Argentina and the United States, which have published official documents with orientation and recommendations on alternative sexual practices including masturbation, virtual sex, *sexting* (posting erotic messages), besides orientation on preventive measures during sexual practice<sup>27</sup>.

Persons that practice chemsex associate it with a significant improvement in the quality of sex, due to the decreased inhibition and increased sexual arousal and pleasure. When drugs are combined with sex sessions, the latter can be prolonged and involve multiple partners and more challenging sexual practices such as fisting and double penetration<sup>28</sup>. Corroborating this assertion, ménage or group sex was an important factor associated with engaging in chemsex. This finding becomes even more

problematic due to the juxtaposition of exposures, since the use of drugs can decrease the perception of risk in MSM, reducing adherence to preventive measures against STIs, while meeting multiple persons with different histories of exposure to SARS-CoV-2 in the same place for long periods of time can increase the odds of infection with the virus <sup>29</sup>.

The use of technologies to facilitate casual encounters may also play an important role in this practice, since it easily, anonymously, and conveniently allows MSM to align their desires and practices with those of users in the codes for posts on social networks, such as CF (chill fun) or the use of emojis (snowflakes, ice cream, lightning) as “codes” known by the MSM community for an invitation to chemsex practice <sup>30</sup>.

The apps, as environments for MSM sociability, can increase the exposure to STIs. They can also be viewed as platforms for harm reduction interventions, serving as ambivalent tools for risk and protection <sup>10,11,12</sup>. These strategies are even more important in the Brazilian scenario when compared to the Portuguese, since their implementation in Portugal is seen as a model even in the European Union, while in Brazil there is a prevailing prohibitionist climate that limits the activities in education and prevention focused on sexual life in general.

Given the MSM population’s needs and situation of vulnerability (historically to STIs and now to SARS-CoV-2 infection), it is essential to develop risk reduction strategies and policies targeted to these men in order to educate them and emphasize the importance of healthcare. We need to understand the reasons leading MSM to expose themselves to these situations, even in crucial moments like the present. Publicizing information on sexual practice and on the less harmful use of drugs with a smaller group of people, or at least with less turnover of sex partners, and encouraging combined prevention of STIs and COVID-19 can be effective actions in the current pandemic.

We acknowledge a series of limitations in this study. The first is that it was conducted in countries with major cultural, economic, and population differences. The second limitation is the cross-sectional design, which did not allow assessing causality or whether the on-going social isolation increased the occurrence of risky sexual practices for STIs and COVID-19.

Finally, the online data collection method was based on self-reported information by occasional sampling, and although the study was conducted in all regions of both countries, the lack of a sample calculation hinders the data’s generalization and may have limited the sample to MSM who are more familiar with the use of internet tools.

## Conclusion

The occurrence of chemsex was high, especially in Brazil, where the proposed social isolation had not raised the awareness of MSM for adherence, given the option for casual sex. Evidently, the search for pleasure proved more relevant than the proposed protective measures against COVID-19, thus leaving MSM more exposed to the disease.



## Contributors

A. F. L. Sousa contributed in the conception and execution of the research project, data analysis and interpretation, writing of the article, and relevant critical revision of the intellectual content. A. A. F. L. N. Queiroz, L. B. Oliveira and I. Fronteira contributed in the conception, planning, data analysis and interpretation, and writing of the article. S. V. M. A. Lima, P. D. Almeida, J. S. Chone, T. M. E. Araújo, S. M. S. Brignol, A. R. Sousa, I. A. C. Mendes and S. Dias contributed in the data analysis and interpretation and writing of the article.

## Additional informations

ORCID: Álvaro Francisco Lopes de Sousa (0000-0003-2710-2122); Artur Acelino Francisco Luz Nunes Queiroz (0000-0002-6350-1908); Shirley Verônica Melo Almeida Lima (0000-0002-9062-0742); Priscilla Dantas Almeida (0000-0002-6574-6335); Layze Braz de Oliveira (0000-0002-9542-1451); Jeremias Salomão Chone (0000-0003-3608-5344); Telma Maria Evangelista Araújo (0000-0001-5628-9577); Sandra Mara Silva Brignol (0000-0002-7728-2304); Anderson Reis de Sousa (0000-0001-8534-1960); Isabel Amélia Costa Mendes (0000-0002-0704-4319); Sônia Dias (0000-0001-5085-0685); Inês Fronteira (0000-0003-1406-4585).

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## Resumo

Investigar os fatores associados à prática do sexo sob o efeito de drogas (chemsex) entre homens que fazem sexo com homens (HSH) durante período de isolamento social, no contexto da pandemia da COVID-19. Inquérito multicêntrico online, aplicado aos territórios de Brasil e Portugal em abril de 2020, enquanto os dois países vivenciavam medidas sanitárias restritivas para a doença. Os participantes foram recrutados valendo-se de uma adaptação do método respondent driven sampling (RDS) ao ambiente virtual. Os dados foram coletados usando redes sociais e aplicativos de encontro voltados a HSH. Utilizamos regressão logística bivariada e multivariada para a produção das odds bruto (OR) e ajustado (ORa). Em um universo de 2361 sujeitos, 920 (38,9%) realizaram a prática do chemsex, que, em 95% dos casos, foi realizada com parceiro casual. Aumentaram as chances de se envolver em chemsex: morar no Brasil (ORa = 15,4; IC95%: 10,7-22,1); não estar em isolamento social (ORa = 4,9; IC95%: 2,2-10,9); fazer sexo casual durante o distanciamento social (ORa = 52,4; IC95%: 33,8-81,4); fazer sexo grupal (ORa = 2,9; IC95%: 2,0-4,4); não apresentar nenhum tipo de sintoma para a COVID-19 (ORa = 1,3; IC95%: 1,1-1,8); não residir com o parceiro (ORa = 1,8; IC95%: 1,2-2,6) e estar em uso da profilaxia pré-exposição (ORa = 2,6; IC95%: 1,8-3,7). A ocorrência de chemsex foi elevada, sobretudo no Brasil, onde o isolamento social proposto não sensibilizou os HSH à adesão.

COVID-19; Comportamento Sexual; Homens que Fazem Sexo com Homens; HIV; AIDS

## Resumen

El objetivo fue investigar los factores asociados a la práctica del sexo bajo el efecto de drogas (chemsex), entre hombres que practican sexo con hombres (HSH) durante el periodo de aislamiento social en el contexto de la pandemia de la COVID-19. Se realizó una encuesta multicéntrica en línea, aplicada al territorio de Brasil y Portugal en abril de 2020, mientras los dos países vivían medidas sanitarias restrictivas por la COVID-19. Los participantes se reclutaron mediante una adaptación del método respondent driven sampling (RDS) al ambiente virtual. Los datos fueron recabados usando redes sociales y aplicaciones de encuentros dirigidos a HSH. Utilizamos la regresión logística bivariada y multivariada para la producción de las odds ratio brutas (OR) y ajustadas (ORa). En un universo de 2.361 sujetos, 920 (38,9%) realizaron la práctica del chemsex, que en el 95% de los casos se realizó con una pareja casual. Aumentaron las oportunidades de implicarse en chemsex: vivir en Brasil (ORa = 15,4; IC95%: 10,7-22,1); no estar en aislamiento social (ORa = 4,9; IC95%: 2,2-10,9); practicar sexo casual durante el distanciamiento social (ORa = 52,4; IC95%: 33,8-81,4); practicar sexo grupal (ORa = 2,9; IC95%: 2,0-4,4); no presentar ningún tipo de síntoma de COVID-19 (ORa = 1,3; IC95%: 1,1-1,8); no residir con la pareja (ORa = 1,8; IC95%: 1,2-2,6) y estar usando la profilaxis previa a la exposición (ORa = 2,6; IC95%: 1,8-3,7). La ocurrencia de chemsex fue elevada, sobre todo en Brasil, donde el aislamiento social propuesto no sensibilizó a los HSH a la adhesión.

COVID-19; Conducta Sexual; Hombres que Hacen Sexo con Hombres; HIV; AIDS

Submitted on 10/Jul/2020

Final version resubmitted on 11/Aug/2020

Approved on 11/Aug/2020