Research Letters

AIDS 2024, **38**:1799–1806

Increasing HIV prevalence rate among men who have sex with men: results of a comparison of two national surveys

Marto Leal[a], Ligia Kerr[a], Rosa M.S. Mota[a], Ana R.C. Motta-Castro[b], Luana N.C. Lima[c], Lisangela C. Oliveira[d], Edgar Merchan-Hamann[e], Ximena Pamela Díaz Bermudez[e], Alexandre K. Pontes[f], Regina C. Moreira[g], Mark Guimarães[h], Ana Maria Brito[i], Inês Dourado[j], Maria Amelia Veras[k], Andréa F. Leal[l], Daniela Knauth[l], Raimunda H.M. Macena[a], Luís Brigido[g], Laio Magno[m] and Carl Kendall[n]

Our objective was to compare HIV prevalence between two national surveys among men who have sex with men in Brazil in 2009 and 2016. HIV prevalence was estimated stratifying by age and socioeconomic status. HIV prevalence increased from 11.9% [95% confidence interval (CI): 9.9–14.3], in 2009, to 19.1% (95% CI: 16.5 – 22.0), in 2016 [odds ratio (OR) = 1.8; 95% CI: 1.3–2.3] increasing 320% among Young MSM of low SES. Political leadership is needed to develop a scientifically sound and inclusive solution.

The HIV epidemic among men who have sex with men (MSM) appears to be increasing in many countries [1,2]. In Brazil, 32% of MSM reported inconsistent condom use in receptive anal intercourse in the last 6 months and almost 50% never tested for HIV [3]. Moreover, awareness of prevention technologies among MSM in Brazil is low [4]. The increase in seroprevalence occurred at a time of political change and growing structural affecting sexual minorities in Brazil and reducing support for LGBTQ+ serving NGOs [5]. The objective of this paper is to compare two surveys (2009, 2016) to explore the association of prevalence among MSM in Brazil.

Two national surveys using Respondent-driven Sampling were conducted among MSM in 11 cities in 2009–2010, and in 12 cities in 2016 in Brazil. To perform this analysis, we selected the nine cities where the surveys were conducted in both rounds. RDS-Analyst and Gile's SS estimator [6] were used to generate a weight for each individual for the two survey rounds in each city. Using the complex analysis functions in STATA v.15.0, data were merged by survey round with each city as a stratum and HIV prevalence calculated.

Much is already known about the factors associated with HIV infection among MSM [7,8]. In our initial analysis we found only two factors associated with HIV status: age and socioeconomic status. Following recommendations from Victora *et al.* [9], we analyzed the socioeconomic and demographic component in an hierarchical model. Victora explains that because these factors are distal determinants and as countless adjustments in the multivariate model are made, they suffer overadjustment and end up losing their statistical association. Age was stratified in <25 vs. ≥25 years and socioeconomic status (SES) as A/B highest; C/D/E lowest. MSM under 25 are identified here as young MSM (YMSM).

The methodology and diagnostics for the 2009 study is detailed in Kerr *et al.* [10]. The methodology for the 2016 study is detailed in Kendall *et al.* [11]. The final sample included 3746 MSM in the first round (2009–2010), and 3956 MSM in the second (2016). The HIV prevalence increased from 11.9% [95% confidence interval (CI): 9.9–14.3] in the first survey round, to 19.4% (95% CI: 16.4–22.9) in the second round, almost two times higher [odds ratio (OR) = 1.8; 95% CI: 1.3–2.4]. YMSM (<25 years) are more likely to be infected in 2016 than in 2009 (OR = 2.7; 95% CI: 1.6–4.6) as are those ≥25 years (OR = 2.3; 95% CI: 1.6–3.3) (Table 1). Stratifying by SES, only individuals with lower SES were more likely to be infected (OR = 2.2; 95% CI: 1.6–3.2) (Table 1). Finally, categorizing by SES (A/B and C/D/E) and age (<25 vs. ≥25 years), the groups more likely to be infected were YMSM (OR = 4.2; 95% CI: 2.5–7.6) and the oldest MSM from C/D/E SES (OR = 2.5; 95% CI: 1.6–3.8).

We documented a high and rising HIV prevalence among MSM in Brazil. However, this increase in HIV cases occurred unevenly, with young and older MSM belonging to lower SWS being most affected. HIV prevalence increased substantially among YMSM (320%) and older MSM (150%) with low SES. Although the HIV prevalence among MSM from higher SES did not change from 2009 to 2016, it is still extremely high compared to the general population [12].

During this decade, men constituted a growing proportion of AIDS cases (27.8% in 2012 to 35.9% in 2021) [13]. Among these male cases, those reporting male–male sex increased from 41.6% in 2012 to 48% in 2021. In 2021, Brazil reported 35 246 cases of AIDS and the sex ratio was 25 cases in men for every 10 women. Among young people aged 15 and 24, this ratio was 36 men for every ten women. Between 2011 and 2021, around 52 500 young people with HIV between 15 and 24 years old, of both sexes, developed AIDS, certainly an unacceptable evolution of the disease [13].

Table 1. HIV prevalence among MSM by age and socioeconomic status (SES) in 2009 and 2016 in selected cities in Brazil.

	2016			2009					
	n/N[#]	%[&]	95% CI[&]	*n*/N[#]	%[&]	95% CI[&]	*P*	OR[&]	95% CI[&]
General	588/3959	19.1	16.5;22.0	398/3746	11.9	9.9;14.3	0.00	1.7	1.3;2.3
Age (years)									
< 25	201/2390	10.0	7.6;12.9	103/1812	4.0	2.8;5.7	0.00	2.6	1.7;4.2
≥ 25	383/1533	31.5	26.7;36.7	285/1842	16.8	13.7;20.5	0.00	2.3	1.6;3.2
Socioeconomic status (SES)									
A/B	227/1811	15.0	11.6;19.1	103/900	14.9	10.6;20.4	0.96	1.0	0.6;1.6
C/D/E	352/2104	22.5	18.726.7	288/2751	11.2	8.9;13.9	0.00	2.3	1.6;3.2
SES[a] and age									
A/B & age < 25	78/1221	6.4	3.9;10.3	26/435	4.3	2.0;8.9	0.37	1.5	0.6;3.9
A/B & age ≥ 25	148/577	30.3	22.9;38.8	76/461	21.8	15.4;30.1	0.13	1.5	0.9;2.7
C/D/E & age <25	129/1169	14.8	11.0;19.8	77/1367	4.0	2.7;5.9	0.00	4.2	2.5;7.3
C/D/E & age ≥ 25	221/918	31.4	25.1;38.4	209/1374	15.6	12.1;19.8	0.00	2.5	1.6;3.8

[a]A and B are higher SES; C, D and E lower SES.
[#]Observed values.
[&]Weighted values.

The global HIV 2030 agenda [14] is an action plan that reflects the interdependence and complexity of a changing world and starts from the recognition that the eradication of poverty, in all its forms and dimensions, is the greatest global challenge to sustainable development. An adequate response to AIDS is no exception. The epidemic will not end without addressing the social determinants of health and vulnerability, as well as structural violence in these different contexts.

Some countries have achieved important successes in the fight against HIV. For example, in Australia, new diagnoses of HIV among MSM have fallen by 57% over the past decade. Sydney, Australia, has reduced new HIV infections by 88%, meaning that it may be the first locality in the world to reach the UN target to end AIDS as a public health threat by 2030 [15]. In turn, Amsterdam reached 95% decline in estimated newly acquired HIV infections and 79% decline in observed new HIV diagnoses between 2010 and 2022, exceeding the 95–95–95 UNAIDS goals [16]. In 2018, the UK was the first to exceed the 95–95–95 target and reported a 32% decline in new HIV diagnoses over the last decade [17]. Although progress is being made, MSM continue to be the group with the highest number of new diagnoses, constituting >50% in Amsterdam and UK [16,17].

According to the most recent UNAIDS report, countries that prioritized their key populations in their policies and programs significantly reduced AIDS as a public health threat [18]. To achieve this success, HIV responses have to be based on strong political leadership, scientific evidence, tackle inequalities, strengthen vulnerable communities and support civil society organizations in their vital role in the response, especially ensuring them adequate and sustainable financing. This is exactly the opposite path Brazil took in the last decade [19].

Although dated and unscientific ideas about sex, sexual orientation and gender identities pretend to identify normative and noncontroversial positions for health promotion, they simply buy silence at the cost of the future. Not responding mirrors phenomena from the early stages of the HIV pandemic: more deaths, lower quality of life, more homophobia and less disclosure. This drove people, but not the disease, underground, and marked generations of Brazilians.

Acknowledgements

Contribution statement: M.L., L.K. and C.K. conceived the paper, developed the analysis plan, carried out the analysis and wrote the initial draft of the manuscript. All the authors contributed to the analysis and interpretation of results. All authors reviewed earlier versions of the draft and approved the final manuscript.

Funding statement: Brazilian Ministry of Health, through the Secretariat for Health Surveillance and the Department of Prevention, Surveillance and Control of Sexually Transmitted Infections, HIV/AIDS and Viral Hepatitis (Projeto # 914BRZ1138, BRAZIL, AIDS-SUS).

Ethics committee approval: The study protocol was approved in 2015 by the Committee on Research Ethics of the Federal University of Ceará (UFC), accredited by the Brazil National Commission on Research (#1.024.053-23/06/2015).

Conflicts of interest

There are no conflicts of interest.

[a]*Universidade Federal do Ceará, Fortaleza;* [b]*Universidade Federal do Mato Grosso do Sul, Campo Grande;* [c]*Instituto Evandro Chagas, Ananindeua;*

[d]Centro Universitário Autônomo do Brasil, Curitiba; [e]Universidade de Brasília, Brasília; [f]Universidade Federal do Rio de Janeiro, Rio de Janeiro; [g]Instituto Adolfo Lutz, São Paulo; [h]Universidade Federal de Minas Gerais, Belo Horizonte; [i]Instituto Aggeu Magalhães, Fiocruz, Recife; [j]Universidade Federal da Bahia, Instituto de Saúde Coletiva, Salvador; [k]Faculdade de Ciências Médicas da Santa Casa de São Paulo, São Paulo; [l]Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; [m]Universidade Estadual da Bahia, Salvador; and [n]Department of Social, Behavioral and Population Sciences, Tulane School of Public Health and Tropical Medicine, New Orleans, USA.

Correspondence to Marto Leal, 1608 Professor Costa Mendes, 60.430-140, Rodolfo Teófilo, Fortaleza, Ceará, Brazil. E-mail: martolp@gmail.com

Received: 29 February 2024; revised: 6 May 2024; accepted: 16 May 2024.

References

1. Coelho LE, Torres TS, Veloso VG, Grinsztejn B, Jalil EM, Wilson EC, McFarland W. **The prevalence of HIV among men who have sex with men (MSM) and young MSM in Latin America and the Caribbean: a systematic review.** *AIDS Behav* 2021; **25**:3223–3237.
2. Dong MJ, Peng B, Liu ZF, Ye Q, Liu H, Lu X, *et al*. **The prevalence of HIV among MSM in China: a large-scale systematic analysis.** *BMC Infect Dis* 2019; **19**:1–20.
3. Gomes RRdFM, Ceccato MdGB, Kerr LRFS, Guimarães MDC. **Fatores associados ao baixo conhecimento sobre HIV/AIDS entre homens que fazem sexo com homens no Brasil.** *Cadernos Saúde Pública* 2017; **33**:e00125515.
4. Torres TS, Luz PM, De Boni RB, Vasconcellos MTL, Hoagland B, Garner A, *et al*. **Factors associated with PrEP awareness according to age and willingness to use HIV prevention technologies: the 2017 online survey among MSM in Brazil.** *AIDS Care* 2019; **31**:1193–1202.
5. Parker R, Aggleton P. People, politics and death: International, national and community responses to HIV and COVID-19. In: Viral times. Routledge; 2024. pp. 120–134.
6. Gile KJ. **Improved inference for respondent-driven sampling data with application to HIV prevalence estimation.** *J Am Stat Assoc* 2011; **106**:135–146.
7. Mwaniki SW, Kaberia PM, Mugo PM, Palanee-Phillips T. **HIV prevalence and associated risk factors among young tertiary student men who have sex with men (MSM) in Nairobi, Kenya: a respondent-driven sampling survey.** *AIDS Res Ther* 2023; **20**:7.
8. Palmer S, Dijkstra M, Ket JC, Wahome EW, Walimbwa J, Gichuru E, *et al*. **Acute and early HIV infection screening among men who have sex with men, a systematic review and meta-analysis.** *J Int AIDS Soc* 2020; **23 (e25590)**.
9. Victora CG, Huttly SR, Fuchs SC, Olinto MT. **The role of conceptual frameworks in epidemiological analysis: a hierarchical approach.** *Int J Epidemiol* 1997; **26**:224–227.
10. Kerr LR, Mota RS, Kendall C, Pinho AA, Mello MB, Guimarães MDC, *et al*. **HIV among MSM in a large middle-income country.** *AIDS* 2013; **27**:427–435.
11. Kendall C, Kerr L, Mota RS, Guimarães MDC, Leal AF, Merchan-Hamann E, *et al*. **The 12 city HIV surveillance survey among MSM in Brazil 2016 using respondent-driven sampling: a description of methods and RDS diagnostics.** *Rev Brasil Epidemiol* 2019; **22 (e190004)**.
12. Szwarcwald CL, Souza Júnior PRBd, Pascom ARP, Coelho RA, Ribeiro RA, Damacena GM, *et al*. **HIV incidence estimates by sex and age group in the population aged 15 years or over, Brazil, 1986–2018.** *Rev Soc Brasil Med Trop* 2022; **55**:1–11.
13. Brazil. *Boletim Epidemiológico – HIV e aids 2023.* Brasília: Ministério da saúde; 2023.
14. UNAIDS. **Global AIDS strategy 2021–2026: end inequalities**. End AIDS; 2021.
15. McGregor S. HIV transmission virtually eliminated in Inner Sydney, Australia; 2023.
16. H-TEAM. **A 95% decline in estimated newly acquired HIV infections, Amsterdam, 2010 to 2022.** *Euro Surveill* 2023; **28**:1.
17. PHE. HIV in the United Kingdom: towards zero HIV transmissions by 2030; 2018.
18. UNAIDS. The path that that ends AIDS: 2023 UNAIDS Global AIDS update; 2023.
19. Parker R. AIDS crisis and Brazil. In: Oxford research encyclopedia of Latin American history; 2020.

DOI:10.1097/QAD.0000000000003934

Cancer in people with multidrug-resistant HIV

Tommaso Clemente[a,b], Domenico Pontillo[b], Vincenzo Malagnino[c], Leonardo Calza[d], Antonio Di Biagio[e,f], Giovanni Cenderello[g], Riccardo Lolatto[b], Elio Manzillo[h], Maria Cristina Moioli[i], Giuseppe Vittorio De Socio[j], Antonella Castagna[a,b], Vincenzo Spagnuolo[b], on behalf of the PRESTIGIO Study Group*

Retrospective, cohort analysis including people with HIV and 4-class drug resistance (4DR). The 8-year probability of malignancy after first evidence of 4DR was 12%, with an incidence of 1.6/100 person years of follow-up. Cancer risk tended to increase with higher precancer viremia copy-years adjusted for time [per 1 − $\log_{10}$ copies/ml higher: adjusted hazard ratio (aHR) = 1.35; 95% confidence interval (95% CI) = 0.98–1.85] and male sex-assigned-at-birth (aHR = 2.50; 95% CI = 0.86–7.27). Efforts to achieve long-term undetectability, risk factor control, prevention, and more aggressive cancer screening are needed in this fragile population.

Individuals with HIV and 4-class drug resistance (4DR) [resistance to nucleoside reverse transcriptase inhibitors (NRTIs), non-NRTIs (NNRTIs), protease inhibitors (PIs) and integrase strand transfer inhibitors (INSTIs)] are characterized by a high rate of both virological failure (VF), with dramatically reduced treatment options, and clinical events [1].

Cancer is a leading cause of death in people with HIV (PWH) [2] and a major contributor to the burden of disease in the population with multidrug resistance [1]; however, to our knowledge, no specific data on its incidence in this fragile group are currently available. Therefore, the objective of this study was to evaluate the incidence of malignancies in individuals with 4DR.

This is a retrospective, cohort study on PWH with 4DR from the PRESTIGIO Registry (NCT04098315), an