



Short communication

Syndemics among individuals enrolled in the PrEP Brasil Study

Raquel B. De Boni^{a,*}, Iona K. Machado^b, Mauricio T.L. De Vasconcellos^c, Brenda Hoagland^a, Esper G. Kallas^d, José Valdez Madruga^e, Nilo M. Fernandes^a, Natalia B. Cerqueira^d, Ronaldo I. Moreira^a, Silvia P. Goulart^d, Valdilea G. Veloso^a, Beatriz Grinsztejn^a, Paula M. Luz^a

^a National Institute of Infectology Evandro Chagas, Lapclin STD/AIDS, Avenida Brasil 4.365, Fiocruz, Rio de Janeiro, Brazil

^b Columbia College of Physicians and Surgeons, 630 W. 168 St., New York City, NY, USA

^c National School of Statistical Sciences, IBGE, Rua Andre Cavalcanti, 106 Centro, Rio de Janeiro, Brazil

^d Division of Clinical Immunology and Allergy, University of São Paulo, São Paulo, Brazil

^e Centro de Referência e Treinamento DST/AIDS, 81 Vila Mariana, São Paulo, Brazil



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ABSTRACT

Background: Concurrent psychosocial problems may synergistically increase the risk of HIV infection (syndemics), representing a challenge for prevention. We aimed to evaluate the prevalence and associated factors of syndemics among men who have sex with men (MSM) and transgender women (TGW) enrolled in the Brazilian pre-exposure prophylaxis demonstration study (PrEP Brasil Study).

Methods: Secondary cross-sectional analysis of the PrEP Brasil Study was performed. Of 450 HIV-seronegative MSM/TGW enrolled in the PrEP Brasil Study—conducted at Rio de Janeiro and São Paulo, Brazil—421 participants with complete data were included in the present analysis. Syndemics was defined as occurrence of ≥ 2 of the following conditions: polysubstance (≥ 2) use, binge drinking, positive depression screen, compulsive sexual behavior, and intimate partner violence (IPV).

Results: The prevalence of recent polysubstance use was 22.8%, binge drinking 51.1%, positive depression screening 5.2%, compulsive sexual behavior 7.1%, and IPV 7.3%. Syndemics prevalence was 24.2%, and associated factors were younger age (adjusted Odds Ratio (aOR) 0.95, 95% Confidence Interval (95% CI) 0.92–0.98 per year increase), TGW vs. MSM (aOR 3.09, 95% CI: 1.2–8.0), some college education or more vs. less than college (aOR 2.49, 95% CI: 1.31–4.75), and multiple male sexual partners in prior 3 months (aOR 1.69, 95% CI: 0.92–3.14).

Conclusion: Given the high prevalence of syndemics, particularly of polysubstance use and binge drinking, PrEP delivery offers an opportunity to diagnose and intervene in mental and social well-being.

1. Introduction

The HIV epidemic in Brazil, as in other Latin America countries, is concentrated in key populations such as men who have sex with men (MSM) and transgender women (TGW), making targeted prevention strategies fundamental to achieve the 90-90-90 goal (De Boni et al., 2014; Kerr et al., 2013). Pre-exposure prophylaxis (PrEP) is an effective, feasible, and cost-effective biomedical strategy for HIV prevention among individuals at high risk for infection (Anderson et al., 2012; Caceres et al., 2015; Drabo et al., 2016; Liu et al., 2015; Nichols et al., 2016; Schneider et al., 2014). However, considering syndemics theory (Halkitis et al., 2013; Singer et al., 2017), MSM and TGW are vulnerable to co-occurring psychosocial problems that may interact to increase HIV risk and worsen other health outcomes (Singer, 1994).

Syndemics, understood as the cumulative and synergistic presence of psychosocial and other health conditions, has been associated with different outcomes such as reporting a higher number of sexual partners (Martinez et al., 2016), condomless anal intercourse (CAI) (Biello et al., 2014; Dyer et al., 2012; Ferlatte et al., 2014; Guadamuz et al., 2014; Jie et al., 2012; Mimiaga et al., 2015a), increased risk for HIV infection (Santos et al., 2014; Guadamuz et al., 2014; Mimiaga et al., 2015b), lack of HIV medication adherence (Biello et al., 2016; Blashill et al., 2015; Friedman et al., 2015), and increased risk for suicide (Ferlatte et al., 2015). It is hard to compare the prevalence of syndemics across populations due to differences in how authors operationalize the definitions. Still, the prevalence of two or more syndemic conditions was higher than 40% among US black MSM living with HIV/AIDS (Dyer et al., 2012) and male sex workers from Vietnam (Biello et al., 2014),

* Corresponding author at: National Institute of Infectology Evandro Chagas/FIOCRUZ, Lapclin STD/AIDS, Av. Brasil 4350, Manguinhos 21040-360, Rio de Janeiro, Brazil.
E-mail addresses: raqueldeboni@gmail.com, raqueldeboni@msn.com (P.M. Luz).

for example.

Some of the individual psychosocial conditions previously described as clustering among MSM and associated with increasing the likelihood of risky sexual behavior and HIV prevalence/incidence include substance use, depression, intimate partner violence (IPV), child abuse, and, more recently, compulsive sexual behavior (CSB) (Parsons et al., 2012; Stall et al., 2003). As only 25% of studies on syndemics were conducted outside the US (Tsai et al., 2017), little is known about syndemics in Latin America. A noteworthy web survey of over 20,000 HIV-negative MSM showed that the prevalence of two or more conditions was at 43% in the region (Mimiaga et al., 2015a). The most frequent conditions were childhood or adolescent sexual abuse (41.75%) and IPV in the last 5 years (35.7%).

Considering the high social vulnerability of MSM and TGW, as well as the recent implementation of PrEP in the Brazilian public health system, to evaluate the occurrence of syndemics among MSM and TGW in the context of PrEP delivery programs may represent an additional benefit of PrEP. These services may provide an opportunity for screening and intervening in underdiagnosed mental health and social issues, and understanding the characteristics and behavior of individuals presenting higher likelihood of syndemics may be useful for targeting limited resources. In the present study, we aimed to describe the prevalence of psychosocial conditions and their clustering (syndemics), as well as factors associated with syndemics, among MSM and TGW enrolled in the PrEP Brasil Study.

2. Methods

PrEP Brasil is a 48-week long demonstration study where oral daily emtricitabine/tenofovir was provided at no cost for PrEP in two Brazilian cities (Rio de Janeiro and São Paulo). Study details are described elsewhere (Hoagland et al., 2017a; Hoagland et al., 2017b). Briefly, 1270 individuals who were either self or clinic-referred (when looking for HIV testing or post-exposure prophylaxis –PEP) were pre-screened. MSM and TGW, 18 years or more, who were HIV-seronegative and presented high risk for HIV infection in the prior 12 months (defined as having condomless anal sex with 2 or more MSM/TGW partners and/or 2 or more episodes of anal sex with an HIV-infected partner and/or history of sexually transmitted infections) were considered potentially eligible ($n = 753$) and referred to the screening visit. Of those, $n = 503$ were evaluated at the screening visit and performed the first clinical/laboratorial screen; eight were excluded and three declined. The enrollment visit was scheduled for 45 days after the screening visit, and 24 individuals did not show up. Of the $n = 468$ who presented at the enrollment visit, eleven declined and seven were excluded. Thus, 450 MSM/TGW were enrolled into PrEP Brasil. The complete clinical inclusion/exclusion criteria for PrEP Brasil, as well as the original study flow-chart and the detailed study procedures, are provided in Hoagland et al., 2017b. This cross-sectional analysis evaluates data collected at the pre-screening, screening and enrollment visits.

2.1. Measures

Demographic variables were self-reported at the pre-screening visit and included age, race, education, gender, presence of steady partner, and enrollment city. Sexual behavior in the prior 3 months was ascertained at the enrollment visit and referred to condomless receptive anal sex, sex with an HIV-seropositive partner, multiple male sexual partners (≤ 1 or > 1), and sex with a client. Additionally, risk perception for HIV infection was evaluated through the question, “What is your chance of getting HIV in the next year?”. Answer choices were “None (0%)”, “Low (25%)”, “Some (50%)”, “High (75%)”, and “Certainly (100%)”, which were dichotomized into “Low” (None and Low options) and “High” (Some, High and Certainly options) (Hoagland et al., 2017a).

2.2. Outcome

Five psychosocial conditions were assessed during the PrEP Brasil screening visit. Polysubstance use (reported use of two or more of the following substances: marijuana, crack/cocaine, non-prescription benzodiazepines, amphetamines, inhalants, and hallucinogens) in the prior 3 months was ascertained by the World Health Organization’s (WHO) Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) (Henrique et al., 2004). Binge drinking in the prior 3 months was assessed via the question, “Have you ingested 5 or more alcoholic drinks in one occasion?” (NIAAA, 2004) and response options were: “No/never”, “Yes, in the last 3 months”, and “Yes, but not in the last 3 months”. Depression was defined as a Patient Health Questionnaire-2 (PHQ-2) score ≥ 3 (de Lima Osório et al., 2009). The PHQ-2 screens for depression in the prior two weeks (Kroenke et al., 2003). A positive screen for CSB was defined as a Sexual Compulsivity Scale (SCS) score > 24 . The SCS assess “obsessive preoccupations with sexual acts and encounters” without specifying any timeframe (Kalichman et al., 1994; Kalichman and Rompa, 1995; Scanavino Mde et al., 2016). Finally, lifetime history of IPV was assessed with two questions: “Have any of your sexual partners hurt or tried to hurt you? (beat, punched, kicked, tried to strangle, attacked you with knives or firearms)” and “Have any of your partners used physical force or verbal threats to force you to have sex when you did not want to?”. A positive history of IPV was defined as a “yes” response to either of these two questions. The variable “syndemics” was defined as the presence of 2 or more of the aforementioned conditions (Singer et al., 2017).

2.3. Statistical analysis

Bivariate logistic regressions were performed to evaluate the associations among the five syndemic conditions, as proposed by Stall et al. (2003), and only conditions associated with at least another condition were kept to create the syndemic outcome (as defined above). Afterwards, bivariate logistic regression models were performed to explore the association of demographics, risky sexual behaviors, and risk perception with syndemics. Stepwise backward logistic regression modeling was performed to evaluate independent factors associated with syndemics by including all variables in the initial model presenting an association at bivariate analysis with p -values < 0.2 . The final model was reached by removing variables of greatest non-significance (provided they were not confounders) until all included variables presented a p -value ≤ 0.05 . Condomless receptive anal sex was forced in the multivariate model considering the previous association with syndemics in the literature. All statistical analyses were performed with R Statistical Software version 3.2.2.

2.4. Ethical aspects

National Institute of Infectology Evandro Chagas –FIOCRUZ, Centro de Referencia e Treinamento DST/AIDS, and University of São Paulo Institutional Review Boards approved the study (#CAAE084059 12.9.1001.5262 at www.saude.gov.br/plataformabrasil), and all study participants signed an informed consent form.

3. Results

Of the 450 participants enrolled in PrEP Brasil, 421 participants had complete data and were included in the present analysis. The median age was 29 years (IQR 24–35), 54.4% ($n = 229$) self-identified as white, 74.6% ($n = 314$) had at least some college education, 5.7% ($n = 24$) self-identified as TGW, 53% had a steady partner, and 59.4% ($n = 250$) were enrolled in São Paulo. Regarding risky sexual behavior in prior 3 months, 45% ($n = 189/421$) reported condomless receptive anal sex, 50% ($n = 204/407$) reported having sex with a HIV-positive partner, 67% ($n = 279/415$) reported more than 1 male sexual partner, and 6%

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