

HIV risk perceptions and post-exposure prophylaxis among men who have sex with men in five Brazilian cities

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Abstract *In the current context of the HIV epidemic, multiple prevention strategies including biomedical interventions have been presented as alternatives for vulnerable groups. This study investigated homosexuals' and bisexuals' perceptions of the risk of HIV infection and their experiences of using HIV post-exposure prophylaxis (PEP). We conducted a qualitative study with 25 men who have sex with men (MSM) in five Brazilian cities using semi-structured interviews. The results showed that the use of condoms was the main HIV prevention strategy employed by the respondents. In addition, condom failure, inconsistent condom use and intentional non-use are the main prompters of risk perception and the consequent decision to seek PEP. The respondent's perceptions and meanings of the use of PEP were mediated by prior knowledge of PEP. This work broadens the debate on the more subjective aspects of HIV prevention among MSM, especially those related to risk perception and the decision to use PEP in the context of combined prevention.*

Key words *Masculinity, HIV, Sexual and gender minorities, Risk management, Post-Exposure Prophylaxis*

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Introduction

It is estimated that 37.9 million people are currently living with HIV worldwide¹. In Brazil, official data show that gay and bisexual men account for more than half (51.3%) of the cases reported to the Ministry of Health² and that the prevalence of HIV among men who have sex with men (MSM) rose from 12.1% in 2009 to 18.4% in 2016³.

The predominant approach adopted in the response to the HIV epidemic in Brazil and the rest of the world is combination prevention⁴⁻⁷. In theory, this approach involves the combination of different strategies, such as structural, community-based and biomedical interventions, expanding HIV prevention efforts on different fronts. However, the implementation of this approach has received criticism due to the excessive focus on biomedical and pharmacological interventions over structural and community-based efforts⁷⁻⁹. It is also worth highlighting that the funding and distribution of biotechnologies has been negatively impacted by the policies of ultra-conservative governments (including the Brazilian government), thus hampering the consolidation of this approach across different levels of health care.

Individual risk perception is an important element of combination prevention. As a sociological concept, risk is understood as a complex mix of historically situated social factors and probabilistic conceptions with a range of actors and forces at play¹⁰⁻¹². From an epidemiological perspective, risk is understood as the probability of an event during a specified period of time¹³. Risk (of getting a disease, for example) is perceived and experienced differently depending on social status, age, race/color, sexual orientation and gender, and social, political and economic context¹⁰⁻¹².

Within the context of the transformations that characterize today's society, *reflexivity*¹⁴, as a fundamental mechanism of institutional organization and formation of the self, promotes risk *expert systems*. These systems, made up of policy makers and biomedical and media experts, among others, operate on a basis of trust, propagating valid technical knowledge beyond their immediate field¹⁵. The calculation of risk by subjects is therefore a complex relation of individual criticism and acceptance of these systems, involving the confluence of a complex order of beliefs, desires and calculations that underpin how individuals manage risk and behavior. Thus,

in the relations of power established between individuals and *expert systems*, risk awareness¹⁵ does not always reflect health guidelines.

The idea of risk perception proposed by Wiedemann¹⁶ is consistent with this perspective insofar as it suggests that perception is influenced by imaginary constructions and beliefs developed through experience. From this perspective, the perception of the risk of HIV/AIDS infection influences the capacity to manage the probability of a potentially high-impact event such as HIV infection.

With regard to biomedical prevention technologies, post-exposure prophylaxis (PEP) has been a prominent method for preventing HIV infection since 2010. Available on the SUS (acronym in Portuguese for *Sistema Único de Saúde*, Brazil's national health system)¹⁷⁻¹⁹ for consensual sexual exposures, PEP is an emergency prevention alternative that should be started within 72 hours after exposure²⁰. Despite being the oldest biomedical prevention method, its distribution is inadequate in some regions, being invariably restricted to sexual health services in large cities^{9,21}. Studies have confirmed the efficacy of PEP and evidence²² suggests that it may have contributed to preventing HIV transmission in at least 3,138 people between 2009 and 2017.

Although there is a growing body of literature on this topic, qualitative studies on the use of PEP among MSM²³ are scarce, particularly those discussing how knowledge of prophylaxis influences the decision to use the method. A recent review²³ found that the central themes of studies in England²⁴ and Australia²⁵⁻²⁷ investigating PEP were motivation, type of sexual partner, negotiation, and risk perception. In Brazil, although studies have investigated the PEP use by heterosexual men²⁸, studies addressing MSM were not found.

The present study investigated MSM's perceptions of PEP in the context of HIV/AIDS prevention based on their risk perceptions. To this end, we look at the context in which PEP emerged as a viable prevention option, discussing elements that help understand what influences the decision to use the medicine and whether and how its use leads people to reconsider risk perception.

Methodology

We conducted a qualitative study with a sample of 25 MSM using data from semi-structured interviews conducted as part of a broader study²⁹

investigating the effectiveness of PEP in public health services in five Brazilian cities (Porto Alegre-RS, Curitiba-PR, Fortaleza-CE, Ribeirão Preto-SP, and São Paulo-SP) called “The Combine! Study”²⁹.

The interviews were conducted using an interview guide addressing the respondents’ affective-sexual experiences and the relationship between sexual practices and PEP use within the context of their perceptions of the risk of exposure to HIV and what led them to seek PEP.

The interviews were conducted between March and December 2015 by trained researchers and all respondents signed an informed consent form. The interviews were terminated when enough information was gathered to explain the study phenomenon, adopting the saturation criterion³⁰ and the interviews were conducted in a private room in the health facility and recorded and transcribed, respecting colloquial expressions, slang and pauses. Average interview duration was 45 minutes. The organization and thematic categorization of the transcribed interviews was performed using QSR NVivo®.

The data was analyzed using meaning interpretation, which draws on hermeneutical and dialectical principles to interpret context and the reasons and logic behind speech, actions and interrelations³¹. Data analysis and interpretation comprised the following stages: (a) in-depth reading to gain an overview and capture the particularities of the transcribed interviews; (b) identification and naming of themes; (c) identification and problematization of explicit and implicit ideas; (d) identification of underlying sociocultural meanings; (e) contextualization of the problematized ideas in relation to existing literature; and (f) construction of an interpretative synthesis³¹.

The presentation of the results uses fictional names in order to guarantee the anonymity of the respondents. The study was approved by the University of São Paulo Faculty of Medicine Ethics Committee and the National Research Ethics Committee.

Results

The age of the respondents differed, with eight being aged between 19 and 23 years and 17 aged between 26 and 40 years. Most of the sample were white (14/25) and homosexual (20/25). Only six of the respondents sought PEP because they had sex with partners in a stable relationship, five of

whom knew they were HIV positive. Of those who had had sex with a casual sexual partner (19/25), most (15/19) did not know the partner’s HIV status. Chart 1 shows the characteristics of the respondents.

The transcribed interviews were divided into three subgroups according to the respondents’ use and knowledge of PEP: those who had previously used PEP (3/25); those who had never used PEP and with limited prior knowledge of the method (7/25); and those who had never used PEP and without prior knowledge of the treatment (15/25). The analysis compares the respondents’ perceptions of the risk of HIV infection, the reasons behind the decision to use PEP, and the meaning of the use of PEP across these subgroups.

In the subgroup who had previously used PEP (3/25), prior use influenced the respondents’ perceptions of the risk of HIV infection, the time taken to decide to seek PEP, and the ease of access to PEP services. The implications of using PEP reported by this subgroup were positive and the strategy was seen as a valid prevention method, being incorporated into the respondents’ prevention repertoire (3/25). The following statement from Noel, who was exposed in another country, clearly shows that he was sure about how to act and what actions to take in seeking medical help:

Interviewer (E): You thought of seeking PEP, you left the hotel...

Noel: I went straight to the hospital... I left the motel not to go to my hotel, but to go to the hospital, to look for prophylaxis (33, brown, homosexual, Curitiba-PR).

The respondents in the subgroup who had never used PEP and with limited prior knowledge of the method (7/25) reported inaccurate information, including not knowing for sure the name of the treatment, use prerequisites, or where to find the medication. The respondents mentioned the mainstream media (newspapers and television), with the internet being the main source of information, notably government sites, such as the Ministry of Health and state and municipal health departments, and videos from public figures:

I didn’t know what PEP was, you know? And once, when I was casually reading about HIV, I saw that there was a treatment that you could take if you put yourself at risk, when you have an accident, have sex without a condom or the condom bursts, anyway... And then, some time passed and I met a person, we had sex and the condom burst, right? And I freaked out. So I looked it up on Goo-

Chart 1. Characteristics of the respondents.

Name	Age	Color	Sexual orientation	Type of sexual partner at the time of exposure	Partner HIV status	In a stable relationship	Occupation/education	City	How did you become aware of PEP?
Agenor	31	White	Bisexual	Casual	Unknown	Yes	Businessman	São Paulo	When searching for specialist help
Agnaldo	26	White	Homosexual	Casual	Unknown	No	Student	Porto Alegre	Prior knowledge of PEP
Aislan	30	White	Homosexual	Casual	Unknown	No	Professor	Ribeirão Preto	When searching for specialist help
Alexandre	22	White	Homosexual	Casual	Unknown	No	Student	Ribeirão Preto	When searching for specialist help
Augusto	38	White	Homosexual	Stable	Positive	No	Financial manager	São Paulo	When searching for specialist help
Cleiton	35	Brown	Bisexual	Stable	Positive	No	Professor	São Paulo	When searching for specialist help
Danilo	27	Indigenous	Homosexual	Stable	Positive	Yes	Photographer	São Paulo	Previous use of PEP
Erico	40	White	Homosexual	Casual	Unknown	No	Businessman	São Paulo	When searching for specialist help
Eusébio	37	White	Homosexual	Casual	Unknown	No	Clerk	Ribeirão Preto	Previous use of PEP
Fabio	35	White	Homosexual	Stable	Unknown	Yes	Translator	Ribeirão Preto	Prior knowledge of PEP
Juliano	22	Negro	Homosexual	Casual	Positive	No	Student - hairdresser	Fortaleza	When searching for specialist help
Juno	23	Brown	Homosexual	Casual	Positive	No	Call Center	Ribeirão Preto	When searching for specialist help
Leondes	23	Brown	Homosexual	Casual	Unknown	No	Teacher	São Paulo	When searching for specialist help
Lucas	37	White	Homosexual	Stable	Positive	No	Interior designer	São Paulo	When searching for specialist help
Marconi	19	Not declared	Homosexual	Casual	Unknown	No	Student – self-employed	Fortaleza	Prior knowledge of PEP
Mario	40	White	Homosexual	Casual	Unknown	Yes	Doctor	São Paulo	Prior knowledge of PEP
Miqueias	19	Negro	Homosexual	Stable	Positive	Yes	Attendant	Porto Alegre	When searching for specialist help
Noel	33	Brown	Homosexual	Casual	Unknown	No	Financial assistant	Curitiba	Previous use of PEP
Plinio	32	White	Bisexual	Casual	Unknown	Yes	Civil servant	Ribeirão Preto	When searching for specialist help
Ramon	31	Not declared	Homosexual	Casual	Unknown	No	Teacher	Fortaleza	Prior knowledge of PEP
Renato	19	White	Bisexual	Casual	Positive	No	Photographer	São Paulo	When searching for specialist help
Roberto	32	White	Homosexual	Casual	Unknown	No	English teacher	São Paulo	When searching for specialist help
Samuel	30	Brown	Homosexual	Casual	Unknown	No	Teacher	Fortaleza	When searching for specialist help
Simão	20	White	Bisexual	Casual	Positive	No	Student	São Paulo	Prior knowledge of PEP
Wellington	27	Yellow	Homosexual	Casual	Unknown	Yes	Photographer	São Paulo	When searching for specialist help

Source: Elaborated by the authors.

gle, you know? “Immediate HIV prevention treatment” and saw PEP. I saw that it was done at the hospital [XX] and so on (Ramon, 31, color not declared, homosexual, Fortaleza-CE).

Forms of prevention without aids (condoms, gel, oral fluid rapid test, etc..) appear in three of the interviews (3/7), while routine HIV testing was only mentioned by one respondent. The perception that the risk of HIV infection is high was practically unanimous (6/7) in this subgroup. The stigma of AIDS, and the anticipation of the stigma by the fear of being infected, are commonly recurring themes:

Because, like it or not, on the day of the rapid test everything is fine, but on the day you receive the [results of] the first HIV test after 45 days, you get those butterflies, that tension. And you keep thinking “My God, what if I have AIDS, what will it be like for me? What will it be like for my partner? What will it be like telling my parents?”. Then the negative result comes out: “Phew! What now? Do I want to be in a situation and go through that all again?” (Mario, 40, white, homosexual, São Paulo/SP).

Negative perceptions are commonly recurring implications and meanings of use (4/7), not only in relation to side effects, but also feelings of guilt and shame.

As expected, the lapse of time between the moment of exposure, recognition of the risk of infection, and seeking specialist help was greater in the subgroup who had never used PEP and without prior knowledge of the treatment (15/25). The main source of information on HIV prevention methods and strategies in this subgroup were friends and the internet.

The majority of respondents in this subgroup arrived at the health service with limited information on PEP (13/15). Two of the respondents (2/15) visited the service seeking HIV testing and were indicated PEP by health professionals during counselling:

But then, during the other interview, before collection, the counsellor told me no. That that’s how it really is. That in today’s test something will come out from past cases. For the problem that I had the day before, I would have to do a new test in a month to be certain, you know? (Agenor, 31, white, bisexual, São Paulo-SP).

With regard to prevention methods and strategies, the respondents in the subgroup who had never used PEP and without prior knowledge of the treatment reported that they used, almost solely, condoms (9/15), albeit not always on a consistent basis. Little mention was made of HIV testing, which was not referred to as prevention

method by the respondents, suggesting that HIV testing is used as a negotiation resource. The use of behavioral strategies, such as preference for a specific sex position (active, passive) or avoiding ejaculating directly onto the partner were mentioned by few respondents. Alexandre explains that the importance of the use of condoms may be downplayed depending on the moment:

[...] I ended up meeting this person, who suggested having sex, so we did! When I got to the motel, I asked about the condom and he said that he didn’t have one and that we should do it anyway.

I ended up accepting, ended up giving in, you know? So we had sex and I was a bit worried at the time, a bit worried before and after as well. But not so much that it held me back (Alexandre, 22, white, homosexual, Ribeirão Preto-SP)

With regard to risk perception, the following account from Miqueias shows that, despite dating someone who was HIV positive, he was not aware of PEP as a prevention option, and only perceived the high risk of infection at the time of exposure:

[...] he withdrew from me, you know, and I felt something kind of wet, strange, and saw that it wasn’t gel. And we saw the ripped condom, right, well ripped, and I was a bit scared! I laid back on the bed and began to cry [...] I felt really dirty (Miqueias, 19, black, homosexual, Porto Alegre-RS).

The risk of HIV infection was perceived as high by two-thirds of the respondents in this subgroup (10/15). Associated with the self-assessment of risk, other responses revealed negative meanings, such as HIV and homosexual stigma and guilt.

To analyze common features that form risk perception across the subgroups, we categorized the responses into risk perceived as high, for respondents who showed greater concern during or straight after exposure (14/25), and risk perceived as low, for those who were less worried about HIV infection during or immediately after exposure (4/25).

Érico, who perceived the risk to be high, refers to “stealth” (non-consensual condom removal during sexual intercourse). The decision to seek medical help was influenced by the fact that he had casual sex not knowing his partner’s HIV status. The consumption of alcohol was an important factor that prompted self-reflection and the decision to seek PEP or other methods of prevention and diagnosis:

I drunk too much on Friday. It happened between Friday and Saturday. I wasn’t alert enough

to realize that at some point he wasn't using a condom. I was being passive and he was being active. [...] I suggested he used a condom. I think he used a condom for most of the time. But, at a certain point, I realized he wasn't using it. And since I don't know him well enough to know if what he said about not being HIV positive was right, I thought it better to do something (Érico, 40, white, homosexual, São Paulo-SP).

Influenced by questions such as pleasure and drug use. Juliano perceived the risk to be low. Despite knowing his partner was HIV positive, prevention was not a priority:

E: So the time went by, you were at a party, you had sex without a condom.

Juliano: Without a condom.

E: Did you remember that he was HIV positive when you were having sex?

Juliano: No.

E: Why do you think you forgot?

Juliano: I don't know. I think it was the adrenaline, I was really wasted, I was thinking of other things, not about that. My head was a bit fuzzy because I was high, but... I think it's normal, I thought it was normal after (Juliano, 22, black, homosexual, Fortaleza-CE).

With regard to the HIV prevention methods and strategies reported by the groups, the condom was understood as being the safest method and was almost always present in the respondents sexual practices (25/25).

Intermittent condom use, a commonly recurring theme in the responses, appeared in two different forms: the beginning of sex takes place without a condom, with the condom being used only when an erection occurs or close to ejaculation; the condom is used at the beginning of sex and later removed for a variety of reasons, such as loss of erection and/or discomfort (loss of sensation, tightness).

The responses show that condom use is influenced by stereotypes and stigmas linked to the sexual partner. For example, the responses of a bisexual respondent show that the choice to use a condom was driven by gender stereotypes and sexual stigma, whereby condom use is dispensable in sex with women and indispensable in sex with men. This may be because he considers the risk of infection to be greater with MSM because the prevalence of HIV and sexually transmitted infections (STIs) is higher in this group than in women.

In short, the respondents' risk perception and the consequent decision to use PEP stem from the following situations: 1- The recognition

that not using a condom is a deliberate choice (14/25); 2- The perception that contextual questions such as affective characteristics or the use of alcohol and other drugs interfere with negotiation and remembering to use a condom (9/25); and 3- The association between condom use and awareness of, or remembering, the partner's HIV status (2/25). Four of the 25 respondents mentioned situations that fall into the above situations, demonstrating the interconnections between pleasure/desire and prevention and negotiation and power relations in sexual contexts.

Age appeared to have a marked influence on prior knowledge of PEP. Most of the respondents aged over 24 years (17/25) had more comprehensive and consistent prior knowledge about prophylaxis (13/17) and mentioned the internet and/or support networks as sources of information, while most of those aged up to 24 years (5/8) mentioned the internet as a source of information, with only one person referring to support networks (1/8).

The meanings and implications of PEP use were predominantly negative across the three subgroups (14/25), expressed through sentiments such as fear, guilt and shame. The anticipation of stigma related to the fear of being confused with being HIV positive because of the use of antiretroviral drugs was evident in the responses of almost half of the respondents who had not previously used PEP. Positive meanings related to the experience of using PEP were predominant among the respondents who had previously taken the medication.

Discussion

The condom and HIV testing were the most commonly cited prevention methods. A number of quantitative and qualitative studies also reported that the most commonly cited prevention method by men in general was the condom^{25,28,32,33}. Despite their widespread use, condom failure, inconsistent use (for various reasons) and intentional non-use were the main prompters of risk perception and the consequent decision to seek specialist help or PEP^{32,34,35}.

The use of the internet as a source of information on HIV prevention, especially after sexual exposure, was frequently reported by the respondents, corroborating the findings of other studies on prevention focusing on PEP^{28,36-38}. These studies confirm that the potential of this tool for positively impacting HIV response strat-

egies. However, attention and investment are needed to ensure the reliability of the internet as an information source³⁷.

Our findings also show that the respondents, especially those aged over 24 years, access support networks of friends, through which respondents were indicated PEP services and follow-up. Friends and support networks are key to exposure-related risk perception. Very often, self-reflection prompted by support networks ensures that participants seek specialist help or PEP. In this regard, the literature highlights the beneficial effect of support networks on the prevention of HIV and other STIs, especially among MSM^{33,39,40}.

The use of alcohol and other drugs appeared in various interviews, showing that this factor has an important influence on risk perception and assessment. Likewise, affective characteristics emerged as complicating factors for the process of managing the risk of infection. In a similar vein, Chakrapani et al.⁴¹ reported that affectivity was a contextual factor that negatively affects condom use among Indian MSM. Our findings show that these factors were strongly related to inconsistent condom use, ultimately leading respondents to seek PEP. These findings confirm prevention challenges such as strengthening support networks^{42,43} and damage reduction programs^{44,45}.

The respondents' perceptions of risk are similar in many ways to Perrusi and Franch's¹⁵ propositions regarding the multiple features of risk, including subjective dimensions. Some studies specifically addressing HIV-related risk suggest that subjective questions have a major impact on the formation of the idea of risk^{15,46}. Thus, improving access to quality information, ensuring services are prepared to embrace subjective questions related to prevention, and strengthening support networks, such as NGOs and groups, are options for improving the implementation of PEP and other combination prevention methods and strategies.

Questions related to risk and masculinities echo throughout the responses given by the bisexual respondents, both in relation to risk perception and prevention strategies. Like Santos et al.²⁸, we observed that respondents perceived that the risks involved in heterosexual relationships are lower. The notion of male "invulnerability" to HIV, underpinned by hegemonic masculinity, has been reported in studies of PEP seeking behaviors among heterosexuals²⁸. In a study with MSM who practice bareback sex, Barreto³⁴ reports that risk exposure is viewed as an acceptable perfor-

mance of masculinity. We did not find this type of argument in the exposures among our homosexual respondents, but we did find reports of not using condoms for the sake of pleasure.

With regard to perceptions of meanings of the use of PEP, the findings suggest that prior knowledge of the method, albeit sometimes limited and inaccurate, has an influence on the decision to seek PEP, especially bearing in mind that time is a key factor in the success of PEP as a prevention method^{47,48}.

The findings in relation to age are consistent with those of epidemiological studies reporting high HIV transmission rates among young people^{2,3,48}. This group use a smaller variety of information sources, restricting themselves almost exclusively to the internet, while in the 24 years and over group support networks are important sources of information in addition to the internet. These differences are associated with aspects of a generational gay culture^{35,49,50}, which establishes and maintains networks of belonging, solidarity, and pursuit of recognition.

Many of the respondents only became aware of PEP when they sought HIV testing or through support networks. These findings reinforce the importance of disseminating quality information in addition to ensuring the availability of PEP services with sufficient resources to meet demand.

The stigma of AIDS and anticipation of this stigma were evident in the respondents' perceptions of the meanings and implications of the use of PEP. In the same vein, Ferraz et al.⁵¹ highlight the impact of this stigma across different groups of PEP users. The findings of both studies reinforce the need for a more in-depth investigation of the reproduction of this stigma, despite the growing popularity of drug-based HIV prevention strategies.

It is important to remember that the fact that the interviews were conducted in health services may have influenced the responses. An example is the frequent mention of condoms, with respondents possibly repeating the recommendations in the health guidelines produced over recent decades³².

Final considerations

This is first study in Brazil to investigate perceptions of risk of HIV infection among MSM who sought and had access to PEP, providing a window to understanding more subjective aspects of

HIV prevention among MSM, especially those related to risk perception and the decision to use PEP in the context of combination prevention.

The promotion of male condoms in the narratives of HIV prevention among MSM and condom failure, shown to be the main reason for seeking PEP among our respondents, demonstrate the complexity of the relationship between risk and pleasure, which has been highlighted as a theme to be explored in gender and sexuality studies in the field of HIV/AIDS. Extrinsic contextual factors (unplanned sex or sex under the influence of drugs or alcohol, for example), more specifically the type of affective bond with the sexual partner (the pursuit of pleasure), warrant highlighting as key elements to be taken into consideration in HIV prevention actions directed at MSM. These elements suggest the need for further research to investigate the complex relation between the exercise of masculinities, risk perceptions and HIV prevention strategies among MSM, in the same vein as the work of Luis and Spink⁵².

Consistent prior knowledge, not only of PEP, but also other prevention strategies and methods, stood out as an important factor that helps subjects to make decisions with greater certainty and less anguish and suffering and that result in successful outcomes.

Support networks were clearly evident among the study group, with the respondents confirming the numerous findings in the literature. In this regard, it is important to highlight the role of the state and civil society organizations in the ongoing dissemination of consistent information and overcoming conservatism in the design and language used in published material in order to access the groups that most need this information, including MSM.

Our findings indicate that, in addition to access to biomedical methods such as PEP, to be successful, HIV/STIs/AIDS prevention actions tailored towards MSM need to consider the complexities involved in the formation of risk perceptions and decision-making among this group and ensure access to a range of prevention strategies and methods without sacrificing sexual-affective satisfaction and health care needs.

Collaborations

A Mathias contributed to the conception and planning of the article, structuring the text, data analysis, discussion and conclusion, being fully involved in the drafting of the initial and final version of the manuscript. MT Couto contributed to the conception and planning of the work,

in the organization of the methodology, critical analysis of the results and discussion, with active participation in writing all versions of the manuscript. LA Santos contributed to the review of the results and discussion sessions, participating in all versions of the manuscript. A Grangeiro contributed to the critical review of the discussion and the final version of the manuscript.

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