

SYSTEMATIC, INTEGRATIVE AND SCOPING REVIEW

METHODOLOGIES OF EDUCATIONAL PROGRAMS IN THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS AMONG USERS OF HIV PRE-EXPOSURE PROPHYLAXIS: AN INTEGRATIVE REVIEW

METODOLOGIAS DE PROGRAMAS EDUCATIVOS NA PREVENÇÃO DE INFECÇÕES SEXUALMENTE TRANSMISSÍVEIS ENTRE USUÁRIOS DE PROFILAXIA PRÉ-EXPOSIÇÃO AO HIV: UMA REVISÃO INTEGRATIVA

METODOLOGÍAS DE PROGRAMAS EDUCATIVOS EN LA PREVENCIÓN DE INFECCIONES DE TRANSMISIÓN SEXUAL ENTRE USUARIOS DE PROFILAXIS PREEXPOSICIÓN AL VIH: UNA REVISIÓN INTEGRATIVA

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Abstract: Introduction: Pre-exposure prophylaxis (PrEP) for the human immunodeficiency virus (HIV) is part of the combined prevention policy, reducing the risk of infection. The main users of PrEP are men, young, white, single, belonging to the group of men who have sex with men (MSM). However, an increase in cases of sexually transmitted infections (STIs) has been observed after the initiation of PrEP, reinforcing the need for educational strategies that include barrier methods. Objective: To identify scientific evidence which regard methodologies used in educational programs aimed towards preventing STIs among PrEP users. Methodology: An integrative literature review (ILR) was conducted, with scientific articles selected from the Cinahl, SciELO, and Medline (via PubMed) databases. Results: Nineteen articles were selected. The thematic analysis revealed two categories: "Sexual behavior through the lens of vulnerability" and "Voices of prevention: Health Information in the digital era." The studies highlight prevention strategies in schools, targeting young and adult MSM, transvestites, and transgender women, as well as the use of social media as a tool for dissemination and engagement. Conclusion: In-person counseling requires updating, thus modifying the approach to PrEP users. Private chats and online consultations proved to be effective alternatives to ensure confidentiality and anonymity.

Keywords: Pre-exposure Prophylaxis; Risky Sexual Behavior; Sexually Transmitted Infections; Condoms; Sexual Counseling; Health Information Technology.

Resumo: Introdução: A Profilaxia Pré-exposição (PrEP) ao vírus da imunodeficiência adquirida (HIV), integra a política de prevenção combinada, reduzindo o risco de infecção. Os principais usuários da PrEP são homens, jovens, brancos, solteiros, do grupo homens que fazem sexo com homens (HSH). Contudo, observa-se aumento de casos de infecções sexualmente transmissíveis (IST) após o início da PrEP, reforçando a necessidade de estratégias educativas que incluam métodos de barreira. Objetivo: Identificar evidências científicas que versem sobre metodologias utilizadas nos programas educativos voltados à prevenção de IST entre usuários de PrEP. Metodologia: Realizou-se uma revisão integrativa de literatura (RIL), com artigos científicos selecionados nas bases Cinahl, SciELO e Medline (via PubMed). Resultados: Foram selecionados 19 artigos. A análise temática evidenciou 02 categorias: "Comportamento sexual sob o prisma da vulnerabilidade" e "Vozes da prevenção: Informação em Saúde na era digital". Os estudos destacam estratégias de prevenção em escolas, voltadas a jovens e adultos HSH, travestis e mulheres trans, além do uso das mídias sociais como ferramenta de divulgação e engajamento. Conclusão: O aconselhamento presencial necessita de atualização, modificando a abordagem aos usuários de PrEP. Chats privados e consultas *on-line*, mostraram-se alternativas eficazes para garantir sigilo e anonimato.

Palavras-chave: Profilaxia Pré-exposição; Comportamento sexual de Risco; Infecções Sexualmente Transmissíveis; Preservativos; Aconselhamento sexual; Tecnologia da informação em saúde.



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Resumen: Introducción: La Profilaxis Preexposición (PrEP) al virus de la inmunodeficiencia humana (VIH) integra la política de prevención combinada, reduciendo el riesgo de infección. Los principales usuarios de la PrEP son hombres, jóvenes, blancos, solteros, del grupo de hombres que tienen sexo con hombres (HSH). Sin embargo, se observa un aumento de casos de infecciones de transmisión sexual (ITS) tras el inicio de la PrEP, reforzando la necesidad de estrategias educativas que incluyan métodos de barrera. Objetivo: Identificar evidencias científicas que versen sobre metodologías utilizadas en los programas educativos orientados a la prevención de ITS entre usuarios de PrEP. Metodología: Se realizó una revisión integrativa de literatura (RIL), con artículos científicos seleccionados en las bases Cinahl, SciELO y Medline (vía PubMed). Resultados: Se seleccionaron 19 artículos. El análisis temático evidenció 02 categorías: “Comportamiento sexual bajo el prisma de la vulnerabilidad” y “Voces de la prevención: Información en Salud en la era digital”. Los estudios destacan estrategias de prevención en escuelas, orientadas a jóvenes y adultos HSH, travestis y mujeres trans, además del uso de las redes sociales como herramienta de difusión y compromiso. Conclusión: El asesoramiento presencial necesita actualización, modificando el abordaje a los usuarios de PrEP. Los chats privados y las consultas en línea se mostraron como alternativas eficaces para garantizar la confidencialidad y el anonimato.

Palabras clave: Profilaxis Preexposición; Comportamiento sexual de riesgo; Infecciones de Transmisión Sexual; Preservativos; Asesoramiento sexual; Tecnología de la información en salud.

Introduction

PrEP was launched in Brazil by the SUS as a combination prevention strategy, aiming to reduce the chances of infection by the virus that causes AIDS (Costa; Jesus; Macedo, 2024; Barp; Mitjavila, 2020). Studies show, however, that after PrEP prescription there was a significant increase in STI cases: 83.5 per 100 person-years versus 48.6 before PrEP, with 30% of users contracting one STI, 12% two, and 9% three or more (Nguyen et al., 2018). Furthermore, it is estimated that 325 million people worldwide have contracted hepatitis B or C, with 1.4 million deaths in 2017 (Timóteo et al., 2020). PrEP users are predominantly young, white, single men, and MSM, and although the prophylaxis is effective against HIV, there is an association between its use without condoms and an increase in syphilis (Lehmkuhl et al., 2021).

Given this scenario, the research proposes the following question: 'What methodologies are used in educational programs aimed at adherence to barrier methods in STI prevention among PrEP users?'. The object of study is self-care involving condom use associated with PrEP as a barrier method within combination prevention strategies, particularly in health promotion programs through digital technologies. The objective is to identify scientific evidence regarding methodologies used in educational programs aimed at STI prevention among PrEP users, considering the role of the SUS, which offers diagnosis and treatment free of charge (Brasil, 2019).

The justification for the study lies in identifying methodologies that strengthen combination prevention between PrEP and condoms, reducing new STI cases. Its relevance is established by addressing risky sexual behaviors among young and adult MSM, travestis, and trans women, associated with socioeconomic factors that facilitate the incidence and prevalence of these infections. Thus, the research contributes to expanding educational and digital strategies, promoting greater adherence to the use of barrier methods and strengthening public health policies aimed at vulnerable populations.

Methodology

This integrative literature review (ILR) analyzed the advancement of PrEP technology, highlighting that many users do not use the medicinal method in combination with barrier methods for STI prevention. To construct the research question, the PICo acronym was used: P = PrEP users; I = methodologies used in educational programs for STI prevention; Co = adherence to barrier methods. The study sought to identify scientific evidence regarding educational strategies that encourage the combined use of PrEP and condoms.

The selected papers were found in databases such as CINAHL, SciELO, MEDLINE (via PubMed), and LILACS, utilizing descriptors in different languages: “HIV Pre-Exposure Prophylaxis”, “Sexually Transmitted

Infections”, “Barrier Methods”, and “Health Education”. Boolean operators AND and OR were applied to compose the search strings, as detailed in Box 1. This methodology ensured comprehensiveness in collecting relevant studies on combination prevention and adherence to barrier methods.

Finally, Sotero and Prado (2025) observed that research conducted across the five Brazilian macro-regions directs greater attention to the young-adult population, aged between 18 and 30, where there is a higher prevalence of cases related to PrEP use and vulnerability to STIs. This scope reinforces the relevance of investigating educational methodologies aimed at this population, seeking to increase condom adherence and strengthen combination prevention strategies.

Box 1 - Search strategies of the main chosen databases

Search strategies – CINAHL ^a				
Male Homosexuality OR Adolescent AND Health Education AND Sex Counseling	Male Homosexuality OR Adolescent AND Sexually Transmitted Diseases AND Sex Counseling		Pre-Exposure Prophylaxis AND Sexually Transmitted Diseases AND Condoms	
Search strategies – SCIELO ^b				
Homossexualidade Masculina OR Profilaxia Pré-Exposição AND Educação em Saúde OR Infecções Sexualmente Transmissíveis AND Método de Barreira Anticoncepção OR Aconselhamento Sexual	Profilaxia Pré-Exposição AND Infecções Sexualmente Transmissíveis AND Autocuidado OR Aconselhamento Sexual	Profilaxia Pré-Exposição OR Homossexualidade AND Saúde Sexual AND Preservativos OR Método de Barreira Anticoncepção	Profilaxia Pré-Exposição OR Comportamento do Adolescente AND Saúde Sexual AND Preservativos OR Método de Barreira Anticoncepção	Pre-Exposure Prophylaxis AND Adolescent Health AND Sex Counseling OR Contraception, Barrier
Search strategies – PUBMED ^c				
Pre-Exposure Prophylaxis AND Health Education OR Sexually Transmitted Diseases AND Contraception, Barrier	Adolescent Behavior AND Health Education OR Sexually Transmitted Diseases AND Contraception, Barrier	Adolescent Behavior AND Sexually Transmitted Diseases AND Sex Counseling	Adolescent Behavior AND Health Education AND Sex Counseling	Pre-Exposure Prophylaxis AND Adolescent Health AND Sex Counseling

Source: Prepared by the authors (2026).^a Cumulative Index to Nursing and Allied Health Literature; ^b Scientific Electronic Library Online; ^c Public Medline.

Original articles available online, published in English, Portuguese, or Spanish, with a timeframe between 2020 and 2024, were included in the research. Additionally, articles that identified the increase in STIs after PrEP adoption; the most sought-after communication media among the LGBTQIAPN+ community and sex workers; and the methodologies operating in terms of sexual health awareness and STI transmission were also included."

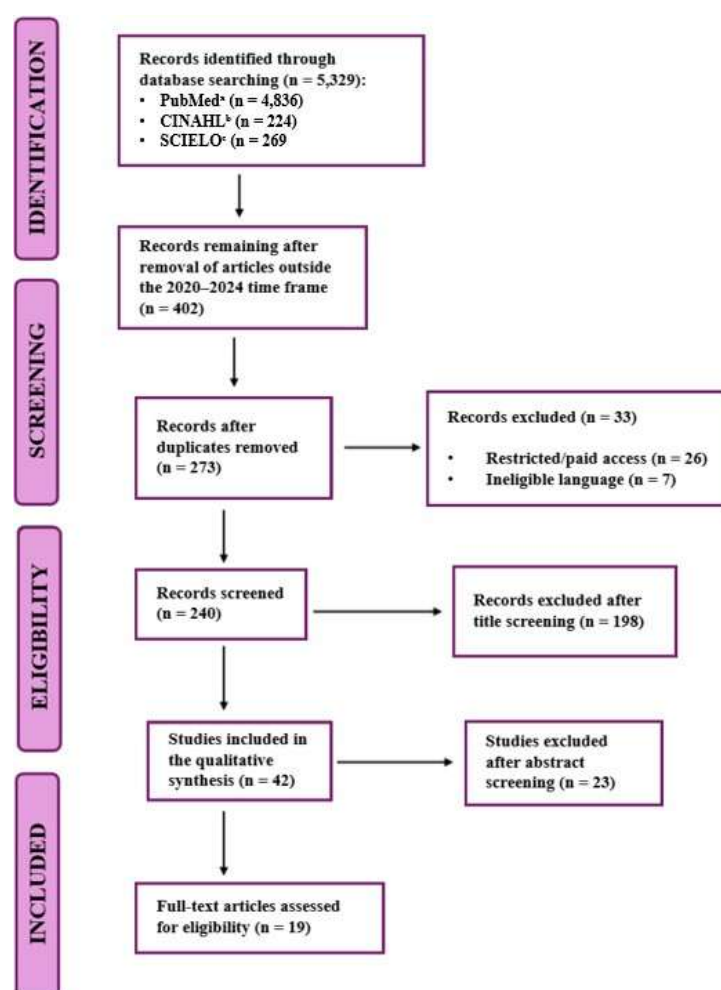
Editorials, letters to the editor, scientific event proceedings (abstracts), opinion articles, duplicate publications, studies whose studied population was not human, and review articles were excluded; as well as articles that only addressed the theme without presenting data on the increase or decrease of STIs after PrEP adoption; papers that lacked interest in sexual education and STI transmission; those that did not deal with STI prevention methodology; and articles whose access required forms of payment.

The limitations of this study relate to the search process, which was conducted in only three databases and three languages, potentially omitting important research published in other languages or platforms. Furthermore, the five-year timeframe may have excluded older studies that could have provided valuable contributions. The retrieved articles exhibit high heterogeneity, making it difficult to compare results and draw general conclusions. There is also a risk of publication bias, where studies with positive results are preferentially published, leaving aside research with negative or inconclusive findings. Finally, given the rapidly evolving nature of this field, the data may become outdated within a short period.

Results and discussion

A total of 5,329 articles were identified in the accessed databases; after applying the eligibility criteria, 19 articles were selected (Fig. 1). The corpus of analysis for this ILR consists of articles represented by the letter “A” followed by a numeral in order of presentation (A1, A2, A3...), which is synthesized in Box 2. Of the selected articles, 9 were in Portuguese and 10 were in English, with the latter being translated by the authors of this research. All were published from 2020 to 2024 on the theme of awareness strategies for prevention against HIV and other STIs, ranging from traditional methods to digital media, highlighting the condom as the primary method of combination prevention alongside PrEP.

Figure 1 - PRISMA flowchart of study identification



Source: Prepared by the authors (2026). ^a Public Medline; ^b Cumulative Index to Nursing and Allied Health Literature; ^c Scientific Electronic Library Online..

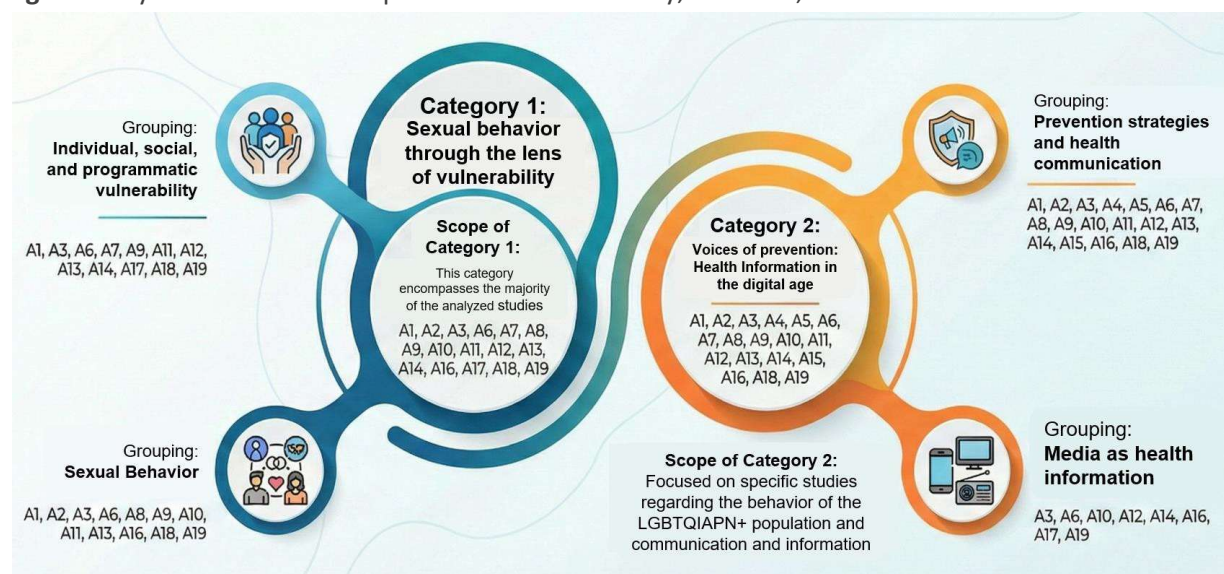
Box 2 - Synthesis of articles published from 2020 to 2024 on awareness strategies for prevention against HIV and other STIs

ID	Article title	Author	Country/Year of publication
A1	Search strategies: Factors associated with condomless anal sex among adolescent MSM ^d and transgender women in three Brazilian capitals: the PrEP ^a 1519 study	ROSÁRIO <i>et al.</i>	Brazil/2024
A2	PrEP perception and experiences of adolescent and young gay and bisexual men: an intersectional analysis	SANTOS <i>et al.</i>	Brazil/2023
A3	Use of HIV prevention methods and contexts of the sexual practices of adolescent gay and bisexual men, travestis, and transgender women in São Paulo, Brazil	MARTINS <i>et al.</i>	Brazil/2023
A4	Involvement in non-governmental organizations and participation in HIV ^b /AIDS ^c prevention actions by MSM ^d in Brazil	ALMEIDA <i>et al.</i>	Brazil/2021
A5	AIDS ^c in posters: representations of sexuality and AIDS prevention in December 1st campaigns in Brazil (2013-2017)	LERMEN <i>et al.</i>	Brazil/2020
A6	HIV ^b Pre-Exposure Prophylaxis among MSM ^d : communication, engagement, and peer social networks	SANTOS <i>et al.</i>	Brazil/2022
A7	Access to the Unified Health System from the perspective of male homosexuals	SANTOS <i>et al.</i>	Brazil/2020
A8	Adolescents' Level of Knowledge About HIV ^b Infection: A Relationship With Self-Care and Risk Behaviors	SILVA <i>et al.</i>	Costa Rica/2022
A9	Social skills and sexual health of adolescents in a border region	CORRÊA <i>et al.</i>	Portugal/2022
A10	Awareness of and Preferences for Preexposure Prophylaxis (PrEP) among MSM at High Risk of HIV Infection in Southern China: Findings from the T2T Study	CHEN <i>et al.</i>	China/2021
A11	Prevalence and factors associated with risky sexual behavior among Brazilian school-aged adolescents	MONTE <i>et al.</i>	Brazil/2024
A12	PrEP ^a delivery in community-based organizations: a comparative study with conventional services	GRANGEIRO <i>et al.</i>	Brazil/2024
A13	Building bridges to care: the experience of peer navigation in enabling linkage to PrEP for adolescent men who have sex with men and transgender women	OLIVEIRA <i>et al.</i>	Brazil/2023
A14	"It was unusual but amazing": demand creation for PrEP among adolescents' men who have sex with men (MSM) and transgender women (TGW) in Brazil	SOUSA <i>et al.</i>	Brazil/2024
A15	Pre-exposure prophylaxis (PrEP) in Australia: are there challenges facing sexual health promotion?	DUNN <i>et al.</i>	Australia/2022
A16	Ehealth interactive intervention in promoting safer sex among men who have sex with men	CHOI <i>et al.</i>	Germany/2024
A17	Adolescent Preferences for a Pediatric Primary Care-based Sexually Transmitted Infection and HIV Prevention Intervention	WOOD <i>et al.</i>	USA/2024
A18	Delaying sexual onset: outcome of a comprehensive sexuality education initiative for adolescents in public schools	RAMÍREZ-VILLALOBOS <i>et al.</i>	United Kingdom/2021
A19	Transgender Youths' Sexual Health and Education: A Qualitative Analysis	WARWICK <i>et al.</i>	EUA/2022

Source: Prepared by the authors (2026). ID: article identification. ^a Pre-Exposure Prophylaxis; ^b Human Immunodeficiency Virus; ^c Acquired Immunodeficiency Syndrome; ^d Men who have sex with Men.

By performing a thematic content analysis of the articles related to HIV and other STI prevention strategies in schools, young and adult MSM, travestis, transgender women, and social media as a dissemination method, the analytical procedure of the obtained results was systematized into 4 clusters and 2 categories (Figure 2).

Figure 2 - Synthesis of scientific production: vulnerability, behavior, and health communication



Source: Prepared by the authors (2026).

The results disclose important information on awareness strategies for the prevention of HIV and other STIs, ranging from traditional methods to digital media communication channels, revealing risky behaviors adopted by young and adult MSM, *travestis*, and transgender women. Within the scope of vulnerabilities among this population, the transformations and challenges of adolescence are prominently highlighted.

The findings address risky sexual behaviors among young and adult MSM, *travestis*, and transgender women, highlighting condomless receptive anal intercourse (A1, A8, A11, A16), the lack of condom use among adolescents (A3, A16), and unprotected first sexual intercourse (A1, A8, A11). Multiple partners, group sex, transactional sex, casual condomless sex, and practices such as receiving semen during receptive anal intercourse are also mentioned (A1, A3, A6, A8, A10, A13, A16). Among the associated factors are the use of illicit drugs (A1, A3, A8, A11, A13, A16), excessive alcohol consumption (A1, A3, A11, A13), commercial sex (A1, A3, A13), homosexual identity, moderate or high perceived HIV risk (A1, A18, A19), partner trust in stable relationships (A1, A2, A3, A11), difficulty negotiating [condom use] (A11, A16, A19), lack of medical counseling (A19), unavailability of condoms at the time of the sexual act (A11, A19), early sexual debut, and first intercourse without a condom (A1, A9, A11).

Other aspects include group sex and multiple partners (A1, A8, A11, A16, A18), sex with younger partners (A1, A3), sex in public venues (A13), as well as sociodemographic factors such as low educational attainment, poverty, precarious housing, dysfunctional family environments, and racial issues (A3, A11). The text also points to the substitution of condoms with other contraceptive methods (A11), discomfort and decreased pleasure associated with condom use (A3, A11, A19), inconvenience regarding the internal [female] condom (A11), sexual violence (A1, A3, A11), and depressive symptoms (A1).

The articles on prevention (A1, A3, A4, A6, A7, A8, A9, A11, A12, A13, A16, A18, and A19) discuss Sexual Education Programs aimed at young and adult MSM, *travestis*, and transgender women, with specific emphasis in A2, A3, and A15. The condom appears as the primary method for STI prevention (A1, A2, A3, A4, A8, A11, A15, A17, A19), while PrEP is addressed as a strategy against HIV (A2, A6, A10) and, combined with condoms, as part of combination prevention (A2, A5, A13, A14, A17; A3, A15, A17). Article A11 addresses the HPV vaccine as a barrier method, and A5 discusses inclusive campaigns for the LGBTQIAPN+ community. Furthermore, A14 and A17 present innovative recruitment and active follow-up strategies, while A16 points out the challenges of sexual health promotion in clinical services related to stigma, access, and

communication barriers.

Media emerges as an important source of information on STI prevention, being cited across social networks (Instagram, Facebook, X, Threads) in articles A3, A6, A14, and A17, and on video platforms (TikTok, YouTube, Reels, and Status) in articles A6 and A17. Dating apps such as Tinder, Badoo, POF, Namoro, Grindr, Hornet, and Scruff are also mentioned as disseminators of information in articles A6, A10, A14, and A16. Access to information, the language used, and the context in which they operate are discussed in A3, A6, A10, A12, A14, A16, A17, and A19. Digital prevention campaigns as online strategies for healthcare demand generation appear in A14, A16, and A17, with article A14 highlighting the use of the Amanda Self Chatbot on social networks, which assists users with STI prevention tips and advice.

The 19 analyzed articles describe both risky sexual behaviors among young and adult MSM, *travestis*, and transgender women, as well as combination prevention alternatives against STIs. The vulnerability of these populations is highlighted alongside the increasing use of dating apps, which offer anonymity and geolocation (Santos et al., 2022; Choi et al., 2024). PrEP emerges as an effective method for HIV prevention, with studies proving its safety, especially among MSM, although gaps still remain regarding cultural aspects, stigmas, and barriers to access and continuity (Santos et al., 2023). The demand for PrEP has increased among individuals facing greater social and economic vulnerability, driving actions to simplify its delivery, such as nurse prescribing, even though some services still require a medical prescription (Grangeiro et al., 2024). NGOs play an essential role by complementing public actions, offering continuing education, condom distribution, emotional, social, and legal support, as well as encouraging safe sex practices (Almeida et al., 2021). Social media also stands out as a tool for disseminating information, acting either positively or negatively, but expanding digital prevention content. Finally, the study organizes two analytical categories: Category 1 – Sexual behavior through the prism of vulnerability, and Category 2 – Voices of prevention: Health Information in the digital era.

Sexual behavior through the prism of vulnerability

This category highlights the risky sexual behaviors of young and adult MSM, *travestis*, and transgender women, associated with individual and programmatic factors that increase vulnerability to STIs. The LGBTQIAPN+ population faces barriers in accessing healthcare, such as discriminatory treatment and rushed consultations lacking adequate counseling on sexuality (Santos et al., 2020). Among adolescents, physical, psychological, and social changes intensify the absence of condom use during their first sexual intercourse—a behavior that tends to persist into adulthood due to a lack of health guidance within the school, family, or healthcare system (Rosário et al., 2024; Oliveira et al., 2023; Ramírez-Villalobos et al., 2021; Silva et al., 2022).

The early debut of sexual life exposes adolescents to unprotected sex, influenced by family and social patterns, and aggravated by the use of alcohol and drugs, which reduce condom use decision-making (Martins et al., 2023; Oliveira et al., 2023; Rosário et al., 2024; Monte et al., 2024). Among *travestis* and transgender women, condomless receptive anal intercourse appears linked to sex work in exchange for money or housing (Rosário et al., 2024; Martins et al., 2023; Oliveira et al., 2023). Practices such as group sex, multiple partners, and relationships between older adults and youth also reinforce risk, as the more experienced partner often decides against condom use (Rosário et al., 2024; Martins et al., 2023).

Social vulnerability amplifies these risks, marked by poverty, low educational attainment, unstable housing, violence, and dysfunctional family environments, which hinder access to information and prevention (Martins et al., 2023; Monte et al., 2024). The non-use of condoms during the first sexual intercourse can extend into adulthood, depending on the social environment. Furthermore, studies point out that although the use of PrEP for HIV prevention is growing, there is a significant reduction in condom use, which has contributed to the increase in STIs (Dunn et al., 2022).

Voices of prevention: health information in the digital era

This category highlights the importance of combination prevention against STIs, especially among

young and adult MSM, *travestis*, and transgender women, through the use of condoms associated with PrEP, sexual education, and digital campaigns. National and international studies emphasize the need to improve sexual health education in schools, including dialogues on sexual orientation, psychological, and emotional aspects, thereby contributing to prevention and health promotion programs (Corrêa et al., 2022; Silva et al., 2022). Counseling provided by healthcare professionals is also identified as essential, given that many families still offer a sexual education focused solely on heterosexual relationships (Warwick et al., 2022; Silva et al., 2022).

Despite criticisms of the condom, such as discomfort, allergy, or decreased sensitivity (Santos et al., 2023; Martins et al., 2023; Santos et al., 2022), it remains the most effective method against HIV and other STIs (Rosário et al., 2024; Martins et al., 2023). However, with the introduction of PrEP, there has been a significant reduction in condom use, resulting in an increase in STIs such as chlamydia, HPV, and syphilis. Therefore, PrEP must be promoted as part of combination prevention, associated with self-care and mental health. Poster campaigns have also been used to disseminate prevention strategies, although they still fail to address sexual practices and gender relations (Lermen et al., 2020).

Social media and dating apps emerge as modern and innovative tools to expand the dissemination of combination prevention (Sousa et al., 2024). Digital resources such as short videos, quizzes, and private chats make the language more accessible and appealing (Wood et al., 2024). Popular apps, such as Grindr, already propagate information on HIV/STIs, leveraging the anonymity and geolocation that attract the LGBTQIAPN+ community (Choi et al., 2024; Chen et al., 2021). Future research should further explore the role of platforms such as X and Instagram in the continuous dissemination of content on sexuality and HIV (Sotero; Prado, 2025).

Conclusion

The study concludes that face-to-face counseling needs to be modernized to meet the current demands of PrEP users. The use of private chats and online consultations can ensure confidentiality and anonymity, creating a more comfortable environment for people to express feelings and speak openly, similar to what already occurs on digital platforms. This modernization, termed Digital Counseling and Sexual Health Education, can be applied as a methodological strategy for sexual health prevention and promotion, utilizing inclusive campaigns on social networks, dating apps, and interactive tools such as videos, quizzes, and private chats, while emphasizing combination prevention with PrEP and condoms.

If incorporated, this digital strategy expands the reach of information, especially among young and adult MSM, *travestis*, and transgender women, by offering accessibility and appropriate language. It is characterized by a diversity of formats, the promotion of user autonomy, and the centrality of digital communication as a tool for engagement in STI prevention. Its effectiveness depends on adapting to sociocultural demands and continuously creating safe, informative spaces that promote responsibility in the expression of sexuality and strengthen the utilization of combination prevention.

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