

PREVENTATIVE MEASURES FOR HIV IN LGBT+ YOUTH

Determining Preventative Measures and Interventions for HIV in LGBT+ Youth

Populations: A Literature Review

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Research Question: What factors contribute to the effectiveness of HIV prevention strategies in LGBT+ youth populations?

Abstract

HIV prevention is an important part of overall HIV research. Over time, both infection rates and mortality rates have been lowered, but there are still disparities that persist in the implementation of effective prevention strategies. Young people who identify as part of the LGBT+ community continue to face unique challenges in accessing and benefiting from HIV prevention measures. The purpose of this literature review is to examine HIV prevention strategies and their effectiveness in LGBT+ youth populations. Ten research articles were chosen from two databases, PubMed and SpringerLink, to be analyzed for this research. Three common strategies arose from this research: making testing more accessible through the internet, providing online education, and providing online peer support. These findings highlight the value of providing alternatives to traditional clinical visits for HIV testing and can point towards new areas of focus for organizations working towards reducing the infection rate of HIV. Further research can be focused on examining specific methods of dissemination of educational materials and HIV self-tests more effectively and to a wider audience.

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Introduction

Approximately 1.2 million people in the US are living with HIV (WHO, 2024). An additional 350,000 are infected every year (Dinesh et al., 2023). This disease weakens the immune system's response to acute illnesses and may impact the health of the central nervous system (National Institute of Mental Health, 2023). Despite many breakthroughs in medical advancements, it remains a significant modern-day health issue. Infected individuals have reduced immune system functions, and untreated HIV risks the development of AIDS, a chronic immune system disorder (National Institute of Mental Health, 2023). In 2023, an estimated 630,000 people died from HIV-related causes, and HIV has claimed an estimated 42.3 million lives to date (World Health Organization, 2024). Between 2008 and 2022, the rate of HIV diagnoses decreased by 25% in women and 8% in men, but the rate of decrease has declined over the years (Center for Disease Control, 2024b).

Approximately 36.5% of people living with HIV were in a household earning an annual income at or below federal poverty (Dasgupta et al., 2023). Additionally, 8.1% have experienced homelessness recently. Additionally, 42.9% had Medicaid, and 27.6% had Medicare; 39.7% were living with a disability (Dasgupta et al., 2023). After adjusting, poverty, homelessness, Medicaid/Medicare coverage, and disability were higher among people with HIV compared to the general population (Dasgupta et al., 2023). Another component that impacts people's risk of acquiring HIV is age, alongside being a part of the LGBT+ community. Young people made up 56% of new diagnoses (Center for Disease Control, 2024b), and around 69% of new cases in 2019 were in gay and bisexual men (Center for Disease Control, 2024a).

There are significant disparities when considering HIV in LGBTQ+ populations. Around 7% of all adults and 17% of adults younger than 30 in the US identify as lesbian, gay, or

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bisexual, and an estimated 1.6% of all adults and 5.1% of adults younger than 30 in the US identify as transgender or non-binary (Jewell & Petty, 2024). In 2018, it was estimated that gay, bisexual, and other men who have sex with men were 22 times more likely to contract HIV acquisition in comparison to members of the general population (Jewell & Petty, 2024). Men who have sex with men (MSM) face numerous HIV prevention challenges, such as racism, discrimination, homophobia, and stigma, which puts them at higher risk for HIV (AIDSVu, 2021). Additionally, MSM are more likely to experience challenges in obtaining and maintaining viral suppression for HIV due to disproportionate levels of stigma, homelessness, and a lack of mental health and culturally competent care; all these factors may prevent them from accessing proper treatment (AIDSVu, 2021).

Young people are at an elevated risk of acquiring HIV infections (Williams et al., 2024). Of the new HIV infections every year, 25% are in youth ages 13 to 24, and most are not aware of their status (Nielsen-Saines et al., 2019). Runaway and homeless youth are a significant risk due to multiple factors, (Nielsen-Saines et al., 2019) and youths in the LGBT+ community are at risk of acquiring HIV (Campaign, 2017). The Youth Risk Behavior Survey reported that, while sexual activity had decreased in adolescent student populations, their rate of using protective barriers (such as condom use) had also decreased (AIDSVu, 2021). Condoms and other protective barriers have been shown to decrease HIV transmission (Center for Disease Control, 2020).

Outreach is an integral part of any preventative work. Public health specialists and healthcare workers must share vital information with at-risk populations in an effective manner. In the past few decades, however, preventative measures are currently more effective than ever (Center for Disease Control, 2020). This has led to an overall decrease in cases since the 1980s, and an estimated \$360,000 is saved (for providing lifetime HIV treatment) per each person for

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every case of HIV that is prevented (Center for Disease Control, 2020). The US Department of Health and Human Services has created a program called End the HIV Epidemic (EHE) to provide early diagnostics, treatment, and protection for those at risk of acquiring HIV (Gleason et al., 2023). The goal is to reduce HIV infections by 90% by 2030. However, nearly 40% of people with HIV either do not know that they have the infection or haven't received appropriate care (HIV.gov, 2019).

The intersection of LGBT+ people and youths is significant; both categories make up a substantial portion of HIV diagnoses, and research into these areas is essential. The detection and treatment of HIV can have both clinical and public health benefits (Nielsen-Saines et al., 2019), and early identification can contribute to improved disease outcomes (Kerin et al., 2024). Traditionally, youth who have acquired HIV through sexual transmission have not been included in early treatment studies (Nielsen-Saines et al., 2019). Therefore, examining methods to increase knowledge, awareness, and testing rates among youths who identify as part of the LGBT+ community is an important part of the overall mission to reduce HIV infection rates.

There are notable gaps, however, in the literature surrounding how to effectively engage LGBT+ youth in HIV prevention resources. While intervention care is crucial for ensuring individuals are protected, the success of outreach, preventative measures, and interventions relies on reaching the appropriate target populations. Health inequities persist among youth living with HIV (Kerin et al., 2024) and within LGBT+ communities, highlighting the need for early identification and intervention. This literature review aims to explore the barriers to accessing preventive care for HIV in LGBT+ youth, with the goal of improving protective and preventative behaviors within the population.

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Methods

For the literature review, a search was done between the PubMed and SpringerLink databases for information about LGBT youth populations and HIV prevention. PubMed has an extensive collection of research articles, covering medicine, health systems, and clinical studies, among other topics. The National Center for Biotechnology Information, a part of the National Institute of Health, manages the database. There are over 26.8 million full-text journal articles provided by PubMed. Meanwhile, SpringerLink covers topics surrounding life science, engineering, and medicine. The journal is managed by Springer Nature and holds over 13 million documents. Over 3,000 of these documents are journal articles specifically. The process for selecting the articles in this literature review is detailed in *Figure 1*.

For PubMed, a search for “HIV and LGBT” yielded 674 results. Searching “HIV and LGBT*” increased the number of articles to 1065. The asterisk was used to include all terms related to the term LGBT. A narrower search of “(HIV) AND (LGBT*). AND (youth OR adolescence*)” resulted in 326 articles. The asterisk was included to expand the search to terms related to LGBT. The search term “(HIV) AND (LGBT* OR MSM*). AND (youth OR adolescence*)” increased the search to 3,208 articles. Including more terms in the search to “(HIV) AND (LGBT* OR MSM* OR lesbian OR gay OR bisexual OR trans*). AND (youth OR adolescence* OR teen*)” resulted in 28,164 articles. The search was then filtered to include articles from 2014 to 2024, yielding 11,197 articles. Then, the search was filtered further to produce articles that are fully available online, in English, and focus on adolescence, producing 7,179 articles. Increasing the search term to “(HIV) AND (LGBT* OR MSM OR lesbian OR gay OR bisexual OR trans*) AND (youth OR adolescence* OR teen*) AND (prevention) NOT (cure)” provided 4,368 articles. The term ‘cure’ was excluded because this literature review is

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focused on preventative measures. The search was filtered further to only include clinical trials or randomized clinical trials. The final search term used was “(HIV) AND (LGBT* OR MSM OR lesbian OR gay OR bisexual OR trans*) AND (youth OR adolescence* OR teen*) AND (prevention OR acessab*) NOT (cure OR treat)” which yielded 60 articles. Of those articles, six were chosen.

A similar search process was used for SpringerLink. The search term “HIV AND (LGBT* OR MSM OR lesbian OR gay OR bisexual OR trans*)” produced 274,295 articles. The search was filtered so that it would produce research articles written in English in the past 10 years, narrowing the pool of articles to 69,256. The search was expanded to “HIV AND (LGBT* OR MSM OR lesbian OR gay OR bisexual OR trans*) AND (prevention OR acessab*) NOT (cure OR treat),” which yielded 17,808 results. Searching “HIV AND (LGBT* OR MSM OR lesbian OR gay OR bisexual OR trans*) AND (prevent* OR acessab*) NOT (cure OR treat OR determin* OR child* OR adult*)” resulted in 3,528. Then, the search was further filtered to focus on public health measures in the last 10 years, yielding 82 articles. Four articles were chosen.

Inclusion and Exclusion Criteria

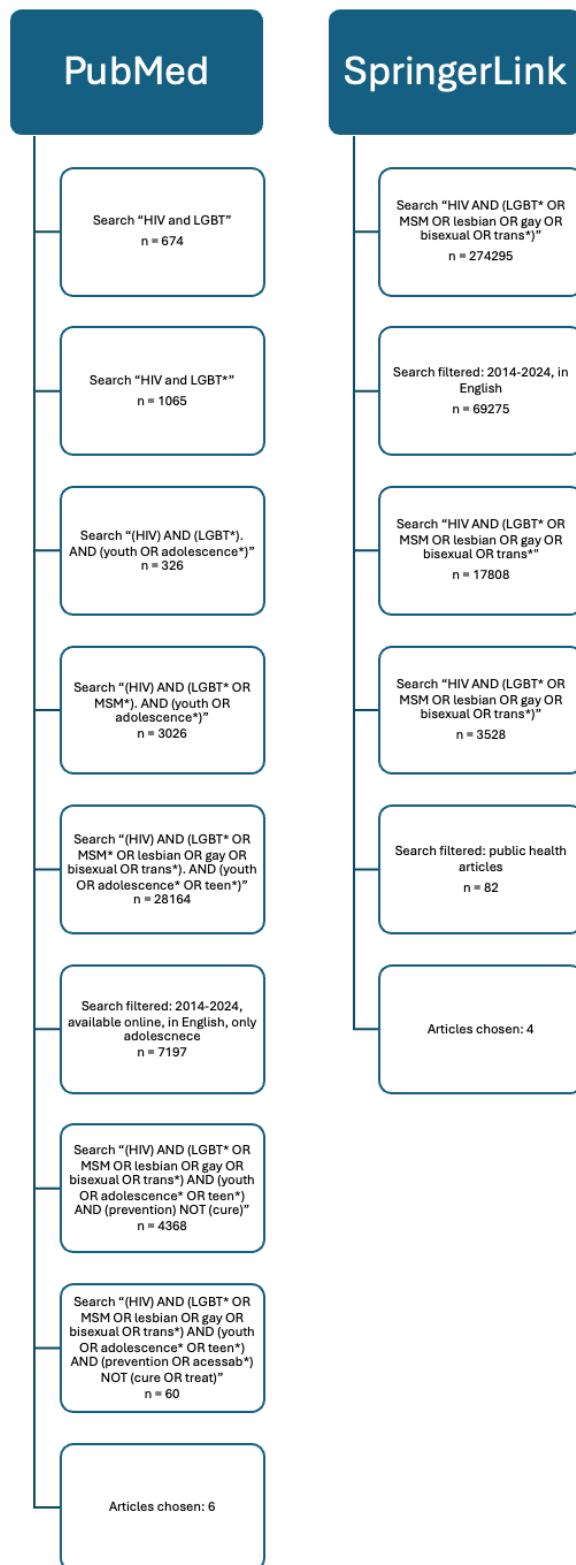
HIV is a wide topic of research. Similar inclusion and exclusion criteria were used in both databases. The search terms “LGBT*”, “MSM”, and other similar terms were included in both database searches. These terms were used in conjunction with “youth and “adolescence*” to find articles with information about both groups. Articles about adult populations and child populations were excluded in the search. Additionally, the term “determin*” was excluded from the search, since many articles that the term would produce may be related to social determinants of HIV risk, and this literature review is more focused on methods of HIV prevention. Both

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databases were limited to only include articles published in the last 10 years and were filtered to only include research articles. *Figure 1* has a detailed chart of the search process.

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Figure 1: Article Selection Process



Results

Research shows that LGBT+ youths, particularly transgender youths, are not as represented in HIV prevention trials. Structural factors, such as socioeconomic disadvantage and lack of access to healthcare, exacerbate HIV risks for many young people who are a part of the LGBT+ community. Current literature is focused on the barriers that exist around healthcare access for at-risk populations and alternative methods to provide it. Increasing HIV test access through different avenues such as the Internet, providing online educational resources, and creating peer-to-peer community spaces have been shown thematically to help increase HIV awareness among LGBT+ youths. The article table (*Table 1: Detailed Summary of Articles Reviewed*) has additional information about the research articles used.

Making testing accessible through the internet

The distribution of HIV self-tests has proven to be a mechanism to increase awareness of HIV and its spread among LGBT+ populations, alongside decreasing its transmission rate (MacGowan et al., 2020). When analyzing preventative measures, one method to consider is to provide people with the ability to monitor themselves for the presence of the infection. HIV self-tests being available through the internet increased testing frequency among young, high-risk individuals (Ybarra et al., 2018), making them more aware of their HIV status. Additionally, self-testing kits can be mailed to individual addresses, reducing certain barriers associated with clinical or peer-based HIV testing programs (MacGowan et al., 2020), such as testing costs or face-to-face interactions. LGBT+ youths tend to face barriers when accessing traditional healthcare services (Ybarra et al., 2018), which at-home testing options can mitigate. Additionally, online platforms can remind youths about the importance of regular HIV testing

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(Ybarra et al., 2019). At-home testing provided via the internet increased annual testing by up to 55.7% among LGBTQ youths (Ybarra et al., 2019). The distribution of HIV self-tests to MSM recruited via the internet significantly increased the frequency of testing overall (Wray et al., 2018). Providing HIV self-tests also increased the testing rate among the social network of the people who obtained self-testing kits (MacGowan et al., 2020).

Providing online education

A part of HIV prevention for youth populations is outreach, and mobile platforms can be a feasible option. Internet-based interventions have been successful overall due to providing anonymity and information confidentiality when sharing personal medical information (Yan et al., 2017). People have different reactions to mobile outreach, but they had positive responses to programs. For example, some research articles studied the effectiveness of Guy2Guy, an online program meant to support at-risk populations in HIV prevention, specifically aimed at adolescent men ranging from ages fourteen to eighteen. The content for this program was created to address key aspects of healthy sexuality (Ybarra et al., 2018). Guy2Guy participation was associated with higher motivation to engage in HIV preventative acts in LGBT youths (specifically men) who had never had sex before entering the intervention (Ybarra et al., 2018). Participants in the Guy2Guy program were more likely to self-report preventative actions such as condom usage and abstinence (Ybarra et al., 2018). Additionally, the *Keep it Up!* program was a program that involved providing accessible online information around HIV prevention. Participants overall reported high engagement with online HIV education resources and self-reported that these programs helped them change their behaviors to reduce HIV risk (Mustanski et al., 2013). The main concern that was found with online programs was loss of privacy, but participants were

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successfully able to find locations to complete the study that afforded them a high degree of privacy (Ybarra et al., 2019). Otherwise, retention rates in these studies were typically over 80% and provided secondary outcomes, such as better HIV knowledge and an increase in the intention to use condoms (Mustanski et al., 2013).

Providing online peer support

Reducing social barriers to HIV prevention in LGBT+ youth involves presenting an environment of inclusivity. Participation of underrepresented groups in HIV prevention programs increases when research staff are of the same community as the participants (Miller et al., 2018). Minority populations are disproportionately affected by HIV but have been underrepresented in clinical trials (Cespedes et al., 2022) and the perception of support had direct, positive impacts on avoidance of sexual activities that may increase the risk of acquiring HIV (Miller et al., 2018). Furthermore, peer-led initiatives make a difference. If other LGBT+ community members can lead discussions and provide resources for others to foster a similar community and lower the social barrier to HIV, then it can create a more supportive environment for LGBT+ youth to engage with (Mustanski et al., 2013).

Table 1: Article Table

	Authors	Y e ar	Article and Journal Title	Purpose of the Article	Sampl e Infor matio n	Type of Rese arch	Research Findings	Article Limita tions
1	Wray, Tyler B Chan, Philip A Simpanen, Erik Operario, Don	2018	A Pilot, Randomized Controlled Trial of HIV Self-Testing and Real-Time Post-Test Counseling/Referral on Screening and Preventative Care Among Men Who Have Sex with Men <i>PubMed</i>	To analyze the usefulness of the eTEST system, which allows patients to use HST kits remotely.	65 men who have sex with men in the northeastern US region.	Longitudinal study	Overall sample completion rate for the full sample of participants was 89%, and 93.1% reported using a study-provided kit to test themselves for HIV at some point during the study. There were no significant differences that emerged in HIV testing between the eTEST	A small sample size was used. Online assessments used brief self-report measures and thus are subject to reporting bias.

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2	MacGowan, Robin J Chavex, Pollyanna R Borkowf, Craig B Owen, S Michele Purcell, David W Mermin, Jonathan H Sullivan, Patrick S	2020	Effect of Internet-Distributed HIV Self-tests on HIV Diagnosis and Behavioral Outcomes in Men Who Have Sex With Men: A Randomized Clinical Trial <i>PubMed</i>	To evaluate the effects of providing HIV self-tests on the frequency of testing to diagnose HIV.	2665 participants that met the appropriate survey requirements. Participants were gay or bisexual men with access to a	Longitudinal randomized clinic trial	Distribution of HIV self-tests proved to be a valid mechanism to increase awareness of HIV infection, helping to prevent transmission among MSM. It increased testing awareness and standard HST conditions. Delivering HSR kits is an effective way to increase testing when compared with outreach efforts and encouraging clinic-based testing.

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					mailing address and the internet.		s and potentially contributed to the prevention of HIV transmission. Participation in the survey was approx. 60%.	y concer ns.
3	Xiao, Wenjing Yan, Li Chen, Liping Fu, Gengfeng Yang, Haitao Yang, Cui Yan, Hongjing Wei, Chongyi	2020	Sexual network distribution of HIV self-testing kits: Findings from the process evaluation of an intervention for men who have sex with men in China <i>PubMed</i>	To analyze the impact of distributing HIV self-test kits on the HIC testing rate of men who have sex with men and their sexual partners	177 men participated who were at least eighteen, resided in the Nanjing area, were HIV negative at the beginning of the trial, and had sex with	Longitudinal study	A sexual network-based approach to distributing HIV self-tests among Chinese men who have sex with men has potential. It may improve the effectiveness of HIV self-testing in men who have not tested. Men who used the	The findings in this study may not be generalizable to all men who don't live in urban areas of China. The sample size was relatively small

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					men in the past year.		HIV self-testing kits themselves were more likely to distribute them to others.	
4	Ybarra, Michele L. Liu, Weiwei Prescott, Tonya L. Phillips II, Gregory Mustanski, Brian	2018	The Effect of a Text Messaging Based HIV Prevention Program on Sexual Minority Male Youths: A National Evaluation of Information, Motivation and Behavioral Skills in a Randomized Controlled Trial of Guy2Guy <i>SpringerLink</i>	To engage young people who identify as part of the LGBT+ community with content around HIV preventative behavior	302 boys, aged 14-18, who identified as gay, bisexual, and/or queer cisgender males across the US	Randomized control trial	Among sexually inexperienced youth, participants in the study were three times as likely to classify themselves as "highly motivated" to engage with the content learned in the program. Participation is associated with a stronger motivation to engage in HIV preventative acts.	The data was collected through self-report questionnaires and is subject to personal bias. Recruitment was done online through Facebook, therefore findings may be generalizable to adolescents.

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								cent gay and bisexual men using this website, not all men in this category.
5	Ybarra, Michele L. Prescott, Tonya Mustanski, Brian Parsons, Jeffery Bull, Sheana S	2019	Feasibility, Acceptability, and Process Indicators for Guy2Guy, an mHealth HIV Prevention Program for Sexual Minority Adolescent Boys <i>PubMed</i>	To examine the feasibility of the program Guy2Guy and to examine the impact on HIV knowledge and related behaviors	302 youth who fit the demographic of Guy2Guy (14 to 18-year-old boys who are a part of a sexual minority)	Randomized control trial	94% of participants completed the 3-month follow-up survey and 93% said that they somewhat or strongly liked the program. Feedback suggests that this program is feasible and accessible for the target demographic, and that	There were issues with connecting with participants who didn't complete the follow-up survey. Feedback with the program or dropped out of the study. Understanding their experi

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							subjects benefitted from the knowledge that they gained from participation.	ence may have given useful information.
6	Yan, Jin Zhang, Aidi Zhou, Liang Huang, Zhulin Zhang, Pan Yang, Guoli	2017	Development and effectiveness of a mobile phone application conducting health behavioral intervention among men who have sex with men, a randomized controlled trial: study protocol	To develop and app to analyze its success in providing an online resource for HIV prevention and intervention among men who have sex with men	400 participants were recruited. Participants needed to be at least sixteen years old, had same-sex intercourse in the past twelve months, be HIV negative, and attended another	Qualitative method in phase one, randomized control trial in phase two	Apps can be beneficial to the self-management of individuals tracking health information and health-related behaviors. Phone-based applications have great potential to be potential tools for HIV prevention among men who have sex with men.	Due to the open design of the intervention, participants are aware of the app's goal and focus on HIV prevention, which may introduce bias. A double-blind strategy is used.

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					intervention program			
7	Mustanski, Brian Garofalo, Robert Monahan, Colleen Gratzer, Beau Andrews, Rebecca	2013	Feasibility, Acceptability, and Preliminary Efficacy of an Online HIV Prevention Program for Diverse Young Men who have Sex with Men: The Keep It Up! Intervention <i>SpringerLink</i>	To analyze the effectiveness of Keep it Up!, an online program aimed at HIV-negative MSM to decrease HIV cases.	102 young men who have sex with men were eligible for this trial. All were HIV-negative, 18-24, and had regular internet access.	Randomized clinical trial	Attitudes towards the Keep it Up! Program were overall positive, and participants self-reported that the program helped them change their behaviors to reduce HIV infection risk. Retention was excellent through the three-month follow-up period (80% in both arms).	Participants completed this study under highly controlled conditions. All outcomes were measured using self-report, which may be prone to bias. A somewhat small sample size was used.
8	Miller, Robin Lin Strzyzowski, Trevor Lee, Kyung-Sook Chiaramonte, Danielle	2018	Structural Effects on HIV Risk Among	To examine the influence	Sample of 1793 youth	Multi-side survey	States in which sexual minorities	The sample used conve

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Acevedo-Polakovich, Ignacio Spring, Hannah Santiago-Rivera, Olga Boyer, Cherrie B. Ellen, Jonathan M.	Youth: A Multi-level Analysis <i>SpringerLink</i>	e of concentrated disadvantage, HIV stigma, and sexual and gender minority on engagement with HIV-risky behavior.	residing in 23 states and the District of Columbia.	s and transgender persons are stigmatized also tend to stigmatize HIV status. Concentrated community disadvantage was also positively correlated with structural stigmatization of HIV status.	nience sampling instead of probability sampling to find its survey population, and while it did include some population variance, most of the study included heterosexual females and gay and bisexual males, creating a de facto comparison of young men and young
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							wome n.
9	Cespedes, Michelle Das, Moupali Hojilla, J Carlo Blumenthal, Jill Mounzer, Karam Ramgopal, Moti Hodge, Theo Torres, Thiago S Peterson, Charles Shibase, Senzokuhle Elliot, Ayana Demidont, A C Callaghan, Larkin Watson, C Chauncey Carter, Chrisph Kintu, Alex Baeten, Jared M Ogbuagu, Onyema	2022	Proactive strategies to optimize engagement of Black, Hispanic/Latinx, transgender, and nonbinary individuals in a trial of a novel agent for HIV pre-exposure prophylaxis (PrEP)	To examine the participation in historicaly underrepresented individuals, notably those who are apart of the LGBT+ community, in studies surrounding their HIV health care.	3295 individuals were recruited for this trial who identified as a cisgender man, transgender woman, or gender non-binary. All participants are at least sixteen years of age, have sex with male partners, and are at	Doub le-blind randomized study	LGBT+ populations are disproportionately impacted by HIV and have not had the same representation in HIV clinical trials. This highlights the need for ongoing engagement with the community to increase representation. According to insights, there are barriers to PrEP uptake for LGBT+ individuals, PrEP being a part of HIV care.

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					risk for HIV infection.			
1 0	Rhodes, Scoot D McCoy, Thomas P Tanner, Amanda E Stowers, Jason Bachmann, Laura Nguyen, Annie L Ross, Micheal W	2 0 1 6	Using Social Media to Increase HIV Testing Among Gay and Bisexual Men, Other Men Who Have Sex With Men, and Transgender Persons: Outcomes From a Randomized Community Trial <i>PubMed</i>	To analyze an alternative strategy to identify HIV infections and link people to HIV care	1292 participants completed the assessments	Cross - sectional data collection	The social media intervention increased testing within intervention communities. The interventions had notable positive characteristics. The intervention was able to reach men who may not have been reached in an intervention done in a physical space. Additionally, the intervention is easy to implement due to	This study relied on access to social media, and while the focus was to examine its reach and success, it was limited in its scope because of its inability to reach those without consistent access to social media.

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							being available over the internet.	
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Discussion

Young people in the LGBT+ community are underrepresented in HIV research, despite being at an increased risk of infection. It is important to develop a more comprehensive understanding of HIV prevention measures for this population, as effective measures can substantially reduce the risk of infection. This literature review aimed to identify and discuss interventions that have been successful in mitigating behaviors associated with a higher risk of HIV transmission among LGBT+ youth. Research shows that providing better access to online resources, HIV testing, and peer communication can decrease the likelihood of LGBT+ youths engaging in behaviors that may increase their risk of acquiring HIV. Improving access to online resources, expanding HIV self-testing availability, and increasing peer communication networks can cause a decrease in high-risk behaviors among LGBT+ youth. These approaches can additionally help increase HIV awareness and promote the early detection of HIV.

One consideration is to provide alternatives to traditional healthcare settings, particularly for younger LGBT+ individuals. Adolescents may face barriers to accessing healthcare due to a fear of judgment. They may additionally be unaware of what resources are available to them. Offering anonymous, easily accessible programs for HIV testing and education can create a safe environment for this group. Mobile testing units, home testing kits, and online consultations are becoming increasingly popular among young people, as they allow for discretion and convenience.

Lowering the social stigma surrounding HIV has shown to improve the willingness of people to engage with preventative measures, as stigma often acts as a barrier to seeking testing and treatment. Additionally, programs that do not require participants to be of legal adult age are especially critical, as younger members of the LGBT+ community may be left out of traditional

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healthcare models. These types of interventions can help bridge the gap for youth who may not be able to access or afford traditional healthcare services.

It is important to consider other at-risk populations when discussing HIV prevention, as many of the same challenges affecting young LGBT+ people can impact other vulnerable groups (Center for Disease Control, 2024b). Because these challenges can impact many different groups, making HIV testing and resources available to a wider audience is important to improving overall HIV education. Regular HIV testing is important to prevention strategies across all high-risk populations (Center for Disease Control, 2020). Early detection through testing allows for timely intervention, including the administration of pre-exposure prophylaxis (PrEP) or antiretroviral therapy (ART) for those diagnosed with HIV, which can significantly reduce transmission risks between individuals. Ensuring that testing is available, accessible, and widely promoted within all at-risk groups can help lower the overall rate of HIV diagnoses and improve health outcomes for those living with HIV.

Limitations

The literature review only used 10-12 articles over a few databases. Ideally, more articles would have been used in order to include a wider database of information. HIV research is a substantial area of research, and this review focused on a small subset of research articles available around the subject. Articles that examine a broader range of options should be included in further research.

Additionally, this review only examines two factors—being a part of the LGBT+ community and being young. There are multiple other factors (such as socioeconomic status, access to healthcare, geographic location, etc.) that may be considered as well when reviewing

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overall risk factors for individuals. These other factors intersect, as these factors may intersect in ways that increase or decrease risk. Their inclusion in future research could offer a new perspective on how HIV prevention can be adjusted to meet the specific needs of different populations. In the future, a more in-depth examination of these intersections may inform researchers of more effective and equitable prevention strategies.

The studies reviewed primarily focused on the short-term outcomes of interventions. Longitudinal research examining the long-term effectiveness of the preventative measures discussed in the literature review may provide a more comprehensive idea of their overall impact. Additionally, this review is focused on published literature, which may not capture current, ongoing, or unpublished HIV prevention and outreach in LGBT+ youth communities. Further research should be done to examine the impact of long-term studies, and additionally an examination should be done of other sources of HIV information provided to LGBT+ youth.

Implications

Future research

From what has been discussed, LGBT+ youths are underrepresented in research, and future work can be done to better investigate other methods that increase outreach and accessibility for at-risk populations for HIV. While this review has offered a look into a list of options, more time should be invested in examining additional studies and identifying other potential methods of HIV prevention.

Investing in further research can provide more insight into alternative methods of HIV prevention. For example, current preventative research is being done into vaccine studies (Goodenow, 2024) and clinical trials have begun in humans beginning in 2021 (IAVI, 2021),

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providing an opportunity for future investigations into vaccination as an option for HIV prevention. Vaccination, like education and access to self-tests, is a form of primary prevention (CDC, 2024 primary prevention) that may lead to decreased risk of HIV infection. Evaluating other methods of HIV prevention can be used to provide guidance on the best practices to encourage overall engagement with HIV prevention.

Future practice

Additionally, it is important to make preventative measures more accessible, private, workable, and beneficial for the populations most at risk. HIV prevention resources should be made accessible to all people. Prevention programs for people at high risk of HIV infection can reduce risk behavior and can be an important part of overall HIV prevention (Center for Disease Control, 2020). In practice, improving and increasing the scope of both online prevention programs and at-home HIV testing kit programs can provide people, especially LGBT+ youths, with better resources to effectively prevent the spread of HIV. Public health campaigns should be encouraged to use inclusive language that reflects the diversity of the LGBT+ community while also being accessible to younger populations. Building networks to address specific social barriers to HIV resource access ultimately improves the accessibility of this information.

Future policy

Outreach programs appear to have reduced risky sexual behaviors and increased use of HIV testing services among high-risk populations (Sabin et. al., 2019). The National HIV/AIDS Strategy (NHAS) already intends to increase the usage of evidence-based HIV prevention approaches, and recognizes the connection between prevention, care, and treatment in reducing

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new infections (Center for Disease Control, 2020) . Improving government HIV programs to assist people in accessing information about HIV self-testing kits or online resources should be a part of policy research.

Conclusions

Young people in the LGBT+ community are at a high risk of HIV exposure. Investing in preventative measures and making them more widely accessible to the populations that need them most can increase HIV awareness and inform people about the safest and most effective measures to take in order to minimize exposure. Research shows that providing online resources, a source of community, and better access to testing can improve HIV knowledge and increase preventative measures taken in the studied populations. Through improving the resources available, LGBT+ youths can better understand HIV, the risks associated with it, and the preventative measures that they can take to avoid infection. Ultimately, if more research can be done and if more tools/resources can be offered, there may be a chance of reaching the goal of reducing new HIV cases by 90% in 2030.

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