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Social Media & PrEP: A Systematic Review of Social Media Campaigns to Increase PrEP Awareness & Uptake Among Young Black and Latinx MSM and Women

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Abstract

Pre-exposure prophylaxis (PrEP) has been shown to be highly effective at reducing the risk of HIV. Despite efforts to employ various social marketing strategies to promote PrEP among young people at greater risk for HIV, PrEP awareness and uptake remain low. We conducted a comprehensive review of current literature that presents or evaluates the use of social media and/or specific communication campaigns to increase PrEP awareness among young Black and Latinx men who have sex with men (MSM) and women. Eight articles met the inclusion criteria for the final analysis. The most used platforms included Facebook, Instagram, and custom mobile applications. Social media is a dynamic and promising tool that may be used to increase PrEP awareness, uptake, and adherence among young Black and Latinx MSM and women.

Abstract

Se ha demostrado que el profilaxis preexposición (PrEP) es muy eficaz para reducir el riesgo de contraer el VIH/SIDA. A pesar de los esfuerzos empleando diversas estrategias sociales de marketing para promover el PrEP entre los jóvenes que tienen mayor riesgo de contraer el VIH/SIDA, el conocimiento y la aceptación del PrEP siguen siendo bajas. Realizamos una revisión exhaustiva de la literatura actual que presenta o evalúa el uso de las redes sociales e campañas de comunicación específicamente para aumentar el conocimiento sobre el PrEP entre

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los jóvenes hombres que tienen relaciones sexuales con hombres (HSH) y las mujeres de raza negra y latinx. Ocho artículos satisficieron los criterios de inclusión para el análisis final. Las plataformas más utilizadas incluyeron Facebook, Instagram y aplicaciones móviles personalizadas. Las redes sociales demuestran ser un instrumento dinámico y prometedor que se puede utilizar para aumentar el conocimiento, la aceptación y la adherencia del PrEP entre los HSH y las mujeres jóvenes de raza negra y latinx.

Keywords

Social media; PrEP awareness; HIV prevention; Health communication

Introduction

In the United States (U.S.), Black and Latinx individuals are disproportionately affected by HIV. In 2018, Black Americans accounted for an estimated 42% of new HIV diagnoses, while individuals of Latinx ethnicity accounted for 27% [1]. Age variations in surveillance data indicates that young people are especially affected by HIV. Individuals between the ages of 13–24 years accounted for 21% of all new diagnoses in 2018, with young Black and Latinx men who have sex with men (MSM) reporting higher rates than their White counterparts [2]. Similarly, Black and Latinx women account for 75% of all new HIV diagnoses, with 41% of those occurring among girls and women between the ages of 13–34 years [3]. Pre-exposure prophylaxis (PrEP) is a proven effective biomedical HIV prevention intervention that when taken consistently can decrease the risk of acquiring HIV from sex by up to 99% [4]. Despite its promise, awareness and uptake of PrEP among young Black and Latinx individuals remains low [5–7].

To reduce HIV rates in the U.S., PrEP awareness and uptake must increase among those who are most vulnerable to HIV, including young Black and Latinx MSM and women. One strategy for increasing PrEP awareness is through the development and integration of digital communication and/or health messages surrounding PrEP use, availability, and access [8]. Social media, in particular, may help bridge gaps in message delivery and expand coverage and dissemination of health information across various groups of people. This method proves especially useful in reaching younger audiences, given that 95% of teenagers report having access to a smartphone [9]. Moreover, compared to White youth, Instagram and Twitter usage is higher among Latinx and Black youth, which underscores the potential for PrEP promotion through social media to reach these groups [10].

For the purposes of this systematic review, social media is defined as any platform allowing for bi-directional or multi-directional exchange of information, such as Facebook, Instagram, Twitter, and YouTube. These platforms offer unique opportunities to connect and engage different types of audiences and help spread information through specific features and functions integrated in the platform. Social media not only facilitates resource and information sharing about PrEP, but it also has the power to shift stigma and social norms surrounding HIV and PrEP use [11–13]. While various interventions have been employed to increase PrEP awareness, the aim of this systematic review is to assess the characteristics

of social media-based interventions that focus on increasing PrEP awareness, uptake, and/or adherence among Black and Latinx individuals under the age of 29 years who may be at risk for HIV.

Methods

Search Strategy

This review paper used a systematic approach to gather relevant research articles pertaining to the use of social media platforms or communication campaigns to increase PrEP awareness. The search was conducted in consultation with a librarian and subject expert (TT) on April 2, 2020. The following databases were used to conduct the search: PubMed, Scopus, and Web of Science. The searches were performed and modified for each respective database using the following search syntax: (“Pre-Exposure Prophylaxis” [mesh] OR “pre-exposure prophylaxis” [tiab] OR “preexposure prophylaxis” [tiab] OR “Emtricitabine, Tenofovir Disoproxil Fumarate Drug Combination” [Mesh] OR Truvada OR (Emtricitabine AND Tenofovir) OR Descovy OR (PrEP AND (HIV OR “human immunodeficiency virus”))) AND (mass media OR communication OR social network OR social networking OR social marketing OR social media OR Twitter OR Facebook OR Instagram OR YouTube OR Snapchat OR blog OR mobile apps OR mobile application OR Web 2.0).

Selection Criteria

The articles selected for this review were screened for relevance, duplication, and the selection criteria. Quantitative, qualitative, and mixed-methods study designs were included. The inclusion criteria were: (1) study conducted in the U.S.; (2) study primarily focused on the use of social media to communicate information about PrEP (social media is defined as any platform allowing for bi-directional or multi-directional exchange of information, such as Facebook, Twitter, Instagram, YouTube, etc.); (3) target population includes Black and Latinx MSM and women under the age of 29 years; and (4) published after 2012 when the Federal Drug Administration approved daily oral PrEP for HIV prevention [14]. The exclusion criteria were (1) study conducted outside the U.S.; (2) exclusively used social media to advertise or market a specific PrEP product for commercial purposes; (3) used social media for study recruitment only; (4) used social media to collect data and/or information on PrEP users; (5) research protocols, commentaries, and grey literature; and (6) study in a language other than English.

Covidence, a systematic review data management program, was used for deduplication and to conduct title, abstract, and full-text review (see PRISMA diagram, Figure 1). The primary reviewer (SK) screened all titles and abstracts (n= 1,045) based on the inclusion and exclusion criteria. Next, the primary and secondary reviewers (SK, TT) independently evaluated all retrieved full-text articles (Kappa statistic = 0.90). Discrepancies during full-text review were discussed with a third reviewer (KH) until consensus was reached.

Data Extraction and Study Quality

Data were extracted from eight full-text articles using a set of 20 defined fields related to study sample characteristics, social media platform used, characteristics of

the communication channels (e.g., bi-directional or multi-directional; group facilitators or moderators), the method used to communicate PrEP messages (i.e., video, infographic, flyer, website, etc.), the use of health behavior or social marketing theories, message content, the benefits and disadvantages of using the social media platform, and study outcomes.

We conducted a quality assessment using a checklist tool for systematic reviews [15–17]. The checklists contain a series of questions about the research methods, study design, and analysis used to evaluate the quality and validity of each study. After reviewing the checklist items for each study design, it was determined that a minimum of 70% of the checklist items must be met for the study to be included in the review.

Results

In total, eight published articles met the inclusion criteria (Figure 1) [18–25]. All studies were conducted in the U.S. and were published after FDA approval of PrEP in 2012. Half of the studies met 100% of the inclusion criteria, whereas the other half (n=4) met at least 80% of the criteria. Qualitative, quantitative, and mixed-methods study designs were employed across the 8 studies. A range of social media platforms were used to communicate information on PrEP and PrEP services. Facebook, Instagram, and mobile applications were the most commonly used platforms to promote PrEP awareness, uptake, and/or adherence. These platforms were designed to provide information about PrEP, to help users consider their PrEP eligibility, or to link them to providers (the full list of social media platforms is provided in Table 1). The following sections provide a comprehensive review of each study's sample characteristics, social media characteristics, intervention design, and outcomes.

Study Sample Characteristics

Specific study sample characteristics such as age, gender, race/ethnicity, sexual orientation, and geography were set as part of the inclusion criteria for this review. Five out of the eight studies explicitly indicated a target population consisting of individuals or participants between the ages of 18–29 years [19, 22–25]. The remaining studies were unable to collect this information due to the nature and parameters of their study design. One study exclusively included Black women in their study, while five studies included Black and/or Latinx gay, bisexual, and other MSM [18–20, 22, 24, 25]. One study included transgender women in their study sample [19]. Four studies were conducted in large metropolitan cities including, New York, Chicago, Atlanta, Seattle, and San Francisco [19, 22, 24, 25]. Additional details on each study's sample characteristics can be found in Table 2.

Social Media Characteristics & Intervention Design

All articles included information pertaining to the social media platform used, the processes and functionalities developed to increase PrEP awareness or uptake, and the methods and theoretical frameworks used to design the study or intervention. The following sections will highlight these characteristics based on the social media platforms reported. Table 2 provides a summary of each study and key findings related to how various social media platforms and technologies were used to increase PrEP awareness, uptake, or adherence.

A. Mobile Apps—Three studies described the use of mobile applications to help improve PrEP awareness, uptake, and adherence [23–25]. Sharpe et al. (2018) conducted a qualitative evaluation of existing Android apps found on the Google Play and Apple App stores to assess the presence of different app features that could contribute to an increase in PrEP uptake and adherence among individuals at risk for HIV [23]. The study found a total of 11 apps, of which seven provided comprehensive information on PrEP, including what PrEP is, when it should be taken, and who would benefit from using it [23]. The apps also featured resources that provided location-based information on clinics and providers offering PrEP services [23]. Other common tools and functions that were featured included PrEP self-assessments, service locators, and adherence reminder systems [23]. Sullivan et al. (2017) evaluated the usability of a comprehensive HIV prevention app for Black and Latinx MSM comprised of tailored HIV-prevention related recommendations, quizzes to self-assess PrEP eligibility, and links to other prevention services [24]. The app was designed using the Social Cognitive Theory and employed specific theoretical constructs such as goal setting, self-efficacy, outcome expectations, and self-regulation [24]. The PrEP eligibility assessment located in the app used an existing 7-item questionnaire developed by the CDC. The researchers identified that 8 out of 86 (9%) PrEP eligible MSM in the study who were not using PrEP began using it [24]. Of the eight who initiated PrEP, six reported that the app influenced their decision to initiate [24]. Many of the reported reasons for PrEP initiation involved the app’s ability to provide information on PrEP, recommend it based on behavioral assessments, and allowed individuals to find a PrEP provider [24]. Based on analytic data, 40% viewed PrEP information in the app and a quarter used the PrEP eligibility screener [24].

The final mobile application-based intervention was PrEPTECH, a telehealth initiation program for PrEP [25]. The aim of the study was to link 25 young MSM of color to PrEP care by providing a free 3-month supply of PrEP via telehealth services. Participants were referred to the study’s mobile-friendly website via the online dating app Grindr [25]. Features on the website were similar to the previous two studies, in that it included a service locator, customizable daily PrEP reminders, and automated appointment reminders [25]. Although researchers determined that users were likely to be PrEP aware prior to using the service, the intervention did serve to address barriers to access experienced by young MSM of color by providing medication in an easy and confidential way [25]. Eleven out of the 16 participants who continued PrEP as a result of enrolling in the study transitioned to sustainable PrEP providers.

B. Facebook & Instagram—One study reported using Facebook to help propagate information about PrEP, and two studies utilized both Facebook and Instagram [18, 19, 22]. In the study that used Facebook only, researchers posted an article titled, “There is a new pill to revolutionize Black women’s sexual health,” to a Facebook page of a website that primarily focused on Black women’s health and lifestyle [18]. The article discussed key information, such as the disparities that exist in new HIV diagnoses among women in the U.S. and the potential benefits of PrEP for Black women. While the study’s aim was to explore Black women’s perspectives on this issue by assessing feedback via the comments section, it did so by presenting factual information regarding PrEP [18]. During

their qualitative analysis, Hill et al. (2018) identified that favorable comments towards the article discussed raising more awareness about PrEP and supported the idea that PrEP was an important HIV prevention option for Black women [18]. The article's reach and engagement on Facebook, as reported by the authors, included 678 likes, 451 shares, and 131 comments [18].

In the study that evaluated #PrEP4Love (P4L), a sex-positive HIV prevention campaign based in Chicago, Dehlin et al. (2019) analyzed the web-based reach of the social marketing campaign through views on two social media platforms, Facebook and Instagram [19]. The campaign's social media ads directed visitors to the P4L website, which included a PrEPLine staffed by University of Chicago employees who provided information about PrEP (what it is and who it is for) and connected callers to PrEP services [19]. The web-based ad campaign generated a total of 40,913,560 unique views across smart ads, Facebook ads, and Instagram ads [19]. One of the three most clicked on smart ads was titled, "*HIV Prevention Medication.*" Data collected from PrEPLine enabled researchers to track those who were referred for PrEP care through the P4L campaign. Eighty-three individuals, many of whom identified as African American or Black, young, gay or same gender loving men, called PrEPLine's number [19]. Of these participants, 18% initiated PrEP [19]. Approximately 53% of these individuals reported hearing about PrEP through the P4L campaign [19]. Out of the 83 PrEPLine callers, 34% reported hearing about PrEP through the P4L campaign [19].

Another intervention that leveraged the use of Facebook and Instagram to increase PrEP awareness and uptake was "Empowering with PrEP", or "E-PrEP" [22]. The peer-led social media-based intervention used a community-based participatory research approach to design a 6-week campaign to provide young Black and Latinx gay, bisexual, and other MSM, education and resources on PrEP [22]. Two theoretical models, the Diffusion of Innovations and Information-Motivation-Behavioral skills model, were used to inform the development of the intervention [22]. Peer leaders were trained and assigned to post specific PrEP related content (text posts, pictures, infographics, and video clips) each week through a private Facebook group or a private Instagram feed to facilitate conversations around PrEP with recruited participants. Weekly topics included PrEP awareness, how to talk about sex and PrEP, talking to partners and friends, overcoming barriers to PrEP, accessing PrEP, and affording PrEP [22]. Patel et al. (2018) tested the feasibility of the intervention by using a similarly designed control intervention (E-Health), which focused on a broad range of health topics excluding HIV or PrEP [22]. Results and analyses of this intervention are still ongoing [22].

C. Twitter—McLaughlin et al. (2018) evaluated the use of Twitter to determine what and how users were communicating about PrEP through their own informal networks [21]. Researchers monitored "tweets" and "re-tweets" posted by individuals, non-profits, academic organizations, news media, and commercial interests [21]. The results of the content analysis determined that the most commonly tweeted category related to PrEP was "recipients," which pertained to who has received or should receive the drug. Researchers also found that the majority of tweet creators (60.2%) were individuals who posted links to referenced articles about Truvada from news or commercial websites [21]. The results

indicated that the most common PrEP-related tweets covered information and issues related to Truvada, including the recipients of the drug, its efficacy, support available for people using it, adherence and side effect issues, and cost and insurance coverage [21]. Tweets were also more likely to be propagated if they contained an affective tone [21]. McLaughlin et al. (2018) concluded that Twitter was a suitable channel for spreading health information and knowledge about PrEP [21].

D. YouTube—One study explored the use of YouTube to share reliable information on PrEP with different audiences through videos [20]. The authors conducted an analysis of the sources, characteristics, and content of the most widely viewed PrEP videos [20]. A total of 217 videos were included in their review, the majority of which originated in the United States (78.8%) [20]. The content categories and the percentage of videos that addressed each category were as follows: defines PrEP (82.9%), describes how PrEP works (49.3%), describes who can use PrEP (60.8%), promotes PrEP as a safe option (23%), discusses side effects (32.3%), describes how to obtain PrEP (35.9%), discusses the cost of PrEP (27.6%), and promotes use of PrEP (83.4%) [20]. Collectively, these videos generated 2,369,003 views. The single most widely viewed (1.2 million views) video was an animated informational video published by the CDC [20]. Based on the results from the data analysis, the number of views and comments on videos appealing to the general population of MSM had a mean rank that was significantly higher than the videos appealing to the scientific community ($p=.04$ and $.01$, respectively) [20]. This finding suggests that specific at-risk groups are engaging with PrEP-related content online.

Discussion

Key Findings

This systematic review highlights eight unique studies that demonstrate how social media has been leveraged in recent years to communicate messages about PrEP with the intention to increase knowledge, awareness, and uptake among Black and Latinx MSM and women. The limited number of studies, as well as the mix of study designs and reported outcomes, make it challenging to synthesize the evidence and to recommend a universal method to further harness the use of social media for the purposes of delivering health information. Nonetheless, this review underscores the range of social media platforms, tools, and functions that may be used to engage young racial and sexual minority men and women at elevated risk for HIV in PrEP.

The relatively small number of articles that met the inclusion criteria in this review indicates that literature on this topic is limited. While these studies provided in-depth evidence on the various representations of PrEP online, they also acknowledged the need for additional research and interventions. The general themes that were gathered from this systematic review include: 1) social media and mobile technologies (applications) are a promising approach for generating PrEP awareness among young racial and sexual minority men and women who might otherwise be hard to reach, 2) social media platforms offer a number of ways to communicate and share reliable PrEP information and services to specific

audiences, and 3) PrEP awareness encompasses a range of sub-topics related to what PrEP is, who it is for, and provider and sexual partner communication about PrEP.

What makes the use of social media and mobile technologies such a promising approach for generating more PrEP awareness is its reach, accessibility, affordability, and usability. In fact, one of the benefits of Facebook is its ability to reach a significant portion of the U.S. population, including 67% of internet-using Black/African American adults [18]. Additionally, video-sharing sites such as YouTube allow billions of users to create, share, and watch videos confidentially and at their own convenience. For many users, particularly younger audiences and sexual and racial minorities, YouTube serves as a platform where individuals can access PrEP information, generate content, share sources within their network, and disseminate information to wider audiences [20]. The same is true for Twitter, which has more than 241 million active users and facilitates the sharing of health information and advice in small and actionable steps [21]. Platforms such as Instagram have proven to be extremely influential in facilitating information sharing within and between networks of friends and peers at a rate that was previously not possible [22]. Additionally, features such as individual “stories” and posts within the platform allow users to intuitively share and view content from credible public health sources. In terms of cost, free mobile apps that include features to address PrEP awareness, uptake, and adherence can help to increase utilization of health information and resources by reducing social and financial barriers to access [11, 13, 23]. Designing health communication or social marketing campaigns to introduce new technologies, such as a PrEP mobile app, could be a viable intervention to promote the continuum of HIV prevention and care.

While many online platforms are able to provide a space and channel for communication, it is also important to consider how and where users are engaged in health-related content online. Some of the studies in this review explicitly included young Black and Latinx men and/or women in their study samples, however the limited number of studies reveals an opportunity to conduct more research that focuses on these specific groups. Hill et al. (2018) demonstrated the ability to directly share information on PrEP to a group of Black women on Facebook by posting an article to a webpage on the platform that was specifically created for this audience [18]. Although the purpose of this study was to measure Black women’s perceptions of PrEP by presenting an article on the benefits of its use, it indirectly made information accessible to a key population [18]. Given that PrEP awareness and uptake is lower among women compared to men, finding innovative ways to amplify PrEP messaging that is targeted towards girls and women on social media is critical [26, 27]. Black and Latinx adolescent girls and women were overall underrepresented compared to young Black and Latinx gay, bisexual, and other MSM in the articles included in this review. This exclusion is particularly concerning given HIV incidence among Black women in the U.S. This finding also highlights an opportunity for future research studies and interventions to find ways to identify, reach, and engage young Black and Latinx women, including transgender women, in online spaces that specifically promote PrEP in a safe and inclusive manner [27].

Additionally, while popular social media platforms such as Facebook, Instagram, and Twitter offer various modes of sharing and communicating information, it is also important

to note their limitations in preventing the spread of misinformation and facilitating the illicit sale of prescription PrEP medications [21]. These limitations must be considered for future communications-related interventions, since regulating oversight of the spread of accurate information and ethical practices online is a large undertaking. Furthermore, the quality of PrEP information being shared online or through PrEP-related communication interventions was not reported in any of the articles included in this review. Quality control of information online may help circumvent PrEP stigma and promote visibility of health information shared by reputable and trusted public health sources.

Lastly, the studies included in this review illustrate that PrEP awareness-related messaging and communication online should consider addressing misperceptions and concerns surrounding PrEP use. The success of the Chicago-based communications campaign, #PrEP4Love, was largely due to its focus on spreading sex-positive messages that promoted the benefits of PrEP use online and in public spaces. This approach also helped to address stigma and shame commonly associated with HIV and MSM [19]. Sex-positive framing is an especially important consideration for future communication campaigns or interventions developed to promote PrEP use to young Black and Latinx MSM and women [19].

Important next steps for using social media to increase PrEP awareness, uptake, and/or adherence include identifying ways to reach and engage younger Black and Latinx MSM and women online. Designing more robust communication campaigns that build trust, promote sex-positive messaging, and represent the social and cultural interests of those most vulnerable to HIV.

Limitations

This review has several limitations. The heterogeneity of the study designs, interventions, and outcomes in this review make it challenging to draw conclusions on effective methods for leveraging social media to communicate information about PrEP. Additionally, this review did not include analyses on the perceptions of PrEP among social media users that could potentially influence the success of social media-based PrEP interventions. This review also excluded studies that discussed the use of other digital communication methods such as e-mail, text messaging, and websites. As previously described, the quality or source of PrEP information being shared online was not a primary focus in this review, although information quality control will be an important consideration for future studies.

Conclusion

Over the last two decades, social media has transformed the way many individuals share and consume health information. This review underlines the significant potential of social media to help increase PrEP knowledge, awareness, and uptake among key groups of young people that may be at risk for HIV. While a singular approach was not identified, the findings demonstrate that various social media platforms can be leveraged to share and disseminate information about PrEP in ways that are appropriate and engaging for specific audiences. The findings from this review can be used to inform or develop additional research or interventions that may help to address gaps in PrEP knowledge or awareness, specifically among young Black and Latinx MSM and women living in the U.S.

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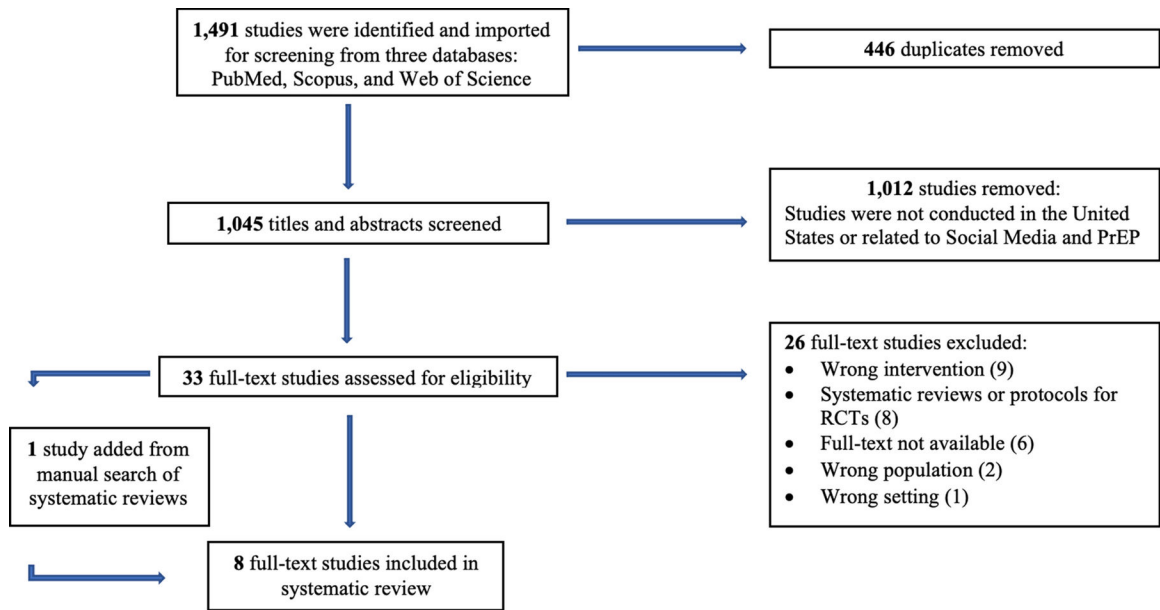


Figure 1.
PRISMA diagram describing screening and selection process.

Table I.

Social media platforms used in selected studies (N=8).

Social Media Platform	Social Media Tool(s)	Studies
Mobile Apps (n=3)	PrEP self-assessments, service locators/maps, adherence reminder systems	Sharpe et al. (2018), Sullivan et al. (2017), Refugio et al. (2019)
Facebook (n=3)	Private group page, Facebook ads	Hill et al. (2018), Dehlin et al. (2019), Patel et al. (2018)
Instagram (n=2)	Instagram ads, Instagram posts	Dehlin et al. (2018), Patel et al. (2018)
Twitter (n =1)	Tweets	McLaughlin et al. (2018)
YouTube (n=1)	Videos	Kecojevic et al. (2018)

Table II.

Summary of study and sample characteristics for the selected studies (N=8).

Author, year	Sample Characteristics	Study Purpose	Study Design and Social Media Platform	Outcomes specific to PrEP	Findings specific to PrEP
Hill et al. (2018) [18]	Black/African American women	Understanding Black women's perspectives on PrEP	Qualitative study of Facebook comments posted in response to an article titled, "There is a new pill to revolutionize Black women's sexual health"	PrEP awareness: Favorable and unfavorable comments toward PrEP	Participants' comments were related to the following themes: Support for PrEP awareness, PrEP safety concerns, Institutional mistrust, Alternatives to PrEP
Dehlin et al. (2019) [19]	Black/African American men and women (including transgender women) between the ages of 18–34, with the majority between 20–29	Evaluate PrEP4Love (P4L) - a sex-positive communication campaign for PrEP awareness launched in Chicago, IL	Analysis of the web-based reach of PrEP4Love (P4L) through views on social media platforms (Facebook and Instagram), smart ads, ads shared on web-based platforms, and P4L website clicks	PrEP awareness and uptake	Millions of unique views were generated across various social media platforms. Most clicked on ads were for information on 'HIV & AIDS Prevention' and 'HIV Prevention Medication'
Kecojevic et al. (2018) [20]	Adolescents and adult men and women	Describe the sources, characteristics, and content of the most widely viewed PrEP related YouTube videos	Content analysis of 217 videos on YouTube - videos were coded for source, view count, length, number of comments, content, and target audience	PrEP awareness	Video content categories identified: defines PrEP, describes how PrEP works, who can use PrEP, promotes PrEP as a safe option, side effects, how to obtain PrEP, cost of PrEP, and promotes PrEP use
McLaughlin et al. (2018) [21]	Individual Twitter users, news media, non-profit and academic groups, and commercial entities	Explore how information about PrEP is represented in online public forums, specifically Twitter	Content analysis of 1,435 Tweets on Twitter that mention daily oral PrEP and the characteristics of the sources of those Tweets	PrEP knowledge and awareness	The majority of PrEP-related Tweets covered information related to Truvada, such as recipients of the drug, its efficacy, support available for individuals using it, adherence and side-effects, cost, and insurance coverage
Patel et al. (2018) [22]	Black and Latinx gay, bisexual, and other MSM between the ages of 18–29	Develop and pilot test a theoretically grounded social media-based peer-led intervention to increase PrEP uptake in young Black and Latinx gay, bisexual, and other MSM (YBLGBM)	Conducted a cluster randomized trial to compare E-PrEP, the 6-week online PrEP education campaign , to the control condition, E-Health, among YBLGBM to assess E-PrEP's feasibility, accessibility, and preliminary efficacy for increasing self-reported intention to use PrEP, PrEP uptake, and impact on PrEP knowledge and attitudes at 12-week follow-up	PrEP knowledge, adoption, and uptake	Analysis of intervention is underway. Authors hypothesize that compared with E-Health, participants randomly assigned to E-PrEP will be more likely to express interest in initiating PrEP use and will show changes in mediators associated with PrEP uptake (e.g., knowledge, attitudes, etc.)
Sharpe et al. (2018) [23]	Youth at risk for HIV; MSM	Evaluate mobile apps that are designed with features to facilitate PrEP uptake and adherence	Conducted a qualitative evaluation on mobile apps that met the inclusion criteria for the presence of features that contribute to PrEP uptake and adherence	PrEP uptake and adherence	Less than 2% (11/621) of the identified apps in the study were relevant to improving PrEP uptake and adherence. Those that were identified contained features that provided comprehensive information on PrEP and resources to locate providers and clinics offering PrEP services
Sullivan et al. (2017) [24]	Non-white (48.8%, 59/121) MSM median age of 28	Evaluate the usability and acceptability of a theory-based Android mobile	Recruited 121 HIV-negative MSM to use comprehensive HIV prevention app for 4 months and complete a	PrEP uptake	Nine percent (8/86) of PrEP eligible MSM in the study started PrEP during the 4-month period, of which 6

Author, year	Sample Characteristics	Study Purpose	Study Design and Social Media Platform	Outcomes specific to PrEP	Findings specific to PrEP
		phone app for HIV prevention	post-use survey. The study measured the use of the app and its features, ordering commodities, self-report of establishing an HIV testing plan, getting tested for HIV, and starting PrEP or using nPEP		out of the 8 reported that the app influenced their decision to initiate PrEP
Refugio et al (2019) [25]	Young MSM of color between the ages of 18–25	Assess the feasibility of a telehealth-based initiation program (PrEPTECH) for PrEP among young MSM of color	Longitudinal study that enrolled 25 HIV-negative MSM between November 2016 and May 2017 to receive cost-free PrEP services via PrEPTECH, a telehealth-based program . Online surveys assessing features and experiences were distributed at 3 months and 6 months	PrEP uptake	Median time to PrEP initiation among study participants was 46 days. Of the 21 participants who completed the study, 16 wanted to continue using PrEP. Eleven of those 16 transitioned to sustainable PrEP providers