Social media utilisation and sexual health education. What are the issues? A systematic review

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Systematic Review

Keywords: social media, Sexual health education, Sexual health, Sexually transmitted diseases

Posted Date: August 3rd, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-776716/v1>

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Abstract

Background

Young people are at a greater risk of poor sexual health and hence, require comprehensive, effective sexual health education. These cohort are constant users of social media which presents many innovative possibilities for sexual health education.

Methods

A guided search was conducted on scientific and medical databases. Selected publications within the last five years on sexual health education were classified according to their study designs, sexual health promotion/education as the main subject, target audience age, and social media use. In all, 25 publications met the inclusion criteria out of which 60% were observational studies, 12% randomised controls and 28% non-randomised. About 96% publications reporting on the main subject sexual health promotion or education. Sixty (60%) of the included publications reported specifically on young people between the ages of 12-30 years.

Results

About 72% of the studies found that social media has positive effects on knowledge, behaviour, and attitudes of young people and 20% reported on its negative effects on young people.

Conclusion

Social media is promising in promoting knowledge, behavioural and attitudinal change in young people. However, further research is required to improve sexual health program implementation and audience reach as well as determine the effectiveness of social media in changing knowledge, attitudes, and behaviours.

Background

Sexually transmitted infections (STIs) are among the most common acute conditions in the world.[1] It is estimated that 340 million new cases of syphilis, gonorrhoea, chlamydia and trichomoniasis occurred throughout the world in 1999 in men and women aged 15–49 years.[2] Moreover, in the 21st century, nearly one million new infections with curable STI are acquired each day.[1] STIs result in a great deal of the large global burden of sexual, reproductive, and maternal-child health consequences, including genital symptoms, pregnancy complications such as ectopic pregnancy, cancer, infertility, and enhanced HIV transmission, pelvic inflammatory disease as well as important psychosocial consequences and financial costs. [1, 3] Currently, STI control is threatened by several behavioural, biological, and implementation challenges, including a large proportion of asymptomatic infections, lack of feasible diagnostic tests globally, antimicrobial resistance, repeated infections, and barriers to intervention access.[3] The fight against STI is a herculean task because STI surveillance has been largely neglected and funding for surveillance continue to be inadequate.[4]

In our efforts to deal with the disease, the World Health Organisation developed a strategy, the global strategy for the prevention and control of sexually transmitted infections 2006–2015. This strategy emphasised education and an integrated approach to reducing the menace.[4] However, two countries Thailand and Uganda, used two contrasting innovative approaches to reduce HIV and STI incidence rates. Thailand stressed condom use in commercial sex environments and promoted reducing visits to sex workers, whilst in Uganda, the emphasis was on delaying the age at first sex and reducing the number of sexual partners. The WHO strategy highlights the need for utilisation of appropriate communication channels better to serve the target group. [4]

Since the introduction of social media, such as Facebook, WhatsApp, Twitter, YouTube, Tango, Hangout etc., millions of people have been attracted to them and it has become a part of their daily lives. [5, 6] Social media has increasingly become so powerful such that Facebook reached over 2.3 billion, followed by YouTube 2 billion subscribers based in the first quarter of 2019. [7] Taking advantage of the huge opportunities that social media landscape presents, social scientists observed that social media have increased individuals' connectivity and afforded users' direct participation. This observation is believed to

have direct implications for health communication programs, prompting efforts to identify new opportunities of using social media to impact population health. [8, 9] Previous reviews have had a course to address Harnessing Social Media for Health Promotion and Behaviour Change but do not address sexual health. [10] Another review was on social media use by clinicians; this review was tailored to clinicians alone. [11] A systematic review of social networking sites: Innovative platforms for health research targeting adolescents and young adults, conducted that become a valuable platform to access, recruit, and cost-effectively deliver health interventions to youth populations as well as hard-to-reach minority or underserved populations. This review also does not treat networking sites and social media, specifically. [12] Recent reviews conducted on the impact of health education transmitted via social media or text messaging platforms regarding adolescent and young adult risky behaviours showed that; 59% of adolescents reported seeking health information online. [13, 14] Thirty one percent 31% of teens reported accessing health information online and that 17% of teens used the internet for information on sensitive health matters. [13, 15] Many of the above publications agreed that the use of social media for health promotion should be given the needed priority.

There is, therefore, a growing need for an up-to-date review of literature that is not limit us to peer-reviewed publications or youth, networking sites or a specific type of outcome or study designs that examines the literature on the use of social media for STI prevention and health promotion. The objective of this review is to describe the scientific literature in the last five years on the utilisation of social media for sexual health education/promotion.

Materials And Methods

To effectively analyse utilisation of social media and sexual health promotion, Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines was adopted for use. [16] An electronic search strategy was employed to include all published papers from 2015 to the end of September 2020 that have either the terms 'sexual health education' or 'sexual health promotion' together with the following words: 'social media'; 'social networking'; 'Twitter'; 'Facebook'; 'YouTube'; 'Instagram'; and 'Snapchat'.

The main criteria for selecting a publication for the review were: Empirical studies reporting results and papers written in English. Papers that did not meet the above criteria were excluded. Papers as that did not deal with the subject matter but only mentioned the keywords of the search strings were also excluded.

In ensuring thorough review, duplicates of papers were removed, the review included examining all titles, abstract to make sure that each paper met the inclusion criteria. After which full-text articles were retrieved and re-examined to exclude any material that does not meet the inclusion criteria. The papers that met the inclusion criteria proceeded to the data extraction phase and the following data extracted; authors, date of publication, title, methodology, social media used, key findings, conclusions, and country. Included studies were furthered classified based on their study designs and those who reported on young people using social media platforms.

Sample

A total of 23,337 publications were identified. After applying the inclusion criteria and screening the identified papers, 25 papers were included for the qualitative synthesis. **Table 1** shows the search strategy and its results. All the included papers were from 2015 to September 2020. For paper selection procedure in the review (see Fig. 1)

Design of included papers

Out of the 25 included publications, 3 reported on randomized control studies, 7 reported on non-randomized controls, and 15 reported on observational studies (see Table 3). For a summary of all the publications included in this review (see Table 2).

Results

Use of social media

Social media has shown to have both positive and negative effects on behaviour and attitudes of young people; however, the positive effects far outweigh the negatives (see Table 4). Participants in the study of Jones, Williams, Sipsma and Patil [17] all had Facebook accounts and about (91%) reported seeking sexual health information between 1–2 times each week through Facebook. General Social Media (SM) and dating apps used to access or receive sexual health information among men-who-have-sex-with-men (MSM) constituted the SM use in the study of Kesten et al. [18], with most participants perceived using SM and dating apps acceptable especially receiving information when browsing these platforms. Macapagal et al. [19] also examined 'hookup apps' used by MSM as they use the apps to meet new sex partners. Participants ($n = 105$) reported using MSM-specific apps to meet partners for sex.

Age contributed a high score in explaining SM involvement (defined as the number and types of SM used), Park, Rodgers, McElroy and Everett [20] along with the variables such as several internet access locations, ownership of a mobile phone with internet connectivity, and transgender. According to Park et al. [20], Social Networking Sites (SNS), such as Facebook, MySpace, and LinkedIn.com; blogs, Twitter or another service constituted the SM involvement with 85% study samples been SM users to one degree or another.

The majority of participants in the paper of Alber, Paige, Stelfox, and Bernhardt [21] had access to the internet at work ($n = 292$, 82.7%), yet less than half reported having full access to SM ($n = 171$, 48.4%). Almost half of the participants reported that their employer either monitored or blocked certain websites ($n = 175$, 49.6%).

According to (Stevens et al., 2017), the most used SM sites at the time of their study were Facebook (64.4%), Instagram (18.7%), and Twitter (5.5%). Participants also reported using other sites, including Vine and Snapchat (11%), and they varied greatly on the frequency of their SM usage, with 8.8% ($n = 22$) reported not using social media at all, 5.6% ($n = 14$) every few weeks, 10.9% ($n = 27$) weekly, 17.3% ($n = 43$) daily, and 57.0% ($n = 142$) multiple times each day. SM served as the fourth most commonly cited source of sexual risk reduction information, with slightly less than half of the sample reporting it as a source of recent sexual risk reduction information (45–47%, $n = 112–117$).

Facebook was the technology with the greatest number of users and most frequently used, with around 58% ($n = 119$) of participants reporting daily use, and only 4.4% ($n = 9$) reporting never using Facebook as reported by the study of (Reynolds, Sutherland & Palacios, 2019). The study further indicated that text messaging ($n = 131$) had 16 more than WhatsApp to place second in user number. WhatsApp was the second most frequently used with 25.5% daily users compared to text messaging's 14.7%, but also 43.6% of participants never used WhatsApp. Instagram, Snapchat, and Twitter were used significantly less than the three other modes of technology, with daily uses at 13%, 5%, and 3% respectively.

SNS were the primary focus of participants' general internet use in the study of Patterson, Hilton, Flowers and McDaid. [22] According to Patterson et al. [22], general SM use was sort of the platforms to receive sexual health information online with participants identifying the barriers to getting credible sexual health information on these SNS platforms.

Patel, Masyukova, Sutton and Horvath [23] reported that, most participants (87.3%) in their study owned an internet-enabled cell phone or mobile device, and the majority (67.6%) used these devices as their primary mode of accessing the internet and SM. All participants reported having at least one SM profile, with most having multiple profiles (83.3%). The vast majority (87.3%) accessed the internet and SM sites multiple times per day. Over a third (34.3%) primarily used SNS to meet new people offline versus about half (52%) that used more general SNS (e.g., Facebook, Twitter) to meet new people, and a smaller proportion (13.7%) did not use SM to meet new individuals.

Aragão et al. [24] used Facebook to investigate the perception of adolescent students about health education. The results revealed that Facebook as an environment for learning in sexual and reproductive health for adolescents, their interaction in the online environment favoured the sharing of knowledge and experiences about sexual and reproductive health with both peers and the nurse in educational intervention programme using Facebook.

Facebook was the only SM platform used in the study of Card et al. [25] to analyse the content of 10 community-based organisations (CBOs) that uses Facebook to promote the well-being of gay and bisexual men (GBM). The results of Card et al.

[25] indicated that 14,071 posts were shared and 21,537 users engaged with these posts, with the number of posts and the number of CBOs users engaged having a moderate correlation with ($r = .53$, $P < .001$).

Witzel, Guise, Nutland, and Bourne, [26] targeted Facebook, Twitter or Tumblr for gay and bisexual men and African people and sought to explore how the online environment shapes end-user engagement with sexual health interventions. The results revealed that participants express privacy concerns related to the ecology of social networking sites, issues with implied disclosure and discrimination, as well as uncertainty over control of data.

Harlow et al. [27] focused on Twitter use to discuss Sexual Violence (SV) prevention due to several high-profile SV cases. The study examines Twitter discourse on SV prevention through the hashtag #HowIWillChange, so users can come out to report plans to engage in bystander prevention. Results of Harlow et al. [27] indicated that 1,493 #HowIWillChange tweets from October 2017 were analysed and participants had discussed a range of prevention strategies, including the spread of misinformation, and the perpetuation of the myth that only strangers commit rape, and that only male children need lessons on consent, and that SV prevention vilifies men.

Burns et al. [28] used Facebook, Instagram, and Twitter to promote SM advertisement campaigns. The campaign reached approximately 146,412 individuals (young black males). The use of SNS to deliver HIV testing messages for SM marketing campaigns constituted the use of SM in the study of Jones, Carter, Wilkerson and Kramer, [29] Jabson, Patterson and Kamen, [30] provided reasons participants gave for internet use. The reasons included were; seeking health information for self, seeking health information for someone else, keep track of personal health information, exchanged support about health concerns with family/friends, used website to help with diet, weight, or physical activity, seeking health care provider, watched a health-related video on YouTube, shared health information on SM sites, downloaded health information, seeking information about quitting smoking, and participation in online forum/support group.

Whiteley et al. [31] presented youth in their internet intervention group with emails with links to online HIV/STI prevention websites and YouTube videos and there was significantly greater improvement in reported HIV self-efficacy at follow-up for those in the internet intervention compared to the control condition ($F [1,58] = 5.71$, $p = 0.021$).

Young, Fujimoto and Schneider [32] used Facebook groups to investigate young black men who have sex with men (YBMSM) affiliation ties based on sexually related contents. The results pointed out 221 YBMSM and 82 Facebook groups with their related characteristics.

Aleman et al. [33] employed a field experiment to enhance the teenager's privacy risk awareness through PESEDIA (an online social network for educational and research purposes). A total of 84 teenagers participated in it, and the participants had access to the PESEDIA, and they share their experiences and feelings about summer school. Respondents in Maes et al. [34] study indicated how much time they spend on Facebook, Instagram, Snapchat, WhatsApp, and websites with video clips such as YouTube. Higher scores reflected higher SM use ($M = 3.30$, $SD = 1.40$).

Contents from lesbian-oriented conception, pregnancy, and parenting Facebook groups by Ruppel et al. [35] were examined for comparison purposes drawn from groups that appeared to serve heterosexual women primarily 400 discussions were made containing 1764 total instances of text, and many participants in the lesbian-oriented Facebook groups sought and provided medical information. Their queries focused on the insemination process, and frequently related to posters' specific situations, while heterosexual women tended to seek general advice about the conception and pregnancy process.

Students health centres (SHCs) websites were used in the study of Stanley et al. [36] to examine the sexual health information delivered to students. Taken from the entire sample of 400, 82.0% ($n = 328$) of SHC websites covered sexual health at some level. Enomoto, Noor and Widner [37] examined if US states that have more users of SNS, dating sites, and dating apps like Match.com, Ashley Madison, Our Time, Down Dating, Bumble, Zoosk, Hinge, Score, At First Sight, Plenty of Fish, Eharmony, Adult Friend Finder, Tinder, Grindr, and Facebook have more cases of STDs after controlling for population, race, age, income, education, and population density. Fongkaew and Fongkaew, [38] addressed ways in which young women tactically use the SM to negotiate the sexual controls they encountered in everyday life.

Sexual health-related subject

Accessing sexual health information, Jones, Williams, Sipsma and Patil, [17] showed that Google had been proven to be the strategy out as the go-to search strategy for finding online resources for sexual health information. The sexual health information relates to general STDs provided in the Caryn Forya Facebook (CF) sexual health intervention site. Sexually transmitted infections (STIs) like HIV and HIV testing constituted the main sexual health subject in the study of Kesten et al. [18] On a flip side, the study of Park et al. [20] focused on the preference of sexual health information (SHI) through SM involvement, where SM users preferred to receive SHI through SNS as against direct telephone calls for non-media users.

Alber et al. [21] identified specific training and resources need related to social media use in health education. Health education professionals can engage community-based organisations and build their capacity to effectively launch and sustain SM-based outreach with community members when additional SM training opportunities are provided. Contraception information and HIV/STD prevention information were the main sexual health subjects in the study of Stevens et al. [39] According to them, the most common sources of sexual risk reduction information reported were television and movies (63%, n = 157), school (56%, n = 140), and parents (47–48%, n = 117–120).

Sexual health subjects discussed in the study of Reynolds, Sutherland and Palacios [40] were contraceptive use, with only about 40% of students reporting that they "always used protection during intercourse", and nearly 30% of participants reported "never." More than 80% identified one method of contraception, but less than half could name multiple. Although nearly 65% of the participants reported access to information about STDs, including HIV and Zika, only about 35% correctly identified how STDs are transmitted.

Many participants in the study of Patterson, Hilton, Flowers and McDaid [22] mentioned that there is huge content available online that serves as a barrier to effectively seeking sexual health information online. Most opposed engaging with sexual health promotion content on SNS like Facebook and Twitter, because liking a sexual health content will result in judgement from peers.

HIV testing, HIV status, and STI (sexually transmitted infection) history, and use of social media to engage in HIV related risk behaviours were the social health-related subject discussed in the study of Patel, Masyukova, Sutton and Horvath. [23] The educational intervention on Facebook reported by Aragão et al. [24] was: Adolescent Health Promotion; Sexuality and Gender; The body that gets sick – STDs / HIV / AIDS; The body that reproduces itself – Pregnancy in Adolescence; and Safer sex.

The following health messages were primary the sexual health-related subjects in Card et al. [25] study; pre-exposure prophylaxis, stigma, mental health, treatment, testing, research, condoms, and dating. *It Starts With Me* (ISWM), a sexual health promotion intervention was evaluated by Witzel et al. [26] regarding privacy and stigma dealing with sexual health interventions on social media. HIV testing and status among general sexual health information were discussed with most participants having concerns about involving in such online interventions as disclosure could lead to discrimination.

Bystander prevention type: proactive and reactive in conjunction with the bystander prevention opportunities provided by McMahon and Banyard,⁴¹ were presented in the findings of Harlow et al. [27] regarding individual's plans to engage in bystander prevention of SV. The sexual reproductive health questions in the study of Burns et al. [28] included (e.g., last sexual encounter, number of partners, testing, clinic utilisation). The attitudes, norms, and perceived control were (e.g., condom use behaviours, HIV/STI transmission).

Jones, Carter, Wilkerson and Kramer [29] examined general thoughts and experiences with HIV and or STI testing, students' awareness of HIV testing campaigns and related activities, their critique of potential messages for an HIV testing campaign, and communication of HIV testing messages through social networking sites. Topics related to sexual health included in Whiteley et al. [31] study were; puberty, basic anatomy, HIV/STI information (including gonorrhoea, chlamydia, syphilis, trichomoniasis, genital warts/HPV, herpes), contraception, pre- and post-exposure prophylaxis, personal risk assessment, the influence of peer norms, HIV's impact on minority communities, benefits of abstinence and protected sex, condom skills, communication skills, and dangers of substance use.

HIV status and testing, condom use, and group sex engagement constituted the sexual health-related information discussed with the young black men who have sex with men (YBMSM) in the study of Young, Fujimoto & Schneider. [32] Varma, Chung, Townsend and Power [42] examined Patient information leaflets (PILs) relevance and some of the information included in the leaflets used were HIV testing and Visiting a Sexual Health Clinic. Results of Varma et al. [42] indicated that, PILs, a clinic website and the Sexual Health Information Link (SHIL), a state-wide website and telephone line, were ranked significantly higher as a means of sexual health-related information (SHRI) delivery on a Likert scale than newer technologies including Facebook ($P < 0.001$), email ($P < 0.001$), mobile phone applications ($P < 0.001$), TVs in waiting rooms ($P < 0.001$) and business cards ($P < 0.001$).

Notions of women as sex objects in the study of Maes et al. [34] had higher mean scores representing higher notions of women as sex objects ($M = 2.64$, $SD = .71$). The sexual health-related subject in Ruppel et al. [35] study included medical information seeking covered general information about the conception and pregnancy process, fertility and conception products, services, and medications, concerns about miscarriage.

In the study of Stanley et al. [36], sexual health topic categories include (1) abstinence (discussion of not having sex as a component of sexual health); (2) contraception (offering information regarding a variety of contraception including condoms, oral contraceptives, morning-after pills); (3) HPV/HPV vaccines (information on the virus and or information about how to get vaccinated); (4) STDs (including information about risk factors or symptoms); (5) pregnancy (including pregnancy tests, prenatal care, pregnancy/abortion counselling); (6) sexual functioning (including sexual pleasure, avoiding/treating sexual dysfunction); (7) sexual relationships (including sexual communication, decision-making, sexual consent); and (8) sexual violence (including sexual assault resources and information).

Results of Enomoto, Noor and Widner [37] study indicated that states with more users of Match.com, OkCupid, and Down Dating had a larger number of cases of STDs, while states with more users of Our Time, Ashley Madison, Facebook, How About We, Hinge, Adult Friend Finder, Grindr, Bumble, Score, Tinder, and At First Sight had fewer cases of STDs. Sexually related matters included Sexual history and HIV/STI risk in sexual healthcare engagement and testing. [19]

Discussion

Achieving sexual health is portrayed to be a struggle for young adults. [36] The findings in this study suggest that internet use has penetrated nearly all age and socioeconomic groups and have served and continue to serve as a means for sexual health interventions programmes targeting young individuals. Park et al. [20] indicates that online health information consumers are more likely to be younger, better educated and more affluent than consumers who use traditional communication channels. SM use is perceived as positive by individuals who find it difficult to seek medical information from health practitioners, especially sexual health-related information due to shyness or stigma related reasons which is usually characteristics of young people. In some part of the world, particularly Sub-Sahara Africa (SSA) adolescent and youth-friendly health facilities such as adolescent centres and safe spaces are either not available or available but not adequately resourced for use. SM will, therefore, be essential for sexual health education or information in such situations. Facebook has a leading forum among other social media platforms as it is included in most of the studies. Gold et al. [43] points out that, SNS has received specific attention for public health activities and discussions, with Facebook leading these SNS.

These SM platforms are strategically good for online sexual health education through the sexual health intervention programmes carried out by various health institutions and organisations. A recent study Burns and Arnault [44], confirms that SM sites are best used in educating young black males, especially to promote the use of condoms. One challenge to access these SM sites could come from internet providers who could monitor and approve sites access. SM could also serve as the source of sexual risk reduction information, and with increasing privacy awareness among the youth on SM, seeking sexual health information could be anonymous without fearing of stigmatisation. Having said this, attracting huge users by SM could mean they are cost-effective.

Stevens et al. [45] confirmed that, SM sites are cost-effective and are frequently used by black youth. Countries with a larger number of SM users are likely to have higher cases of STDs given that other groups used these SM sites to promote their sexual content (e.g. Pornographic posts) without any sexual risk reduction information. SHCs websites are primarily a good starting point for providing adequate sexual health information to adolescents, especially regarding STDs and their preventions. Individuals could then verify any contradicting sexual information received or viewed on SM platforms. More interestingly, young individual use SM to have their way through simple sexual controls from parents and guidance, as indicated in the study of Fongkaew and Fongkaew. [38]

Limitations of the study

With the criteria used to select studies in this review, only 25 primary research publications met the criteria. We do appreciate that the search terms used only allowed us to capture relevant publications identified in the field. We might have as well missed publications that were not published in the journals or databases that were searched and those written in other languages. Most sexual health promotion or education interventions and programs using social media were excluded from the review because they were not primary research hence we could not report study findings. The study focused on publications within the last five (5) years from 2015 to September 2020. Given the number of studies included in this review that reported effects and differences among the included studies, it was not possible to conduct a meta-analysis.

Conclusions

Some studies used social media platforms for sexual health promotion/education or STDs prevention as an intervention. These interventions were either stand-alone or integrated. Social media provides great potential to reach and engage young people for sexual health promotion or education. However, further evidence is required to improve sexual health program implementation and audience reach as well as determine the effectiveness of social media in changing knowledge, attitudes, and behaviours.

Declarations

Authors' contributions

Conception and design of study: AAN; analysis and/or interpretation of data: AAN and MA; Drafting the manuscript: AAN, MA and AAS; revising the manuscript critically for important intellectual content; AAN, MA and AAS. All authors have read and approved the final manuscript.

Acknowledgements

Not applicable

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interests

None declared

Ethical approval

Not required

Data availability

Not applicable

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Tables

Table 1. Search strategy and results

Search String	Counts on the initial search			Included papers after screening		
	PubMed	Scopus	MEDLINE(Ovid)	PubMed	Scopus	MEDLINE(Ovid)
(Social media) AND (sexual health promotion OR sexual health education)	459	16287	17	5	4	2
(Social networking) AND (sexual health promotion OR sexual health education)	185	2801	11	3	2	0
(Facebook) AND (sexual health promotion OR sexual health education)	93	1691	6	2	2	0
(Twitter) AND (sexual health promotion OR sexual health education)	20	717	1	3	0	0
(Youtube) AND (sexual health promotion OR sexual health education)	12	690	0	2	0	0
(Instagram) AND (sexual health promotion OR sexual health education)	8	263	0	0	0	0
(Snapchat) AND (sexual health promotion OR sexual health education)	2	74	0	0	0	0
Total: 23337			Total: 25			

Table 2. Summary of included publications in the review (n=25)

Table 3. Classification of included studies

Studies	Study design	Number
(Whiteley et al. 2018), (Reynolds et al., 2019), (Alber et al., 2016)	Randomised controls	3 (12%)
(Witzel et al., 2016), (Young et al., 2019), (Alemany et al., 2019), (Jones et al., 2019), (Aragão et al., 2018), (Stevens et al., 2017), (Jones et al., 2018)	Non-randomised	7 (28%)
(Card et al., 2018), (Harlow et al., 2018), (Burns et al., 2020), (Ruppel et al, 2017), (Stanley et al., 2019), (Enomoto et al., 2017), (Fongkaew & Fongkaew, 2016), (Jabson et al, 2017), (Patel et al., 2016), (Patterson et al.,2019), (Park et al. 2018), (Macapagal et al., 2018), (Kesten et al. 2019), (Maes et al., 2019), (Varma et al., 2016).	Observational	15 (60%)
(Burns et al., 2020)- 18-24 years, (Whiteley et al. 2018)- 15-24 years, (Young et al., 2019)- 16-29 years, (Alemany et al., 2019)- 12-14 years, (Fongkaew & Fongkaew, 2016)- 18 years, (Jones et al., 2019)- 18-24 years, (Aragão et al., 2018)- average age 15 years, (Patel et al., 2016)- 13-29 years, (Patterson et al.,2019) - 16-19 years, (Reynolds et al., 2019) - 13-14 years, (Stevens et al., 2017) - 13-24 years, (Macapagal et al., 2018) - 14-17 years, (Kesten et al. 2019)- 16 years and above, (Jones et al., 2019) - 15-23 years (Maes et al., 2019)- 15-18 years,	Studies that reported on young people.	15 (60%)

Table 4. Studies reporting about the main subject SM use (and effect) and sexual health promotion or education

No	Author	Year	Title of paper	Method of study	Type of social media	Key findings	Conclusion	Country
1	Krista Jones, Jeff Williams, Heather Sipsma, Crystal Patil	2019	Adolescent and emerging adults' evaluation of a Facebook site providing sexual health education	Qualitative approach through focus group discussions	Facebook	Participants reported significant concerns with the stigma associated with having sexual health conversations with parents, peers or providers. Participants thought the Facebook site provided reliable sexual health information, was not condescending, and was more visually appealing than other sites frequented by technology-proficient adolescents and emerging adults (AEAs). AEAs suggested developing an independent sexual health education website	Findings demonstrate the importance for having accurate and reliable sexual health information available on the internet. The use of visually appealing social media to communicate sexual health content that is interactive, informative, and user- friendly and meets the educational needs of AEA in the Midwest is recommended.	USA
2	Joanna M. Kesten, Kaiseree Dias, Fiona Burns, Paul Crook, Alison Howarth, Catherine H. Mercer, Alison Rodger, Ian Simms, Isabel Oliver, Matthew Hickman, Gwenda Hughes and Peter Weatherburn	2019	Acceptability and potential impact of delivering sexual health promotion information through social media and dating apps to MSM in England: a qualitative study	Qualitative approach through semi-structured interviews	Dating apps - Scruff and Growlr, Twitter and OutBristol	Sexual health information delivery through social media and dating apps was considered acceptable. Receiving information when browsing social media was viewed positively by most, as people have time to absorb information. In contrast, concerns were expressed that sharing or commenting on social media sexual health information may lead to judgements and discrimination. While social media reaches a high proportion of the population, dating apps can easily target MSM. However, tensions exist between the ability to provide information at an opportune time through dating apps, when users are connecting with new sexual partners, with the potential to adversely affect the app user's experience. Hypothetical and actual uses and impacts of sexual health information ranged from no impact to reading information, sharing with peers, and increased awareness, to	Overall, these findings support the development of new interventions that use dating apps and social media for sexual health promotion.	England

						influencing healthcare seeking, decision-making and risk-taking behaviours. Ensuring that information is engaging, positive in tone, not too clinical, focused on building social norms and delivered by trusted organisations were viewed as important for supporting its use		
3	Hyojung Park, Shelly Rodgers, Jane A. McElroy & Kevin Everett	2018	Sexual and gender minority's social media user characteristics: Examining preferred health information	Quantitative approach through survey study	Facebook, MySpace, and LinkedIn.com, Twitter and blogs	A survey of 2,274 sexual and gender minorities (SGMs) individuals revealed that age, sexual orientation, number of Internet access points, and use of smartphones predicted levels of social media involvement. Results suggest that a broader range of traditional and nontraditional communication channels is needed to meet a diversity of health information needs in SGMs.	The study measured the most popular forms of social media at the time the surveys were administered. Social media may have changed or advanced since the start of the study and new forms of social media have emerged. Future research can look at social media involvement in terms of specific types of social media targeting the general population versus SGMs, which may intensify use of social media. Social media sites targeting SGMs versus the general population need to be examined to see what types of health information is available to determine if/how well the SGM population is being served.	USA
4	Julia M. Alber, PhD, MPH Samantha Paige, MPH Michael Stellefson, PhD Jay M. Bernhardt, PhD, MPH	2016	Social Media Self-Efficacy of Health Education Specialists: Training and Organizational Development Implications	cross-sectional study	Survey sent through email	Statistically significant differences in social media (SM) self-efficacy existed by age, $F(2, 289) = 6.54, p = .002$. SM experience ($\beta = 1.43, t = 11.35, p < .001$) was a statistically significant predictor of SM self-efficacy, even after controlling for age, sex, years of work experience, and level of	As the popularity and capabilities of SM continue to expand, the potential to use social technologies for health promotion will likewise increase. As such, professional health education organisations	USA

						<p>SM access, $F(5, 290) = 30.88$, $p < .001$, $R^2 = .35$. Results revealed statistically significant differences in mean SM self-efficacy scores by the Areas of Responsibility, $F(4.69, 1425.46) = 22.46$, $p < .001$. Professional health organisations should have policies in place and trainings that are conducive to learning and applying SM for health education research and practice.</p>	<p>where CHES/MCHES are employed should institute policies and training programs that are conducive to employees learning how to apply new SM technologies to practice health education. Health education specialists may also benefit from more SM trainings related to competencies and subcompetencies in Areas of Responsibility I (Assess Needs, Assets, and Capacity) and V (Administer and Manage Health Education). To further understand the impact of SM self-efficacy within health education organisations, future research should explore the relationship between SM self-efficacy and actual performance using SM on the job among health education specialists.</p>	
5	Robin Stevens, Stacia Gilliard-Matthews, Jamie Dunaev, Abigail Todhunter-Reid, Bridgette Brawner, Jennifer Stewart	2017	Social Media Use and Sexual Risk Reduction Behavior Among Minority Youth Seeking Safe Sex Information	cross-sectional study	General	<p>Youth who were exposed to sexual health messages on social media were 2.69 times ($p < .05$) and 2.49 times ($p < .08$) more likely to have used contraception or a condom at last intercourse, respectively. Parents, schools, or traditional media as information sources were not significantly associated with contraceptive use or condom use at last intercourse.</p>	<p>The results highlight the important role of social media in shaping sexual risk reduction behaviors among minority youth. The implications of these findings cannot be understated, as community health and school nurses can integrate social media strategies into future sexual health promotion</p>	USA

							strategies, screenings, and interventions for racial and ethnic minority youth. Nurse scientists must stay informed about the media usage behaviors of youth, considering the platforms by which youth communicate online are ever evolving.	
6	Christopher Reynolds, Melissa A. Sutherland, Iván Palacios	2019	Exploring the Use of Technology for Sexual Health Risk-Reduction among Ecuadorean Adolescents	mix methods - quantitative and qualitative	General	Nearly every participant (96.6%) expressed interest in a sexual health education program using technology and social media. A majority of participants indicated that they consulted parents (58.3%) regarding sexual health questions. Only a few participants had access to physicians outside of appointments (3.9%), and most desired more sexual health information (87.3%). Although approximately one-quarter of participants were sexually active (27%), most lacked baseline knowledge regarding contraceptives and STDs. Facebook (91%) and WhatsApp (53%) were the most frequently used and requested social media for an educational program. Students indicated a strong desire to be involved in the design stages of a sexual health risk-reduction program, rather than use a pre-established program.	There is strong interest in a technology based sexual health risk-reduction program through Facebook and WhatsApp, which could establish communication between health providers and Ecuadorian youth to disseminate health information and answer private inquiries. Findings from this study, the first of its kind among South American adolescents, introduces a novel idea: involving participants from initial design stages of a text-messaging health education program. Future studies should focus on engaging families as well as physicians' willingness to participate.	South America
7	Susan Patricia Patterson , Shona Hilton , Paul Flowers, Lisa M McDauid	2019	What are the barriers and challenges faced by adolescents when searching for sexual health information on the internet? Implications for policy and	A novel qualitative approach was used which combined paired interviews with real-time online activities	General	This study highlighted practical and socio-cultural barriers to engagement with online sexual health content. Key practical barriers included difficulty filtering overabundant content; limited awareness of specific,	This study provides insights into some of the key barriers faced by young people in accessing and engaging with sexual health information and support online.	Scotland

			practice from a qualitative study			relevant, trusted online sources; difficulties in finding locally relevant information about services; and difficulties in navigating large organisations' websites. Key socio-cultural barriers included fear of being observed; wariness about engaging with visual and auditory content; concern about unintentionally accessing sexually explicit content; and reticence to access sexual health information on social networking platforms or through smartphone applications. These practical and socio-cultural barriers restricted access to information and influenced searching practices.	Reducing such challenges is essential. We highlight the need for sexual health information providers and intervention developers to produce online information that is accurate and accessible; to increase awareness of and promote reliable, accessible sources; and to be sensitive to young people's concerns about 'being seen' accessing sexual health information regarding audio-visual content and platform choice.	
8	Viraj V Patel , Mariya Masyukova , Desmond Sutton , Keith J Horvath	2016	Social Media Use and HIV-Related Risk Behaviors in Young Black and Latino Gay and Bi Men and Transgender Individuals in New York City: Implications for Online Interventions	Survey study	General	Among 102 primarily Black and Latino gay and bisexual men (75.5 %) and transgender women (19.6 %), over 90 % were under 30 years of age, 18.6 % reported homelessness in the past 6 months, and 10.8 % reported having HIV. All participants used social media, most accessed these platforms most often via a mobile device (67.6 %) and most logged on multiple times per day (87.3 %). Participants used social media to seek sex partners (56.7 %), exchange sex for money or clothes (19.6 %), and exchange sex for drugs (9.8 %).	These results confirm prior studies demonstrating the feasibility of using social media platforms to reach at-risk, urban youth. Of particular concern is the association between recent STI and exchanging sex for money/clothes and drugs. Interventions using social media for young, urban minority MSM and transgender populations should incorporate risk reduction modules addressing exchange partners and promote frequent and regular HIV/STI testing.	USA
9	Joyce Mazza Nunes Aragão, Fabiane do Amaral Gubert, Raimundo Augusto	2018	The use of Facebook in health education: perceptions of	A qualitative, descriptive study	Facebook	Facebook contributed to the sexual and reproductive health education in an	health professionals should recognise that such virtual	Brazil

	Martins Torres, Andréa Soares Rocha da Silva, Neiva Francenely Cunha Vieira		adolescent students			interactive, playful and practical way, reducing the embarrassment of some adolescents to converse on the subject, and brought adolescents closer to the health service, by strengthening their bond with Health professionals.	spaces on the Internet offer potential for the production of health care, especially among adolescents.	
10	Kiffer George Card , Nathan Lachowsky , Blake W Hawkins , Jody Jollimore , Fahmy Baharuddin , Robert S Hogg	2018	Predictors of Facebook User Engagement With Health-Related Content for Gay, Bisexual, and Other Men Who Have Sex With Men: Content Analysis	Content analyses	Facebook	In total, 14,071 posts were shared and 21,537 users engaged with these posts. Most users (n=13,315) engaged only once. There was moderate correlation between the number of posts and the number of CBOs users engaged with ($r=.53$, $P<.001$). Higher user engagement was positively associated with positive sentiment, sharing multimedia, and posting about pre-exposure prophylaxis, stigma, and mental health. Engagement was negatively associated with asking questions, posting about dating, and sharing posts during or after work (versus before).	Results highlight the existence of a core group of Facebook users who facilitate diffusion. Factors associated with greater user engagement present CBOs with a number of strategies for improving the diffusion of health content.	Global
11	T Charles Witzel , Andy Guise , Will Nutland , Adam Bourne	2016	It Starts With Me: Privacy concerns and stigma in the evaluation of a Facebook health promotion intervention	Qualitative		Privacy concerns related to the ecology of social networking sites, issues with implied disclosure and discrimination, as well as uncertainty over control of data. These concerns limited the organic reach of the intervention by confining the intervention to those who already held the norms diffused through it, and by discouraging participants from sharing and commenting on content.	Care should be taken to address concerns when designing interventions delivered through social media. Gated interventions may be more beneficial for marginalised communities, while large-scale interventions such as ISWM may provide a useful backdrop for face-to-face interventions.	London
12	Alyssa F. Harlow, Sydney K. Willis, Meghan L. Smith, and Emily F. Rothman	2018	Bystander Prevention for Sexual Violence: #HowIWillChange and Gaps in Twitter Discourse	Content analyses	Twitter	Many Twitter users proposed potentially effective bystander strategies, with a particular focus on proactive rather than reactive prevention. Whereas reactive	This analysis of #HowIWillChange revealed that although Twitter users discussed a range of bystander prevention	Global

						<p>prevention helps specific individuals in need, proactive prevention helps change societal norms that perpetuate a cycle of violence (Banyard, 2011). One of the most common proactive strategies included teaching children about SV through role modeling in their own relationships. Role modeling behavior aligns with recommendations by national SV programs for how to teach children about SV, including the Rape, Abuse, & Incest National Network ("Talking to Your Kids About Sexual Assault," 2018).</p>	<p>strategies, there were important gaps and misinformation in the online discourse. We also found that amid growing attention to SV, there may be growing pushback against SV prevention, particularly among men on social media. Our findings provide context for a growing Internet-based SV movement, and can inform health promotion programs aiming to educate the public on SV bystander prevention.</p>	
13	Burns J, Johnstone K, Chavanduka T, Jamison C, Pena V, Stephenson R, Darbes L	2020	Evaluation of the Sexual Health Behaviors of Black Male Adolescents and Young Adults Through Social Media Platforms: Web-Based Survey Study	Web-based survey	Facebook, Instagram, Twitter	<p>Social media advertisements on the Black Male Opinion survey reached approximately 146,412 individuals. Our primary finding of the web-based survey engagement was that referral (eg, group chat, indirect social media sharing) led to as the greatest proportion of recruitment, with Twitter and YouTube as the preferred sites to receive sexual health information.</p>	<p>Recognising the variety of technologies being used among Black male young adults and adolescents can help the community, researchers, and health care providers understand the web-based engagement of this high-risk population. This information may also promote culturally sensitive, customised marketing on sexual health information for this population.</p>	Global
14	J. Jones, B. Carter, R. Wilkerson and C. Kramer	2019	Attitudes toward HIV testing, awareness of HIV campaigns, and using social networking sites to deliver HIV testing messages in the age of social media: a	Qualitative	General	<p>The following themes emerged from the analysis: general thoughts and attitudes toward HIV and testing campaigns; barriers to test for HIV, motivation to test for HIV with subcategories of intrinsic and extrinsic</p>	<p>Although fear, stigma, negative attitudes toward HIV and low perceived risk for infection continue to hinder young black men from receiving HIV tests, universal</p>	USA

			qualitative study of young black men			motivation, and development of future social media marketing campaigns (consisting of campaign messaging and campaign marketing/dissemination subcategories) as given in Table II.	messages that show HIV is something anyone can acquire (and not misconstrued as being limited to certain subpopulations such as the LGBT community) and messages that tap into their motivating factors (i.e. friends, peer leaders, protecting themselves and sexual partners) could be effective in increasing HIV testing uptake among this population. Using social networking sites such as Instagram may allow researchers and practitioners to send messages to young black men engaged in HIV-risk behaviors and increase their awareness of campaigns and the importance of HIV testing.	
15	Jabson JM, Patterson JG, Kamen C	2017	Understanding Health Information Seeking on the Internet Among Sexual Minority People: Cross-Sectional Analysis From the Health Information National Trends Survey	Survey study	General	Almost all of the SMP in this sample reported having access to the internet (92.4%, 97/105). SMP were equally as likely as heterosexual people to seek health information on the internet (adjusted odds ratio [aOR] 0.94, 95% CI 0.56-1.66) and to report incidental exposure to health information online (aOR 1.02, 95% CI 0.66-1.60). SMP were 58% more likely to watch a health-related video on YouTube than heterosexual people (aOR 1.58, 95% CI 1.00-2.47). Incidental exposure to health information was associated with seeking health information for oneself (aOR 3.87, 95%	It is often difficult to locate sexual minority people for health-related, disparities-reducing interventions, but our findings suggest that the internet is a promising tool for delivering health interventions to this group. SMP use the Internet and are using it to access health information at high rates. This is valuable given the popularity and promise of Internet-based	

						CI 1.16-14.13) and for someone else (aOR 6.30, 95% CI 2.40-17.82) among SMP	interventions for SMP. We now have evidence that the internet is a promising delivery method for health-related information for SMP.	
16	Laura B. Whiteley, Larry K. Brown, Virginia Curtis, Hyeon Ju Ryoo, Nancy Beausoleil	2018	Publicly Available Internet Content as a HIV/STI Prevention Intervention for Urban Youth	Randomised controlled pilot study	Web-links, YouTube	The current study enrolled and randomized 60 youth (mean age 18.6 years, 62% male, 52% Black/African American, 36% Hispanic, 47% non-heterosexual) to either the intervention (n = 31) or the control condition (n = 29) condition. Preliminary analyses did not reveal significant differences in demographic factors (age, race, ethnicity, sexual orientation) between conditions (See Table 2). All the youth in the study reported a history of vaginal and/or anal sex. Retention for the 12-week post-test assessment was 87 and 83% for the intervention and control conditions, respectively (not significantly different).	Despite the study's small sample size, the significant changes we found in measures of self-efficacy and the reduction in unprotected sex acts suggest that this easily disseminated Internet content could result in changed attitudes and behavior. This compiled intervention, chosen for its appeal for urban minority youth with diverse sexual, ethnic and racial backgrounds, may hold promise as a low-cost intervention method. Future research will need to confirm its efficacy before it is disseminated, and also determine the most effective ways to engage youth with online content.	USA
17	Lindsay E. Young, Kayo Fujimoto, John A. Schneider	2019	Facebook group affiliation ties, group topics, and HIV behavioral characteristics among young Black men who have sex with men: Potential for public health intervention	longitudinal cohort study	Facebook	Of the 221 YBMSM, 41 percent were HIV positive and majorities were regular testers (61%), were aware of PrEP (78%), and had engaged in condomless sex (62%). About 15 percent reported engaging in group sex. Descriptive results for the analytic sample are consistent with those for the full sample of YBMSM. Among the 82 Facebook	Despite these limitations, our findings provide a structural account of HIV risk and protection as observed in an underexplored, yet culturally salient social context. Given that SNS are now mainstreamed into our daily routines, it	USA

						<p>groups, 21 focused on LGBTQ identity (26%), 17 focused on personal/professional development (21%), 14 were chat groups (17%), 12 promoted nightlife (15%), and 10 focused on sexual attraction (12%). The remaining 8 groups (10%) were categorized as "Recreational Interests" (n =6) or "Health" (n =2) but were later combined and recategorized as "Other."</p>	<p>behoooves the research community to understand their role in forging both sexual risk and prevention norms in high-risk populations like YBMSM. Developing interventions that leverage the group-based affiliation network structure of YBMSM and, by extension, the topics they discuss in these environments may prove more effective than off-the-shelf interventions that remain agnostic to the needs and interests of this population.</p>	
18	J. Alemany, E. del Val, J. Alberola, A. García-Fornes	2019	Enhancing the privacy risk awareness of teenagers in online social networks through soft-paternalism mechanisms	Field experiment	General	<p>In this section, we show the results obtained from the experiment. First, we introduce the participants' demographics and their initial attitude toward privacy as well as data related to posting behaviors. All of the information about participants was collected from the PESEDIA platform through their profiles, activity, and settings. Second, we analyse the participants' activity during stage 1 (where none of the groups had the nudging mechanisms activated) and during stage 2 (where G1 and G2 had the nudging mechanisms activated) in order to quantify the impact of the nudges on the participants. We applied statistical</p>	<p>Teenagers are considered to be one of the vulnerable groups to suffer privacy risks because of their limited capacity for self-regulation and susceptibility to peer pressure. Most privacy approaches proposed in the literature try to deal with privacy in social networks to facilitate the configuration of privacy. However, there is still an open problem of making teenagers aware of the extent of disclosing information on social networks, even if users have</p>	

						significance tests to answer the research questions and to validate the hypotheses about the nudge effects on participants' behaviors. Finally, we present the participants' perception of the benefits and drawbacks of the nudges based on the survey results.	defined a specific audience.	
19	Rick Varma, Charles Chung, Amanda Townsend and Melissa Power	2016	Sexual health-related information delivery - are patient information leaflets still relevant?	anonymous self-administered questionnaire	General	Over half (210/315; (67%)) of the consecutive clients from a culturally diverse population completed the survey. Sex workers (SW) and young people (YP) were significantly likely to have a high school education than non-HRP ($P < 0.039$ and $P < 0.032$). Overall, PILs, a clinic website and the Sexual Health Information Link (SHIL), a state-wide website and telephone line, were ranked significantly higher as a means of SHRI delivery on a Likert scale than newer technologies including Facebook ($P < 0.001$), email ($P < 0.001$), mobile phone applications ($P < 0.001$), TVs in waiting rooms ($P < 0.001$) and business cards ($P < 0.001$). There was no significant difference in opinion between HRP and non-HRP.	This study provides evidence for the ongoing use of PILs to deliver SHRI to clinic attendees, in conjunction with other forms of SHRI delivery such as websites and SHIL. Novel methods may require additional consumer engagement and a greater understanding of specific population's needs.	
20	Chelly Maes , Lara Schreurs, Johanna M.F. van Oosten , Laura Vandenbosch,	2019	#(Me)too much? The role of sexualising online media in adolescents' resistance towards the metoo-movement and acceptance of rape myths	cross-sectional paper-and-pencil survey	General	The results showed that exposure to sexually explicit internet material, but not receiving negative appearance feedback on social media, was related to more resistance towards the metoo-movement and the acceptance of rape myths through notions of women as sex objects. Self-objectification did not function as a valid mediator in the examined relations. Gender and self-esteem did not moderate the proposed relations	The findings underline the role of media use in how adolescents develop sexist beliefs and, more precisely, beliefs about contemporary actions to combat sexism, i.e., the metoomovement. The present study showed that sexual objectification fueled by sexually explicit internet material may result in less	Belgium

							positive attitudes and, thus, more resistance towards this movement.	
21	Emily H. Ruppel, Hannah E. Karpman, Carolyn E. Delk, Mallory Merryman	2017	Online maternity information seeking among lesbian, bisexual, and queer women	qualitative content analysis	Facebook	many participants in lesbian-oriented Facebook groups sought and provided medical information. Their queries focused on the insemination process, and frequently related to posters' specific situations, while heterosexual women tended to seek general advice about the conception and pregnancy process. The accuracy of the content of responses varied, and group members seemed to view the prevalence of contradictory information as positive evidence of diverse perspectives. Even when information was technically correct, posters did not always apply it properly to the question at hand.	barriers to maternity care, or a lack of education and initiative among primary care providers, may drive lesbian, bisexual, and queer women to seek health information from peers on the internet when trying to become pregnant. These exchanges may contribute to misinformation, which may negatively affect lesbian, bisexual, and queer women's fertility outcomes and overall health.	
22	Samantha J. Stanley, Kun Yan, Jian Jiao, Bethany R. Lutovsky, Jennifer Stevens Aubrey & Margaret Jane Pitts	2019	Communicating about sex when it matters: a content analytic investigation of sexual health information on college student health center websites	Content analyses	Institutions websites	This research documents incomplete sexual health information on SHC websites despite the ability to post far greater amounts of content online than is often feasible in print. While this study suggests that most SHC websites should include more sexual health information in order to meet the quality indicator of completeness, it is unclear whether perceptions of completeness, credibility, and source utility are positively related at all levels of completeness. There may also be instances where perceptions of credibility or perceptions of completeness are more influential in perceptions of source utility. These issues demand further clarification in	Young adults in the United States have the right to expect equivalent, accessible, and at a minimum, adequate, if not comprehensive, sexual health information regardless of their institution type. Our findings suggest a wide variance in the types of sexual health information available to young adults through SHC websites that may damage young adults' perceptions of SHC websites as credible and complete. We found significant differences in the range and depth of topics covered and in the	USA

						order to make the best recommendations to SHCs about the provision of sexual health information online.	availability of sexual health resources across institution types. The representation of sexual health on SHC websites overwhelmingly focused on topics dedicated to risk avoidance while topics about sexual relationships and sexual pleasure were almost entirely absent from the sample.	
23	Carl Enomoto, Sajid Noor and Benjamin Widner	2017	Is Social Media to Blame for the Sharp Rise in STDs?	Regression analysis	General	It was found that states with more users of Match.com, OKCupid, and Down Dating had a larger number of cases of STDs, while states with more users of Our Time, Ashley Madison, Facebook, How About We, Hinge, Adult Friend Finder, Grindr, Bumble, Score, Tinder, and At First Sight had fewer cases of STDs.	While social networking sites make it easier for individuals to be exposed to an STD since in-network individuals may share an STD, many sites either attract individuals who are not interested in a short-term sexual relationship or who take precautions to avoid contracting an STD.	USA
24	Kathryn Macapagal, David A. Moskowitz, Dennis H. Li, Andrés Carrión, Emily Bettin, Celia B. Fisher, and Brian Mustanski	2018	Hookup App Use, Sexual Behavior, and Sexual Health Among Adolescent Men Who Have Sex With Men in the United States	Online survey	Hookup apps	Overall, 52.5% of participants (n = 105) reported using MSM-specific apps to meet partners for sex. Of these, most participants reported having oral (75.7%, n = 78) and anal sex (62.1%, n = 64) with those partners. Of those who reported having anal sex, 78.1% (n = 50) had sex with those partners more than once, and only 25.0% (n = 16) always used condoms with those partners. Relative to those who used only non-MSM-specific apps, MSM-specific app users reported more sex partners and condomless anal sex partners, greater perceived risk of HIV, more engagement in sexual health services,	Use of MSM-specific apps was not uncommon among this sample of AMSM. Patterns of risk behavior and HIV testing were similar to samples of adult MSM app users. Further research should investigate AMSM's app-related sexual and HIV/sexually transmitted infection prevention decision-making to guide sexual health education efforts for AMSM.	USA

						and greater odds of HIV testing.		
25	Warunee Fongkaew & Kangwan Fongkaew	2016	My space, my body, my sexual subjectivity: social media, sexual practice and parental control among teenage girls in urban Chiang Mai	Ethnographic methods for collecting and interpreting information	General	Taking the teenage girls' point of view, this paper argues that, as active agents, young women achieve a certain level of sexual autonomy and construct their own sexual selves in modern northern Thai society, despite their parents' attempts to prevent this.	The paper highlights the ways in which social media are used by Thai girls in order to achieve such a goal. Research findings should inform the development of future programmes on sexual health promotion, parental skills and sexual communication between Thai parents and their children.	Thailand

Papers that talked about the main subject SM use and sexual health promotion or education	Papers that reported on the effect (positive) ^[a] of the SM	Papers that reported on the effect (negative) ^[b] of the SM
(Jones et al., 2019), (Kesten et al. 2019), (Park et al. 2018), (Alber et al., 2016), (Stevens et al., 2017), (Reynolds et al., 2019), (Patterson et al.,2019), (Patel et al., 2016), (Aragão et al., 2018), (Card et al., 2018), (Witzel et al., 2016), (Harlow et al., 2018), (Burns et al., 2020), (Jones et al., 2019), (Jabson et al, 2017), (Whiteley et al. 2018), (Young et al., 2019), (Varma et al., 2016), (Maes et al., 2019), (Ruppel et al, 2017), (Stanley et al., 2019), (Enomoto et al., 2017), (Macapagal et al., 2018), (Fongkaew & Fongkaew, 2016).	(Jones et al., 2019), (Kesten et al. 2019), (Park et al. 2018), (Alber et al., 2016), (Stevens et al., 2017), (Reynolds et al., 2019), (Patel et al., 2016), (Aragão et al., 2018), (Card et al., 2018), (Harlow et al., 2018), (Burns et al., 2020), (Jabson et al, 2017), (Whiteley et al. 2018), (Young et al., 2019), (Alemany et al., 2019), (Maes et al., 2019), (Macapagal et al., 2018), (Fongkaew & Fongkaew, 2016),	(Patterson et al.,2019), (Witzel et al., 2016), (Jones et al., 2019), (Ruppel et al, 2017), (Enomoto et al., 2017),
Total papers = 24 (96%)	Total papers = 18 (72%)	Total papers = 5 (20%)

[a] Papers that reported on the positive of SM in terms of behavior change, attitudes, or reduction in STIs or HIV or others
[b] Papers that reported on the concerns of SM relating to behavior change, attitudes, or reduction in STIs or HIV or others

Figures

Figure 1

Selection procedure flow chart