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Impact of Facebook Ads for Sexual Health Promotion Via an Educational Web App: A Case Study

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ABSTRACT

Background: The authors present a case study of a public health campaign, including social media, and aiming at maximizing the use of web app on sexual health. Objective: To analyze the impact of a Facebook fan page, Facebook advertisements, and posters to maximize the number of visits to the educational web app. Methods: The campaign is assessed for 1 year, using data tracked through Facebook statistics and Google Analytics. Results: The site had 3670 visits (10.1 visitors/day, 95%CI 8.7-11.4). During the one-month Facebook Ads campaign, the site received 1263 visits (42.1 visitors/day, 95%CI 37.3-46.9), multiplying by over four the average number of visitors/day. 34.4% of all the participants were recruited during the one-month Facebook ads campaign. Conclusions: Facebook advertisements seem to be a good tool to promote an educational web app on sexual health targeting youth, and to reach a huge number of users rapidly and at a low cost.

KEYWORDS

Adolescent Health, Disease Prevention, Health Communication, Health Education, Health Promotion, Public Health, Sexual Health, Sexually Transmitted Diseases, Sexually Transmitted Infections

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BACKGROUND

Introduction

The World Health Organization has underlined the importance of addressing sexually transmitted infections (STIs) (Organization 2010). Viral STIs such as HIV and Hepatitis B have a prevalence of about 37 million and 240 million cases worldwide, respectively (Organization 2012). Genital chlamydia, gonorrhea, trichomoniasis and syphilis represent the main curable STIs in the world, with nearly 500 million new cases in 2008 (Organization 2012). Many of these patients remain contagious for decades, hence, preventive measures are essential.

Computer-based interventions for sexual health promotion represent an excellent resource for education, as they have demonstrated to have a significant effect on users by improving their knowledge, and increasing safety in their sex behaviour (Noar, Black et al. 2009, Bailey, Murray et al. 2012). With over a billion and a half active users worldwide as of September, 2016 (The Statistics Portal 2016), Facebook (FB) might represent a relevant environment for public health promotion (Paton, Bamidis et al. 2011, Gabarron and Fernández-Luque 2012, Neiger, Thackeray et al. 2012, Miron-Shatz, Hansen et al. 2013), including for sexual health promotion (Dunne, McIntosh et al. 2014). The computer-based technologies' effect on health promotion and health education might be even more relevant in developed countries, such as Norway, where a national survey performed in 2011 showed that 100% of youth aged 16-24 used the Internet every day, or almost every day, and that they connected to the Internet mainly for social networking purposes (Statistics Norway 2016).

Related Work

Conversations on sexual health and sexually transmitted infections already take place among online social media users (Gabarron, Serrano et al. 2014), but there are relatively few publications on the use of different social media for sexual health promotion (Bailey, Murray et al. 2010, Gold, Pedrana et al. 2011, Bailey, Murray et al. 2012, Guse, Levine et al. 2012, Dunne, McIntosh et al. 2014, Schnall, Travers et al. 2014, Yonker, Zan et al. 2015, Gabarron and Wynn 2016). Qualitative studies show that social media consumers are open for sexual health education and promotion through these media (Byron, Albury et al. 2013, Nicholas, Bailey et al. 2013, Lim, Vella et al. 2014, Pfeiffer, Kleeb et al. 2014).

In a recent review it was identified fifteen research studies on sexual health promotion using Facebook interventions for targeting youth (Gabarron and Wynn 2016). Most of these studies using Facebook for promoting sexual health among people aged 16-26 distribute general sexual health contents (Hedge and Donald 2011, Bull, Levine et al. 2012, Gold, Pedrana et al. 2012, Mustanski 2013, Nguyen, Gold et al. 2013, Pedrana, Hellard et al. 2013, Anderson and Samplin-Salgado 2014, Friedman,

Bozniak et al. 2014, Klingler 2014, Prior, Salmon et al. 2014, Dowshen, Lee et al. 2015, Fuller and Carter 2015), while only three studies focus on a specific sexually transmitted infection, namely chlamydia (Jones, Baldwin et al. 2012, Syred, Naidoo et al. 2014), and human papillomavirus (Patel, Stern et al. 2014).

Four of the studies that used Facebook for promoting sexual health among young people have reported a behaviour change, such as a 25% more condom use (Jones, Baldwin et al. 2012) or a higher tendency to use condoms (Bull, Levine et al. 2012); increases in the knowledge of sexual health (Fuller and Carter 2015), a 128% increase in the number of patients presenting for STIs testing (Friedman, Bozniak et al. 2014), and even a 54% reduction in the number of positive chlamydia cases among 15-17 years-olds (Jones, Baldwin et al. 2012). Interestingly, in two of these four studies, Facebook was the only media used for the sexual health promotion (Bull, Levine et al. 2012, Jones, Baldwin et al. 2012), while in the other two studies, Facebook was used as a resource for supporting other sexual health promoting channels (Friedman, Bozniak et al. 2014, Fuller and Carter 2015).

So far, it seems that social media have been used for public sexual health promotion targeting youth in different ways, and also to recruit youth for sexual health related research (Ahmed, Jayasinghe et al. 2013, Nicholas, Bailey et al. 2013, Hernandez-Romieu, Sullivan et al. 2014, Stratton, Spencer et al. 2015). We present a case study of a Norwegian public health campaign using social media, and aiming at maximizing the use of a web app on sexual health. In our case, the selected social media channel was Facebook, due to its popularity when the study was carried out (Statistics Norway 2016).

Objective

The objective of the present study is to analyze the impact of a Facebook fan page, a Facebook advertisement campaign, and posters to maximize the use of a public health educational web app promoting sexual health for youth. The impact of the promotion is assessed using data tracked through two sources, the Facebook statistics dashboard and Google Analytics.

Methods

At the end of 2012, a game-style web app on sexual health was developed for a Norwegian public hospital (Gabarron, Serrano et al. 2012). The web app includes interactive game-like functions to learn about STIs, text and photographs on anatomy, physiology, contraception, and behavioral issues related to sexual health, instructional videos, and a symptom checker (Gabarron, Serrano et al. 2012, Gabarron, Schopf et al. 2013, Gabarron, Serrano et al. 2014). The site was built on social constructivist learning theory (Gergen 1999), by providing information on sexual health that allows the users to compare that information to their previous knowledge, modify their ideas, and continue learning. All its content was developed by doctors and nurses experienced in teaching at schools. Most of the web app content is in the Norwegian language, and it also includes some educational videos in Swedish and English. In 2013, a

strategy to promote the web app among youth was planned and carried out jointly with communication experts at the public university hospital (Gabarron, Serrano et al. 2012). The strategy included three elements: 1) Appealing and funny posters with QR codes linking to the web app. The QR codes are images that codify URLs. After taking a photo most smartphones are able to transform the image into a link. Therefore, when a user takes a photo of the poster with a cell phone, the phone will redirect to the website. Two different posters with QR codes were distributed to all the 44 secondary schools, 43 public libraries, and 37 health stations for youth in North Norway; 2) The web app was also promoted through a Facebook fan page, created on the 13th February 2013, and posting 1 or 2 times per week; and 3) A Facebook advertisement campaign promoting the fan page (Pay-per-like) was carried out during a period of one month. The Facebook ads campaign was set up to be displayed among all the Facebook users aged 13-25 years, from all the villages from the two northernmost counties in Norway (Troms and Finnmark), and we selected to spend up to 3000 NOK (approximately 386 USD) in a one-month period. The Facebook ads campaign included a message in Norwegian meaning "Visit the virtual cinema and watch the movie to see what happens in the body when you come", and included a drawing of a young female doctor, the url of the web site, and a button inviting to "like" the Facebook fan page (see Figure 1).

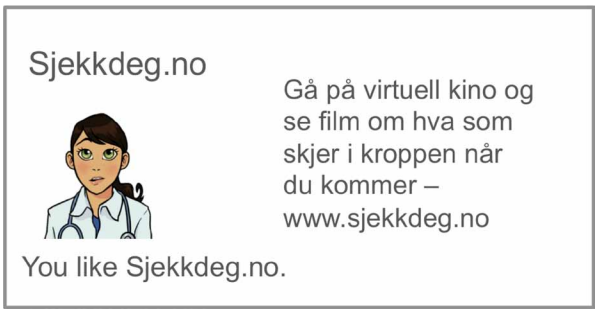
The advertisements were approved by Facebook, and the campaign started on the 4th April, 2013 and finished on the 3rd May, 2013. To assess the impact of both the Facebook fan page and the Facebook advertisements on the sjekkdeg.no visits rates, we used data provided by the Facebook statistics dashboard and also by the web analytic tool Google Analytics.

Results

Results from Google Analytics

The public health web app promoting sexual health had a total of 3670 visitors during the year (about 10 visitors/day), 2916 of these visitors were from Norway (79.5%). Norwegian visitors used desktop computers more frequently to reach the site (n=2099, 72%), followed by mobile phones (n=528, 18.1%), and tablet computers (n=289, 9.9%). However, tablet computer users, with an average of 13:57 minutes, were the

Figure 1. Facebook advertisement (English meaning: "Visit the virtual cinema and watch the movie to see what happens in the body when you come")



ones spending the most time on the educational site, vs. 04:54 minutes for desktop computer users, and 03:04 minutes for mobile phone users.

During the Facebook advertisements campaign, Google Analytics registered 1263 visitors in 30 days (42.1 visitors/day, 95% confidence interval 37.3-46.9), multiplying by over four the average number of visitors per day during the rest of the year (10.1 visitors/day, 95% confidence interval 8.7-11.4). Among these 1263 visitors, 1193 reached the site from Norway (94.5%). During the Facebook ads campaign, Norwegian visitors used desktop computers most frequently too (n=962, 80.6%), followed by mobile phones (n=171, 14.3%), and tablet computers (n=60, 5%). In this case, the highest time on site came from desktop computer users, with an average of 03:52 minutes, followed by the 03:26 minutes for mobile users, and 02:20 minutes for tablet users.

The audience data are summarized in Table 1, and the steep increase in recruitment from the graph due to the campaign can be seen in Figure 2.

Smaller peaks on the visitors' rate at the beginning of the year are related to the publication of an interview with the one of the authors in a newspaper (http://www.elmundo.es/elmundosalud/2013/02/11/noticias/1360603163.html), and were tracked by Google Analytics.

The smaller peaks observed in June-July and in autumn (after the Facebook ads campaign) might be explained by the effect of the promotion posters, or perhaps that the popularity of the site has risen slowly. No special referring websites were tracked by Google Analytics during these periods.

Results from Facebook Statistics

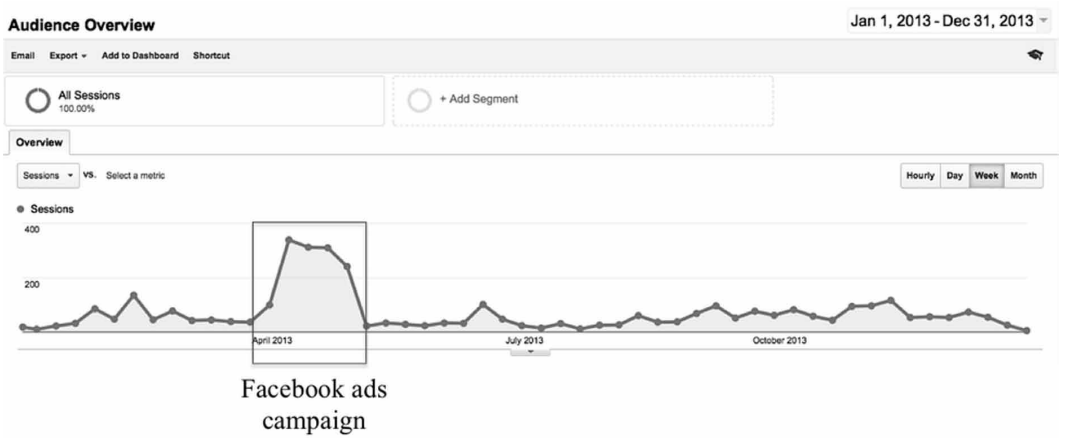
The Facebook fan page had a total of 67 "likes" during all of 2013. Of these 67 "likes", 35 "likes" (52%) were achieved during the "Pay-per-like" advertisements one-month campaign, with a cost of 85.71 NOK/"like" (about 11.33 USD/"like").

Table 1. Site audience data in 2013 (data from Google Analytics)

	Audience 1st Jan 2013 – 31st Dec 2013	**Audience 4th Apr 2013 – 3rd May 2013 Facebook Ads Campaign***
Total Visitors New Visitors	3670 (100%) 2381 (64.9%)	1263 (100%) 901 (71.3%)
Number of visitors Through desktops Through mobiles Through tablets	 2686 (73.2%) 637 (17.4%) 347 (9.4%)	 1022 (80.9%) 180 (14.3%) 61 (4.8%)
Number of visitors referred by Facebook	671 (18.3%)	505 (40%)
Sessions		
Avg. Pages/session New Visitors Returning Visitors	20.62 18.86 23.89	15.84 18.06 10.61
Avg. Session Duration New Visitors Returning Visitors	05:02 min 04:01 min 06:56 min	03:44 min 03:57 min 03:13 min

* FB ads targeted users aged 13-25 from all the cities and villages in the targeted area

Figure 2. Site audience overview in 2013 (data from Google Analytics)



The Facebook ads targeted all the Facebook users aged between 13 and 25 from all the cities and villages from the targeted area. At the time of the study, a total of 68360 Facebook accounts of users aged between 13 and 25 years existed, according to the Facebook Ads Manager. In addition to the 35 "likes" in the fan page, the Facebook advertisement reached 51200 people, and it had 1295 clicks and 1077 unique clicks according to the Facebook Statistics Dashboard, and 1263 visits according to Google Analytics.

Discussion

Facebook for Sexual Health Promotion

In countries where Internet access is universal, such as in Norway (Statistics Norway 2016), Facebook advertisements seem to be a good tool to promote a public health educational web app on sexual health targeting youth, judging by the number of sessions tracked during the one-month campaign in comparison to the rest of the year. Facebook advertisements helped to increase rapidly the number of visitors to the educational web app promoting sexual health, and this increase in the number of users potentially helped to improve their knowledge and safe sex behavior, as previous studies have demonstrated (Noar, Black et al. 2009, Bailey, Murray et al. 2012). However, visitors received during the Facebook advertisements campaign visited fewer pages in each visit, and spent less time on the educational site. The time spent on the site dramatically went down among tablet computer users during the one-month campaign, from almost 14 minutes along the year, to 2 minutes and 20 seconds. This could be because some visitors that were less interested in the topic of sexual health nevertheless were attracted briefly to the site by the advertisement. About 1/3 of all the participants recruited during the year are from that one-month FB campaign (34.4%). During the Facebook Advertisements campaign, the average number of visitors to the site was quadrupled, catching the attention of about 42 users daily. A yearlong Facebook ads campaign could potentially have reached over 15,000 users.

Facebook Statistics Dashboard registered a total of 1295 clicks (1077 of those were identified as unique clicks) to the advertisement during the one-month campaign, while Google Analytics registered a total of 1263 sessions, and only 505 (40%) of these visits were identified by Google Analytics as being referred from Facebook. Despite the disagreement regarding the number of web app visitors from the two statistics dashboards, we assume that the extraordinarily high number of visitors to the web app during the one-month campaign can be explained by the Facebook advertisements effect.

The discrepancy could be due to users accessing the web app by clicking the right mouse button when pressing the advertisement, instead of the usual left button. By clicking the advertisement with the left mouse button, the user "liked" the Facebook fan page, while when the right button was pressed, the option to open the website in a new tab without "like" it on the Facebook fan page was given. Or, maybe the users clicked on the advertisement, but they preferred to access the site by typing the url address in a new tab.

The over 1250 new visitors (1295 according to Facebook Statistics Dashboard, and 1263 according to Google Analytics) were reached during the 1-month Facebook ads campaign, at a cost of 3000 NOK (approximately 386 USD). Our Facebook advertisement campaign seemed to be more cost-effective than the one carried out by Gamage et al. in 2009 and 2010 (Gamage, Fuller et al. 2011). The study advertised sexual health services in Australia, reported a cost of 1408 AUD spent on Facebook (approximately 970 USD), and recruited 318 participants (Gamage, Fuller et al. 2011).

Youth and Sensitive Topics

When dealing with matters that are sensitive, such as sexual health and STIs, anonymity and privacy are likely to be important (Gabarron, Schopf et al. 2013, Gabarron, Serrano et al. 2014, Johnsen, Vambheim et al. 2014). Prior studies have suggested that youth are adept at circumventing systems that allow for the monitoring by parents or other adults (Gammon, Christiansen et al. 2009). While it may be the case that few visitors to the Facebook fan page actually liked the page, we believe that making a public statement about liking a movie that shows what happens during an orgasm is unthinkable for many people and especially so for youth. On the other hand, visiting the Facebook fan page is achieved without drawing attention from other people in the visitor's social network, which can explain why the number of visitors was quite high during the Facebook Ads campaign.

To explain the apparent contradiction between young people's interest in sexual health information and the low numbers of "likes" on the Facebook fan page, we need to take into account some factors: a) The targeted population was younger students and some studies reveal that the majority of young people have a high level of awareness of the risks and potential outcomes associated with their online behavior (Bryce and Fraser 2014). 60% of adolescent Facebook users keep their profiles private, and most report high levels of confidence in their ability to manage their settings (Madden, Lenhart et al. 2013); b) We must also take into account that adolescents' self-disclosure

on social network sites is mostly the result of a rational, deliberated process, but can be influenced by a more emotional spontaneous response to a given online situation (Van Gool, Van Ouytsel et al. 2015). If we combine both ideas with the findings of Pew Internet Research showing that 98% of Facebook-user teens are friends with people they know from school; 91% of teen Facebook users are friends with members of their extended family, and 70% are Facebook friends with their parents (Madden, Lenhart et al. 2013), it is easier to understand the paradoxical relations between the interest of young people in sexual health education and the number of "likes" collected during the ads campaign on Facebook. Regarding the issue of privacy, a former study found that young participants were interested in sexual health information, but they did not want to access it at the cost of their own sense of comfort and belonging in their social networks (Byron, Albury et al. 2013). This phenomenon, known as the "spiral of silence", has been described before, and it is associated with sensitive issues in the social media (Hampton, Rainie et al. 2014). In this sense, we consider that support expressed through "likes" in the case of a STI in a social network can favor the emergence of a "spiral of silence," where adolescents try to avoid showing that they have visited the site. This issue might explain the high number of visitors to the educational web app referred from Facebook, and the low number of "likes" on the Facebook fan page. It is an interesting finding that while there were 901 new visitors to the site during the 1-month Facebook Ads campaign, the site received only 35 Facebook "likes". The number of "likes" we found is higher than the 2 fans achieved in 5 months by Ahmed et al (Ahmed, Jayasinghe et al. 2013); and proportionally higher than the 50 "likes" reported by Syred et al in a 5 months study (Syred, Naidoo et al. 2014). However the number of fans is very distant from the 2929 fans reported by Pedrana et al in their 1 year study (Pedrana, Hellard et al. 2013). When someone "likes" a Facebook page, this is published on the page that is "liked" as well as on the Facebook page of the person that has "liked" (i.e. on the "Timeline"). The person who owns the page that has been liked is notified of this action. In addition, when someone "likes" a page, this information may be conveyed to those who are registered as friends of the person who has pressed the "like" button, for instance by means of Facebook Ads (https://www.Facebook.com/help/like). However, other explanations for the low number of "likes" might exist. For instance, the youth felt attracted by the advertisement, but after visiting the site they did not like it enough to press the "like" button. Or, maybe after visiting the site, they forgot to press "like"; or maybe they are lurkers and do not actively contribute or press "like".

Our study analyzes the impact of three strategies to recruit web users, and two of them were related to Facebook. Although is not possible to clearly differentiate the effect of these three strategies on the web app visitor rates, the exceptionally high number of visitors during the Facebook ads campaign suggests that the main effect is explained by the social media advertisements. Our research adds evidence on the usefulness of social media for getting young people' attention on sexual health topics. This study measured only project reach and site engagement; therefore it is not possible to say if our sexual health promotion lead to behavior change. Further research should include

variables that allow showing behaviour change related to the social media intervention. One might also take into account that teens' enthusiasm for Facebook is diminishing, as many dislike the increasing adult presence (Madden, Lenhart et al. 2013, Lenhart 2015). Although Facebook is still the leading social media channel (Lenhart 2015), other social networks that are increasing their popularity among young people, such as Twitter, Instagram or Snapchat, could therefore be tested. Youth have reported they could better express themselves on these platforms, by feeling freed from the social expectations and constraints of Facebook (Madden, Lenhart et al. 2013). Anonymous "like" social media buttons could also be explored in future research projects (Alves and Ferreira 2013), as well as strategies like the "Informers" phenomenon in Spain, a procedure allowing users to share content in Facebook anonymously. The high level of self-disclosure on social networks like Facebook (Kaplan and Haenlein 2010) can be a barrier to the free expression of "likes" and might make it problematic for people to openly support public health sites on sexual health.

Much current research literature on social media and sexual health focuses on interventions trying to change the behavior of the users. The rationale is that social media are ideal to promote short and simple messages, e.g. "Use condoms!" However, social media platforms are not designed for distant teaching and e-learning. Also, sexual content (e.g. nude photographs for anatomy education) may not be allowed by social media providers. Therefore, we believe that traditional websites are still an important part of any web-based intervention on sexual health, and previous studies have demonstrated their efficacy (Noar, Black et al. 2009, Bailey, Murray et al. 2012). In our study, we present a novel approach. An educational website is being used for teaching basic issues on sexual health. Three different strategies were used to recruit users for the web app, Facebook ads was one of these strategies, and it was the most successful to recruit users in a short period of time.

CONCLUSION

Facebook advertisements seem to be a very useful tool to help promoting websites on sexual education to youth, while the use of fan pages on sensitive topics in a social network can favor the emergence of a "spiral of silence". Public health campaigns targeting young populations should consider Facebook advertisements as a resource to reach a huge number of youth, rapidly and at a low cost. This method might be especially useful for campaigns dealing with sensitive topics.

Clinical Relevance Statement

Educational online sites are an important part of any web-based intervention on sexual health, and especially when the intervention is targeting youth. Facebook advertisements seem to be the most useful strategy to recruit users for the educational site in a short period of time.

Protection of Human and Animal Subjects

This research study strictly followed the regulations provided by the Health Register Act (Helseregisterloven) and the Health Personnel Act (Helsepersonelloven). Both acts (with accompanying regulations) being supervised by the Norwegian Ministry of Health and the Norwegian Board of Health. The project pursued conformance to the regulations of the Personal Data Act (based on the European Data Protection Directive). The Personal Data act and other relevant acts and regulations are enforced and supervised by the Norwegian Data Inspectorate (Datatilsynet). The study has been approved by the Privacy Ombudsmann at the University Hospital of North Norway. The project protocol was presented for assessment to the Ethics Committee (REK-Nord), with the reference code: 406678, and it was declared exempt.

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Author Contributions

All authors contributed to conception and design, interpretation of data, and drafting or revising the manuscript critically for important intellectual content. EG and LFL additionally contributed to the acquisition and analysis of data. All authors have read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

REFERENCES

Ahmed, N., Jayasinghe, Y., Wark, J. D., Fenner, Y., Moore, E. E., Tabrizi, S. N., & Garland, S. M. et al. (2013). Attitudes to Chlamydia screening elicited using the social networking site Facebook for subject recruitment. *Sexual Health*, *10*, 224–228. PMID:23702200

Alves, P. and P. Ferreira (2013). AnonyFacebook - Liking Facebook Posts Anonymously. In *On the Move to Meaningful Internet Systems: OTM 2013 Workshops* (Vol. 8186, pp. 709-713).

Anderson, J., & Samplin-Salgado, M. (2014). GYT: Adapting a national STD testing campaign for a local audience in Santa Clara county, California. *Proceedings of the 2014 STD Prevention Conference*.

Bailey, J., Murray, E., Rait, G., Mercer, C., Morris, R., Peacock, R., & Nazareth, I. et al. (2012). Computer-based interventions for sexual health promotion: Systematic review and meta-analyses. *International Journal of STD & AIDS*, *23*(6), 408–413. doi:10.1258/ijsa.2011.011221 PMID:22807534

Bailey, J. V., Murray, E., Rait, G., Mercer, C. H., Morris, R. W., Peacock, R., & Nazareth, I. et al. (2010). Interactive computer-based interventions for sexual health promotion. *Cochrane Database of Systematic Reviews*, *9*, CD006483. PMID:20824850

Bryce, J., & Fraser, J. (2014). The role of disclosure of personal information in the evaluation of risk and trust in young peoples' online interactions. *Computers in Human Behavior*, *30*, 299–306. doi:10.1016/j.chb.2013.09.012

Bull, S. S., Levine, D. K., Black, S. R., Schmiege, S. J., & Santelli, J. (2012). Social media-delivered sexual health intervention: A cluster randomized controlled trial. *American Journal of Preventive Medicine*, *43*(5), 467–474. doi:10.1016/j.amepre.2012.07.022 PMID:23079168

Byron, P., Albury, K., & Evers, C. (2013). It would be weird to have that on Facebook: Young peoples use of social media and the risk of sharing sexual health information. *Reproductive Health Matters*, *21*(41), 35–44. doi:10.1016/S0968-8080(13)41686-5 PMID:23684185

Dowshen, N., Lee, S., Matty Lehman, B., Castillo, M., & Mollen, C. (2015). IknowUshould2: Feasibility of a Youth-Driven Social Media Campaign to Promote STI and HIV Testing Among Adolescents in Philadelphia. *AIDS and Behavior*, *19*(Suppl. 2), 106–111. doi:10.1007/s10461-014-0991-9 PMID:25563502

Dunne, A., McIntosh, J., & Mallory, D. (2014). Adolescents, Sexually Transmitted Infections, and Education Using Social Media: A Review of the Literature. *The Journal for Nurse Practitioners*, *10*(6), 401–408.e402. doi:10.1016/j.nurpra.2014.03.020

Friedman, A. L., Bozniak, A., Ford, J., Hill, A., Olson, K., Ledsky, R., & Brookmeyer, K. et al. (2014). Reaching Youth With Sexually Transmitted Disease Testing: Building on Successes, Challenges, and Lessons Learned From Local Get Yourself Tested Campaigns. *Social Marketing Quarterly*, *20*(2), 116–138. doi:10.1177/1524500414530386

Fuller, R., & Carter, K. (2015). Peer education in practice: an example of a youth-led sexual health program. *Proceedings of the STI & HIV World Congress*. doi:10.1136/sextrans-2015-052270.243

Gabarron, E., & Fernández-Luque, L. (2012). eSalud y vídeos online para la promoción de la Salud. *Gaceta Sanitaria*, *26*(3), 197–200. doi:10.1016/j.gaceta.2012.03.004 PMID:22554457

Gabarron, E., Schopf, T., Serrano, J. A., Fernandez-Luque, L., & Dorronzoro, E. (2013). Gamification strategy on prevention of STDs for youth. *Studies in Health Technology and Informatics*, *192*, 1066–1066. PMID:23920840

Gabarron, E., Serrano, J. A., Schopf, T., Fernandez-Luque, L., & Wynn, R. (2014). Play as a prevention strategy: Using a web app to teach youth about STDs. *Studies in Health Technology and Informatics*, *205*, 1187.

Gabarron, E., Serrano, J. A., Wynn, R., & Armayones, M. (2012). Avatars using computer/smartphone mediated communication and social networking in prevention of sexually transmitted diseases among North-Norwegian youngsters. *BMC Medical Informatics and Decision Making*, *12*(1), 120–120. doi:10.1186/1472-6947-12-120 PMID:23110684

Gabarron, E., Serrano, J. A., Wynn, R., & Lau, A. Y. (2014). Tweet Content Related to Sexually Transmitted Diseases: No Joking Matter. *Journal of Medical Internet Research*, *16*(10), e228. doi:10.2196/jmir.3259 PMID:25289463

Gabarron, E., & Wynn, R. (2016). Use of social media for sexual health promotion: A scoping review. *Glob Health Action*, *9*(1), 32193. doi:10.3402/gha.v9.32193

Gamage, D. G., Fuller, C. A., Cummings, R., Tomnay, J. E., Chung, M., Chen, M., & Fairley, C. K. et al. (2011). Advertising sexual health services that provide sexually transmissible infection screening for rural young people - what works and what doesn't. *Sexual Health*, *8*(3), 407–411. doi:10.1071/SH10144 PMID:21851783

Gammon, D., Christiansen, E., & Wynn, R. (2009). Exploring morally relevant issues facing families in their decisions to monitor the health-related behaviours of loved ones. *Journal of Medical Ethics*, *35*(7), 424–428. doi:10.1136/jme.2008.027920 PMID:19567691

Gergen, K. (1999). *An Invitation to Social Construction*. London: Sage Publications.

Gold, J., Pedrana, A. E., Sacks-Davis, R., Hellard, M. E., Chang, S., Howard, S., & Stoove, M. A. et al. (2011). A systematic examination of the use of online social networking sites for sexual health promotion. *BMC Public Health*, *11*(1), 583–583. doi:10.1186/1471-2458-11-583 PMID:21777470

Gold, J., Pedrana, A. E., Stoove, M. A., Chang, S., Howard, S., Asselin, J., & Hellard, M. E. et al. (2012). Developing health promotion interventions on social networking sites: Recommendations from The FaceSpace Project. *Journal of Medical Internet Research*, *14*(1), e30–e30. doi:10.2196/jmir.1875 PMID:22374589

Guse, K., Levine, D., Martins, S., Lira, A., Gaarde, J., Westmorland, W., & Gilliam, M. (2012). Interventions using new digital media to improve adolescent sexual health: A systematic review. *The Journal of Adolescent Health*, *51*(6), 535–543. doi:10.1016/j.jadohealth.2012.03.014 PMID:23174462

Hampton, K., Rainie, L., Weixu, L., Dwyer, M., Shin, J., & Purcell, K. (2014). Social Media and the "Spiral of Silence.", Washington DC.

Hedge, K. C., & Donald, C. P. (2011). Evaluation of the use of a social networking site in sexual health care. *International Journal of STD & AIDS*, *22*(3), 171–172. doi:10.1258/ijsa.2010.010355 PMID:21464456

Hernandez-Romieu, A.C., Sullivan, P.S., Sanchez, T.H., Kelley, C.F., Peterson, J.L., Del Rio, C., … Rosenberg E. S. (2014). The comparability of men who have sex with men recruited from venue-time-space sampling and Facebook: a cohort study. *JMIR research protocols*, *3*, e37.

Johnsen, J., Vambheim, S., Wynn, R., & Wangberg, S. (2014). Language of motivation and emotion in an Internet support group for smoking cessation: Explorative use of automated content analysis to measure regulatory focus. *Psychol Res Behav Manag*, *7*, 19–29. PMID:24470780

Jones, K., Baldwin, K. A., & Lewis, P. R. (2012). The potential influence of a social media intervention on risky sexual behavior and Chlamydia incidence. *Journal of Community Health Nursing*, *29*(2), 106–120. doi:10.1080/07370016.2012.670579 PMID:22536914

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, *53*(1), 59–68. doi:10.1016/j.bushor.2009.09.003

Klingler, G. (2014). Just talk about it: Changing sexual health conversations in Colorado through Beforeplay.org. *Proceedings of the 2014 STD Prevention Conference*.

Lenhart, A. (2015). Teens, Social Media & Technology Overview 2015. Retrieved from http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/

Lim, M. S., Vella, A., Sacks-Davis, R., & Hellard, M. E. (2014). Young people's comfort receiving sexual health information via social media and other sources. *International Journal of STD & AIDS*, *25*(14), 1003–1008. doi:10.1177/0956462414527264 PMID:24616114

Madden, M., Lenhart, A., Cortis, S., Gasser, U., Duggan, M., Smith, A., & Berton, M. (2013). *Teens*. Washington, DC: Social Media and Privacy.

Miron-Shatz, T., Hansen, M., Grajales, F. r., Martin-Sanchez, F., & Bamidis, P. (2013). Social Media for the Promotion of Holistic Self-Participatory Care: An Evidence Based Approach. Contribution of the IMIA Social Media Working Group. *Yearbook of Medical Informatics*, *8*, 162–168. PMID:23974565

Mustanski, B. (2013). Effects of online comprehensive sexual health education for LGBT youth. *Journal of Sexual Medicine*, *10*(Suppl. 5), 314.

Neiger, B. L., Thackeray, R., Van Wagenen, S. A., Hanson, C. L., West, J. H., Barnes, M. D., & Fagen, M. C. (2012). Use of social media in health promotion: Purposes, key performance indicators, and evaluation metrics. *Health Promotion Practice*, *13*(2), 159–164. doi:10.1177/1524839911433467 PMID:22382491

Nguyen, P., Gold, J., Pedrana, A., Chang, S., Howard, S., Ilic, O., & Stoove, M. et al. (2013). Sexual health promotion on social networking sites: A process evaluation of The FaceSpace Project. *The Journal of Adolescent Health*, *53*(1), 98–104. doi:10.1016/j.jadohealth.2013.02.007 PMID:23583509

Nicholas, A., Bailey, J. V., Stevenson, F., & Murray, E. (2013). The Sexunzipped trial: Young peoples views of participating in an online randomized controlled trial. *Journal of Medical Internet Research*, *15*(12), e276–e276. doi:10.2196/jmir.2647 PMID:24334198

Noar, S., Black, H., & Pierce, L. (2009). Efficacy of computer technology-based HIV prevention interventions: A meta-analysis. *AIDS (London, England)*, *23*(1), 107–115. doi:10.1097/QAD.0b013e32831c5500 PMID:19050392

Organization, W. H. (2010). Developing sexual health programmes. A framework for action.

Organization, W. W. H. (2012). Global Incidence and Prevalence of Selected Curable Sexually Transmitted Infections – 2008, Geneva.

Patel, A., Stern, L., Unger, Z., Debevec, E., Roston, A., Hanover, R., & Morfesis, J. (2014). Staying on track: A cluster randomized controlled trial of automated reminders aimed at increasing human papillomavirus vaccine completion. *Vaccine*, *32*(21), 2428–2433. doi:10.1016/j.vaccine.2014.02.095 PMID:24631099

Paton, C., Bamidis, P., Eysenbach, G., Hansen, M., & Cabrer, M. (2011). Experience in the use of social media in medical and health education. Contribution of the IMIA Social Media Working Group. *Yearbook of Medical Informatics*, *6*, 21–29. PMID:21938320

Pedrana, A., Hellard, M., Gold, J., Ata, N., Chang, S., Howard, S., & Stoove, M. et al. (2013). Queer as F**k: Reaching and engaging gay men in sexual health promotion through social networking sites. *Journal of Medical Internet Research*, *15*(2), e25. doi:10.2196/jmir.2334 PMID:23391459

Pfeiffer, C., Kleeb, M., Mbelwa, A., & Ahorlu, C. (2014). The use of social media among adolescents in Dar es Salaam and Mtwara, Tanzania. *Reproductive Health Matters*, *22*(43), 178–186. doi:10.1016/S0968-8080(14)43756-X PMID:24908469

Prior, M., Salmon, M., Walker-Baban, C., Bodas LaPollo, A., & Johnson, C. (2014). Condoms, condoms everywhere! - Examining the reach and awareness of take control Philly! at two years. *Proceedings of the 2014 STD Prevention Conference*.

Schnall, R., Travers, J., Rojas, M., & Carballo-Dieguez, A. (2014). eHealth interventions for HIV prevention in high-risk men who have sex with men: A systematic review. *Journal of Medical Internet Research*, *16*(5), e134. doi:10.2196/jmir.3393 PMID:24862459

Statistics Norway. (2016). ICT usage in households, 2016, 2nd quarter. Retrieved from https://ssb.no/en/teknologi-og-innovasjon/statistikker/ikthus

Stratton, S. L., Spencer, H. J., Greenfield, W. W., Low, G., Hitt, W. C., Quick, C. M., . . . Nakagawa, M. (2015). A novel use of a statewide telecolposcopy network for recruitment of participants in a Phase I clinical trial of a human papillomavirus therapeutic vaccine. Clinical trials (London, England).

Syred, J., Naidoo, C., Woodhall, S. C., & Baraitser, P. (2014). Would you tell everyone this? Facebook conversations as health promotion interventions. *Journal of Medical Internet Research*, *16*(4), e108. doi:10.2196/jmir.3231 PMID:24727742

The Statistics Portal. (2016). Most famous social network sites worldwide as of September 2016, ranked by number of active users (in millions).

Van Gool, E., Van Ouytsel, J., Ponnet, K., & Walrave, M. (2015). To share or not to share? Adolescents self-disclosure about peer relationships on Facebook: An application of the Prototype Willingness Model. *Computers in Human Behavior*, *44*, 230–239. doi:10.1016/j.chb.2014.11.036

Yonker, L., Zan, S., Scirica, C., Jethwani, K., & Kinane, T. (2015). Friending teens: Systematic review of social media in adolescent and young adult health care. *Journal of Medical Internet Research*, *17*(1), e4. doi:10.2196/jmir.3692 PMID:25560751