JOURNAL OF HEALTHCARE SCIENCES
Volume 4 Issue 1 2024, Article ID: JOHS2023000810
http://dx.doi.org/10.52533/JOHS.2024.40105
e-ISSN: 1658-8967

Review

Social Media Influence, Role, Challenges, and Effect on Medicine

Yaser Qattan[1*], Saad Alenezi[2], Ammar Alahmari[3], Rawdha Fardan[4], Fares Alhajuj[5], Nasser Almarri[6], Bassma Hejles[7], Abdalrahman Sibieh[8], Tahirah Algarrous[9], Fatimah Almuhaysin[10], Mansour Alqahtani[11]

[1] *Department of Psychiatry, Al-Amal Mental Health and Addiction Treatment Hospital, Jeddah, Saudi Arabia*
[2] *College of Medicine, Arabian Gulf University, Manama, Bahrain*
[3] *Department of Emergency Medicine, King Salman Medical City, Medina, Saudi Arabia*
[4] *Department of Internal Medicine, Governmental Hospitals / SMC, Manama, Bahrain*
[5] *Security Forces Specialized Comprehensive Polyclinics, Medina, Saudi Arabia*
[6] *Department of General Surgery, Buraidah Central Hospital, Buraidah, Saudi Arabia*
[7] *College of Medicine, Medical University of Lodz, Lodz, Poland*
[8] *Emergency Medical Services, Al Thager General Hospital, Jeddah, Saudi Arabia*
[9] *College of Medicine, Medical University of Warsaw, Warsaw, Poland*
[10] *College of Medicine, King Faisal University, Al Ahsa, Saudi Arabia*
[11] *College of Medicine, King Khalid University, Abha, Saudi Arabia*

Correspondence should be addressed to **Yaser Qattan**, Department of Psychiatry, Al-Amal Mental Health and Addiction Treatment Hospital, Jeddah, Saudi Arabia. Email: yasserqattan@hotmail.com

Received: 31 December 2023, Accepted: 9 January 2024, Published: 13 January 2024.

Abstract

Social media has grown exponentially as an open, social platform for communication and information sharing. By April 2020, there were 3.81 billion active users, fueled by increased internet and mobile phone access. A notable aspect of these platforms is their potential in public health initiatives, reaching large audiences and offering direct messaging capabilities. Social networks often exhibit higher engagement and retention rates than traditional web-based approaches, and their interactive nature may have a more significant impact. Social media has been utilized for health-related interventions, public health campaigns, medical education, disease outbreak tracking, and health research. It facilitates cost-effective, two-way communication between healthcare professionals and patients, enhancing current medical practices. However, the use of technologies and eHealth applications presents challenges, including establishing trust, adhering to regulations, and curating optimal content. The emotional content of user-generated information, especially during health crises, raises concerns about misinformation, stigma, and mental health issues such as cyberbullying and depression. The misuse of social media can harm personal relationships and reputations. In medical contexts, it requires careful handling of information accuracy and accessibility. Issues with compliance, trust, and patient privacy have impacted doctor-patient relationships. The development of standard protocols for health information dissemination and understanding personal health data usage in various cultural and social contexts remains a key area for further research and exploration.

Keywords: *Social media, healthcare, disease surveillance, mental health, privacy.*

Introduction

The term social media was first used to describe the evolution of Web 2.0 applications that are open and social in nature (1). Web 2.0 social networking sites are broad online platforms where people can communicate and share information and as we enter the digital age, this media platform is becoming more popular. With 3.81 billion active social media users in April 2020 (1, 2), increasing access to the internet and mobile phone connections, more people have access to public health information more quickly and directly than ever before. 2020 was a huge year in the social media sector. Facebook, the most popular social media platform worldwide, had 1.1 billion monthly users in 2013 (3). YouTube had 2,562 million users as of 2022, making it the second most popular social networking site behind Facebook (4).

There were 2000 million active users on WhatsApp, 1,263 on Wein/WeChat, 1,000 on TikTok, 988 on Facebook Messenger, 557 on Snap chat, 550 on Telegram, 444 on Pinterest, 436 on T witter, 430 on Reddit, and 300 million on Quora (4). **(Figure 1)** is a percentage-based compilation of global usage data from January 2022 for all mentioned social media networks (4). Online social media platforms hold significant promise for public health initiatives due to various factors. Firstly, they can reach substantial audiences; for example, in 2013, Facebook had 1.1 billion monthly users (3). Secondly, the ability to deliver messages directly to individuals could offer advantages over traditional health promotion methods (5). Thirdly, engagement and retention rates are often higher on social networks compared to standard web-based approaches (6). Additionally, the interactive and content-creating nature of social media may have a stronger impact compared to traditional websites (7). A range of studies has highlighted the potential of social media for health-related interventions, connecting with supportive networks, discussing emotions, promoting healthy behaviors, counseling, public health campaigns, medical education, tracking disease outbreaks, and conducting health research (8). Recent advancements indicate that social media can facilitate cost-effective, two-way communication between healthcare professionals and patients, potentially benefiting current medical practices. However, the introduction of Web 2.0 technologies and eHealth applications also presents challenges, such as establishing trust, adhering to regulations, and curating optimal content (4). The emotional content of user-generated information on social media, particularly during health crises, raises concerns (9). These platforms can impact the decision-making of individuals and groups, leading to risks of misinformation, conspiracy theories, stigma, violence, and harm to religious-cultural sentiments (10). Excessive social media use is linked to mental health issues in both adults and adolescents, including fear of missing out (FOMO), cyberbullying, sleep problems, stress, depression, and issues related to false prestige (11). Misuse of social media can also harm personal relationships and reputations. Using social media in medical contexts requires ensuring the accuracy and accessibility of information (4). There are also concerns about how social media use can negatively affect doctor-patient relationships due to issues with compliance, trust, and patient privacy (12). The development of standard protocols for disseminating health information via web networks remains an area of exploration. Additionally, the perceptions and usage of personal health data, along with varying cultural and social norms, need further investigation.

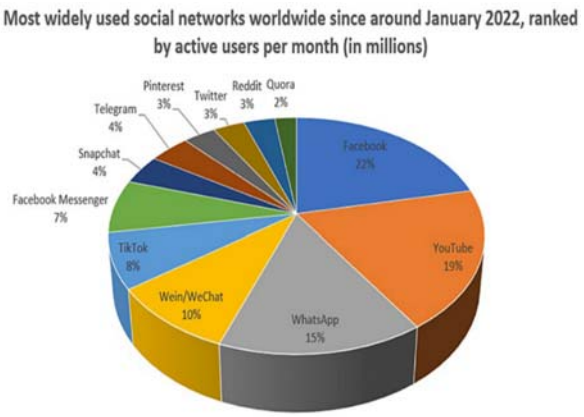

Figure 1: Most widely used social networks worldwide since around January 2022, ranked by active users per month (in millions); in percentage (4).

http://dx.doi.org/10.52533/JOHS.2024.40105

Methodology

This study is based on a comprehensive literature search conducted on December 20, 2023, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed social media influence, role, challenges, and effect on medicine. There were no restrictions on date, language, participant age, or type of publication.

Discussion

Role of social media in medicine

Disease surveillance and public health surveillance

Social media plays a crucial role in public health and disease surveillance by leveraging the collective intelligence of users across various platforms. Social networking sites are increasingly used by clinicians, patients, and the general public, contributing to the surveillance of public health trends and potential outbreaks. For instance, organizations like the World Health Organization's Global Outbreak Alert and Response Network rely on online sources for real-time surveillance when traditional data collection methods fall short (13).

A notable study in 2018 by Yasmin's team focused on analyzing geolocated tweets for public health surveillance during a large gathering in Canada, specifically the 2015 Pan/Parapan American Games. This research demonstrated the utility of syndromic surveillance, which utilizes pre-diagnostic data, in monitoring health conditions during mass events (14).

Social media platforms offer valuable opportunities for disease surveillance, enhancing the ability to detect outbreaks promptly. User-generated content and real-time monitoring of health outcomes, such as influenza, foodborne illnesses, or heat alerts, can enable faster identification of infectious disease cases. For example, a 2018 study by Wakamiya et al. used Twitter, employing geotagged tweets and sensors, to detect influenza outbreaks, thereby validating the effectiveness of this approach (15).

Additionally, the development of specialized platforms like the Platform for Automated Extraction of Disease Information from the Web (PADI-web) by Arsevska et al. has automated the detection of animal infection outbreaks in France using data from 4,500 news websites, including Google News (16). This study exemplifies how web-based systems can be effectively implemented and evaluated for public health surveillance.

Another innovative application is seen in the work of Effland et al., who developed a system to identify foodborne illness reports in Yelp restaurant reviews. This system is utilized by the New York City Department of Health and Mental Hygiene (DOHMH) to monitor and address concerns related to foodborne diseases reported on Yelp (17). These examples highlight the growing importance and effectiveness of social media and web-based platforms in enhancing public health surveillance and response systems.

Health researchers

Social media has become a vital tool for health researchers, serving various research-related purposes. It is extensively used for recruiting participants and collecting data through methods like content analysis of social media posts and data mining (18). Additionally, it aids in networking with colleagues, disseminating public health research, and significantly expanding the reach of scientific publications through sharing on platforms like Facebook, Twitter, and Instagram, which were identified as the most popular for health research in 2020 (19, 20). Professional associations, public health organizations like WHO and CDC, hospitals, and major news organizations also use social media for communication and distribution, integrating current events with mobile technology (19).

http://dx.doi.org/10.52533/JOHS.2024.40105

Enhance professional development

Social media significantly boosts professional development by facilitating interactions beyond conventional environments. Academics, physicians, business experts, public health departments, and healthcare systems can engage with wider audiences through diverse platforms. For instance, Twitter chats, organized by entities like the CDC, provide a dynamic forum for these professionals to connect with the public. This modern mode of interaction allows for the sharing of insights, knowledge, and updates in a more accessible and immediate manner, bridging gaps between experts and the general public, and enhancing the flow of information in fields like healthcare and business (19).

Influence policy

Social media plays a pivotal role in influencing policy by offering a space for sharing views on health policies with the public, decision-makers, and stakeholders. This can potentially sway the actions of politicians. The platform's increasing significance in politics and policy debates is underscored by its use by high-profile figures to directly communicate with the public. This direct line of communication opens up new avenues for advocacy and policy influence, making it an essential tool in modern political and public health discourse (4).

Combat misinformation

Social media's role in combatting misinformation is vital, particularly for public health professionals. Through active online engagement, they can effectively challenge false claims and support rigorous fact-checking. This proactive stance is key to ensuring the spread of accurate health information, which in turn boosts the credibility and dependability of health-related content on the internet. This approach not only informs the public but also upholds the integrity of information in the increasingly digital landscape of health communication (19).

Health and behavioral change

The impact of social media on influencing health behaviors and facilitating behavioral change is increasingly evident, as highlighted by research like that conducted by Bonar et al. in 2022. This research delves into the use of social media advertising to target specific behaviors, such as risky drinking and cannabis use, particularly among young adults (21). The findings from these studies are significant, showing that social media can effectively influence and modify health-related behaviors.

This approach underscores the potential of digital platforms as tools for public health interventions. Social media's wide reach and engagement capabilities make it particularly effective in reaching younger demographics, who are often heavy users of these platforms. The tailored advertising and messaging possible through social media allow for targeted interventions that can address specific behaviors and risk factors relevant to this audience.

Moreover, the use of social media for health interventions reflects a broader shift in public health strategies, moving towards more digital and personalized approaches. These strategies leverage the ubiquitous nature of social media to deliver health messages and interventions directly to individuals, often in a more engaging and interactive manner compared to traditional health communication methods.

The promising results from studies like those of Bonar et al. suggest that social media could play a crucial role in future public health campaigns, particularly in addressing behaviors and health issues prevalent among younger populations. The ability of social media to facilitate behavioral change highlights its potential as a powerful tool in the arsenal of public health professionals and policymakers (21, 22).

Health promotion

Social media's role in health promotion has become increasingly prominent, serving as a vital conduit for disseminating a wide array of health-related information. Its effectiveness is particularly notable in enhancing public awareness and knowledge in various health domains. Key areas where social media has made significant contributions include

http://dx.doi.org/10.52533/JOHS.2024.40105

women's health, menstrual hygiene, and breast cancer awareness. These platforms have also been pivotal in educating about breastfeeding techniques, highlighting the importance of oral health, and promoting responsible antibiotic use (4).

Moreover, social media's influence extends to encouraging healthy lifestyle choices such as regular exercise and sexual health awareness. It also plays a crucial role in advocating for road safety, aiding smoking cessation efforts, and reporting adverse drug reactions. The accessibility and widespread reach of social media platforms enable them to engage diverse audiences, making them powerful tools for health information dissemination.

This vast influence of social media is not just limited to individual health awareness but also extends to public health education and advocacy. By providing a platform for health professionals and organizations to share information, social media helps foster a more informed, health-conscious public. Its ability to quickly disseminate information to a broad audience underscores its critical role in public health education. Through these contributions, social media continues to demonstrate its capacity as an indispensable asset in health promotion and public health advocacy, underscoring its importance in contemporary health communication strategies (23).

Healthcare provider's perspectives on Social Media Usage

For healthcare providers, social media is a cost-effective medium for reaching wider audiences, building professional communities, and enriching both professional development and classroom learning. These platforms have become a staple in clinical environments, enabling providers to connect with their target audiences on both personal and professional levels. This integration of social media into healthcare settings has revolutionized the way professionals engage with peers and patients, offering innovative ways to disseminate information, share knowledge, and cultivate professional relationships (4). The versatility of social media in these contexts highlights its significant impact on the healthcare industry.

Patients' perspectives on social media usage

For patients, social media has transformed how they access health information and engage in their health care. A significant portion of internet users research health-related topics on social media, with many viewing and sharing health experiences and supporting health-related causes (4). The concept of "peer-to-peer health care," as described by Susannah Fox, highlights this trend where patients actively share and seek health-related information (11). Social media's role in facilitating communication between health professionals and the public potentially improves health outcomes and supports areas like health professional identification, peer support, and promotion of healthy behaviors (24).

Challenges

The relationship between social media use and mental health, particularly in adolescents and young adults, necessitates a careful evaluation, as the impacts can be complex and multifaceted. The research, including a review of 43 studies by Best et al. (2014), acknowledges both the benefits and risks associated with social media use (25). While benefits like increased self-esteem and opportunities for self-disclosure are noted, risks such as exposure to harm, social isolation, depressive symptoms, and bullying are also significant concerns.

Impact on symptoms

A consistent finding across studies is that heavy and prolonged use of social media can exacerbate mental health symptoms and diminish well-being, especially in young people. This has been linked to the negative effects of screen time, which include heightened anxiety and depressive symptoms (26). Social media use can foster negative social comparisons and feelings of isolation, which are associated with increased depression and anxiety (27, 28). The quantity of social media use and the number of platforms accessed are both factors that contribute to these risks, with greater use correlating with higher levels of depressive and anxiety symptoms (29, 30).

http://dx.doi.org/10.52533/JOHS.2024.40105

Facing hostile interactions

Cyberbullying is a significant issue on social media, often leading to worsened mental health outcomes like depression and anxiety. This form of online aggression is particularly harmful and disproportionately affects females (31, 32).

Consequences for daily life

Social media use impacts offline relationships and daily activities. Concerns include privacy, confidentiality breaches, and the spread of poor quality or misleading health information (33, 34). People with mental illnesses may face additional risks, such as privacy concerns and negative impacts on employment, personal relationships, and exposure to hostility or harm (35).

Future directions

The intersection of social media and mental health is opening up promising avenues for both research and clinical practice. The use of digital phenotyping and machine learning to analyze social media interactions is enhancing our understanding of mental health patterns and intervention points. While unique communication patterns on social media offer valuable insights into various mental health conditions, ethical considerations regarding consent and privacy remain paramount. Mental health professionals are increasingly required to navigate these digital landscapes, guiding patients in the safe use of these platforms. Simultaneously, health systems are beginning to leverage social media as a tool for patient engagement and support, signaling a shift towards a more integrated and responsive approach in mental health care. This evolution points towards a future where digital and traditional mental health practices coalesce, offering more comprehensive and personalized care (35).

Conclusion

Social media's integration into healthcare has transformed health information dissemination, enhancing public health initiatives and patient engagement. Despite its benefits, challenges like misinformation, privacy concerns, and mental health impacts necessitate careful navigation. Future efforts focus on digital phenotyping and ethical data use, requiring ongoing adaptation by clinicians and health systems for optimal impact.

Disclosure

Conflict of interest

There is no conflict of interest

Funding

No funding

Ethical consideration

Non applicable

Data availability

Data that support the findings of this study are embedded within the manuscript.

Author contribution

All authors contributed to conceptualizing, data drafting, collection and final writing of the manuscript.

References

1. Hardey M. Public health and Web 2.0. Journal of the Royal Society for the Promotion of Health. 2008;128(4):181-9.

2. Kind T. Professional guidelines for social media use: a starting point. AMA journal of ethics. 2015;17(5):441-7.

3. Constine J. Facebook's Q2: Monthly users up 21% YOY to 1.15 B, dailies up 27% to 699M, mobile monthlies up 51% to 819M. Retrieved October 3th. 2013.

4. Kanchan S, Gaidhane A. Social Media Role and Its Impact on Public Health: A Narrative Review. Cureus. 2023;15(1).

5. De Bruyn A, Lilien GL. A multi-stage model of word-of-mouth influence through viral marketing. International journal of research in marketing. 2008;25(3):151-63.

6. Davies CA, Spence JC, Vandelanotte C, Caperchione CM, Mummery WK. Meta-analysis of internet-delivered interventions to increase physical activity levels. International Journal of Behavioral Nutrition and Physical Activity. 2012;9(1):1-13.

http://dx.doi.org/10.52533/JOHS.2024.40105

7. Thackeray R, Neiger BL, Hanson CL, McKenzie JF. Enhancing Promotional Strategies Within Social Marketing Programs: Use of Web 2.0 Social Media. Health Promotion Practice. 2008;9(4):338-43.

8. Abroms LC. Public health in the era of social media. American Public Health Association; 2019. p. S130-S1.

9. Hu N. Sentiment Analysis of Texts on Public Health Emergencies Based on Social Media Data Mining. Computational and mathematical methods in medicine. 2022;2022.

10. George DR, Rovniak LS, Kraschnewski JL. Dangers and opportunities for social media in medicine. Clinical obstetrics and gynecology. 2013;56(3).

11. Pagoto S, Waring ME, May CN, Ding EY, Kunz WH, Hayes R, et al. Adapting behavioral interventions for social media delivery. Journal of medical Internet research. 2016;18(1):e5086.

12. Al-Balushi AA. In the Era of Social Media: Is it time to establish a code of online ethical conduct for healthcare professionals? Sultan Qaboos University Medical Journal. 2020;20(1):e25.

13. Brownstein JS, Freifeld CC, Madoff LC. Digital disease detection—harnessing the Web for public health surveillance. The New England journal of medicine. 2009;360(21):2153.

14. Khan Y, Leung GJ, Belanger P, Gournis E, Buckeridge DL, Liu L, et al. Comparing Twitter data to routine data sources in public health surveillance for the 2015 Pan/Parapan American Games: an ecological study. Canadian journal of public health. 2018;109:419-26.

15. Wakamiya S, Kawai Y, Aramaki E. Twitter-based influenza detection after flu peak via tweets with indirect information: text mining study. JMIR public health and surveillance. 2018;4(3):e8627.

16. Arsevska E, Valentin S, Rabatel J, De Goër de Hervé J, Falala S, Lancelot R, et al. Web monitoring of emerging animal infectious diseases integrated in the French Animal Health Epidemic Intelligence System. PLoS One. 2018;13(8):e0199960.

17. Effland T, Lawson A, Balter S, Devinney K, Reddy V, Waechter H, et al. Discovering foodborne illness in online restaurant reviews. Journal of the American Medical Informatics Association. 2018;25(12):1586-92.

18. Dol J, Tutelman PR, Chambers CT, Barwick M, Drake EK, Parker JA, et al. Health researchers' use of social media: scoping review. Journal of medical Internet research. 2019;21(11):e13687.

19. Breland JY, Quintiliani LM, Schneider KL, May CN, Pagoto S. Social media as a tool to increase the impact of public health research. American journal of public health. 2017;107(12):1890.

20. Bour C, Ahne A, Schmitz S, Perchoux C, Dessenne C, Fagherazzi G. The use of social media for health research purposes: scoping review. Journal of medical Internet research. 2021;23(5):e25736.

21. Bonar EE, Bauermeister JA, Blow FC, Bohnert AS, Bourque C, Coughlin LN, et al. A randomized controlled trial of social media interventions for risky drinking among adolescents and emerging adults. Drug and alcohol dependence. 2022;237:109532.

22. Bonar EE, Goldstick JE, Chapman L, Bauermeister JA, Young SD, McAfee J, et al. A social media intervention for cannabis use among emerging adults: randomized controlled trial. Drug and alcohol dependence. 2022;232:109345.

23. Bahkali S, Almaiman A, Bahkali A, Almaiman S, Househ M, Alsurimi K. The role of social media in promoting women's health education in Saudi Arabia. Enabling Health Informatics Applications: IOS Press; 2015. p. 259-62.

24. Farsi D. Social media and health care, part I: literature review of social media use by health care providers. Journal of medical Internet research. 2021;23(4):e23205.

25. Best P, Manktelow R, Taylor B. Online communication, social media and adolescent wellbeing: A systematic narrative review. Children and Youth Services Review. 2014;41:27-36.

26. Stiglic N, Viner RM. Effects of screentime on the health and well-being of children and adolescents: a systematic review of reviews. BMJ open. 2019;9(1):e023191.

http://dx.doi.org/10.52533/JOHS.2024.40105

27. Feinstein BA, Hershenberg R, Bhatia V, Latack JA, Meuwly N, Davila J. Negative social comparison on Facebook and depressive symptoms: Rumination as a mechanism. Psychology of popular media culture. 2013;2(3):161.

28. Rideout V, Fox S. Digital health practices, social media use, and mental well-being among teens and young adults in the US. 2018.

29. Lin LY, Sidani JE, Shensa A, Radovic A, Miller E, Colditz JB, et al. Association between social media use and depression among US young adults. Depression and anxiety. 2016;33(4):323-31.

30. Primack BA, Shensa A, Escobar-Viera CG, Barrett EL, Sidani JE, Colditz JB, et al. Use of multiple social media platforms and symptoms of depression and anxiety: A nationally-representative study among US young adults. Computers in human behavior. 2017;69:1-9.

31. Alhajji M, Bass S, Dai T. Cyberbullying, mental health, and violence in adolescents and associations with sex and race: data from the 2015 Youth Risk Behavior Survey. Global pediatric health. 2019;6:2333794X19868887.

32. Hamm MP, Newton AS, Chisholm A, Shulhan J, Milne A, Sundar P, et al. Prevalence and effect of cyberbullying on children and young people: A scoping review of social media studies. JAMA pediatrics. 2015;169(8):770-7.

33. Torous J, Keshavan M. The role of social media in schizophrenia: evaluating risks, benefits, and potential. Current opinion in psychiatry. 2016;29(3):190-5.

34. Ventola CL. Social media and health care professionals: benefits, risks, and best practices. Pharmacy and therapeutics. 2014;39(7):491.

35. Naslund JA, Bondre A, Torous J, Aschbrenner KA. Social media and mental health: benefits, risks, and opportunities for research and practice. Journal of technology in behavioral science. 2020;5:245-57.

http://dx.doi.org/10.52533/JOHS.2024.40105