

Navigating Information Overload on Social Media: Opportunities and Misadventures for Clinicians and Professionals

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ABSTRACT

In an age with numerous online and social media platforms where families, clinicians, and professionals rely more on the internet and social media for information finding, sharing, understanding, and analyzing medical literature is more complex than ever. Navigating social media has become increasingly difficult with misinformation and disinformation concerns and the growing number of dissemination methods. Social media plays an ever-increasingly significant role in facilitating or hindering the practice of evidence-based medicine. There are ever-growing challenges to practicing medicine in the age of social media.

This article describes the benefits and risks of using social media for health professionals to stay updated with medical literature and provides best-use practices for critical appraisal, specifically for adapting essential techniques of appraisal when encountering social media. This article also describes best-use practices for understanding and collaborating with colleagues and partnering with families in information sharing.

Keywords: Critical appraisal, Evidence-based medicine, Health and communication, Health and media, Social media, Misinformation.

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INTRODUCTION

Since the creation of the modern internet, social media has transformed human interactions. Billions of users all over the world utilize social media for connectivity, and its utilization has evolved over the last 25 years.^{1,2} It started with local country-specific platforms that only allowed for profile creation and connectivity with known contacts; it has now evolved to creating personal and professional profiles with additional features like blogging, media sharing, instant messaging, and content creation on global platforms.² Businesses, corporations, and government entities have also leveraged international social media promotion, advertisement, and crowdsourcing.^{2,3} Most individuals who utilize the internet use some form of social media, which has, in turn, transformed how patients obtain health information and communicate with their healthcare providers.³⁻⁵

Health information is disseminated in many ways, including traditional print articles, online resources, and social media platforms. Several social media platforms are now available that contain health-related content. Each portal differs depending on its structure and underlying algorithms. In addition, new ones are being formed frequently, and existing platforms are constantly evolving and being modified. Social media has increased social support, information sharing, and interconnectivity among individuals, families, and providers and provided an additional public health and health promotion platform.⁵ The use of social media within medical education and clinical practice has also grown over the last few decades due to its availability, portability, ease of dissemination, interactivity, and ability to collaborate.⁶ Many medical societies and academic journals have embraced social media by having professional accounts that distribute information, provide publication alerts, organizational promotion, and clinician and patient education.⁷ Furthermore, clinicians and professionals

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frequently use social media as an adjunct for networking and professional education.⁷ Previous surveys have described that 70-90% of physicians use social media for personal or professional networking and information aggregation.⁸⁻¹⁰ Social media can play an important role in facilitating or hindering the practice of evidence-based medicine, particularly with clinicians becoming aware of the evidence. Evidence-based medicine frameworks include awareness, critical appraisal, assessment of trade-offs, application

of the evidence, and evaluation of performance.¹¹ However, the increasing use of social media within medicine has resulted in the increasing dissemination of misinformation and equity issues of health information access for those without the internet.⁵

Given the rising use of social media within healthcare, this article describes how medical information is generated and disseminated across social media, how health professionals can evaluate the completeness and validity of evidence they encounter, and considerations for the best methods of social media use.

Content Generation and Consumption

Medical content on social media often comes from many sources. Primarily, traditional scientific content generally comes from journal articles or academic institutions. Secondly, other sources could range from personal opinions, press releases, magazines, blogs, and health advocacy groups to government health policy statements and everything in between. Irrespective of the source, how this information is generated and uploaded on social media is very diverse. Content may be generated from a source journal, a server (“bot”) that automatically publishes every new article in the field, or from individuals or groups that post their own or other people’s work on various platforms. Generally, given character or page limits, information will likely be packaged in short “sound bites”.

Often, there are heavy biases introduced because of how information is presented. For example, positive and sensational studies with a “clickbait” feel perform well and often receive greater dissemination through more likes, reposts, and shares. Once information is shared, several biases are introduced based on how users interact with the content. These include interaction bias, self-selection bias, and sampling bias. All of these compound into second-order biases, which feed into the social media algorithms.¹² Social media algorithms possibly produce the biggest bias by significantly influencing what users see and interact with on various platforms. Posts are elevated based on who posted it, their popularity (influencer, number of followers), the type of post (e.g., text, pictures, video, audio), and timeliness and timing of the post (recency).¹³ The built-in algorithm is unique to each social media platform (and is constantly being revised) and determines how the posts are recirculated and appear on users’ feeds. These include factors like how users interacted with posts (likes, reposts, shares, replies, comments, tagged, etc.). Platform developers update these algorithms regularly to ensure the currency and popularity of feeds. For example, what most celebrities or influencers post is likely to be read and consumed by the maximum users, and healthcare posts are not immune to this.¹⁴ Given the biases and metrics involved, even if an individual does not follow an influencer in their field, because of the algorithm, their post will likely be circulated into the feeds of all users. In other words, social media posts may be missed based on how frequently they check social media and what the algorithm exposes them to.

With the increasing use of generative AI, including but not limited to large language models, the volume and quality of auto-generated and/or curated posts across platforms is also on the rise. The accuracy and authenticity of any post need to be carefully considered by the consumers.

Building a Health Professional Community or Network

Critical to the success of leveraging social media as a tool for translating evidence-based medicine into evidence-based practice is the use of networks and peers to build a community of practice

based on integrity and trust. As previously detailed, much of the content generation for an individual consumer depends on the community they have built. Networks on social media can also serve as powerful tools for disseminating and critically evaluating evidence being presented.¹⁵ Therefore, the social network one chooses to interact with directly significantly impacts the content being generated.

Communities of practice have been previously described as groups of people who share a common focus and improve their practice through interactions within the community.¹⁶ The concept has been applied to social media networks to bridge the long gap between evidence-based medicine and clinical practice.¹⁷ For example, the formation of a community of practice was described in the neonatal community on the social media platform Twitter (now “X”), formed around the hashtag #neoEBM and later with #neotwitter.^{18,19} The pediatric intensive care unit (PICU) community also demonstrated how social media could be a powerful tool for dissemination during challenging times, such as the COVID-19 Pandemic.²⁰

A community of practice connected through social media can offer several advantages for disseminating evidence-based medicine. The annual growth of journals and publications each year makes it difficult for a single person to keep track of clinical research, even if they stick to their specific area of expertise.²¹ A community of practice can effectively “crowdsource” this information, taking a burdensome task for a single person and dividing it into the community. Free and immediate access to colleagues through an online community also allows for novel ways to communicate about emerging research. For publication authors, social media provides a unique tool to add context and clarity or educate peers in ways that do not fit publication requirements. Social media can replace or enhance the traditional methods of correspondence (e-mail, letters to the editor) with direct access to study authors for clarification or critical discussion. A large, widespread community of practice can also provide a quick means of assessing the generalizability of the study by leveraging the broad reach of the community to gain a brief glimpse into practice variation.

Along with these potential benefits come some concomitant challenges that require a thoughtful, measured approach to utilizing social media to complement evidence-based medicine. Research studies that are shared through social media can be of varying quality, dependent on the process of selection applied by the person sharing the content. As mentioned, automated bots search online databases for keywords and share content without critical appraisal. This differs from experts with a background in evidence-based medicine sharing content through social media after critically assessing an article. There is also a natural tendency towards self-promotion on social media, which can influence the dissemination of medical research. Spin in communicating results of mainly negative studies and information through publications and news has been prevalent.^{22,23} While there are no published reports of the prevalence of spin through social media dissemination, it may be magnified without the filter of journal editors and peer reviewers. An evidence-based community utilizing social media should encourage thoughtful, balanced critical appraisal, allowing an open discussion of both the strengths and limitations of study findings. When building a social media network, it is important to be aware of these limitations, identify trusted sources of dissemination, and always conduct your own critical appraisal without taking study findings shared on social media at face value.



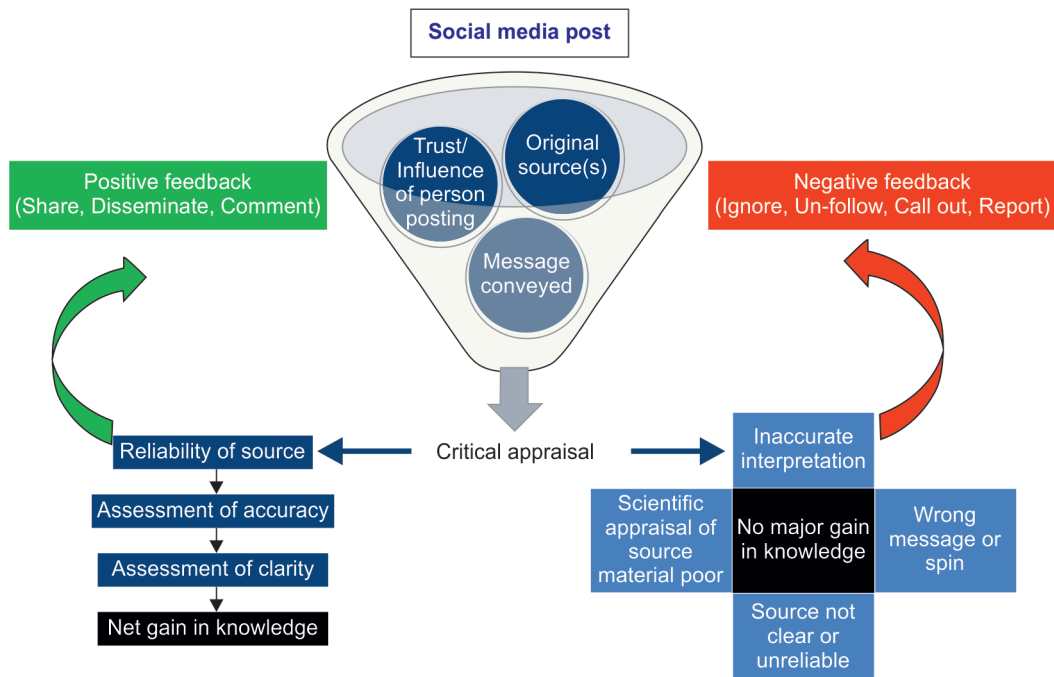


Fig. 1: Critical appraisal and dissemination of social media

Critical Appraisal

Critical appraisal is a systematic process of evaluating research for validity, importance, and applicability. Social media has no filters and triage mechanisms that medical journals utilize to cull flawed evidence, such as editorial rejection, peer review, revision, editorial oversight, retraction, expert commentaries, and post-publication peer review. Therefore, clinicians should develop a habit of critical appraisal when exposed to information on social media. Clinicians should consider obtaining and reviewing the complete article, placing it in the context of prior literature, and assessing the clinical expertise, all within the context of patient values and preferences. This will aid in deciding whether to incorporate the evidence into practice. Traditional approaches to critical appraisal include evaluating the research based on the presence of a clear research question, study design and implementation, design biases, confounders, and appropriate interpretation of results and conclusions.²⁴ Applying critical appraisal techniques when reviewing social media can help clinicians avoid incorporating inaccurate or incomplete information into practice.

Systemically appraising social media similarly involves evaluating the source, message, and interpretation, which can provide feedback on the accuracy or inaccuracy of the post. After critical appraisal, content can be shared with personal evaluation and opinions with other social media users or members of an online community of practice (Fig. 1). Admittedly, this ideal critical appraisal process requires time, access to the full text of articles, skills in study evaluation, and awareness of statistical methods and tests. Social media facilitates the grouping of users into ‘echo chambers’ or those with similar mindsets, and this can be an additional barrier to fair and transparent evaluation and dissemination of evidence.

Best Practices

With social media being all-pervasive in our daily lives, healthcare professionals often ask, “How can I apply social media to my practice?” Social media can be used in several ways by healthcare

professionals, that include, but are not limited to, the following: (A) learning; (B) teaching health education to medical professionals, the public, as well as health advocacy; (C) professional networking; and (D) interacting with patients and families.¹⁰ Depending on the degree of intended engagement, the time commitment for each domain could be substantial. Therefore, it is important to define one’s goals for using social media before starting to use it.

Learning

This is perhaps the most common reason for trainees to engage in social media, as it transcends geographic and often financial boundaries and makes educational resources accessible. However, given the need for vetting of authenticity, there is always a risk of obtaining inaccurate information. Therefore, healthcare professionals should rely on social media channels from established organizations such as the New England Journal of Medicine, the American Academy of Pediatrics, the Cochrane Database of Systematic Reviews, etc., for their learning needs. Organizations and medical societies like these utilize their channels to dispel misinformation, discuss important topics and highlight landmark research.^{25,26} One should trust individual social media accounts or those from freelance organizations only when trusted peers have thoroughly vetted them.

Clinicians often rely on their social media feed to keep themselves abreast with the latest research evidence. While social media is an excellent tool to keep oneself updated on new evidence, it is crucial to keep in mind that the bite-sized summary of research findings posted on social media, either by authors, peers, social media channels of journals, or academic organizations, may not always align with the magnitude or certainty of the corresponding evidence. To promote their research, researchers may deliberately or unknowingly introduce “spin bias” into their research communication, defined as “the intentional or unintentionally distorted interpretation of research results, unjustifiably suggesting favorable or unfavorable findings that can result in misleading

conclusions".^{27,28} Therefore, clinicians should be aware of their own confirmation biases and consistently critically appraise the literature themselves or by expert peers before trusting and applying social media summaries to their practice. For up-to-date evidence, social media consumers should continually reevaluate their network and the sources they follow and adjust the sources they obtain information from to focus on high-quality, accurate information.

Teaching

Social media is an excellent tool for providing education that genuinely upholds the principles of equity, diversity, and inclusion, as geographic boundaries or unaffordable paywalls do not restrict this medium. However, ensuring the quality and consistency of the teaching content requires significant time commitment. Several online resources help guide clinicians in generating teaching content on social media. The following general principles may help to ensure effective teaching on social media: (A) maximize the use of visual aids such as infographics and short video clips; (B) engage the audience through questions and (C) online polls.

Professional Networking

Social media can be an excellent avenue to build professional networks, at any stage of one's career, especially in an age with increasing awareness about one's carbon footprint, thereby limiting in-person interactions. Professionals may use platforms like LinkedIn or Research Gate to share their credentials, areas of expertise, and professional accomplishments. In addition, joining healthcare-related online groups and attending virtual events may further help one connect with individuals with shared professional interests. However, one should keep their professional and personal social media accounts separate; the latter can be used to share personal stories and pictures with friends, family, and acquaintances.

Interaction with Patients and Families

Clinicians may use social media platforms to engage with patients and families in several ways, such as imparting health education, promoting healthy behaviors, and sharing other health-related information (e.g., access to specialized care).²⁹ However, clinicians must adhere to the following best practices while engaging with patients and families to ensure professionalism.^{26,30,31}

- Maintaining patient privacy should be the top priority. Any identifying information, including pictures and videos, should not be shared without permission. Reviewing institutional social media guidelines before engaging in social media is advisable.
- Promote healthy behaviors in an evidence-based manner, i.e., aligning the language of recommendations with the level of evidence.
- Maintain transparency about potential conflicts of interest.
- Maintain professional boundaries (i.e., avoid engaging in personal or romantic relationships with patients).
- Show empathy and practice active listening.
- Maintain respectful and inclusive communication—avoid discriminatory or offensive language.
- Avoid specific medical advice on an open social media platform.

CONCLUSION

There are many opportunities for clinicians to use social media within medicine, including education, networking, and patient-family interactions. For optimal use, users should be aware of biases

that impact content dissemination and understand how to leverage social media to build a community of practice.

DECLARATION

The views expressed in this manuscript are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or US Government.

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