# Social Media in Health Care

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**Abstract.** To identify existing streams of research and develop an agenda for future research, we reviewed and synthesized the existing literature relevant to social media in health care. In particular, our review encompassed two themes - Patient Use of Social Media and Healthcare Organization/Professional Use. Within these overarching themes, we focused on four subthemes (i.e., two under each main theme): community/public health and patient support/use, as well as medical litigation & compliance risk and health education & information sharing. From this review, we have also proposed future research topics and questions to further cultivate this salubrious research domain.

**Keywords:** Social media · Health care · Patient social media use · Healthcare organization social media use

## 1 Introduction

Social media provides new prospects for the healthcare industry and new avenues for research. Social media is unique in that the content can be shared in real-time masses, and is user-generated as well as organization facilitated. Social media is present on many organizations' lists of strategic media to achieve its goals and provide new channels of interacting with relevant stakeholders. Social media has also developed a noticeable presence in the healthcare industry and is an important domain for research [1]. In this paper, we will review and synthesize the literature relevant to social media in health care into thematic areas, as well as provide suggestions for future research.

Social media is being utilized by a variety of healthcare institutions. For example, it is estimated that more than 1,500 hospitals are utilizing various types of social media [2]. Examples of social media use include collaboration among healthcare professionals to share information and consult with one another regarding complex or unique cases. Healthcare organizations are also leveraging social media to support internal operations such as providing a platform for employees to communicate. Hospitals have utilized social media to recognize employee achievements and announce employee-related activities [3]. Providing a new channel to connect with patients or potential patients, social media also offer opportunities for healthcare professionals to educate the public and healthcare institutions to extend their branding and marketing efforts [2, 4]. For example, hospitals have promoted patient wellness activities [3].

The amount of potential could be considered equivalent to the amount of uncertainty surrounding social media usage in health care. Healthcare organizations are contemplating managing and growing social media usage while also considering risks and legal implications [2, 3]. Although most or all hospitals have an established Facebook page, only approximately 19 % have been identified as actively managing it [3]. Some healthcare providers are using Twitter and Youtube, or social media specifically dedicated to health care such as PatientsLikeMe and Inspire [2]. However, given their limited usage, weighing the advantages and disadvantages, as well as evaluating social media's contribution to health care, will be pivotal and an important domain for research. Therefore, our research objective is to explore the existing streams of social media in healthcare research through a literature review, and identify meaningful agendas for future research.

## 2    Review of Literature

During our literature review, we identified two key themes: Patient Use of Social Media and Healthcare Organization/Professional Use, and will focus on these two themes in the paper. Within the Patient Use of Social Media theme, we focused on two key subthemes: Community/Public Health and Patient Support/Use. For the Healthcare Organization/Professional Use theme, we focused on two key subthemes: Medical Litigation & Compliance Risk and Health Education & Information Sharing.

### 2.1    Patient Use of Social Media

**Community/Public Health.** Research has found that patients utilize the Internet to address information shortfalls which can help to improve self-efficacy as well as coping abilities [5]. However, other research found information inaccuracies to be prevalent in websites that were studied. Additional research suggests that some social media channels, e.g., Twitter, could be used to foster behavioral changes. For example, healthcare organizations may alert patients who are at risk of being infected with a disease based on their data on social media [6]. Social media can also be used to alert or notify the public of a disease epidemic. Social media not only can be used to monitor health-related events for public wellness, but can also be used to notify the public or specific individuals about health-related risks. Hence, social media is a powerful means for monitoring and managing health-related events [6].

In addition to connecting patients with their physicians and subscribing institutions, social media also connect patients to the online medical community. For example, they can be used to offer support for specific health related problems or solutions such as obesity [7] and smoking cessation [8]. In the event of a health-related crisis, the public can receive advice from healthcare organizations to manage the crisis, which could include assistance to find the right drugs or the nearest treatment center. Social media provide a channel for patients to share challenges and achievements in dealing with diseases, so others can learn and benefit from them as well as contribute to them [9].

Crowdsourcing can also be used to share knowledge and information about drug safety and allergies, thus empowering patients in diagnosing health-related issues [6].

**Patient Support/Use.** Social media can be used by physicians or healthcare providers to assist, reach out to, and offer support to their patients [10]. There are many potential benefits to patients including conveying information or opportunities for better health and keeping patients up-to-date on health-related information [9]. Patients may participate in social media that are either publicly available, such as by subscribing to a specific healthcare provider on Facebook or Twitter, or dedicated specifically to health care, such as PatientsLikeMe and Inspire [4]. For example, healthcare providers can maintain a fan page on Facebook to post information and updates, and manage communications and discussions with their "fans" or current and potential patients. PatientsLikeMe provides a communication channel for patients, doctors and healthcare institutions to discuss health issues, where patients can also learn from other patients who have the same disease or illness. Inspire, on the other hand, provides a platform where patients, families, friends, caregivers, and health professionals can stay connected and provide support to one another. Support groups are available in Inspire, where patients have control over their personal information in terms of what information they choose to share and who they share it with.

Norton and Strauss [9] reported on a study by PricewaterhouseCoopers LLP (PwC) Health Research Institute indicating that consumers are willing to have their conversations on social media monitored if it can help them to improve their health [11]. Norton and Strauss [9] also reported that, in the same study involving adult consumers, 28 % indicated that they supported health-related causes, 27 % commented on others' health experiences, 24 % posted about health experiences, 20 % joined health forums and communities, 18 % tracked and shared symptoms/behaviors, 17 % posted reviews of doctors, 16 % posted reviews of medications/treatments, 16 % shared health-related videos/images, and 15 % posted reviews of health insurers. Hence, social media have significant implications for health care. An example of a successful social media for health care is Angieslist.com where it offers reviews on healthcare institutions and providers. Other forms of social media, including Twitter and Facebook, have been used by patients to share or comment on their health experiences. Social media not only can support health management of patients, they can also influence patients' choices of physicians, doctors, medical facilities, and hospitals [10].

Privacy is a relevant consideration and concern for patients and healthcare organizations [9]. Patients may hold back from sharing information due to privacy concerns, or friends and family members may post protected information about a patient on social media. There are risks involved in the use of social media that will need to be carefully monitored by patients and social media providers, and some of the information are protected by the Health Insurance Portability and Accountability Act (HIPAA) and cannot be shared on social media. The high sensitivity of healthcare information and protection by HIPAA may have been a reason for the limited success of social media in health care to date. The Health Information Technology for Economic and Clinical Health (HITECH) Act, however, is in place to promote the adoption of health information technology in compliance with HIPAA.

## 2.2    Healthcare Organization/Professional Use

**Medical Litigation and Compliance Risk.** Based on a review of the literature, topics and objectives included reviews of applicable legislation and specific cases of violations; suggestions for mitigating risks; and discussions of social media policies, monitoring, inappropriate use, adoption, additional risks associated with mobile device use, and inability to track communications and control information transmissions with certain social media [2, 9, 12–14]. Recommendations put forth included implementing, communicating, and updating social media policies; utilizing administrative controls; monitoring social media usage and posts; correcting inaccurate information; implementing security measures; training; posting disclosure statements; making professionalism a priority; and holding users accountable. Also, suggestions were made regarding considerations of potential litigation or evidence for litigation, healthcare professionals' online relationships and communications, leadership and proactive use of social media, security of mobile devices, data encryption, protecting privacy, and conducting risk analysis/ assessment of social media use/tools.

A previous exploratory study identified concerns with social media use by hospitals in Spain including data security, privacy, and compliance issues with applicable regulations [15]. Challenges noted have been categorized into three areas: reputation, productivity, and privacy [16]. For example, individual employee postings on social media can lead to negative perceptions of the institution [9]. Privacy issues can encompass patient and organizational information. Productivity challenges include reduced cognitive focus on work-related tasks as well as cyberbullying in the workplace.

As mentioned earlier, privacy and HIPAA are key concerns for healthcare organizations. Not only must policies on social media be in place, employees need to be trained on appropriate usage versus inappropriate usage, as well as the implications that go along with them [9]. A healthcare organization that maintains a social media presence needs to ensure that its social media usage is compliant with HIPAA, regardless of the source of the posts. Hence, careful monitoring is required for protection from HIPAA violations. HITECH also imposes rigid requirements for reporting and violations [2]. Not only do social media need to be monitored carefully, timely actions are needed to fix issues or problems such as negative or inappropriate posts on social media [9].

The literature has identified specific and potential unintended consequences from negative social media use [1, 14, 17–19]. Some examples include the lack of filtering information leading to frauds, issues with billing and insurance reimbursements for social media based communication and care, questions regarding quality of care via social media versus in-person visits, distractions from social media messages being the impetus for errors during medical care, and losing the trust of stakeholders.

**Health Education and Information Sharing.** The literature has identified benefits that social media can provide to the healthcare industry including real-time access to health and medical information, the ability to share or collaborate (e.g., pictures as well as text), mass communication of health- or wellness-related instructions or information concerning health-related debates or conditions, educational opportunities (e.g., posting educational videos, and podcasts), assisting with treatment and supporting patients managing certain health conditions and diseases using various methods (e.g., games),

and increased speed of information sharing or transfer as well as more rapid collabora-
tion and knowledge acquisition [4, 10, 19, 20]. To successfully utilize social media for
public health initiatives, the literature has identified the importance of engaging content
and interactivity (e.g., games) [21]. However, in a study that analyzed hospitals' social
media pages' posts and tweets, the majority were made by the hospital indicating a
greater unilateral dialogue versus an interactive exchange [22].

Social media has been viewed as a tool to accumulate patient experiential knowledge
such as effects of or reactions to medication as well as educate patients on medication
management [23]. In a case study of a medication review site, the study identified the
vetting process that occurred with the information patients submitted. The process
entailed the site developers restricting some information from being posted but was done
for quality control purposes and information integrity. The study proposed that social
media sites can help educate patients which can facilitate greater compliance with medi-
cation regimens, but can also be shared with other stakeholders such as pharmaceutical
companies. Social media has also been viewed as a data collection tool for healthcare
research and monitoring [24]. However, potential ethical issues have been associated
with this practice such as protecting identities as well as differentiating public and private
spaces regarding privacy expectations.

Social media has been used by physicians to collaborate with or garner opinions from
other physicians, gain different perspectives on a healthcare topic, become educated on
recent healthcare advances and issues, and provide advice to patients [17, 25]. Social
media has also been used by healthcare organizations to provide health-related infor-
mation such as information regarding illnesses and treatments [14]. An exploratory study
of social media use and impact in a public healthcare context found social media use to
facilitate productivity and efficiency improvements for physicians and healthcare
employees, and improve access to quality and quantity of information for patients [26].
Also, information on social media was noted as being used to identify potential
epidemics, as well as facilitate patients sharing information with one another leading to
additional questions to be addressed and interactions with their healthcare provider.
Concerns, however, were identified regarding expanding the impact of the digital divide
for those unable to access social media in health care to benefit from it. In another
exploratory study, findings suggest that hospitals promoting health education and quality
performance outcomes on their websites are more likely to be engaged in social media
use [27]. Also, hospitals are more likely to distribute information versus facilitate
engagement.

In one study of Twitter usage regarding the topic of childhood obesity, suggestions
were made to utilize social media tools such as Twitter to provide evidence-based infor-
mation from credible or expert sources to educate individuals on healthcare topics [7].
Applying the persuasion knowledge model in another study of perceptions of commer-
cial websites as sources of health information, results indicate that adolescents are *less*
likely to trust and rely on commercial websites in comparison to other websites (e.g.,
government) even after receiving eHealth literacy training [28]. Therefore, even if
commercial or brand websites are providing reliable information or engaging in corpo-
rate social responsibility initiatives, adolescents may still not trust or rely on the Web
site for health information.

In a descriptive research study of health organizations' (i.e., government, healthcare institutions, educational institutions, corporations, community, and others) use of social media, it was found that photo sharing was the most salient interactive tool utilized by all health organizations studied [29]. The interactive tool utilized the least was e-newsletters. From a literature review of Web 2.0 in the health domain (e.g., impact on attitudes), the commentaries reviewed indicate that social media is instrumental in enhanced interactivity, extended engagement, personalization, and cost efficiencies [30]. However, it was also noted that social media's impact may be inconsistent. For instance, variations may exist due to different socioeconomic statuses. Also, assessing the effectiveness of health-related interventions facilitated by social media was noted as a challenge. The descriptive studies that were reviewed suggest that social media has the potential to facilitate health improvements. Intervention studies varied in topics (e.g., behavior changes, training employees) and included methods such as competitions and providing patient support.

Although social media research in a healthcare context has become a proliferating topic, additional research is vastly needed and has much potential for practical and theoretical contributions. Based on the findings from our literature review, we propose directions for future research next.

## 3 Directions for Future Research

### 3.1 Community/Public Health

Given the many positive implications and benefits of using social media for monitoring and managing health-related events and crises, more research is needed to understand how the process and results of social media usage can be managed efficiently and effectively. For example, how could we use existing social media and their associated data to make accurate predictions on health-related risks and to control or mitigate the risks? Can social media be used more effectively to manage health-related crises and public health, and if so, how? We also need to assess and evaluate the reliability and accuracy of using crowdsourcing for supporting health-related issues or problems. Are there reliable mechanisms that can be used to gauge or assess the degree of trustworthiness or accuracy of information on crowdsourcing sites and to discount those that are not reliable or accurate? How can trust be assessed on crowdsourcing sites and what are their implications (both positive and negative) on health care? Would offering trust ratings on healthcare social media and crowdsourcing sites be helpful? If so, what are the appropriate sources for such ratings? An important overarching research question relates to the need to assess the effectiveness of social media in supporting public health in order to identify the areas for improvements.

### 3.2 Patient Support/Use

Future research may explore patient use of social media in which inappropriate amounts or types of uses generates negative consequences. For example, patient overuse of social media may lead the patient to become more stressed about a condition, side effects of a

medication, or risks associated with a medical procedure. This stress may result in the patient experiencing anxiety or hypertension. Hence, research can identify effective use of social media to address a patient's health questions or concerns to avoid possible negative outcomes.

Research is also needed to examine how to reach out to remote patients who need immediate attention in times of crises and how assistance can be offered in the most effective way. Given the power of collective knowledge and intelligence, it would be particularly helpful to create an online community or environment where healthcare experiences can be shared across a critical mass. Research on the critical success factors (e.g., needs and desired functionality) of such an online community is also warranted.

Given the privacy concerns of patients and the protection of patient information by HIPAA, what is the best or appropriate mechanism for protecting such information in social media? Can users be prompted about or prevented from carrying out an action when they attempt to share protected information on social media? Would the system be able to detect such violations and warn the user or prevent him or her from taking the action? Would the social media provider be liable for such violations? The next section will discuss this issue further.

### 3.3    Medical Litigation and Compliance Risk

In the domain of social media and health care, there is a paucity of medical litigation and compliance risk research which generates a future research agenda replete with opportunities. For example, the existing literature supports the creation and implementation of social media policies which provides a rich area for research. For example, research questions to be pursued may include: What specific policy or guidance is appropriate for social media use by healthcare organizations, healthcare providers, and employees? A previous study indicated inappropriate use of social media by medical students at 60 % of U.S. medical schools [12]. Policies that are too restrictive will inhibit the use of social media to foster relationships with patients and other healthcare providers, but too little restriction could create legal or ethical ramifications or hinder employee productivity.

Issues of privacy continue to challenge healthcare organizations and professionals, and the use of social media presents another consideration for compliance risk. Considering the pervasiveness of individuals accessing social media content and sites with mobile devices, additional risks are introduced. Research can explore appropriate risk assessments of social media use and controls to mitigate the risks. Future research may pursue appropriate methods of monitoring social media and mobile device use by employees. Also, studies regarding accountability that can be fostered in employees using social media, as well as embedding accountability within the IT infrastructure can be undertaken. Studies can be conducted in which software applications are utilized to monitor relationships and behaviors on social media using data mining and analytics. Future research can also evaluate the use of nondisclosure statements or reminder messages regarding protection of personal health information, for example, to evaluate the effectiveness of increasing intentions to use social media professionally and reducing noncompliant behavior. Related questions include: What are the risks for a healthcare

organization to offer social media? Would the benefits outweigh the risks? Can health-care providers implement mechanisms to increase patients' comfort in using social media by eliminating the risks associated with them? To what degree do patients trust social media? Factors that impact trust and behavioral intentions also need to be assessed.

### 3.4   Health Education and Information Sharing

Providing patients with information needed to comprehend, treat, or manage a health condition or issue is essential, and social media may be a potentially effective tool to do so. Future research may explore the potential of patients to trust information that is provided through social media channels. The literature has proposed that many patients make health care decisions based on individuals' opinions they trust (e.g., family members) [4]. Research studies may explore methods of instilling a sense of trust in healthcare organizations' or professionals' social media posts, tweets, or blogs.

Social media provides a platform for rich and extensive dialogue regarding health-care matters, such as becoming a parent or managing diabetes, in which patients can share their experiences and opinions. Albeit with the best of intentions, patients may provide information that is idiosyncratic or not completely accurate. Hence, future research may explore appropriate methods of evaluating information shared by patients for content accuracy while still encouraging open sharing of patient information and experiences.

Future studies may explore individual tendencies or factors influencing acceptance and use of social media among healthcare professionals. These studies may identify contributory factors to acceptance as well as aversion. Factors to be explored may be studied at the individual, organizational, societal or environmental level.

## 4   Conclusion

The categories that have emerged in the literature review accentuate the efforts that healthcare organizations are making to connect with patients to provide information and support. It also notes the concerns that healthcare organizations have regarding compli-ance with regulations and addressing the risks posed by social media. The literature has viewed multiple participants' social media use in health care, e.g., healthcare providers/professionals, patients, and support groups. Future research can explore the various themes and questions that we have identified in this review using a variety of research methodologies including action research, case studies, and experiments.

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