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Chapter 6
Improving Health and Efficiency With Strategic Social Media Use in Health Organizations:
A Critical Review of the Status Quo

Gokhan Aydin
https://orcid.org/0000-0002-5652-8694
Istanbul Medipol University, Turkey

ABSTRACT

The emergence of social networking systems as mainstream applications and an inherent element of daily life is a phenomenon observed throughout the world as the worldwide social media users exceeds 2.7 billion. Similar to other sectors, healthcare organizations have also started benefiting from social media in distinct ways such as collecting feedback, educating, communicating and supporting patients and citizens. Social networks can act as remarkable channels for healthcare providers, governmental institutions, pharmaceutical companies, hospitals and others to educate, communicate to, listen, connect to and engage existing and potential customers, patients, physicians and healthcare professionals. Despite the various benefits offered, health institutions, health professionals and stakeholders are reluctant to utilize social media due to several barriers and lack of expertise. This chapter aims to provide a better understanding on the ways healthcare companies can utilize social networks in detail to overcome use barriers and obtain related benefits.

INTRODUCTION

Currently the Internet has become an important and integral part of daily life throughout the world. In line with decreasing cost of communication and rapidly growing population with access to the Internet, new opportunities have arisen, new economies have been devised and current ones have been transformed. Even small-sized organizations now have the ability to directly reach millions of individual citizens and potential customers. This ability to reach millions was only available through the use of intermediaries

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and was commonly a unique capability of larger, well-established institutions (Palmer & Koenig-Lewis, 2009). The developments in the last decade regarding enabling technologies such as the Internet, communication technologies, Web 2.0 and social networking sites (SNS) have transformed the daily lives of billions of consumers and companies alike. Among the most significant developments, the emergence of SNS as mainstream applications is a phenomenon observed not only in developed countries but also globally. The estimated number of global users of social media have exceeded 2.7 billion in 2018 and is expected to reach to 2.95 billion in 2020 (Clement, 2018). On the other hand, the increase in number of people interacting with each other and companies and creating content themselves have led to an exponential increase of data available to institutions and consumers. It has become particularly difficult to process and evaluate all the data available to individuals and organizations alike to acquire relevant information. Web 2.0 technologies have been diffusing to the healthcare arena as well. Social media use in healthcare is becoming a significant issue in a variety of ways. Effective use of SNS can enable cost-effective healthcare professional (physician) - patient communication and exchange of relevant information and experience among patients. Moreover, it is possible for companies (e.g. pharmaceutical) to collect data from patients to explore new medical knowledge or confirm existing knowledge. Moreover, epidemic trend detection and education of citizens are promising areas that governmental bodies and Non-Governmental Organizations (NGOs) can utilize via social networks to improve and sustain public health.

Despite all the benefits offered, health institutions, professionals and stakeholders are reluctant to utilize social media fully. There are several barriers and lack of expertise in the healthcare industry on effective social media use. This chapters aims to highlight the distinct ways social networking sites can be utilized to benefit all stakeholders of healthcare industry. The barriers that are hindering wider adoption of social media in healthcare organizations and recommendations for relevant healthcare institutions, professionals and governmental bodies are provided in the following pages of this chapter.

BACKGROUND

Origin of Health 2.0: From Web 1.0 to Web 2.0

It is argued that the most successful period for technology companies was experienced after 2001. This coincides with the emergence of Web 2.0, whose most important aspect is the interaction capability provided to users. Individuals can conveniently interact and communicate with the companies and other users and through the content everyone create. Web 2.0 offers not a read-only system that users access to get informed but an editable platform that can be used in distinct ways by users. Unlike its predecessor, Web 2.0 facilitates the interaction between users and websites, and provides an abundance of interactivity, participation, and sharing. Countless successful enterprises such as YouTube, Facebook and Skype emerged after 2001 and benefited from Web 2.0 technologies. Furthermore, the general social networking sites (SNS) such as Facebook and Twitter that are positioned to reap the benefits offered by Web 2.0 have also emerged during this period. Before furthering the discussion it is best to define the social networks as “a group of internet-based applications that were built on the ideological and technological foundations of Web 2.0 and that allow creation and exchange of user generated content” (Kaplan & Haenlein, 2010).

Web 2.0 technologies connect people with each other mainly through SNS, which have created opportunities and challenges for managers and marketers. Within the changing digital environment, the online and offline strategies are being integrated and multi-channel approaches are becoming more common as online media and social networks are used more commonly for sharing information rapidly. The power is shifting from sellers to buyers as information transparency increases and consumers' trust in each other exceeds their trust in companies. Following the media fragmentation (increasing number of channels to reach information), online connections are becoming more critical as everyone is a becoming a content producer.

Through the Web 2.0, not only a limited technologically savvy portion of the population, but a large majority of users obtained the ability to create and share content online conveniently. Ranging from short text comments to long videos, creation and sharing of content became commonplace with the enabling technologies and proliferating social networking services. In general these systems are also called social media and have become an integral part of daily life. They are used in many different ways from entertainment to information gathering and learning. Among these, a significant area of information seeking is focused on healthcare and well-being of consumers. SNS offer various ways to help users in reaching the health related information and support they seek online (Sarasohn-Kahn, 2008).

Commonly, Web 2.0, social media and social networking sites are used interchangeably, moreover, this concept is also called the "new media" from a communication professional's perspective. A comparison of social media to traditional media provided in Table 1 may help in exploring the concept in more detail. As can be seen from this table, social media is focused on sharing, interactivity and collaboration whereas traditional media is a more inflexible system that focuses on one-way communication.

Table 1. Properties of traditional and social media, developed upon (Stokes, 2011, p. 125)

Traditional Media	Social Media
Fixed system	Instantly updateable system
Limited commentary and interactivity	Unlimited commentary and interactivity
Feedback/commentary not in real-time	Real-time commentary and interactivity
Limited, time-delayed bestseller/popularity lists	Instant popularity gauge
Hard to measure	Easy to measure
Access to archives is hard & limited	Archives easily accessible
Limited media mix	Different types of media can be mixed
Committee / institutional publishers	Individual publishers
Finite communication	Infinite communication
Sharing not encouraged	Sharing and participation encouraged
Controlled environment	Free environment

In the Web 2.0 era, the Internet has progressed from a one-way broadcasting medium to a participatory, and collaborative platform which allows people to easily share the content they generate (Thevenot, 2007). The emergence of SNS as mainstream applications is a phenomenon observed not only in developed countries but also globally. The estimated number of global users of social media have exceeded

2.3 billion in 2016 and is expected to reach to 2.95 billion in year 2020 (Clement, 2018). Parallel to their popularity, social networks have proliferated and several types of sites that have become an integral part of daily lives of consumers and professionals have emerged. These different social network types are pondered in the following section.

Social Networking Sites

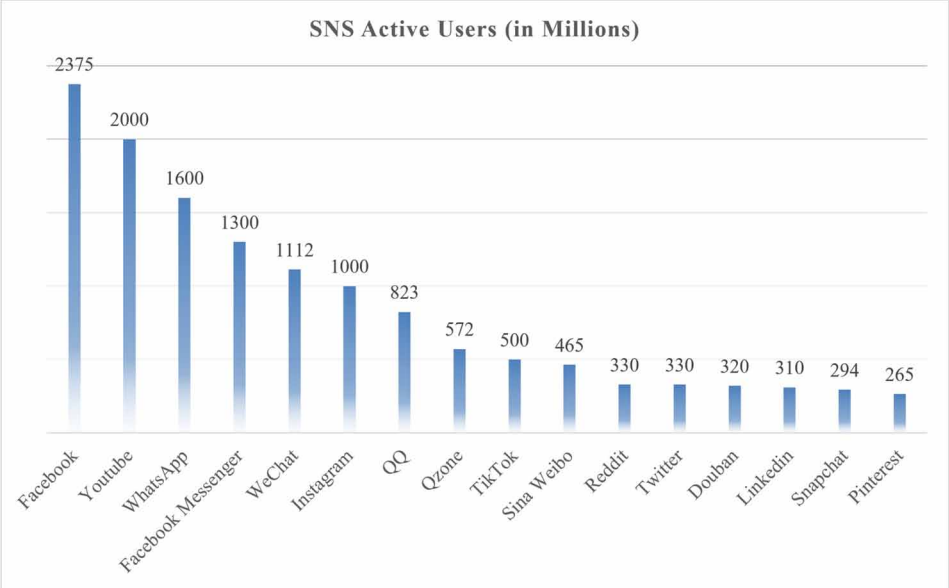
To explore social network sites in a more systematic way, the following Table 2 developed upon a categorization by Constantinides and Fountain (2008) identifies basic principal categories of social network types.

Table 2. Social network types

Social Network	Definition
Blogs & Microblogs	Web-logs, the first type of Web 2.0 applications that are considered as "social media" were developed before the year 2000. Web-logs are commonly referred as blogs currently. They can be considered as journals that individuals' or institutions publish online. A blog is a quick and easy way to publish and share content online. Posts can be text only or enriched with audio or visual content and podcasts. It is still a popular way to establish a basic presence online. Another version of blogs is the micro-blogs pioneered by Twitter. Microblogs are used for quick information distribution, fast / real-time communication and social networking. Twitter is a blog service that allows networks of users to send short updates to each other.
General Social networking sites	General SNS are applications that provide their users the ability to build personal online spaces accessible to other users. These sites are used to connect, communicate, interact and stay in touch with friends and family and offer convenient two-way communication and interaction (Steinfield, Ellison, & Lampe, 2008). Facebook, the most popular social networking site throughout the world is a good example of this category.
Thematic & Professional Networking Sites	Thematic networking sites are social network services that are specialized on a certain topic such as health. Thus, they are preferred by a subset of Internet users with specific needs. Professional networking sites are a subset of these thematic SNS that focus on communication and interactions between professionals and business executives (e.g. Linkedin). Sites that provide a discussion and communication platform for health professionals are among the examples of this SNS category (e.g. Sermo, Doximity etc.).
Content sharing sites & communities	Content sharing sites are SNS that systematically organize and classify information (e.g. specific types of content) and share it on their own platform. Online sites/services that provide individuals to create galleries of graphical content (photos / videos) or other content such as presentations are categorized in this category. The service provider stores and makes the content available to other users publicly or privately (e.g. Flickr, 5oopx).
Forums/bulletin boards	Forums are websites that are devoted to exchanging ideas and information on special interests. They can be related to hobbies, shopping, or more significant topics such as healthcare. They are valuable sources of information through discussions and questions and answers.
Content aggregators & & collaborative filtering sites	Websites/online services in this category allow their members to customize the web content they wish to access in various ways. A website where information is filtered or collected according to patterns such as StumbleUpon and del.icio.us are examples of this category. Different practices to enable collaboration among multiple agents, viewpoints, and data sources are often used in these sites.
Instant Messaging Apps	The popularity of instant messaging apps increased in the last decade rapidly and with the novel attributes they've become popular applications considered under the larger SNS category. WhatsApp, WeChat, Snapchat are among the examples of this category that enable quick messaging and content shares among closed groups of friends. They offer better prospects in rapid two way communication than e-mail.

Among the more commonly accepted category of social networks is the general social network sites, which is also termed as social media sites. Facebook is currently the most popular SNS in the world with more than 1.4 billion active members, 82% of whom are living outside its birthplace, the U.S. (Socialbakers, 2018). Twitter, acting as a micro-blogging site and a general social networking site is among the most popular SNSs with 330 million monthly active users, 79% of which are located outside the US (Statista, 2019b). Twitter is used by the companies and marketing professionals as a real-time marketing and guerrilla marketing platform as well. With an open structure, large, distributed conversations going on throughout the world, Twitter offers a plethora of information to both companies and users (Twitter Inc., 2017). To highlight the other popular SNS, the number of estimated active users for the largest social networks are provided in Figure 1.

Figure 1. Major social networks' number of active users (Statista, 2019a)



Web 2.0 and Healthcare = Health 2.0

The so-called Web 2.0 technologies that enable instant two-way communication and easy content creation parallel to the emergence of SNS are empowering consumers by educating them and helping them in providing and getting feedback and recommendations. From a wide perspective, social media can be used to collect and/or relay information by carrying out conversations. Information on various trends on products, consumption, brands, diseases, symptoms and customer feedback (including complaints) can be collected.

The use of social media in health care is termed as Health 2.0, which can be defined as: "the use of social software and its ability to promote collaboration between patients, their caregivers, medical professionals, and other stakeholders in health" (Sarasohn-Kahn, 2008, p. 2). Within the Health 2.0 setting, consumers with chronic health conditions can share their experiences with each other. This is helpful for

informational purposes also for providing emotional support for the receiver of this experience. Gaining insights of similar patients with comparable health backgrounds that can be found in social networks and online communities may offer valuable feedback to patients. On the other hand of the spectrum, physicians and health professionals are also utilizing social media as well. Health professionals can share their views on problems and recent developments in healthcare, try to solve challenging cases with their peers and try to come up with efficient solutions to problems at hand.

Health 2.0 enables interaction between the physicians, organizations and consumers, which may lead to beneficial outcomes for all parties involved. Social networks can act as a great channel for pharmaceutical companies, healthcare providers, hospitals and many others to educate, communicate to, listen, connect and engage with existing and potential customers, patients, physicians and healthcare professionals (Jorner, 2018). Researchers and physicians can learn about patients' experiences, side-effects, follow their recovery and collect feedback. Organizations can follow trends, analyze the feedback they have received and provide support over social networks. Not surprisingly thousands of hospitals and health institutions are using social media actively through their own accounts (Li, Wang, Lin, & Hajli, 2018). The ways healthcare companies can utilize social networks is categorized and contemplated in the following sections of this chapter to offer a good understanding of each potential activity.

Word of Mouth (WOM)

Before the emergence of the Internet and social media, many organizations valued the traditional word of mouth highly and used it to gain loyal customers in a cost-effective way. In the current age of Web 2.0, traditional ways of creating buzz is enhanced in a substantial way. Creating word of mouth online, which is termed as online WOM or "e-WOM", was made possible with the emergence of new technologies and ways to share content (Hennig-Thurau & Walsh, 2003). The ease of sharing comments, opinions and various types of content instantly on SNS is the basis of the significance of e-WOM. The content generated by organizations and users will spread rapidly if it can get the attention of large groups of users (e.g. shares, re-tweets etc.) and will reach to a much larger group than traditional word-of-mouth. As e-WOM can be established rapidly, it can act as a double-edged sword. The considerably greater reach made possible through the use of SNS and the relative ease of use to create and share content creates this powerful yet hard to control tool. A simple comment made on a social media site can influence thousands or even millions in certain circumstances. Consequently, an organization has to manage social media carefully and systematically by establishing a strategy and related sharing policies and reputation management systems that can quickly respond to criticisms and negative e-WOM. Online reputation management systems basically utilizes SNS and similar digital channels to monitor and analyze a brand's reputation and engage in conversation to improve its reputation (Stokes, 2011, pp. 420–421). This is also a noteworthy topic for public health professionals. Promoting content to create positive-WOM yet preventing the spread of misinformation (e.g. public display of unhealthy behavior and promotion of harmful products) is not straightforward. There's almost no control on e-WOM even for governmental organizations. The significance of e-WOM is further elaborated in recommendations section of this chapter.

SOCIAL MEDIA USE IN HEALTHCARE

Issues and Problems

Given the abundance of platforms considered under the larger SNS categorizations, there are numerous relevant use cases for consumers, organizations and health professionals. For instance, clinician to patient communication, patient to patient communication, online health information search, sharing healthcare experiences, dissemination of health information, chronic disease management, marketing communication, professional training of healthcare personnel are among the major areas that attract interest of researchers, policy makers and practitioners (Zhou, Zhang, Yang, & Wang, 2018). Each distinct way of using SNS has its own benefits, issues and barriers that are pondered in detail in this section.

Social Networks for Consumers (motives / uses, benefits & barriers)

The power owned by organizations in the 1900s has shifted towards the consumers in the new millennia. The empowerment of consumers is related to increased information availability and the content that users generate themselves. The open democracy culture and the ability to share information quickly using Web 2.0 technologies have decreased information asymmetry (Leung, 2013; Strauss & Frost, 2013). Thus, SNS have become popular platforms consumers utilize for a variety of reasons. They can be used to stay in touch with friends, family and colleagues, to interact with brands and organizations. Social networks provide up-to-date information on current events promptly and it is possible to share opinions and thoughts on various subjects. Moreover, they are good platforms to meet other people, do networking and even to pass idle time and get entertained.

Consumers are increasingly utilizing the Internet and social networks to search for health information. According to a study carried out by Pew Internet Project in US, over 70% of Internet users seek health information online (Zhou et al., 2018). The basic motives for consumers utilizing social networks in a healthcare context are as follows (Antheunis, Tates, & Nieboer, 2013; Li et al., 2018; Lin, Zhang, Song, & Omori, 2016; Moorhead et al., 2013):

- Increasing knowledge on health problems / symptoms / diseases.
- Expressing one's thoughts and emotions on a health problem / disease / adverse effects.
- Sharing one's experience on a health problem / disease and its treatment (medicines, therapies, etc.).
- Giving advice to patients with similar problems.
- Getting advice / consultation from health professionals or other patients with similar problems.
- Providing personal information on one's current health and updating friends and others.

On specialized social networks such as PatientsLikeMe, HealthBoards, MedHelp, HealthUnlocked, patients from several countries assemble to share their personal experiences on medicine use, side effects they have experienced, and their treatment histories for a wide range of conditions. Special interest group pages on Facebook also offer a similar and convenient way to access and share health information and experiences, also to get emotional support from community members. These specialized SNS are becoming a preferred avenue to reach information by citizens (Greene, Choudhry, Kilabuk, & Shrank, 2011; Lin et al., 2016). As their number of members increase, the SNS's effectiveness also increases

through positive network effects. The more participants there are in a social network — the foundation of Health 2.0 — the more value they create.

Despite the benefits of social networking systems, the vast amount of available information which is of questionable quality, makes it hard for citizens and patients to find useful and relevant information. Moreover, there are several limitations posed by SNS and certain barriers exist to use them effectively. The barriers that consumers face and the limitations they perceive in using social networks may be summarized as follows (Antheunis et al., 2013; Bates, Romina, Ahmed, & Hopson, 2006; Li et al., 2018; Lin et al., 2016; Moorhead et al., 2013):

- Lack of confidentiality & privacy.
- Patients are not fully aware of the risks of disclosing information online.
- Unreliability and unknown quality of information.
- Inefficiency of systems.
- Lack of trust to the SNS.
- Risks associated with communicating harmful or incorrect advice using social media.
- Information overload in using SNS.
- Amount of time required to seek and find relevant information.
- Not sure how to correctly apply information found online to their personal health situation.
- Adverse health consequences and potential negative health behaviors.

The privacy concern is related to the fact that the patients want to stay anonymous and do not want to be known as patients on the social networks.

Social Networks for Healthcare Professionals (Motives / Uses, Benefits and Barriers)

As mentioned during discussing social network types, SNS are not focused only on consumers but also cater to professionals as well. These networks that have been set up to exchange information about a specific area of interest offer opportunities to professionals that are harder to establish on general SNS. For instance, LinkedIn can be used to reach professionals working in a specific field such as healthcare, with certain expertise and are of a certain managerial level. Moreover, social networks that are catered for physicians such as Sermo and Doximity offer their members platforms for learning, personal development and collaboration. These sites, along with closed groups on general SNS (e.g. Facebook) are popular among medical doctors, but also cater to pharmacists, nurse practitioners and physician assistants. Specialized SNS platforms and groups such as these enable and encourage discussion of cases with other healthcare providers and staying up to date with the current developments and advancements in medicine in a convenient way. When healthcare professionals share their expertise with each other on SNS, the results they get usually go well beyond an individual interchange of clinical experiences and insights thanks to the collective wisdom (Sarasohn-Kahn, 2008). Technically, the value created by networks increase with the increasing number of members due to the positive network effects.

Considering the examples provided and the academic studies on SNS use of health professionals, several noteworthy motives emerge, which may be listed as follows (Moorhead et al., 2013):

- Providing health information on a range of conditions to promote and improve health.

- Provide general or specific answers to medical questions raised by patients and other healthcare professionals.
- Facilitate one-to-one dialogue with patients and other healthcare professionals.
- Collecting feedback and data on patient experiences and opinions from patients and healthcare professionals.
- Providing and getting online consultations and medical experience of peers and experts.
- For health intervention, health promotion and health education.
- For reducing stigma.

Despite the wide breadth of available ways to utilize social media, SNS use is limited among health professionals. First of all, when utilizing social media sites, health care professionals are obligated to adhere to ethical and professional conduct standards of their relevant profession, similar to other types of communication that they carry out. Moreover, institutional guidelines may limit or suppress the use of social media among their employees to overcome possible problems related to privacy, confidentiality and reputations. In addition to these barriers, several studies provide insights on further use barriers that health professionals perceive in adopting SNS for professional use (Antheunis et al., 2013; Moorhead et al., 2013):

- Privacy concerns & lack of confidentiality.
- Not feeling a need for using it.
- Legal grounds.
- Inefficiency of SNS systems.
- Lack of relevant skills to use social media effectively.
- Social media may act as a deterrent for patients from visiting health professionals.
- Lack of proper compensation provided for giving advice on SNS.
- Lack of reliability.
- Quality concerns.

Moreover, using social media ethically and without creating adverse legal consequences is not straightforward. To prevent possible issues, the medical associations throughout the world have started publishing guidelines for health professionals in using social media (Australian Medical Association Council, 2010; British Medical Association, 2019) in addition to the institutional guidelines prepared by large healthcare providers such as MayoClinic (Gagnon & Sabus, 2015).

Social Networks for Organizations (Motives / Uses, Benefits and *Barriers)*

SNS can act as a great channel for companies such as health tracking device manufacturers, pharmaceutical companies, hospitals and many others to educate, communicate to, listen, connect and engage with their existing and potential customers, patients, physicians and healthcare professionals. Various ways healthcare companies can use social networks is contemplated in this section to provide a good understanding of popular possible activities.

Organizations in healthcare industry may benefit from social networks in a multitude of ways such as:

- Collecting feedback and information.

- Relaying information to educate patients.
- Public relations.
- Improving physician-patient communication.
- Improving internal communication, discussion and problem solving.
- Data collection and trend detection.

Social media can be used as a platform to find new customers also to help consumers in finding organizations. Existing customers, potential ones and influencers can all be engaged using social media to obtain various positive outcomes. Creating a bond, increasing loyalty, attracting talent can all be obtained using social networks effectively. In addition, engagement with customers and influencers may lead to actionable insights and intelligence by utilizing data on SNS. Using social media systematically can lead to strategic value for organization if it is used to produce solutions for issues at hand and to strategically developing innovative ideas.

Using conversations and two-way communication, the organizations can collect feedback to understand and attract more customers and retain them by answering their needs rapidly. Various consumption trends, diseases, or customer feedback can be collected via social media. This information can help in segmenting and targeting consumers in a better way. Listening consumers on social networks is less intrusive than actively communicating with them on these platforms. In social networks, the users feel a sense of ownership of the network and its community, so consumers may be resentful of intrusion into their own perceived community space by companies (Palmer & Koenig-Lewis, 2009). In this way, effective use of social media as a customer relationship tool that can help improving brand loyalty is possible (D. Leung, Law, van Hoof, & Buhalis, 2013). The term "social media listening" defining the continuous process of identifying and monitoring what's being said about a company/brand or a topic of interest online have become a popular one in the last decade. However, a thorough analysis of massive amounts of data published on SNS requires significant investments, which only a small percentage of companies are willing to, in arriving at actionable outcomes. For instance, SouthWest Airlines has a "listening center" to centrally manage all the data coming from social networks, online industry and their internal operations. This center monitors what customers are talking about the company, industry, or a specific topic of interest to the company. Keyword-based listening is used to collect data in terms of mentions from social networks such as Twitter and blogs. Integrating this data with operational information, real-time insights can be generated to identify issues and opportunities to engage customers rapidly (Dupre, 2014).

Another way social networks can be used is for marketing communication and public relations. As a communication tool, social media can help companies in increasing conversations and their exposure (Bermúdez-Tamayo et al., 2013). These conversations may be on products, services trends, problems, suggestions and can be carried out with customers, potential customers, admirers of the brand, suppliers, influencers, employees and even competitors. As the trust in the advertisements are falling, SNS offer more promising avenues to establish trust in marketing communication. It has been found that customers find their friends and colleagues' as more credible sources than company's own communication such as advertising. This is a relevant phenomenon validated for professional and personal services providers (Cheung, Luo, Sia, & Chen, 2009; Harrison-Walker, 2001; Zichermann & Cunningham, 2011). Relatedly, the trust in WOM (both offline and online) is on the rise as evidenced by global research company Nielsen on a study on 28,000 people living in 56 countries. The 83% of the respondents indicated that the recommendations they get from their family, friends and colleagues is the most credible source of

information. The second most reliable source of information appeared as the online WOM with 66% of respondents indicating that online comments in various social networks are the most reliable in this study (Nielsen, 2015). Another study carried out in the US and Canada demonstrated that 88% of consumers find online comments as credible as comments from personally acquainted sources (Murphy, 2018). These studies highlight the critical role of SNS as a communication medium and a way to relay messages in a more credible manner. Using social media effectively can also lower the costs of communication, customer relationship management, complaint handling and idea generation through crowdsourcing (Arora & Predmore, 2013).

Albeit the prospects of using social media, there are certain risks involved for the companies and they are faced with a dilemma when planning their SNS strategies. Increasing two-way communication to reach consumers and get feedback is a lucrative opportunity, however, if not managed effectively and timely, it can lead to problems that have significant impacts due to the open-to-all nature of content shared through SNS. Organizations use as many communication channels as possible to reach a wider audience, yet this is set-back by the resources they can put into managing all these channels. Making sure that the communication created by the company provides high-quality and consistent messages to target audiences require resources such as time, effort and careful planning. The content created by SNS users regarding each organization is virtually impossible to control. On the other hand, these communications can be handled through careful and timely responses that support the brand promise and company values when needed. These factors may be among the reasons that not all healthcare institutions embrace social media. As evidenced in a study by Bermúdez-Tamayo et al. (2013) in Spain, SNS are used more often by larger hospitals that have access to more resources.

Social Networks for Policy Makers and Governmental Institutions

A good way for governmental institutions in utilizing SNS is for public health surveillance and tracking epidemic diseases (Chunara, Andrews, & Brownstein, 2012; McGough, Brownstein, Hawkins, & Santillana, 2017). Moreover, attitudes of the public towards specific public health issues may be analyzed via sentiment analysis using SNS data (Yang, Lee, & Kuo, 2016). Utilizing the data available online on SNS, disease trend prediction with good predictive accuracy is possible as evidenced by several researchers (Denecke et al., 2013; Hors-Fraile et al., 2016; Signorini, Segre, & Polgreen, 2011; Velasco, Agheneza, Denecke, Kirchner, & Eckmanns, 2014; M. Yang, Kiang, & Shang, 2015). For instance, Sickweather, a start-up focusing on social networks was able to use the online conversations to predict flu season in the US. Listening (monitoring conversation) about flu symptoms online, Sickweather saw a 30% increase of flu chatter in October compared to the previous year, which led them to predict that the flu season have started earlier (Sass, 2012). By using SNS, public health professionals may get more valuable and timely health information on different geographical levels, which may be used to improve health outcomes.

Moreover, discovering adverse drug reactions and drug-drug interactions are possible utilizing the online SNS data (Correia, Li, & Rocha, 2016; Nguyen et al., 2017). To carry out such studies, text mining and information extraction has been widely used in the literature. Drug and disease names, common symptoms of adverse drug reactions and interactions are among the major types of textual content mined from SNS such as blogs. These approaches can be either lexicon (dictionary) and knowledge- based methods or machine learning methods (Zhou et al., 2018). Further information on methodologies may be found in the aforementioned studies as it is beyond the scope of this chapter.

RECOMMENDATIONS

The rapid adoption of social media worldwide and the level of popularity among users have not yet been matched by most organizations in healthcare. A large fraction of stakeholders such as physicians, healthcare institution managers, academic institutions and governmental bodies are unacquainted with the power of social media and entire potential applications. Their use in communication, information gathering, customer relations and daily operations are not pondered in detail. Moreover, the risks involved in using these networks, crises management and reputation management are not well thought of (Grajales, Sheps, Ho, Novak-Lauscher, & Eysenbach, 2014). The following subsections offer best practices derived from social media research and industry reports that may help in overcoming barriers and solving relevant problems in a variety of SNS use cases. Moreover, various types of social media applications in healthcare are listed as follows to offer a concise list for practitioners (Chew & Eysenbach, 2010; Eysenbach, 2011; Kapp, Peters, & Oliver, 2013; Li et al., 2018; Seeman, Ing, & Rizo, 2010):

- Marketing communication aimed at existing and potential customers.
- Creating online communities to connect with patients/customers and collecting direct feedback.
- Enabling patient interaction in online communities to establish psychological benefits.
- Educating customers and patients by sharing relevant content and answering questions (Li et al., 2018).
- Providing access to educational resources to clinicians by establishing blogs and micro-sites (Eysenbach, 2011).
- Establishing discussion platforms to healthcare professionals to share medical expertise and collaborate.
- Establishing reference resources that is content rich and focused on healthcare aiming public and patients (specialized wikis).
- Public health surveillance, evaluation of real-time epidemic disease trends (Seeman et al., 2010),
- Increasing outreach and engagement of public health campaigns (Chew & Eysenbach, 2010).
- Recruitment to clinical trials and online healthcare studies (Kapp et al., 2013).
- Uncovering disease trends by social listening of social networks such as Twitter (Denecke et al., 2013).
- Improving internal communication and employee empowerment in organizations (Arora & Predmore, 2013).

Public Health Monitoring

Parallel to the increasing SNS use, a growing number of patients utilize online platforms and SNS to describe and their healthcare experiences and emotions. As a consequence, it is possible to obtain information regarding poor quality healthcare service, epidemics, disease trends, drug use etc. utilizing the publicly available SNS data (Greaves, Ramirez-Cano, Millett, Darzi, & Donaldson, 2013; Velasco et al., 2014). Broadly four different sources of data are available for carrying out relevant analysis: rating and feedback websites (Greaves et al., 2013), patient networks, discussion platforms, blogs and general social media (Facebook, Twitter). Among these platforms, information in the form of rating scores, text descriptions of healthcare providers and patients' experiences with them, comments on health provider pages and public messages send to healthcare providers are the major data that can be utilized. Yet, this

data does not always reflect the reality fully. The data collected in this manner may not be representative of all target groups and a bias towards higher education and income group may be evident especially in underdeveloped regions. Another issue is that the content shared on review sites are open to manipulation and may be uploaded by employees, agencies or paid individuals. Lastly, the posts on Facebook, Twitter and similar platforms are short, and it is not very common to share details of health-related issues on these platforms, making it hard to arrive at deep and detailed insights.

Educating Patients and Citizens

It was observed that SNS may be used in protecting citizens from public health threats as a convenient and effective communication channel during epidemics (Hors-Fraile et al., 2016; Velasco et al., 2014). Disease-specific or health service/product specific educational information can be relayed to customers/citizens. This communication can present non-biased information on diseases and help patients understand their symptoms and get into touch and engage with their healthcare providers to improve outcomes. It was discussed by Gagnon & Sabus (2015) that creating a social media presence to provide credible and high-quality health care information on fitness, wellness, and rehabilitation is an obligation for health-care professionals. For instance, Johnson & Johnson worked together with an organization aiming for an "AIDS Free Generation" to create a social media campaign to educate customers on AIDS. Johnson & Johnson donated one dollar to the Global Fund to fight AIDS for every share or tweet of an informative AIDS infographic on social media (Olenski, 2013). Thus, increasing awareness and fund-raising was realized together over social media.

Yet, the power of SNS and the open structure of these systems may also lead to dissemination of disinformation. There are several cases of misinformation against vaccination, promoting anorexia etc. that has been circulating on various online platforms such as YouTube (Madathil, Rivera-Rodriguez, Greenstein, & Gramopadhye, 2015). Moreover, SNS such as YouTube are used for promoting controversial and unscientific drugs and ineffective / harmful therapies (Madathil et al., 2015). In a study by Lau, Gabarron, Fernandez-luque and Armayones (2012), five problematic areas for citizens regarding healthcare on YouTube use were identified as follows:

- Harmful product promotion (tobacco or drug advertising)
- Public display of unhealthy behavior (self-injury or hurting others)
- Tainted public health messages (e.g. anti-vaccination)
- Psychological impact of inappropriate, offensive content
- Distorting policy and research funding agendas

There are several ways to overcome these problems. First, activity of online bloggers, influencers and related company accounts (e.g. uncertified drug promoters etc.) on SNS may be listened and real time counter-marketing strategies and activities may be carried out to limit the adverse effects on public health (Seeman et al., 2010). Higher participation and better promotion of content from credible sources such as healthcare professionals, relevant NGOs and governmental bodies may help in decreasing the effect of misleading buzz created on SNS. Thus, tracking and analyzing the health-related information and shares on SNS and incentivizing and promoting credible sharers may both be beneficial for public health.

Utilizing Patient Communities

Another way to better utilize SNS in healthcare is by creating patient support communities. Patients with certain diseases / conditions can be allowed to connect to each other, communicate and interact to discuss the benefits or side effects of a particular treatment, physician or healthcare facility to help and support each other. It was found that supportive traditional social networks (offline) improves health outcomes for individuals with several conditions such as depression, preoperative pain and anxiety (Hopkins & Campbell, 2008; Mitchinson, Kim, Geisser, Rosenberg, & Hinshaw, 2008). Moreover, patients with rare diseases are faced with several difficulties such as extensive travelling in diagnosis and finding similar patients that have experienced the same problems as them. SNS helps patients in obtaining information on a rare disease and develop a close-knit community to ease their emotional burden (Zhou et al., 2018).

Online social networks have also been found to lead to improvements in health literacy (Benetoli, Chen, & Aslani, 2018). When patients managing the same chronic condition share observations with each other, their collective wisdom can yield clinical insights well beyond the understanding of any single patient. Misleading health and treatment related information on SNS can be overcome by self-correcting through attracting a high number of active members that contribute to discussions (Sarasohn-Kahn, 2008). Yet patients are more eager in reading about health information on SNS than posting about their health (Weaver, Lindsay, & Gitelman, 2012).

Communicating with Healthcare Professionals

In a systematic review by Smailhodzic, Hooijsma, Boonstra and Langley (2016) on social media use in healthcare, patient-healthcare professional relationship was found to be affected by SNS use. They have indicated that more equal communication between the patient and healthcare professional, harmonious relationships yet increased physician switching, and suboptimal interactions between the patient and healthcare professional were encountered in their review. Similarly, in a recent study, SNS use was found to have a positive impact on patients' health literacy and on communication with healthcare providers as patients feel more empowered and competent in relevant decision-making (Benetoli et al., 2018).

In a separate vein, social media can be used to communicate with physicians-the main target audience of pharmaceutical companies-as an effective way of education and reducing costs of frequent visits. A decrease in the drug representatives' visits may be beneficial for the physician as well, by means of fewer disruptions in physicians' daily schedule. One-to-many and many-to-many communication capabilities offered by social media platforms denotes that pharmaceutical companies can reach and interact with a group of physicians easily. It is also possible to bring together high-profile researchers and best sales representatives in the company with physicians' online, who cannot visit everyone using physical means (Belbey, 2016).

Utilizing Healthcare Professional Communities

Connecting with colleagues worldwide through SNS can be a noteworthy source of learning for health professionals. Professional networks such as LinkedIn should be utilized to a greater extent to get in touch with relevant colleagues and follow the up-to-date content. Yet more specialized communities offer even more value as they can be used to communicate on a special topic more easily without losing focus in a large network. A convenient way to establish such closed communities is using invitation only

Facebook groups where health professionals can exchange information regarding specific conditions (Weaver et al., 2012).

Moreover, physicians should educate themselves on the policies of their employers and adhere to the standards set by their employing institution and other professional bodies to overcome any future problems (Gagnon & Sabus, 2015). These two points are valid in communication with the patients and other healthcare professionals as well.

In addition to the general SNS, establishing and utilizing organization-wide internal social networks also offer several benefits. For instance, employees may contribute to solving daily internal issues or future strategy development by providing comments, feedback and starting their own discussions on company-wide social networking systems. Creating a platform for open discussion regardless of seniority or managerial level in an organization helps empowerment of employees motivate them to share and to own projects and initiatives being carried out in the company (Arora & Predmore, 2013). Another role of social media as an internal communication tool and a way to increase motivation, engagement and loyalty among employees is evident.

Clinical Trial Enrollment and Crowdsourcing

Yet another proven way to utilize social media is to use it for crowdsourcing and clinical trial enrollments. Attracting and recruiting individuals to participate in online research initiatives and clinical trials is a major barrier that limits rapid execution of these studies. It is estimated that almost 30% of time is spent on recruitment in these studies. Social media can be used as a good way to increase enrollment and can decrease time and expense devoted to this process (Belbey, 2016; Wisk, Nelson, Magane, & Weitzman, 2019). It was found out that Facebook is among the major SNS with the highest yield recruitment source (Wisk et al., 2019). Given that Facebook is the largest SNS, this finding is not surprising. Facebook ads emerge as a promising tool for recruiting participants for clinical trial studies. Information and guidelines on optimizing the recruitment and enrollment via creating a Facebook presence, designing ads, planning advertising campaigns to attract potential participants is provided by Akers and Gordon (2018).

In addition, category / product managers or product development teams may benefit from crowdsourcing platforms in coming up with improvements and modifications of existing products and new product ideas (Arora & Predmore, 2013). For instance, several companies utilize crowdsourcing in improving both simple and complex products/services they offer and coming up new ones (Starbucks, 2017; Wortman Vaughan, 2018).

Communicating with Customers and Patients

Managing all the online communities and SNS effectively is not a straightforward job. There should be a careful balance established between the control of the content that is steered through the posts of sponsors/companies and the posts of community members. Trying to control the information flow to guide the community and user generated content towards the company's own interests directly may pose problems in engagement and sustainability of these communities (Muniz & O'Guinn, 2001). An indirect approach with minimum perceived intrusion may create a higher sense of belonging among the members of the community (Brown, Broderick, & Lee, 2007). Retail brands such as Starbucks have benefited from online communities they have sponsored to get customer feedback to improve their operations, products and services. Starbucks have gained insights on the current trends and changing customer needs

and wants using a crowdsourcing platform named MyStarbuckIdeas that allows customers to see, share, discuss and vote on ideas (Starbucks, 2017).

Actively managing and steering communities may not be the best solution for every institution in all social platforms. The underlying promise of social media for marketers is achieving positive word of mouth and earned media for a brand / company through conversations of consumers. Consequently, an indirect approach without direct intervention of companies may be preferred. This goal may be hard to reach if the intervention of the company that actively tries to direct the buzz about themselves.

In establishing a presence in online communities, it is best to set clear goals beforehand. As discussed throughout this chapter, the ways that SNS can be utilized are numerous and clear goals help in choosing the best ones that fit the organization. To use the social media effectively proper strategic planning should be carried out on which channels to use. The chosen social media should be a good match with the brand values and personality and also a proper platform to reach the target audience.

FUTURE RESEARCH DIRECTIONS

Future research into the use of SNS in healthcare have several promising avenues. Firstly, the increasing data available created by the users on several SNS platforms may be better utilized by the policy makers and pharmaceutical companies and health device/application developers. Yet the quality and accuracy of this data is questionable. Studies that focus on developing methodologies to improve / filter accurate, genuine data and improving the data quality is called for. Another interesting line of research may focus on the effect of privacy of personal information and related legislations on healthcare professionals and institutions social media use behavior. Collecting and protecting personal information of each patient / customer, storing them securely or deleting them after a certain time limit are not straightforward tasks yet the legislations call for. The changing legal environment on the use of personal information online and the related ethical dilemmas and problems faced by healthcare professionals may be assessed in a variety of legislative settings.

CONCLUSION

Social media use in healthcare from a variety of perspectives ranging from health professionals to organizations and governmental bodies have been pondered in detail throughout this chapter. It is evident that from each stakeholder's perspective, there are abundant opportunities to benefit from SNS use. Yet each use case is utilized in a limited way compared to the total online population and organizations that have a means to access SNS. There is still a long way to go before utilizing the possibilities offered by SNS and the data available in them in healthcare for consumers, organizations and governmental bodies. Relevant use barriers and risks associated with SNS use for each stakeholder should be handled one by one and ways to overcome or lessen the impact of each barrier should be put forward. Future research focusing on the aforementioned issues should help to understand the rapidly changing user behavior, effect of legislations and standards put in force and new technological developments.

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KEY TERMS AND DEFINITIONS

Crowdsourcing: The practice of obtaining input into a task by enlisting the services of a large number of people mainly via online channels such as the Internet and SNS.

e-WOM: Any positive or negative statement made by consumers / patients about a product or organization, that is made available to a multitude of people and institutions via the Internet and SNS.

Health 2.0: The use of social networking sites and relevant technologies to promote collaboration between patients, their caregivers, health professionals, and other related stakeholders in health.

Online Communities: Groups of online people that have common interests and get together in SNS and similar platforms to communicate, exchange ideas / experiences, work together and pursue their interests.

Social Networking Sites: A group of internet-based applications built on the Web 2.0 technological foundations that enable creation and easy exchange of user generated content.

Use Barriers: The factors that affect to continuous use of a certain service or technology.

Web 2.0: Web technologies that facilitate the easy interaction between users and companies via two way communication, interactivity and sharing.

Word of Mouth (WOM): All informal communications towards other users/consumers with regards to the usage, or characteristics of certain products / services and their sponsors /owners.

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