
Review

A New Dimension of Health Care: Systematic Review of the Uses, Benefits, and Limitations of Social Media for Health Communication

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Abstract

Background: There is currently a lack of information about the uses, benefits, and limitations of social media for health communication among the general public, patients, and health professionals from primary research.

Objective: To review the current published literature to identify the uses, benefits, and limitations of social media for health communication among the general public, patients, and health professionals, and identify current gaps in the literature to provide recommendations for future health communication research.

Methods: This paper is a review using a systematic approach. A systematic search of the literature was conducted using nine electronic databases and manual searches to locate peer-reviewed studies published between January 2002 and February 2012.

Results: The search identified 98 original research studies that included the uses, benefits, and/or limitations of social media for health communication among the general public, patients, and health professionals. The methodological quality of the studies assessed using the Downs and Black instrument was low; this was mainly due to the fact that the vast majority of the studies in this review included limited methodologies and was mainly exploratory and descriptive in nature. Seven main uses of social media for health communication were identified, including focusing on increasing interactions with others, and facilitating, sharing, and obtaining health messages. The six key overarching benefits were identified as (1) increased interactions with others, (2) more available, shared, and tailored information, (3) increased accessibility and widening access to health information, (4) peer/social/emotional support, (5) public health surveillance, and (6) potential to influence health policy. Twelve limitations were identified, primarily consisting of quality concerns and lack of reliability, confidentiality, and privacy.

Conclusions: Social media brings a new dimension to health care as it offers a medium to be used by the public, patients, and health professionals to communicate about health issues with the possibility of potentially improving health outcomes. Social media is a powerful tool, which offers collaboration between users and is a social interaction mechanism for a range of individuals. Although there are several benefits to the use of social media for health communication, the information exchanged needs to be monitored for quality and reliability, and the users' confidentiality and privacy need to be maintained. Eight gaps in the literature and key recommendations for future health communication research were provided. Examples of these recommendations include the need to determine the relative effectiveness of different types of social media for health communication using randomized control trials and to explore potential mechanisms for monitoring and enhancing the quality and reliability of health communication using social media. Further robust and comprehensive evaluation and review, using a range of methodologies, are required to establish whether social media improves health communication practice both in the short and long terms.

KEYWORDS

health communication; social media; review

Introduction

There is an ongoing increase in the use of social media globally [1], including in health care contexts [2-9]. When focusing on social media for health communication, it is useful to first outline the general characteristics of social media. Kaplan and Haenlein [10] defined social media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content”. They suggested that social media can be classified as two components: media-related and social dimension. The media-related component [11] involves how close to synchronous face-to-face communication different types of social media come and how well they reduce ambiguity and uncertainty. The social dimension is based on Goffman’s [12] notion of self-presentation, whereby individuals’ interactions have the purpose of trying to control others’ impressions of them.

Social media provides opportunities for users to generate, share, receive, and comment on social content among multiusers through multisensory communication [1,2,10,13,14]. Although the terms “social media” and “social networking” are often used interchangeably and have some overlaps, they are not really the same. Social media functions as a communication channel that delivers a message, which involves asking for something. Social networking is two-way and direct communication that includes sharing of information between several parties. Social media can be classified in a number of ways to reflect the diverse range of social media platforms, such as collaborative projects (eg, Wikipedia), content communities (eg, YouTube), social networking sites (eg, Facebook), and virtual game and social worlds (eg, World of Warcraft, Second Life) [10].

The relationship between personality traits and engagement with social media has been reported [15]. Gender is a factor in that extraverted women and men are equally likely to engage, but emotional instability increases usage only for men. Age is also a factor in that extraversion is particularly important in younger users, while openness to new experiences is particularly important in older users [15]. Lenhart and colleagues [16] explored various types of Internet usage among teens and young adults in the United States between 2006 and 2010. During this time, social networking sites experienced the biggest rise (an average of around 50%), and the key shift in use came at age 30 years with almost double the number of teens and 18-29 years old using them as those 30 years and over (73% compared with 39%).

Social media is changing the nature and speed of health care interaction between individuals and health organizations. The general public, patients, and health professionals are using social media to communicate about health issues [2-9]. In the United States, 61% of adults search online and 39% use social media such as Facebook for health information [7]. Social media

adoption rates vary in Europe; for example, the percentage of German hospitals using social networks is in “single figures”, whereas approximately 45% of Norwegian and Swedish hospitals are using LinkedIn, and 22% of Norwegian hospitals use Facebook for health communication [8]. Recent UK statistics reported Facebook as the fourth most popular source of health information [9]. There have been many applications of social media within health contexts, ranging from the World Health Organization using Twitter during the influenza A (H1N1) pandemic, with more than 11,700 followers [4], to medical practices [3] and health professionals obtaining information to inform their clinical practice [5,6].

To explore the diversity in form and function of different social media platforms, Keitzmann and colleagues [17] presented the “social media ecology”, a honeycomb framework of seven building blocks that are configured by different social media platforms and have different implications for organizations such as health care providers. In developing their model, they have drawn on Butterfield [18], Morville [19], Webb [20], and Smith [21]. The building blocks are (1) identity: the extent to which users reveal themselves, (2) conversations: the extent to which users communicate with each other, (3) sharing: the extent to which users exchange, distribute, and receive content, (4) presence: the extent to which users know if others are available, (5) relationships: the extent to which users relate to each other, (6) reputation: the extent to which users know the social standing of others and content, and (7) groups: the extent to which users are ordered or form communities. Thus organizations, including health care providers, need to recognize and understand the social media landscape, where the conversations about them are already being held, and develop their own strategies where suitable [17]. Similarly, Mangold and Faulds [22] highlighted that social media is changing the relationship between producers and consumers of a message. This suggests that health care providers may need to take a certain degree of control over online health communication to maintain validity and reliability.

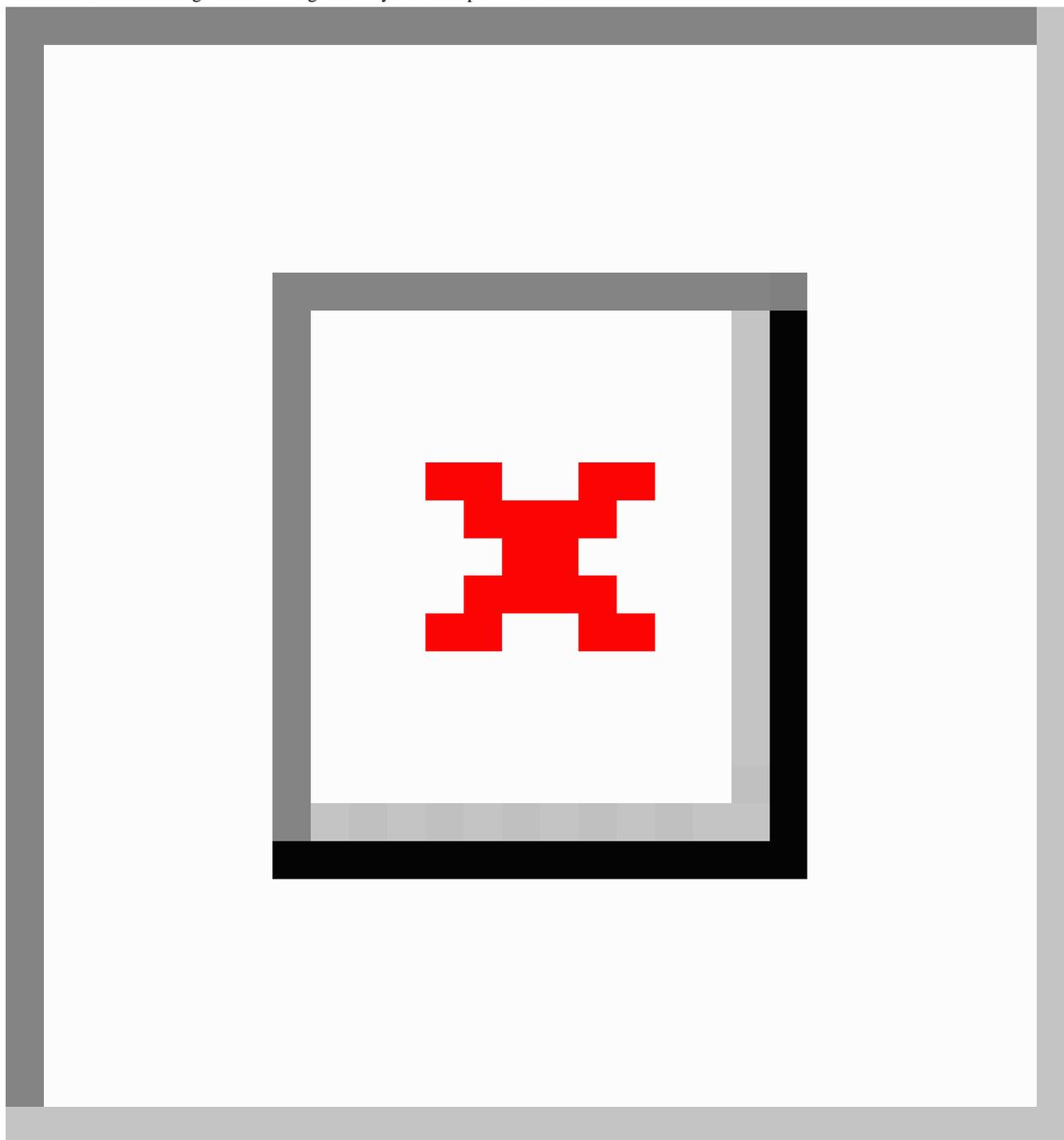
In this paper, social media for health communication refers to the general public, patients, and health professionals communicating about health issues using social media platforms such as Facebook and Twitter. Currently, there is a lack of information about the uses, benefits, and limitations of social media for health communication among the general public, patients, and health professionals from primary research. The objective of this paper was to review the current published literature to identify the uses, benefits, and limitations of social media for health communication among the general public, patients, and health professionals and to identify current gaps in the literature to provide recommendations for future health communication research. This is important in order to establish whether social media improves health communication practices.

Methods

This review paper followed the PRISMA guidelines [23] and used a systematic approach to retrieve the relevant research studies. The review included all study designs in order to identify the best evidence available to address the research objective. The literature search was conducted on February 7, 2012, using the following 10 electronic databases: CSA Illumina, Cochrane Library, Communication Abstracts, EBSCO Host CINAHL, ISI Web of Knowledge, Web of Science, OvidSP Embase, OvidSP MEDLINE, OVIDSP PsycINFO, and PubMed Central. The searches were performed using the following defined search terms: “social media” OR “social network” OR “social networking” OR “Web 2.0” OR “Facebook” OR “Twitter” OR “MySpace” AND “Health”. From the above database searches, 9749 hits were identified. Manual searches were conducted in the *Journal of Medical Internet Research* (January 2002 to February 2012) where 24 papers were identified; thus, 9773 papers were identified in total. The papers’ titles and abstracts were screened for relevance, duplication, and the selection criteria. The inclusion criteria were (1) primary focus on all communication interactions within

and between the general public and/or patients and/or health professionals about health issues using social media, (2) including the uses and/or benefits and/or limitations of social media for health communication, (3) original research studies, (4) published between January 2002 and February 2012, and (5) all study designs. The exclusion criteria were (1) studies not in English, (2) literature reviews, dissertation theses, review papers, reports, conference papers or abstracts, letters (to the editor), commentaries and feature articles, (3) studies only on Web 1.0 (ie, traditional Internet use), and (4) studies with a primary marketing or advertising focus. In total, 98 original research studies that included the use, and/or benefits, and/or limitations of social media for health communication among the general public, patients, and health professionals were selected for this review [24-121] (see [Figure 1](#)). Excluded studies and the reasons for exclusion are listed in [Multimedia Appendix 1](#). Two researchers (AM, LH) independently reviewed and evaluated the studies and reached consensus on the inclusion for the analysis. The interrater reliability between them was 0.90, indicating strong agreement [122]. Any discrepancies were discussed with reference to the research objective until consensus was reached.

Figure 1. PRISMA flow diagram illustrating the study selection procedure.



Results

The 98 selected studies are summarized by study design, social media tool/application, study purpose, participants/sample and sample size, measurement tools, results, conclusion, and use of social media in [Multimedia Appendix 2](#) [24-121]. The diverse studies included the use of a range of social media tools/applications, the most reported being Facebook, blogs,

Twitter, and YouTube (the full list is provided in [Table 1](#)). The study samples included blogs/forum discussions in which the participants were the general public, patients, and/or health professionals ([Multimedia Appendix 2](#)). There was a wide range of health topics, but the most frequently reported on were sexual health [45,46,70,104,107,115,117], diabetes [47,60,68,110,116], flu/H1N1 [54,57,58,111], and mental health issues such as stress or depression [48,83,101].

Table 1. Social media tools/applications within the 98 studies^a.

Facebook (n=13)	Farmer et al (2009) [37], Ahmed et al (2010) [51], Greene et al (2010) [60], Bender et al (2011) [78], Egan & Moreno (2011a) [83], Egan & Moreno (2011b) [84], Frimblings et al (2011) [86], Gajara et al (2011)[88], Garcia-Romero et al (2011) [89], Jent et al (2011) [92], Kukreja et al (2011) [95], Lord et al (2011) [99], Sajadi & Goldman (2011) [105]
Blogs (n=13)	Adams (2008) [26], Kovic et al (2008) [29], Lagu et al (2008) [30], Tan (2008) [32], Denecke & Nedjl (2009) [36], Keelan et al (2009) [41], Kim (2009) [42], Adams (2010) [50], Clauson et al (2010) [53], Hu & Sundar (2010) [61], Sanford (2010) [71], Shah & Robinson (2011) [109], Marcus et al (2012) [119]
Twitter (n=8)	Chew & Eysenbach (2010) [54], Scanfled et al (2010) [72], Heavillin et al (2011) [91], Kukreja et al (2011) [95], Sajadi & Goldman (2011) [105], Salathe & Khandelwal (2011) [106], Signorini et al (2011) [111], Turner-McGrievy & Tate (2011) [112]
YouTube (n=7)	Freeman & Chapman (2007) [24], Fernandez-Luque et al (2009) [38], Lo et al (2010) [67], Tian (2010) [74], Chou et al (2011) [80], Sajadi & Goldman (2011) [105], Fernandez-Luque et al (2012) [118]
MySpace (n=5)	Moreno et al (2007) [25], Moreno et al (2009a) [44], Moreno et al (2009b) [45], Versteeg et al (2009) [49], Ralph et al (2011) [104]
PatientsLikeMe (n=4)	Frost et al (2008) [28], Wicks et al (2010) [75], Doing-Harris & Zeng Treitler (2011) [81], Frost et al (2011) [87]
Wikipedia (n=3)	Clauson et al (2008) [27], Morturu & Liu (2011) [100], Rajagopalan et al (2011) [103]
Wiki (n=2)	Denecke & Nedjl (2009) [36], Adams (2010) [50]
Quitnet / online smoking cessation support group (n=2)	Cobb et al (2010) [55], Selby et al (2010) [73]
Physician rating website (not specified) (n=2)	Lagu (2010) [65], Kadry et al (2011) [93]
Second Life (n=1)	Beard et al (2009) [34]
Daily Strength (n=1)	Morturu & Liu (2011) [100]
ArboAntwoord (n=1)	Rhebergen et al (2012) [121]
Social media (tool not specified) (n=30)	Chou et al (2009) [35], Jennings et al (2009) [40], Takahashi et al (2009) [48], Avery et al (2010) [52], Colineau & Paris (2010) [56], Corley et al (2010) [57], Ding & Zhang (2010) [58], Hwang et al (2010) [62], Kim & Kwon (2010) [63], Kontos et al (2010) [64], Lariscy et al (2010) [66], Orizio et al (2010) [69], Rice et al (2010) [70], Adrie et al (2011) [76], Baptist et al (2011) [77], Bosslett et al (2011) [79], Dowdell et al (2011) [82], Friedman et al (2011) [85], Hanson et al (2011) [90], Kishimoto & Fukushimima (2011), [94], Lariscy et al (2011) [96], Liang & Scammon (2011) [98], O'Dea & Campbell (2011) [101], Omurtag et al (2011) [102], Selkie et al (2011) [107], Setoyama et al (2011) [108], Shrank et al (2011) [110], Veinot et al (2011) [115], Weitzman et al (2011) [116], Young & Rice (2011) [117], O'Grady et al (2012) [120]
Web 2.0 application (not specified) (n=11)	Scotch et al (2008) [31], Timpka et al (2008) [33], Hughes et al (2009) [39], Lupianez-Villanueva et al (2009) [43], Moen et al (2009) [44], Nordqvist et al (2009) [47], Ekberg et al (2010) [59], Nordfeldt et al (2010) [68], Lau (2011) [97], Usher et al (2011) [113], Van Uden-Kraan (2011) [114]

^aSome studies included more than one social media tool/application.

Methodological Quality of Studies

From the searches between January 2002 and February 2012, the selected studies in this review were published from 2007 to 2012 with the vast majority in the last 2 years (Table 1). From the available methodology of bias tools/quality scales, the Downs and Black Instrument [123] has been previously identified as a recommended tool to evaluate the quality of both quantitative randomized and nonrandomized studies [124]. As there are no standard accepted quality scales for studies of proportions [125], only quantitative studies (including mixed methods) were evaluated. Using this Downs and Black instrument [123], the maximum total score that could be achieved was 32, but the scores of the studies in this review ranged from 3 [89] to 22 [121]. Overall, the studies scored low using this scale as they were mainly exploratory and descriptive with three intervention studies [43,112,121] and one randomized controlled trial (RCT) [45]. From the 98 studies, 40 were applied

quantitative, 48 qualitative (including studies with content analysis presenting data with descriptive statistics), and 10 mixed methods (both quantitative and qualitative). These studies are presented by methodology in Table 2. Methodological bias of the selected studies using the Downs and Black instrument [123] is presented in Multimedia Appendix 3.

Characteristics/Profile of Users Accessing Social Media for Health Communication

The characteristics of users of social media for health communication in the selected studies were diverse, covering a range of different population groups. The age of the social media users ranged from school children to older adults aged 65 years and up [24-121], but the majority of the reported ages were 11-34 years [25,35,45,46,64,77,104,107,119]. Some studies reported that there were more female than male users of social network sites [35,40,55,62,64]. A few studies found that social

media users were disproportionately from lower-income households [35,64,72]. Studies within the United States reported that more social media users were African Americans than nonHispanic Whites [35,40]. Chou et al [35] concluded that the population is accessing social media regardless of education and race/ethnicity.

Uses of Social Media for Health Communication

From the selected studies, seven key uses of social media for health communication were identified for the general public, patients, and health professionals (Table 3). Social media provided health information on a range of conditions to the general public [36,61,71,74,103], patients [47,63,71,75,98,103], and health professionals [36,47,98]. This communication can provide answers to medical questions [34,36,60]. Social media allows information to be presented in modes other than text and can bring health information to audiences with special needs; for example, videos can be used to supplement or replace text and can be useful when literacy is low [50]. A range of social media platforms can facilitate dialogue between patients and patients, and patients and health professionals [56,79,110]. Sites such as PatientsLikeMe enable patients to engage in dialogue with each other and share health information and advice including information on treatment and medication [28,75]. YouTube has been used by the general public to share health information on medications, symptoms, and diagnoses [38], and by patients to share personal cancer stories [80]. Blog sites create a space where individuals can access tailored resources [26] and provide health professionals with an opportunity to share information with patients and members of the public [30,56]. Facebook is being used by the general public, patients, carers, and health professionals to share their experience of disease management, exploration, and diagnosis [37]. Asthma groups are using MySpace to share health information, in particular personal stories and experiences [49,60]. Social media can be used to collect data on patient experiences and opinions such as physician's performance [26,65,109].

Social media have been used for health promotion and health education [25,34,46,59,82,90,113,117] and for delivering a health intervention by providing social support/influence to promote smoking cessation and abstinence [55]. A study has shown that social media can reduce stigma about certain conditions such as epilepsy [67]. In addition, there were some

opportunities for health professionals to have online consultations [88].

Benefits of Social Media for Health Communication

Six overarching benefits of social media for health communication were identified for the general public, patients, and health professionals (Table 4). Social media users have the potential to increase the number of interactions and thus are provided with more available, shared, and tailored information. Social media can generate more available health information as users create and share medical information online [50]. Blog sites create a space where individuals can access tailored resources to deal with health issues [26]. Social media can widen access to those who may not easily access health information via traditional methods, such as younger people, ethnic minorities, and lower socioeconomic groups [35,64,66,83,84,86,99,104,107,115]. An important aspect of using social media for health communication is that it can provide valuable peer, social, and emotional support for the general public [37,43,44,47,48,51,56,73,101,108,114] and patients [28,33,34,44,47,48,56,60,62,68,71,76,88,98,120]. For example, social media can aid health behavior change such as smoking cessation [53,73], and PatientsLikeMe enables patients to communicate with other patients and share information about health issues [28]. Colineau and Paris [56] reported that people used health-related social networking sites to discuss sensitive issues and complex information with health professionals.

In public health surveillance, social media can provide communication in real time and at relatively low cost [31,40,54,57,72,111,116]. Social media can monitor public response to health issues [54], track and monitor disease outbreak [111], identify misinformation of health information [72], identify target areas for intervention efforts [106], and disseminate pertinent health information to targeted communities [57]. Health professionals can aggregate data about patient experiences from blogs and monitor public reaction to health issues [26,40]. Social media may have particular potential for risk communications as they can be used to disseminate personalized messages immediately thus making outreach more effective [58]. There is the potential that information on social media may contribute to health care policy making, as medical blogs are frequently viewed by mainstream media [29].

Table 2. List of studies by methodology—quantitative, qualitative, or both (n=98).

Quantitative (n=40)	Qualitative (n=48)	Mixed methods (n=10)
Kovic et al (2008) [29]	Freeman & Chapman (2007) ^a [24]	Clauson et al (2008) [27]
Chou et al (2009) [35]	Moreno et al (2007) ^a [25]	Timpka et al (2008) [33]
Moreno et al (2009a) [45]	Adams (2008) [26]	Hughes et al (2009) [39]
Avery et al (2010) [52]	Frost et al (2008) [28]	Jennings et al (2009) [40]
Chew & Eysenbach (2010) [54]	Lagu et al (2008) ^a [30]	Lupianez-Villanueva et al (2009) [43]
Cobb et al (2010) [55]	Scotch et al (2008) [31]	Takahashi et al (2009) [48]
Colineau & Paris (2010) [56]	Tan (2008) [32]	Hwang et al (2010) [62]
Hu & Sundar (2010) [61]	Beard et al (2009) [34]	Ralph et al (2011) [104]
Kim & Kwon (2010) [63]	Denecke & Nedjl (2009) ^a [36]	Selkie et al (2011) [107]
Kontos et al (2010) [64]	Farmer et al (2009) ^a [37]	O'Grady et al (2012) [120]
Lariscy et al (2010) [66]	Fernandez-Luque et al (2009) ^a [38]	
Lo et al (2010) [67]	Keelan et al (2009) ^a [41]	
Rice et al (2010) [70]	Kim (2009) [42]	
Wicks et al (2010) [75]	Moen et al (2009) [44]	
Adrie et al (2011) [76]	Moreno et al (2009b) ^a [46]	
Baptist et al (2011) [77]	Nordqvist et al (2009) [47]	
Bosslett et al (2011) [79]	Versteeg et al (2009) ^a [49]	
Dowdell et al (2011) [82]	Adams (2010) [50]	
Frimmings et al (2011) [86]	Ahmed et al (2010) ^a [51]	
Garcia-Romero et al (2011) [89]	Clauson et al (2010) [53]	
Hanson et al (2011) [90]	Corley et al (2010) [57]	
Jent et al (2011) [92]	Ding & Zhang (2010) ^a [58]	
Kadry et al (2011) [93]	Ekberg (2010) [59]	
Kishimoto & Fukushmima (2011) [94]	Greene et al (2010) ^a [60]	
Kukreja et al (2011) [95]	Lagu (2010) ^a [65]	
Lau (2011) [97]	Nordfeldt et al (2010) [68]	
Lord et al (2011) [99]	Orizio et al (2010) ^a [69]	
Morturu & Liu (2011) [100]	Sanford (2010) [71]	
O'Dea & Campbell (2011) [101]	Scanfeld et al (2010) [72]	
Omurtag et al (2011) [102]	Selby et al (2010) ^a [73]	
Rajagopalan et al (2011) [103]	Tian (2010) [74]	
Setoyama et al (2011) [108]	Bender et al (2011) ^a [78]	
Signorini et al (2011) [111]	Chou et al (2011) ^b [80]	
Turner-McGrievy & Tate (2011) [112]	Doing-Harris & Zeng-Treitler (2011) [81]	
Usher et al (2011) [113]	Egan & Moreno (2011a) ^a [83]	
Van Uden-Kraan (2011) [114]	Egan & Moreno (2011b) ^a [84]	
Weitzman et al (2011) [116]	Friedman et al (2011) ^a [85]	
Young & Rice (2011) [117]	Frost et al (2011) [87]	

Quantitative (n=40)	Qualitative (n=48)	Mixed methods (n=10)
Fernandez-Luque et al (2012) [118]	Gajaria et al (2011) [88]	
Rhebergen et al (2012) [121]	Heavillin et al (2011) [91]	
	Lariscy et al (2011) [96]	
	Liang & Scammon (2011) [98]	
	Sajadi & Goldman (2011) [105]	
	Salthe & Khandelwal (2011) ^a [106]	
	Shah & Robinson (2011) [109]	
	Shrank et al (2011) ^a [110]	
	Veinot et al (2011) [115]	
	Marcus et al (2012) [119]	

^a Qualitative study using content analysis with some findings reported as descriptive statistics.

^b Descriptive statistics.

Limitations of Using Social Media for Health Communication

There were 12 limitations of social media for health communication (Table 5). The main recurring limitations of social media are quality concerns [26,39,42,44,47,50,69,85] and the lack of reliability of the health information [26,37,39,40,42,44,47,50,69,74,85,95]. The authors of websites are often unidentifiable, or there can be numerous authors, or the line between producer and audience is blurred [38,50,74]. Thus it is more difficult for individuals to discern the reliability of information found online [50,38]. Regulations may not facilitate health professionals to communicate with patients online, for example, email is not an official medical record and could be vulnerable to security breaches [68]. Policy reactions to address concerns include providing training in how to use and navigate social media technologies and validate accuracy of information found [39,66], or bringing more credible sites into the mainstream and making them fully accessible [39].

The large volume of information available through social media and the possibility for inaccuracies posted on these sites presents

challenges when validating information [26]. Several studies highlighted concerns about privacy and confidentiality, data security, and the potential harms that emerge when personal data are indexed [38,44,47,50]. Social media users are often unaware of the risks of disclosing personal information online [26] and with communicating harmful or incorrect advice using social media [26,50]. As information is readily available, there is the potential of information overload for the user [50]. The general public may not know how to correctly apply information found online to their personal health situation [50]. There is the potential that adverse health consequences can result from information found on social media sites, for example, pro-smoking imagery [24]. In addition, there may be negative health risk behaviors displayed online, such as unsafe sexual behavior [45,46]. There is limited evidence that engaging in online communities positively impacts people's health [56]. Health professionals may not often use social media to communicate with their patients [42]. There is also the possibility that social media may act as a deterrent for patients from visiting health professionals [42].

Table 3. Uses of social media for health communication among the general public, patients, and health professionals.

Uses of social media for health communication	Social media user		
	General Public	Patients	Health Professionals
Provide health information on a range of conditions	✓	✓	✓
Provide answers to medical questions	✓	✓	✓
Facilitate dialogue between patients to patients, and patients and health professionals		✓	✓
Collect data on patient experiences and opinions		✓	✓
Used for health intervention, health promotion and health education	✓	✓	✓
Reduce stigma		✓	✓
Provide online consultations		✓	✓

Table 4. Benefits of using social media for health communication for the general public, patients, and health professionals.

Benefits of social media for health communication	Social media user		
	General Public	Patients	Health Professionals
Increase interactions with others	✓	✓	✓
More available, shared, and tailored information	✓	✓	✓
Increase accessibility & widening access	✓	✓	✓
Peer/social/emotional support	✓	✓	✓
Public health surveillance	✓	✓	✓
Potential to influence health policy	✓	✓	✓

Table 5. Limitations of social media for health communication among the general public, patients, and health professionals.

Limitations of social media for health communication	Social media user		
	General Public	Patients	Health Professionals
Lack of reliability	✓	✓	✓
Quality concerns	✓	✓	✓
Lack of confidentiality & privacy	✓	✓	✓
Often unaware of the risks of disclosing personal information online	✓	✓	
Risks associated with communicating harmful or incorrect advice using social media	✓	✓	
Information overload	✓	✓	
Not sure how to correctly apply information found online to their personal health situation	✓	✓	
Certain social media technologies may be more effective in behavior change than others	✓		
Adverse health consequences	✓		
Negative health behaviors	✓		
Social media may act as a deterrent for patients from visiting health professionals		✓	✓
Currently may not often use social media to communicate to patients			✓

Discussion

The 98 research studies in this review provided evidence that social media (most reported applications were Facebook, Blogs, Twitter, and YouTube) can create a space to share, comment, and discuss health information on a diverse range of health issues such as sexual health, diabetes, flu/H1N1, and mental health issues [24-121]. Social media attracts a large number of users thus creating a platform for mass health communication [35] with identified uses, benefits, and limitations for the general public, patients, and health professionals.

Uses of Social Media for Health Communication

The main uses of social media focus on increasing interactions with others, and facilitating, sharing, and obtaining health messages [24-121]. The general public mainly use social media for themselves, family members, and/or friends to obtain and share information on a wide range of health issues [36,60,61,71,74,103]. Patients can share their experiences through discussion forums, chat rooms and instant messaging, or online consultation with a qualified clinician [26,62,63]. Some health professionals were reported to use social media to

collect data on patients [26,65] and to communicate with patients using online consultations [88]; however, this latest use is limited. Recent research reported that female health professionals in Quebec, Canada, believed that Web 2.0 may be a useful mechanism for knowledge transfer but is limited due to their lack of time and technological skills [126]. Perhaps in light of Kaplan and Haenlein's [10] classifications of social media, further work on improving the "social presence", the closeness to synchronous face-to-face communication of such online consultations, would contribute to improving communication between health professionals and patients. Another recent study applied social network analysis to understand the knowledge sharing behavior of practitioners in a clinical online discussion forum and found that although their number is limited, interprofessional and interinstitutional ties are strong [127]. This relates to Gilbert and Karahalios' [128] social tie analysis and suggests that development of mechanisms that evaluate tie strength in social media that in turn impact on its functionality may be useful for health communication. Further technological advances will provide more opportunities to use social media in health care in the future, especially between patients and patients, and also health professionals and

patients. However, both patients and health professionals may require training to fully maximize the uses of using social media in health care.

Benefits of Social Media for Health Communication

Numerous benefits of using social media for health communication were reported for the general public, patients, and health professionals. A major benefit of social media for health communication is the accessibility and widening access of health information to various population groups, regardless of age, education, race or ethnicity, and locality, compared to traditional communication methods [35,64,95,72]. While these changing patterns may lessen health disparities, traditional inequalities in overall Internet access remain. Furthermore, variation in social media engagement according to personality traits, age, and gender [15] suggests the need for ongoing scrutiny regarding equality of access and effectiveness for different users. Social media can be used to provide a valuable and useful source of peer, social, and emotional support to individuals, including those with various conditions/illnesses [48,62,71]. Hwang and colleagues [62] reported that encouragement, motivation, and shared experience were important social support features of social media sites.

Social media allows users to generate peer-to-peer discussion in a way not enabled by traditional websites [48,50,62,71]. However, this may challenge expectations, relationships, quality, and consistent health care practice. As Moen et al [44] explain, current patterns of collaboration tend to produce an asymmetric patient-health care provider relationship. This highlights a strong need for health providers to maintain a role within social media health communication that is not simply the same as that of patient and general public users. Keitzmann et al [17] have suggested that organizations need to recognize and understand the social media landscape, and where the conversations about them are already being held (cognize), develop strategies that are suitable, work out how often and when they should enter into conversations, and be aware of what others are doing and act accordingly. This review highlights clearly that social media has benefits for health communication but the long-term effects are not known. As the use of social media is expected to increase in the future [1], there may be further benefits of using social media in health care. It is not yet known how effective social media applications are in health communications, which warrants further research.

Limitations of Social Media for Health Communication

Social media tools remain informal, unregulated mechanisms for information collection, sharing, and promotion, so the information is of varying quality and consistency [26,27,39,40,42,44,47,50,69,74,85,95]. Similar issues exist with traditional Internet sites, but these issues are being heightened by the interactive nature of social media, which allows lay-users to upload information regardless of quality [50]. Reliability may be monitored by responsible bodies using automated processes, employed to signal when content has been significantly edited, and progress is being made in automated quality detection [50]. Further work to improve the “media richness” [10] of social media for health communication, that is, how they may reduce ambiguity and uncertainty, would be valuable. In addition,

combining more resources in one site could improve reliability of information. As patients interact and share links, they could compare numerous social media sites and triangulate information to help them discern correct from incorrect information [50]. Despite concerns, information found on some websites is reported to be generally factually accurate [39,62]. A further limitation is that postings can be a permanent record and be viewed by an increasing audience, and perhaps users are unaware of the potential size of the audience base. Regulatory and security issues must be addressed to broach a way forward for best-practice that allows the benefits of social media to be utilized yet still protects patients’ privacy and to therefore improve use of these media in routine clinical care. This is a public policy issue and is already being contested in the United States. Public education is required for the general public, patients, and health professionals to make them more aware of the nature of using social media. Consideration of the variation in social media engagement according to personality traits, age, and gender [15] will be valuable in tailoring education to meet the needs of population groups.

Gaps in the Research Literature and Recommendations of Research Into Social Media for Health Communication

This literature review has shown that the general public, patients, and health professionals use social media in health care for various purposes with numerous benefits and limitations. The current research’s methodological scoring was low; this was mainly due to the fact that the vast majority of the studies in this review were exploratory and descriptive. To date, there is very limited evidence from RCTs and longitudinal studies. To more fully determine the role of social media for health communication, further research with larger sample sizes and more robust methodologies are required. Based on this review [24-121], several gaps in the literature have been identified that need to be addressed:

- the impact of social media for health communication in specific population groups, such as minority groups, patients groups, culture differences;
- the relative effectiveness of different applications of social media for health communication;
- the longer-term impact on the effectiveness of social media for health communication;
- the most suitable mechanisms to monitor and enhance the quality and reliability of health communication using social media;
- the risks arising from sharing information online, the consequences for confidentiality and privacy, and the most suitable mechanisms for effectively educating users in the maintenance of their confidentiality and privacy;
- the full potential of social media in effectively supporting the patient-health professional relationship;
- the impact of peer-to-peer support for the general public, patients, and health professionals to enhance their interpersonal communication;
- the impact of social media on behavior change for healthy lifestyles.

To address these gaps in the literature, the key recommendations for future health communication research focus on robust and comprehensive evaluation and review, using a range of methodologies. The research priorities are highlighted below:

- To determine the impact of social media for health communication in specific population groups with large sample sizes (representation of population groups).
- To determine the relative effectiveness of different social media applications for health communication using RCTs.
- To determine the longer-term impact on the effectiveness of social media for health communication using longitudinal studies.
- To explore potential mechanisms for monitoring and enhancing the quality and reliability of health communication using social media.
- To investigate the risks arising from sharing information online and the consequences for confidentiality and privacy, coupled with developing the most suitable mechanisms to effectively educate users in the maintenance of their confidentiality and privacy.
- To determine how social media can be effectively used to support the patient-health professional relationship.

- To determine the impact of peer-to-peer support for the general public, patients, and health professionals to enhance their interpersonal communication.
- To explore the potential for social media to lead to behavior change for healthy lifestyles to inform health communication practice.

Conclusions

Social media brings a new dimension to health care, offering a platform used by the public, patients, and health professionals to communicate about health issues with the possibility of potentially improving health outcomes. Although there are benefits to using social media for health communication, the information needs to be monitored for quality and reliability, and the users' confidentiality and privacy need to be maintained. Social media is a powerful tool that offers collaboration between users and a social interaction mechanism for a range of individuals. With increasing use of social media, there will be further opportunities in health care. Research into the application of social media for health communication purposes is an expanding area because increasing general use of social media necessitates that health communication researchers match the pace of development. Further robust research is required to establish whether social media improves health communication practices in both the short and long terms.

Authors' Contributions

Dr. Anne Moorhead developed the concept of this paper and selected and evaluated papers and led this manuscript. Laura Harrison conducted the searches for studies, and Dr. Anne Moorhead and Laura Harrison evaluated the papers. All authors evaluated the studies and contributed to this manuscript.

Conflicts of Interest

None declared.

Multimedia Appendix 1

Excluded studies.

[\[PDF File \(Adobe PDF File\), 250KB-Multimedia Appendix 1\]](#)

Multimedia Appendix 2

Summary of the selected studies (n=98).

[\[PDF File \(Adobe PDF File\), 518KB-Multimedia Appendix 2\]](#)

Multimedia Appendix 3

Study quality scores using Downs and Black scale: checklist for measuring study quality (n=50).

[\[PDF File \(Adobe PDF File\), 345KB-Multimedia Appendix 3\]](#)

References

1. Boyd DM, Ellison NB. Social network sites: Definition, history, and scholarship. *J Comp Med Commun* 2008;13:210-230. [doi: [10.1111/j.1083-6101.2007.00393.x](https://doi.org/10.1111/j.1083-6101.2007.00393.x)]
2. Thackeray R, Neiger BL, Hanson CL, McKenzie JF. Enhancing promotional strategies within social marketing programs: use of Web 2.0 social media. *Health Promot Pract* 2008 Oct;9(4):338-343. [doi: [10.1177/1524839908325335](https://doi.org/10.1177/1524839908325335)] [Medline: [18936268](https://pubmed.ncbi.nlm.nih.gov/18936268/)]
3. Eyrich N, Padman ML, Sweetser DS. PR practitioners' use of social media tools and communication technology. *Public Relations Review* 2008;34:412-414.

4. McNab C. What social media offers to health professionals and citizens. 2009. URL: <http://www.who.int/bulletin/volumes/87/8/09-066712/en/> [accessed 2013-04-04] [WebCite Cache ID 6FdBA9AuG]
5. Green B, Hope A. Promoting clinical competence using social media. *Nurse Educ* 2010;35(3):127-129. [doi: [10.1097/NNE.0b013e3181d9502b](https://doi.org/10.1097/NNE.0b013e3181d9502b)] [Medline: [20410751](https://pubmed.ncbi.nlm.nih.gov/20410751/)]
6. Giustini D. How Web 2.0 is changing medicine. *BMJ* 2006 Dec 23;333(7582):1283-1284 [FREE Full text] [doi: [10.1136/bmj.39062.555405.80](https://doi.org/10.1136/bmj.39062.555405.80)] [Medline: [17185707](https://pubmed.ncbi.nlm.nih.gov/17185707/)]
7. Fox S, Jones S. The Social Life of Health Information. 2009. URL: <http://www.pewinternet.org/Reports/2007/Information-Searches-> [accessed 2013-04-04] [WebCite Cache ID 6FdBDPOJA]
8. Heidelberger CA. Health Care Professionals' Use of Online Social Networks. 2011. URL: <http://cahdsu.wordpress.com/2011/04/07/infs-892-health-care-professionals-use-of-online-social-networks/> [accessed 2013-04-04] [WebCite Cache ID 6FdBOyNJi]
9. Dawson J. Doctors join patients in going online for health information. *New Media Age* 2010;7.
10. Kaplan AM, Haenlein M. Users of the world, unite! The challenges and opportunities of social media. *Business Horizons* 2010;53:59-68.
11. Short J, Williams E, Christie B. The social psychology of telecommunications. Hoboken, NJ: John Wiley & Sons, Ltd; 1976.
12. Goffman E. The presentation of self in everyday life. New York: Doubleday Anchor Books; 1959.
13. Maness JM. Library 2.0 Theory: Web 2.0 and its implications for libraries. 2006. URL: <http://www.webology.org/2006/v3n2/a25.html> [accessed 2013-04-04] [WebCite Cache ID 6FdBicNxb]
14. Kamel Boulos MN, Wheeler S. The emerging Web 2.0 social software: an enabling suite of sociable technologies in health and health care education. *Health Info Libr J* 2007 Mar;24(1):2-23. [doi: [10.1111/j.1471-1842.2007.00701.x](https://doi.org/10.1111/j.1471-1842.2007.00701.x)] [Medline: [17331140](https://pubmed.ncbi.nlm.nih.gov/17331140/)]
15. Correa T, Willard Hinsley A, de Zúñiga HG. Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in Human Behavior* 2010;26(2):247-253.
16. Lenhart A, Purcell K, Smith A, Zickuhr K. Social Media & Mobile Internet Use Among Teens and Young Adults. USA: Pew Research Center; 2010. URL: http://www.pewinternet.org/~media/Files/Reports/2010/PIP_Social_Media_and_Young_Adults_Report_Final_with_toplines.pdf [accessed 2013-04-04] [WebCite Cache ID 6FdBrFKd9]
17. Kietzmann JH, Hermkens K, McCarthy IP, Silvestre BS. Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons* 2011;54(3):241-251.
18. Butterfield S. Social software. 2003. URL: http://www.sylloge.com/personal/2003_03_01_s.html [accessed 2013-04-04] [WebCite Cache ID 6FdBtXa5e]
19. Morville P. User experience design. 2004. URL: <http://semanticstudios.com/publications/semantics/000029.php> [accessed 2013-04-04] [WebCite Cache ID 6FdBwP2d9]
20. Webb M. Social software consultancy. 2004. URL: http://interconnected.org/home/2004/04/28/on_social_software [accessed 2013-04-04] [WebCite Cache ID 6FdByLPat]
21. Smith G. Social software building blocks. 2007. URL: <http://nform.ca/publications/social-software-building-block> [accessed 2013-04-04] [WebCite Cache ID 6FdBzbhIe]
22. Mangold WG, Faulds DJ. Social media: The new hybrid element of the promotion mix. *Business Horizons* 2009;52(4):357-365.
23. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 2009;6(6):e1000097. [doi: [10.1371/journal.pmed1000097](https://doi.org/10.1371/journal.pmed1000097)]
24. Freeman B, Chapman S. Is "YouTube" telling or selling you something? Tobacco content on the YouTube video-sharing website. *Tob Control* 2007 Jun;16(3):207-210 [FREE Full text] [doi: [10.1136/tc.2007.020024](https://doi.org/10.1136/tc.2007.020024)] [Medline: [17565142](https://pubmed.ncbi.nlm.nih.gov/17565142/)]
25. Moreno MA, Parks M, Richardson LP. What are adolescents showing the world about their health risk behaviors on MySpace? *MedGenMed* 2007;9(4):9. [Medline: [18311359](https://pubmed.ncbi.nlm.nih.gov/18311359/)]
26. Adams SA. Blog-based applications and health information: two case studies that illustrate important questions for Consumer Health Informatics (CHI) research. *Int J Med Inform* 2010 Jun;79(6):e89-e96. [doi: [10.1016/j.ijmedinf.2008.06.009](https://doi.org/10.1016/j.ijmedinf.2008.06.009)] [Medline: [18701344](https://pubmed.ncbi.nlm.nih.gov/18701344/)]
27. Clauson KA, Polen HH, Boulos MN, Dzenowagis JH. Scope, completeness, and accuracy of drug information in Wikipedia. *Ann Pharmacother* 2008 Dec;42(12):1814-1821. [doi: [10.1345/aph.1L474](https://doi.org/10.1345/aph.1L474)] [Medline: [19017825](https://pubmed.ncbi.nlm.nih.gov/19017825/)]
28. Frost JH, Massagli MP. Social uses of personal health information within PatientsLikeMe, an online patient community: what can happen when patients have access to one another's data. *J Med Internet Res* 2008 May;10(3):e15 [FREE Full text] [doi: [10.2196/jmir.1053](https://doi.org/10.2196/jmir.1053)] [Medline: [18504244](https://pubmed.ncbi.nlm.nih.gov/18504244/)]
29. Kovic I, Lulic I, Brumini G. Examining the medical blogosphere: an online survey of medical bloggers. *J Med Internet Res* 2008 Sep;10(3):e28 [FREE Full text] [doi: [10.2196/jmir.1118](https://doi.org/10.2196/jmir.1118)] [Medline: [18812312](https://pubmed.ncbi.nlm.nih.gov/18812312/)]
30. Lagu T, Kaufman EJ, Asch DA, Armstrong K. Content of weblogs written by health professionals. *J Gen Intern Med* 2008 Oct;23(10):1642-1646 [FREE Full text] [doi: [10.1007/s11606-008-0726-6](https://doi.org/10.1007/s11606-008-0726-6)] [Medline: [18649110](https://pubmed.ncbi.nlm.nih.gov/18649110/)]

31. Scotch M, Yip KY, Cheung KH. Development of grid-like applications for public health using Web 2.0 mashup techniques. *J Am Med Inform Assoc* 2008 Aug;15(6):783-786 [[FREE Full text](#)] [doi: [10.1197/jamia.M2731](https://doi.org/10.1197/jamia.M2731)] [Medline: [18755998](#)]
32. Tan L. Psychotherapy 2.0: MySpace blogging as self-therapy. *Am J Psychother* 2008;62(2):143-163. [Medline: [18605128](#)]
33. Timpka T, Eriksson H, Ludvigsson J, Ekberg J, Nordfeldt S, Hanberger L. Web 2.0 systems supporting childhood chronic disease management: a pattern language representation of a general architecture. *BMC Med Inform Decis Mak* 2008;8:54 [[FREE Full text](#)] [doi: [10.1186/1472-6947-8-54](https://doi.org/10.1186/1472-6947-8-54)] [Medline: [19040738](#)]
34. Beard L, Wilson K, Morra D, Keelan J. A survey of health-related activities on second life. *J Med Internet Res* 2009 May;11(2):e17 [[FREE Full text](#)] [doi: [10.2196/jmir.1192](https://doi.org/10.2196/jmir.1192)] [Medline: [19632971](#)]
35. Chou WY, Hunt YM, Beckjord EB, Moser RP, Hesse BW. Social media use in the United States: implications for health communication. *J Med Internet Res* 2009 Nov;11(4):e48 [[FREE Full text](#)] [doi: [10.2196/jmir.1249](https://doi.org/10.2196/jmir.1249)] [Medline: [19945947](#)]
36. Denecke K, Nejdil W. How valuable is medical social media data? Content analysis of the medical web. *Inform Sciences* 2009;179:1870-1880.
37. Farmer AD, Bruckner Holt CE, Cook MJ, Hearing SD. Social networking sites: a novel portal for communication. *Postgrad Med J* 2009 Sep;85(1007):455-459. [doi: [10.1136/pgmj.2008.074674](https://doi.org/10.1136/pgmj.2008.074674)] [Medline: [19734511](#)]
38. Fernandez-Luque L, Elahi N, Grajales FJ. An analysis of personal medical information disclosed in YouTube videos created by patients with multiple sclerosis. *Stud Health Technol Inform* 2009;150:292-296. [Medline: [19745316](#)]
39. Hughes B, Joshi I, Lemonde H, Wareham J. Junior physician's use of Web 2.0 for information seeking and medical education: a qualitative study. *Int J Med Inform* 2009 Oct;78(10):645-655. [doi: [10.1016/j.ijmedinf.2009.04.008](https://doi.org/10.1016/j.ijmedinf.2009.04.008)] [Medline: [19501017](#)]
40. Jennings A, Powell J, Armstrong N, Sturt J, Dale J. A virtual clinic for diabetes self-management: pilot study. *J Med Internet Res* 2009 Mar;11(1):e10 [[FREE Full text](#)] [doi: [10.2196/jmir.1111](https://doi.org/10.2196/jmir.1111)] [Medline: [21821504](#)]
41. Keelan J, Pavri V, Balakrishnan R, Wilson K. An analysis of the Human Papilloma Virus vaccine debate on MySpace blogs. *Vaccine* 2010 Feb 10;28(6):1535-1540. [doi: [10.1016/j.vaccine.2009.11.060](https://doi.org/10.1016/j.vaccine.2009.11.060)] [Medline: [20003922](#)]
42. Kim S. Content analysis of cancer blog posts. *J Med Libr Assoc* 2009 Oct;97(4):260-266 [[FREE Full text](#)] [doi: [10.3163/1536-5050.97.4.009](https://doi.org/10.3163/1536-5050.97.4.009)] [Medline: [19851489](#)]
43. Lupiáñez-Villanueva F, Mayer MA, Torrent J. Opportunities and challenges of Web 2.0 within the health care systems: an empirical exploration. *Inform Health Soc Care* 2009 Sep;34(3):117-126. [doi: [10.1080/17538150903102265](https://doi.org/10.1080/17538150903102265)] [Medline: [19670002](#)]
44. Moen A, Smørdal O, Sem I. Web-based resources for peer support - opportunities and challenges. *Stud Health Technol Inform* 2009;150:302-306. [Medline: [19745318](#)]
45. Moreno MA, Vanderstoep A, Parks MR, Zimmerman FJ, Kurth A, Christakis DA. Reducing at-risk adolescents' display of risk behavior on a social networking web site: a randomized controlled pilot intervention trial. *Arch Pediatr Adolesc Med* 2009 Jan;163(1):35-41. [doi: [10.1001/archpediatrics.2008.502](https://doi.org/10.1001/archpediatrics.2008.502)] [Medline: [19124701](#)]
46. Moreno MA, Parks MR, Zimmerman FJ, Brito TE, Christakis DA. Display of health risk behaviors on MySpace by adolescents: prevalence and associations. *Arch Pediatr Adolesc Med* 2009 Jan;163(1):27-34. [doi: [10.1001/archpediatrics.2008.528](https://doi.org/10.1001/archpediatrics.2008.528)] [Medline: [19124700](#)]
47. Nordqvist C, Hanberger L, Timpka T, Nordfeldt S. Health professionals' attitudes towards using a Web 2.0 portal for child and adolescent diabetes care: qualitative study. *J Med Internet Res* 2009 Apr;11(2):e12 [[FREE Full text](#)] [doi: [10.2196/jmir.1152](https://doi.org/10.2196/jmir.1152)] [Medline: [19403464](#)]
48. Takahashi Y, Uchida C, Miyaki K, Sakai M, Shimbo T, Nakayama T. Potential benefits and harms of a peer support social network service on the internet for people with depressive tendencies: qualitative content analysis and social network analysis. *J Med Internet Res* 2009 Jul;11(3):e29 [[FREE Full text](#)] [doi: [10.2196/jmir.1142](https://doi.org/10.2196/jmir.1142)] [Medline: [19632979](#)]
49. Versteeg KM, Knopf JM, Posluszny S, Vockell AL, Britto MT. Teenagers wanting medical advice: Is MySpace the answer? *Arch Pediatr Adolesc Med* 2009 Jan;163(1):91-92 [[FREE Full text](#)] [doi: [10.1001/archpediatrics.2008.503](https://doi.org/10.1001/archpediatrics.2008.503)] [Medline: [19124711](#)]
50. Adams SA. Revisiting the online health information reliability debate in the wake of "web 2.0": an inter-disciplinary literature and website review. *Int J Med Inform* 2010 Jun;79(6):391-400. [doi: [10.1016/j.ijmedinf.2010.01.006](https://doi.org/10.1016/j.ijmedinf.2010.01.006)] [Medline: [20188623](#)]
51. Ahmed OH, Sullivan SJ, Schneiders AG, McCrory P. iSupport: do social networking sites have a role to play in concussion awareness? *Disabil Rehabil* 2010;32(22):1877-1883. [doi: [10.3109/09638281003734409](https://doi.org/10.3109/09638281003734409)] [Medline: [20367328](#)]
52. Avery E, Lariscy R, Amador E, Ickowitz T, Primm C, Taylor A. Diffusion of Social Media Among Public Relations Practitioners in Health Departments Across Various Community Population Sizes. *Journal of Public Relations Research* 2010 Jul 2010;22(3):336-358. [doi: [10.1080/10627261003614427](https://doi.org/10.1080/10627261003614427)]
53. Clauson KA, Ekins J, Goncz CE. Use of blogs by pharmacists. *Am J Health Syst Pharm* 2010 Dec 1;67(23):2043-2048. [doi: [10.2146/ajhp100065](https://doi.org/10.2146/ajhp100065)] [Medline: [21098377](#)]
54. Chew C, Eysenbach G. Pandemics in the age of Twitter: content analysis of Tweets during the 2009 H1N1 outbreak. *PLoS One* 2010 Nov;5(11):e14118 [[FREE Full text](#)] [doi: [10.1371/journal.pone.0014118](https://doi.org/10.1371/journal.pone.0014118)] [Medline: [21124761](#)]
55. Cobb NK, Graham AL, Abrams DB. Social network structure of a large online community for smoking cessation. *Am J Public Health* 2010;100(7):1282-1289. [doi: [10.2105/AJPH.2009.165449](https://doi.org/10.2105/AJPH.2009.165449)]

56. Colineau N, Paris C. Talking about your health to strangers: understanding the use of online social networks by patients. *New Review of Hypermedia and Multimedia* 2010 Apr 2010;16(1-2):141-160. [doi: [10.1080/13614568.2010.496131](https://doi.org/10.1080/13614568.2010.496131)]
57. Corley CD, Cook DJ, Mikler AR, Singh KP. Text and structural data mining of influenza mentions in Web and social media. *Int J Environ Res Public Health* 2010 Feb;7(2):596-615 [FREE Full text] [doi: [10.3390/ijerph7020596](https://doi.org/10.3390/ijerph7020596)] [Medline: [20616993](https://pubmed.ncbi.nlm.nih.gov/20616993/)]
58. Ding H, Zhang J. Social media and participatory risk communication during the H1N1 flu epidemic: A comparative study. *China Media Res* 2010;6:80-90.
59. Ekberg J, Ericson L, Timpka T, Eriksson H, Nordfeldt S, Hanberger L, et al. Web 2.0 Systems Supporting Childhood Chronic Disease Management: Design Guidelines Based on Information Behaviour and Social Learning Theories. *J Med Syst* 2008 Oct 2008;34(2):107-117. [doi: [10.1007/s10916-008-9222-0](https://doi.org/10.1007/s10916-008-9222-0)]
60. Greene JA, Choudhry NK, Kilabuk E, Shrank WH. Online social networking by patients with diabetes: a qualitative evaluation of communication with Facebook. *J Gen Intern Med* 2011 Mar;26(3):287-292 [FREE Full text] [doi: [10.1007/s11606-010-1526-3](https://doi.org/10.1007/s11606-010-1526-3)] [Medline: [20945113](https://pubmed.ncbi.nlm.nih.gov/20945113/)]
61. Hu Y, Sundar S. Effects of online health sources on credibility and behavioral Intentions. *Commun Res* 2010;37:105-132. [doi: [10.1177/0093650209351512](https://doi.org/10.1177/0093650209351512)]
62. Hwang KO, Ottenbacher AJ, Green AP, Cannon-Diehl MR, Richardson O, Bernstam EV, et al. Social support in an Internet weight loss community. *Int J Med Inform* 2010 Jan;79(1):5-13 [FREE Full text] [doi: [10.1016/j.ijmedinf.2009.10.003](https://doi.org/10.1016/j.ijmedinf.2009.10.003)] [Medline: [19945338](https://pubmed.ncbi.nlm.nih.gov/19945338/)]
63. Kim K, Kwon N. Profile of e-patients: analysis of their cancer information-seeking from a national survey. *J Health Commun* 2010 Oct;15(7):712-733. [doi: [10.1080/10810730.2010.514031](https://doi.org/10.1080/10810730.2010.514031)] [Medline: [21104502](https://pubmed.ncbi.nlm.nih.gov/21104502/)]
64. Kontos EZ, Emmons KM, Puleo E, Viswanath K. Communication inequalities and public health implications of adult social networking site use in the United States. *J Health Commun* 2010 Dec;15 Suppl 3:216-235 [FREE Full text] [doi: [10.1080/10810730.2010.522689](https://doi.org/10.1080/10810730.2010.522689)] [Medline: [21154095](https://pubmed.ncbi.nlm.nih.gov/21154095/)]
65. Lagu T, Hannon NS, Rothberg MB, Lindenauer PK. Patients' evaluations of health care providers in the era of social networking: an analysis of physician-rating websites. *J Gen Intern Med* 2010 Sep;25(9):942-946 [FREE Full text] [doi: [10.1007/s11606-010-1383-0](https://doi.org/10.1007/s11606-010-1383-0)] [Medline: [20464523](https://pubmed.ncbi.nlm.nih.gov/20464523/)]
66. Lariscy RW, Reber BH, Paek H. Examination of Media Channels and Types as Health Information Sources for Adolescents: Comparisons for Black/White, Male/Female, Urban/Rural. *Journal of Broadcasting & Electronic Media* 2010 Mar 2010;54(1):102-120. [doi: [10.1080/08838150903550444](https://doi.org/10.1080/08838150903550444)]
67. Lo AS, Esser MJ, Gordon KE. YouTube: a gauge of public perception and awareness surrounding epilepsy. *Epilepsy Behav* 2010 Apr;17(4):541-545. [doi: [10.1016/j.yebeh.2010.02.004](https://doi.org/10.1016/j.yebeh.2010.02.004)] [Medline: [20236867](https://pubmed.ncbi.nlm.nih.gov/20236867/)]
68. Nordfeldt S, Hanberger L, Berterö C. Patient and parent views on a Web 2.0 Diabetes Portal--the management tool, the generator, and the gatekeeper: qualitative study. *J Med Internet Res* 2010;12(2):e17 [FREE Full text] [doi: [10.2196/jmir.1267](https://doi.org/10.2196/jmir.1267)] [Medline: [20511179](https://pubmed.ncbi.nlm.nih.gov/20511179/)]
69. Orizio G, Schulz P, Gasparotti C, Caimi L, Gelatti U. The world of e-patients: A content analysis of online social networks focusing on diseases. *Telemed J E Health* 2010 Dec;16(10):1060-1066. [doi: [10.1089/tmj.2010.0085](https://doi.org/10.1089/tmj.2010.0085)] [Medline: [21070131](https://pubmed.ncbi.nlm.nih.gov/21070131/)]
70. Rice E, Monro W, Barman-Adhikari A, Young SD. Internet use, social networking, and HIV/AIDS risk for homeless adolescents. *J Adolesc Health* 2010 Dec;47(6):610-613 [FREE Full text] [doi: [10.1016/j.jadohealth.2010.04.016](https://doi.org/10.1016/j.jadohealth.2010.04.016)] [Medline: [21094441](https://pubmed.ncbi.nlm.nih.gov/21094441/)]
71. Sanford AA. "I Can Air My Feelings Instead of Eating Them": Blogging as Social Support for the Morbidly Obese. *Communication Studies* 2010 Nov 2010;61(5):567-584. [doi: [10.1080/10510974.2010.514676](https://doi.org/10.1080/10510974.2010.514676)]
72. Scanfeld D, Scanfeld V, Larson EL. Dissemination of health information through social networks: twitter and antibiotics. *Am J Infect Control* 2010 Apr;38(3):182-188 [FREE Full text] [doi: [10.1016/j.ajic.2009.11.004](https://doi.org/10.1016/j.ajic.2009.11.004)] [Medline: [20347636](https://pubmed.ncbi.nlm.nih.gov/20347636/)]
73. Selby P, van Mierlo T, Voci SC, Parent D, Cunningham JA. Online social and professional support for smokers trying to quit: an exploration of first time posts from 2562 members. *J Med Internet Res* 2010 Aug;12(3):e34 [FREE Full text] [doi: [10.2196/jmir.1340](https://doi.org/10.2196/jmir.1340)] [Medline: [20719739](https://pubmed.ncbi.nlm.nih.gov/20719739/)]
74. Tian Y. Organ donation on Web 2.0: content and audience analysis of organ donation videos on YouTube. *Health Commun* 2010 Apr;25(3):238-246. [doi: [10.1080/10410231003698911](https://doi.org/10.1080/10410231003698911)] [Medline: [20461609](https://pubmed.ncbi.nlm.nih.gov/20461609/)]
75. Wicks P, Massagli M, Frost J, Brownstein C, Okun S, Vaughan T, et al. Sharing health data for better outcomes on PatientsLikeMe. *J Med Internet Res* 2010 Jun;12(2):e19 [FREE Full text] [doi: [10.2196/jmir.1549](https://doi.org/10.2196/jmir.1549)] [Medline: [20542858](https://pubmed.ncbi.nlm.nih.gov/20542858/)]
76. Dumaij AC, Tijssen EC. On-line health companion contact among chronically ill in the Netherlands. *Health Technol (Berl)* 2011 Aug;1(1):5-23 [FREE Full text] [doi: [10.1007/s12553-011-0003-2](https://doi.org/10.1007/s12553-011-0003-2)] [Medline: [21909478](https://pubmed.ncbi.nlm.nih.gov/21909478/)]
77. Baptist AP, Thompson M, Grossman KS, Mohammed L, Sy A, Sanders GM. Social media, text messaging, and email-preferences of asthma patients between 12 and 40 years old. *J Asthma* 2011 Oct;48(8):824-830. [doi: [10.3109/02770903.2011.608460](https://doi.org/10.3109/02770903.2011.608460)] [Medline: [21864099](https://pubmed.ncbi.nlm.nih.gov/21864099/)]
78. Bender JL, Jimenez-Marroquin MC, Jadad AR. Seeking support on facebook: a content analysis of breast cancer groups. *J Med Internet Res* 2011 Feb;13(1):e16 [FREE Full text] [doi: [10.2196/jmir.1560](https://doi.org/10.2196/jmir.1560)] [Medline: [21371990](https://pubmed.ncbi.nlm.nih.gov/21371990/)]

79. Bosslet GT, Torke AM, Hickman SE, Terry CL, Helft PR. The patient-doctor relationship and online social networks: results of a national survey. *J Gen Intern Med* 2011 Oct;26(10):1168-1174 [[FREE Full text](#)] [doi: [10.1007/s11606-011-1761-2](https://doi.org/10.1007/s11606-011-1761-2)] [Medline: [21706268](#)]
80. Chou WY, Hunt Y, Folkers A, Augustson E. Cancer survivorship in the age of YouTube and social media: a narrative analysis. *J Med Internet Res* 2011 Jan;13(1):e7 [[FREE Full text](#)] [doi: [10.2196/jmir.1569](https://doi.org/10.2196/jmir.1569)] [Medline: [21247864](#)]
81. Doing-Harris KM, Zeng Treitler Q. Computer-assisted update of a consumer health vocabulary through mining of social network data. *J Med Internet Res* 2011;13(2):e37. [doi: [10.2196/jmir.1636](https://doi.org/10.2196/jmir.1636)]
82. Dowdell EB, Burgess AW, Flores JR. Original research: online social networking patterns among adolescents, young adults, and sexual offenders. *Am J Nurs* 2011 Jul;111(7):28-36; quiz 37. [doi: [10.1097/01.NAJ.0000399310.83160.73](https://doi.org/10.1097/01.NAJ.0000399310.83160.73)] [Medline: [21673563](#)]
83. Egan KG, Moreno MA. Prevalence of stress references on college freshmen Facebook profiles. *Comput Inform Nurs* 2011 Oct;29(10):586-592 [[FREE Full text](#)] [doi: [10.1097/NCN.0b013e3182160663](https://doi.org/10.1097/NCN.0b013e3182160663)] [Medline: [21436681](#)]
84. Egan KG, Moreno MA. Alcohol references on undergraduate males' Facebook profiles. *Am J Mens Health* 2011 Sep;5(5):413-420 [[FREE Full text](#)] [doi: [10.1177/1557988310394341](https://doi.org/10.1177/1557988310394341)] [Medline: [21406490](#)]
85. Friedman DB, Koskan A, Rose ID. Prostate cancer guidelines on Web 2.0-based sites: the screening dilemma continues online. *J Cancer Educ* 2011 Mar;26(1):188-193. [doi: [10.1007/s13187-010-0180-0](https://doi.org/10.1007/s13187-010-0180-0)] [Medline: [21153573](#)]
86. Frimmings RE, Polsgrove MJ, Bower GG. Evaluation of a health and fitness social media experience. *Am J Health Educ* 2011;42(4):222-227.
87. Frost J, Okun S, Vaughan T, Heywood J, Wicks P. Patient-reported outcomes as a source of evidence in off-label prescribing: analysis of data from PatientsLikeMe. *J Med Internet Res* 2011;13(1):e6 [[FREE Full text](#)] [doi: [10.2196/jmir.1643](https://doi.org/10.2196/jmir.1643)] [Medline: [21252034](#)]
88. Gajaria A, Yeung E, Goodale T, Charach A. Beliefs about attention-deficit/hyperactivity disorder and response to stereotypes: youth postings in Facebook groups. *J Adolesc Health* 2011 Jul;49(1):15-20. [doi: [10.1016/j.jadohealth.2010.09.004](https://doi.org/10.1016/j.jadohealth.2010.09.004)] [Medline: [21700151](#)]
89. Garcia-Romero MT, Prado F, Dominguez-Cherit J, Hojyo-Tomomka MT, Arenas R. Teledermatology via a social networking web site: a pilot study between a general hospital and a rural clinic. *Telemed J E Health* 2011 Oct;17(8):652-655. [doi: [10.1089/tmj.2011.0038](https://doi.org/10.1089/tmj.2011.0038)] [Medline: [21790270](#)]
90. Hanson C, West J, Neiger B, Thackeray R, Barnes M, McIntyre E. Use and acceptance of social media among health educators. *Am J Health Educ* 2011;42(4):197-204.
91. Heavilin N, Gerbert B, Page JE, Gibbs JL. Public health surveillance of dental pain via Twitter. *J Dent Res* 2011 Sep;90(9):1047-1051 [[FREE Full text](#)] [doi: [10.1177/0022034511415273](https://doi.org/10.1177/0022034511415273)] [Medline: [21768306](#)]
92. Jent JF, Eaton CK, Merrick MT, Englebert NE, Dandes SK, Chapman AV, et al. The decision to access patient information from a social media site: what would you do? *J Adolesc Health* 2011 Oct;49(4):414-420 [[FREE Full text](#)] [doi: [10.1016/j.jadohealth.2011.02.004](https://doi.org/10.1016/j.jadohealth.2011.02.004)] [Medline: [21939873](#)]
93. Kadry B, Chu LF, Kadry B, Gammass D, Macario A. Analysis of 4999 online physician ratings indicates that most patients give physicians a favorable rating. *J Med Internet Res* 2011 Nov;13(4):e95 [[FREE Full text](#)] [doi: [10.2196/jmir.1960](https://doi.org/10.2196/jmir.1960)] [Medline: [22088924](#)]
94. Kishimoto K, Fukushima N. Use of anonymous Web communities and websites by medical consumers in Japan to research drug information. *Yakugaku Zasshi* 2011;131(5):685-695 [[FREE Full text](#)] [Medline: [21532265](#)]
95. Kukreja P, Sheehan AH, Riggins J. Use of social media by pharmacy preceptors. *Am J Pharm Educ* 2011;75(9):1104. Accession number 2217 2011;75(9):1104.
96. Lariscy R, Reber B, Paek H. Exploration of health concerns and the role of social media information among rural and urban adolescents: A preliminary study. *Int Electr J Hea Educ* 2011;14:16-36.
97. Lau AS. Hospital-based nurses' perceptions of the adoption of Web 2.0 tools for knowledge sharing, learning, social interaction and the production of collective intelligence. *J Med Internet Res* 2011 Nov;13(4):e92 [[FREE Full text](#)] [doi: [10.2196/jmir.1398](https://doi.org/10.2196/jmir.1398)] [Medline: [22079851](#)]
98. Liang B, Scammon DL. E-Word-of-Mouth on health social networking sites: An opportunity for tailored health communication. *J Consumer Behav* 2011 Dec;10(6):322-331. [doi: [10.1002/cb.378](https://doi.org/10.1002/cb.378)]
99. Lord S, Brevard J, Budman S. Connecting to young adults: an online social network survey of beliefs and attitudes associated with prescription opioid misuse among college students. *Subst Use Misuse* 2011 Jan;46(1):66-76. [doi: [10.3109/10826084.2011.521371](https://doi.org/10.3109/10826084.2011.521371)] [Medline: [21190407](#)]
100. Morturu ST, Liu H. Quantifying the trustworthiness of social media content. *Distrib Parallel Dat* 2011;29:239-260.
101. O'Dea B, Campbell A. Healthy connections: online social networks and their potential for peer support. *Stud Health Technol Inform* 2011;168:133-140. [Medline: [21893921](#)]
102. Omurtag K, Jimenez PT, Ratts V, Odem R, Cooper AR. The ART of social networking: how SART member clinics are connecting with patients online. *Fertil Steril* 2012 Jan;97(1):88-94. [doi: [10.1016/j.fertnstert.2011.10.001](https://doi.org/10.1016/j.fertnstert.2011.10.001)] [Medline: [22088209](#)]

103. Rajagopalan MS, Khanna VK, Leiter Y, Stott M, Showalter TN, Dicker AP, et al. Patient-oriented cancer information on the internet: a comparison of wikipedia and a professionally maintained database. *J Oncol Pract* 2011 Sep;7(5):319-323 [FREE Full text] [doi: [10.1200/JOP.2010.000209](https://doi.org/10.1200/JOP.2010.000209)] [Medline: [2221130](https://pubmed.ncbi.nlm.nih.gov/2221130/)]
104. Ralph LJ, Berglas NF, Schwartz SL, Brindis CD. Finding teens in their space: Using social networking sites to connect youth to sexual health services. *Sex Res Soc Pol* 2011;8:38-49.
105. Sajadi KP, Goldman HB. Social networks lack useful content for incontinence. *Urology* 2011 Oct;78(4):764-767. [doi: [10.1016/j.urology.2011.04.074](https://doi.org/10.1016/j.urology.2011.04.074)] [Medline: [21862115](https://pubmed.ncbi.nlm.nih.gov/21862115/)]
106. Salathé M, Khandelwal S. Assessing vaccination sentiments with online social media: implications for infectious disease dynamics and control. *PLoS Comput Biol* 2011 Oct;7(10):e1002199 [FREE Full text] [doi: [10.1371/journal.pcbi.1002199](https://doi.org/10.1371/journal.pcbi.1002199)] [Medline: [22022249](https://pubmed.ncbi.nlm.nih.gov/22022249/)]
107. Selkie EM, Benson M, Moreno M. Adolescents' Views Regarding Uses of Social Networking Websites and Text Messaging for Adolescent Sexual Health Education. *Am J Health Educ* 2011 Dec;42(4):205-212 [FREE Full text] [Medline: [22229150](https://pubmed.ncbi.nlm.nih.gov/22229150/)]
108. Setoyama Y, Yamazaki Y, Namayama K. Benefits of peer support in online Japanese breast cancer communities: differences between lurkers and posters. *J Med Internet Res* 2011;13(4):e122. [doi: [10.2196/jmir.1696](https://doi.org/10.2196/jmir.1696)]
109. Shah SG, Robinson I. Patients' perspectives on self-testing of oral anticoagulation therapy: content analysis of patients' internet blogs. *BMC Health Serv Res* 2011;11:25 [FREE Full text] [doi: [10.1186/1472-6963-11-25](https://doi.org/10.1186/1472-6963-11-25)] [Medline: [21291542](https://pubmed.ncbi.nlm.nih.gov/21291542/)]
110. Shrank WH, Choudhry NK, Swanton K, Jain S, Greene JA, Harlam B, et al. Variations in structure and content of online social networks for patients with diabetes. *Arch Intern Med* 2011 Sep 26;171(17):1589-1591. [doi: [10.1001/archinternmed.2011.407](https://doi.org/10.1001/archinternmed.2011.407)] [Medline: [21949173](https://pubmed.ncbi.nlm.nih.gov/21949173/)]
111. Signorini A, Segre AM, Polgreen PM. The use of Twitter to track levels of disease activity and public concern in the U.S. during the influenza A H1N1 pandemic. *PLoS One* 2011 May;6(5):e19467 [FREE Full text] [doi: [10.1371/journal.pone.0019467](https://doi.org/10.1371/journal.pone.0019467)] [Medline: [21573238](https://pubmed.ncbi.nlm.nih.gov/21573238/)]
112. Turner-McGrievy G, Tate D. Tweets, Apps, and Pods: Results of the 6-month Mobile Pounds Off Digitally (Mobile POD) randomized weight-loss intervention among adults. *J Med Internet Res* 2011 Dec;13(4):e120 [FREE Full text] [doi: [10.2196/jmir.1841](https://doi.org/10.2196/jmir.1841)] [Medline: [22186428](https://pubmed.ncbi.nlm.nih.gov/22186428/)]
113. Usher W. Types of social media (Web 2.0) used by Australian allied health professionals to deliver early twenty-first-century practice promotion and health care. *Soc Work Health Care* 2011 Apr;50(4):305-329. [doi: [10.1080/00981389.2010.534317](https://doi.org/10.1080/00981389.2010.534317)] [Medline: [21512953](https://pubmed.ncbi.nlm.nih.gov/21512953/)]
114. Van Uden-Kraan CF, Drossaert CH, Taal E, Smit WM, Bernelot Moens HJ, Van de Laar MA. Determinants of engagement in face-to-face and online patient support groups. *J Med Internet Res* 2011 Dec;13(4):e106 [FREE Full text] [doi: [10.2196/jmir.1718](https://doi.org/10.2196/jmir.1718)] [Medline: [22155649](https://pubmed.ncbi.nlm.nih.gov/22155649/)]
115. Veinot TC, Campbell TR, Kruger D, Grodzinski A, Franzen S. Drama and danger: The opportunities and challenges of promoting youth sexual health through online social networks. In: Proceedings of the AMIA Annual Symposium. Improving Health: Informatics and IT Changing the World. 2011 Presented at: AMIA Annual Symposium. Improving Health: Informatics and IT Changing the World; Oct. 22-26, 2011; Washington, DC.
116. Weitzman ER, Adida B, Kelemen S, Mandl KD. Sharing data for public health research by members of an international online diabetes social network. *PLoS One* 2011 Apr;6(4):e19256 [FREE Full text] [doi: [10.1371/journal.pone.0019256](https://doi.org/10.1371/journal.pone.0019256)] [Medline: [21556358](https://pubmed.ncbi.nlm.nih.gov/21556358/)]
117. Young SD, Rice E. Online social networking technologies, HIV knowledge, and sexual risk and testing behaviors among homeless youth. *AIDS Behav* 2011 Feb;15(2):253-260 [FREE Full text] [doi: [10.1007/s10461-010-9810-0](https://doi.org/10.1007/s10461-010-9810-0)] [Medline: [20848305](https://pubmed.ncbi.nlm.nih.gov/20848305/)]
118. Fernandez-Luque L, Karlsen R, Melton GB. HealthTrust: a social network approach for retrieving online health videos. *J Med Internet Res* 2012 Jan;14(1):e22 [FREE Full text] [doi: [10.2196/jmir.1985](https://doi.org/10.2196/jmir.1985)] [Medline: [22356723](https://pubmed.ncbi.nlm.nih.gov/22356723/)]
119. Marcus MA, Westra HA, Eastwood JD, Barnes KL, Mobilizing Minds Research Group. What are young adults saying about mental health? An analysis of Internet blogs. *J Med Internet Res* 2012 Jan;14(1):e17 [FREE Full text] [doi: [10.2196/jmir.1868](https://doi.org/10.2196/jmir.1868)] [Medline: [22569642](https://pubmed.ncbi.nlm.nih.gov/22569642/)]
120. O'Grady L, Wathen CN, Charnaw-Burger J, Betel L, Shachak A, Luke R, et al. The use of tags and tag clouds to discern credible content in online health message forums. *Int J Med Inform* 2012 Jan;81(1):36-44. [doi: [10.1016/j.ijmedinf.2011.10.001](https://doi.org/10.1016/j.ijmedinf.2011.10.001)] [Medline: [22030035](https://pubmed.ncbi.nlm.nih.gov/22030035/)]
121. Rhebergen MD, Lenderink AF, van Dijk FJ, Hulshof CT. Comparing the use of an online expert health network against common information sources to answer health questions. *J Med Internet Res* 2012 Feb;14(1):e9 [FREE Full text] [doi: [10.2196/jmir.1886](https://doi.org/10.2196/jmir.1886)] [Medline: [22356848](https://pubmed.ncbi.nlm.nih.gov/22356848/)]
122. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics* 1977 Mar;33(1):159-174. [Medline: [843571](https://pubmed.ncbi.nlm.nih.gov/843571/)]
123. Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology & Community Health* 1998 Jun 1998;52(6):377-384. [doi: [10.1136/jech.52.6.377](https://doi.org/10.1136/jech.52.6.377)]
124. Lim SM, Shin ES, Lee SH, Seo KH, Jung YM, Jang JE. Tools for assessing quality and risk of bias by levels of evidence. *J Korean Med Assoc* 2011;54(4):419. [doi: [10.5124/jkma.2011.54.4.419](https://doi.org/10.5124/jkma.2011.54.4.419)]

125. National Health and Medical Research Council. How to review the evidence: systematic identification and review of the scientific literature. 2000. URL: <http://www.nhmrc.gov.au/files/nhmrc/publications/attachments/cp65.pdf?q=publications/synopses/files/cp65> [accessed 2013-04-04] [WebCite Cache ID 6FdFEKvuW]
126. David I, Poissant L, Rochette A. Clinicians' expectations of web 2.0 as a mechanism for knowledge transfer of stroke best practices. *J Med Internet Res* 2012 Sep;14(5):e121 [FREE Full text] [doi: [10.2196/jmir.2016](https://doi.org/10.2196/jmir.2016)] [Medline: [23195753](https://pubmed.ncbi.nlm.nih.gov/23195753/)]
127. Stewart SA, Abidi SS. Applying social network analysis to understand the knowledge sharing behaviour of practitioners in a clinical online discussion forum. *J Med Internet Res* 2012 Dec;14(6):e170 [FREE Full text] [doi: [10.2196/jmir.1982](https://doi.org/10.2196/jmir.1982)] [Medline: [23211783](https://pubmed.ncbi.nlm.nih.gov/23211783/)]
128. Gilbert E, Karahalios K. Predicting tie strength with social media. In: Proceedings of the SIGHI Conference on Human Factors in Computing Systems. 2009 Presented at: SIGHI Conference on Human Factors in Computing Systems; April 4-9, 2009; Boston, MA p. 211-220.

Abbreviations

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

RCT: randomized controlled trial

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