International Journal of Medical Informatics 115 (2018) 92–105

Contents lists available at ScienceDirect

International Journal of Medical Informatics

journal homepage: www.elsevier.com/locate/ijmedinf

# The emerging use of social media for health-related purposes in low and middle-income countries: A scoping review

Emily Hagg, V. Susan Dahinten*, Leanne M. Currie

*School of Nursing, University of British Columbia, T201-2211 Westbrook Mall, Vancouver, BC, V6T 2B5, Canada*

ARTICLE INFO

*Keywords:*
Social media
Social networking sites
Health
Developing countries
Low-income countries
Middle-income countries

ABSTRACT

*Background:* Social media allows for instant access to, and dissemination of, information around the globe. Access to social media in low- and middle-income countries has increased exponentially in recent years due to technological advances. Despite this growth, the use of social media in low- and middle-income countries is less well-researched than in high-income countries.

*Objective:* To identify, explore and summarize the current state of the literature on the use of social media for health in low- and middle-income countries.

*Methods:* A scoping review was conducted on literature available to December 2017. Six databases were searched, and grey literature was identified through the Google and Google Scholar search engines. Literature was considered for inclusion if it (1) was published in English, (2) was conducted in or in relation to a low or middle-income country, (3) reported on as least one type of social media or social media use generally for health purposes, and (4) reported on at least one aspect of human health. Content analysis was performed to identify themes.

*Results:* Forty articles met the inclusion criteria. Thirty-one were research articles, and nine were review/discussion/descriptive and evaluative reports. Since 2010, when the first article was published, most of the literature has focused on Asian (n = 15) and African (n = 12) countries. Twitter (n = 11) and Facebook (n = 10) were the most frequently discussed individual social media platforms. Four themes were identified: (1) use for health education and influence (sub-themes were health behaviour and health education); (2) use within infectious disease and outbreak situations; (3) use within natural disaster, terrorism, crisis and emergency response situations; and (4) producers and consumers of social media for health (sub-themes were misinformation, organizational challenges, users' expectations, and challenges of unique sub-populations). Most studies addressed more than one theme.

*Conclusion:* Social media has the ability to facilitate disease surveillance, mass communication, health education, knowledge translation, and collaboration amongst health providers in low- and middle-income countries. Misinformation or poorly communicated information can contribute to negative health behaviours and adverse health outcomes amongst consumers, as well as hysteria and chaos. Organizations using social media should provide accurate and readable information. Promotion of credible social media sites by governments, health care professionals and researchers, as well as education on the appropriate use of social media, could help to lessen the effect of misinformation. This is a nascent body of literature and future research should investigate the relative effectiveness of various platforms for different users, other potential uses, and pursue a broader geographical focus.

## 1. Introduction

An increasing number of people worldwide use the Internet in their daily lives in various contexts, including for accessing health information [1]. Early Internet use for health focused on providing traditional patient education for health promotion and disease management [2] while more recently, the importance of online media use (e.g., YouTube) for health education and in times of public health crisis has been highlighted [3]. Recent shifts in trends and availability of technology-based social media services for public health initiatives offer enormous possibilities for health improvement [4].

Social media is a broad concept that encompasses Web-based operations that are used for computer-mediated communication [5]. These websites support functions such as social networking (e.g.,

* Corresponding author.
*E-mail addresses:* Emily.Hagg@alumni.ubc.ca (E. Hagg), Susan.Dahinten@ubc.ca (V.S. Dahinten), Leanne.Currie@ubc.ca (L.M. Currie).

https://doi.org/10.1016/j.ijmedinf.2018.04.010
Received 10 November 2017; Received in revised form 1 March 2018; Accepted 23 April 2018

Facebook, MySpace, Google Plus), professional networking (e.g., LinkedIn), media sharing (e.g., YouTube, Flickr), content production such as blogs and microblogs (e.g., Tumblr, Blogger, Twitter), knowledge/information aggregation (e.g., Wikipedia), and virtual reality and gaming environments (e.g., Second Life) [1]. Facebook, which was established in 2004, is the most popular of these; in 2015, 72% of online adults globally were users [6] and in 2017 it was estimated that Facebook has approximately 1.8 billion active users [7]. These websites are often called social media platforms and are used to create, debate, modify and share material [8]. Social media allows for instant access to and dissemination of information both locally and around the world, and users have the opportunity to play an active part in the reporting and dissemination of online material [9]. The high prevalence of use emphasizes the potential for social media activities to impact people's knowledge, attitudes and behaviours in both high and low resource settings [10].

Historically, Internet access has been strongly linked to gross national income (GNI) per-capita, with social media use and popularity being limited in low- and middle-income countries (LMICs) [11].[1] However, significant technological gains have been emerging in LMICs [2,10], and with the recent growth and improvement in Internet access, social networking has become more popular in Latin America and the Middle East than it is in Europe and the United States [11]. The rapid improvement in Internet access within low-income settings has been enhanced through 'leap frogging,' which refers to the adoption of a more advanced technology while skipping the preceding stage of technology [12]. Leap frogging is made possible through the lower cost and greater efficiency of the new technology [13] as seen in Africa where cellular networks are expanding rapidly, having skipped installation of hard-wired infrastructures, thus facilitating wireless access to the Internet [14]. In 2015, one third of people across developing nations reported owning a smartphone [11], a fast-growing trend expected to accelerate in coming years.

The potential for health benefits of social media has been demonstrated through research conducted in high-income nations such as the United States, where social media is currently being used in almost every healthcare domain [15] and by an estimated 70% of healthcare organizations [16,67]. Social media has given healthcare professionals effective tools for communicating with populations for the purpose of health promotion and patient education, and has been credited with enabling more effective and responsive healthcare services [16,17]. For example, patients in the United Kingdom have reported that using services supported by social media has resulted in improved communication and shared-decision making, more positive interactions, and a shift towards treating the whole patient rather than just the disease [17].

Descriptions of, and investigations into, the use of social media for health in LMICs emerged only recently in the literature but is accelerating. Therefore, the aim of this study was to identify, explore and summarize the current state of the literature on the use of social media in LMICs for health purposes through a scoping review. The general research questions that guided this review were: (1) What is the current state of literature that addresses the use of social media for health purposes in LMICs? (2) For what purposes are social media being used in LMICs? (3) Who is using social media for health purposes in LMICs? and (4) What are the key issues and implications of social media use in LMICs for health purposes? It is anticipated that the findings of this report will be helpful for healthcare professionals, health organizations, and governments working in the context of low- and middle-income settings, and other researchers concerned with this topic.

[1] For the 2017 fiscal year, low income countries are defined as those having a GNI per capita of less than $1005 per year; middle income countries have a GNI per capita ranging between $1006 and $12,235 per year [65,66].

## 2. Methods

A systematic scoping review was selected as the best method for evaluating the literature in this project. Systematic scoping reviews are appropriate when the aim is to map the literature or evidence rather than seeking to answer a specific question by looking for only the best available information [18], particularly when the topic is new or varied, or lacks a prior systematic review. Scoping reviews can incorporate a range of literature including published and grey literature [19,20], whereas other forms of systematic reviews analyze empirical evidence from a more narrow body of literature focused on a specific research question with a particular research design [21].

### 2.1. Information sources

Given the multidisciplinary nature of the topic, a variety of information sources were examined. We searched six electronic databases comprising literature from nursing, medicine, allied health, global health, and social, behavioural, computer and engineering sciences: the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline/PubMed, Web of Science, CAB Direct (CAB Abstracts and Global Health), Compendex Engineering Village, and Compendex Engineering Village 2. Grey literature was identified through searches using the Google and Google Scholar search engines up to page 10. We also hand searched the 'Journal of Health Informatics in Developing Countries' as a specific source directly related to the topic, and screened reference lists of direct hit articles and lists of "similar articles" produced by the PubMed database.

### 2.2. Search strategy

The search strategy and comprehensive list of search terms were developed by the three authors, assisted by the university librarian. The general search terms were: social media, social networking sites, developing countries, middle-income countries, low-income countries, health, global health, and public health. Table 1 identifies the specific search strategies used for each database and search engine, and number of hits. All searches were conducted during the months of January 2016, November 2016, and for a final time in February 2018 for articles up to December 31, 2017.

### 2.3. Inclusion and exclusion criteria

Any literature describing the use of social media in relation to health in any low- or middle-income country, including any type of literature whether or not it involved research, among any population group, regardless of date of publication was considered. Therefore, literature was considered for inclusion if the article (1) was published in English, (2) was conducted in or in relation to a low- or middle-income country, (3) reported on as least one type of social media or social media/social networking use generally for health purposes, and (4) reported on at least one aspect of human health. Social media was defined as a collection of Internet-based applications that allow the creation and exchange of user-produced context [22]. We excluded literature that focused only on the *use* of mobile phones and cellular capabilities (i.e., such as telephoning or texting, and not devices that were used for social media access), and articles that focused only on mHealth, which is defined as medical or public health practice supported by mobile devices [23]. Literature that focused on low-income or low-resourced settings within high-income countries, and literature where social media was used solely as a method for data collection with no discussion of its use were also excluded.

### 2.4. Search results and selection of literature

One author (EH) searched the six selected databases and two search