

Paper:

# Risk Communication During the COVID-19 Pandemic in the Era of Social Media

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[Received August 28, 2022; accepted November 25, 2022]

The widespread application of social media in the field of crisis management has been adopted globally. In recent years, the role of social media in emergencies has grown, especially during the coronavirus disease 2019 (COVID-19) pandemic. This study explores the different roles played by social media in the government, the media, and the public during the pandemic through the key nodes of information dissemination at each developmental stage of crisis risk communication. The results indicate that in a government-led environment, in which social media is the link and the public is the core, attention must be directed towards the key role of social media as a “whistleblower” during the incubation period of a crisis event. Moreover, a new gate-keeping mechanism that integrates the public, the media, and the government should be formed to improve emergency management during crises.

**Keywords:** COVID-19, emergency management, social media, risk communication

## 1. Introduction

Currently, the coronavirus disease 2019 (COVID-19) pandemic remains a global issue. The disease is highly transmissible, contagious, and still widespread. According to Our World in Data statistics, as of May 7, 2022, the number of COVID-19-related deaths globally had exceeded 6.25 million [1]. Currently, COVID-19 continues to pose a serious threat to global security. Nevertheless, social media has enabled instant communication between nations and its citizens during the pandemic. Essentially, social media has erased geographic boundaries for the first time in history, and it has been widely a major risk communication channel during the COVID-19 crisis. Given the uncertainty surrounding public health events such as the COVID-19 pandemic, effective dissemination of relevant information is crucial. In the process of disseminating epidemic information through social media, the dissemination characteristics, internal mechanisms, and division of labor are important aspects of the transmission worthy of study.

## 2. Social Media as the Main Channel for Crisis Risk Communication

Since 2010, social media platforms, represented by Facebook and Twitter, have flourished, and the public has become reliant on them in emergencies. In a survey by the American Red Cross, 74% of the respondents believed that help would come shortly after their Twitter or Facebook posts, and 69% said emergency responders should monitor social media sites to send help immediately [2].

In China, the communication ecology of the media and channels for the public to obtain information has undergone considerable changes. From the perspective of media communication ecology, the main characteristics of social media communication are nationalization, mobility, and socialization. By the end of 2021, the number of mobile phone users in China had reached 1.643 billion, and the population penetration rate had risen to 116.3 units/100 people, which is higher than the global rate of 104.3 units/100 people. In particular, 4G and 5G users reached 1.069 billion and 355 million, respectively, collectively accounting for 86.7% of the total number of mobile phone users [3]. The number of mobile social media users in China reached 924 million in 2020; it is predicted to exceed 1 billion by 2022 [4]. Today, an average individual spends about 139 minutes per day on social media [5].

The era of social media has spurred the evolution of communication channels in public health emergencies. Dissemination of information on social media can be likened to bacterial reproduction—huge amounts of information can be spread instantly, and even compound communication without borders can be realized. In addition, social media encourages users to create content (i.e., user-generated content), and information is often recreated and story-processed during dissemination, constantly mutating as it spreads.

## 3. Characteristics of Social Media for Crisis Communication

In 1967, Goldmark first mentioned the new media in a research report [6], after which major US government reports also began to use this label. At that time, “new me-

dia” generally referred to self-media, with the main difference being the focus on publishers and operators. It emphasizes the reduced dependence on traditional media for information release (i.e., for publicization and with a low threshold), claiming that everyone can be a reporter.

Nowadays, social media is a concrete manifestation of new media; unlike traditional media (print media, such as newspapers and periodicals, radio, and television), which rely on digital technology, network technology, and mobile Internet of things technology, social media relies on computers, mobile phones, tablets, and other electronic devices to deliver information to audiences. Moreover, publishers, technologies, carriers, and audiences of social media are different from those of traditional media. In the past, the main operators of social media were individuals and social organizations, hence the term “self-media”; at present, many official media or news communication organizations have also joined social media, thereby reflecting how government officials have actively embraced the Internet.

The characteristics of social media, such as the rapid dissemination of information, elimination of geographical boundaries, and freedom from the influence of time and space, have gradually led to the following consensus.

First, the world increasingly recognizes the importance of social media in emergency management, and it has become an indispensable component of contemporary emergency management. Second, the use of social media in emergency management affords unprecedented opportunities. Third, traditional emergency management is used to disseminate information in a single direction. In the era of social media, emergency managers can obtain huge amounts of information from the public. An effective two-way information exchange channel promotes the sharing of emergency information between these two parties. Fourth, if social media is used scientifically and prudently, it can be used as a powerful tool for emergency management innovation. However, if used improperly, it may have many negative consequences.

There are several representative perspectives in academic research on the role of social media in crisis communications. The first perspective is the “advantage theory.” Scholars such as Imran et al. [7] have reported that social media spreads crisis information faster and helps achieve more transparency, thus leading to more effective emergency management. The second perspective is the “tool theory.” Newman [8] explained that traditional media is easily disturbed by emergencies, and social media has become a reliable tool for information communication. The third perspective is the “social participation theory.” The public is the real “first responder” in crises, and social media provides unprecedented opportunities for their participation [9]. The fourth perspective is the “whole-process theory.” Scholars such as Luna and Pennock [10] have demonstrated that social media can be embedded in all stages of emergency management preparation, response, mitigation, and recovery. The fifth perspective concerns “situational awareness.” Sigala [11] pointed out that social media provides dynamic situational

awareness for emergency management, which consequentially provides important support for emergency response and auxiliary decision-making. The sixth perspective is the “limitation theory.” Sagiroglu and Sinanc [12] argued that it is difficult to collect and analyze social media big data in real time and that further research is required at the technical level.

## 4. Functions of Social Media in Crisis Communication

In the era of big data, social media has a powerful capacity for differentiation: Netizens are classified by the media and “kept in captivity” with information that matches their preferences. Therefore, the more information they receive, the thicker the information cocoon and the more close-minded they become. In this case, the audience may become fanatical and prone to incitement. The new media environment is more complex than the traditional media environment. In the former, there are many platforms and fierce competition; it has various forms of information presentation that emphasize interactivity, and the user base and coverage are still expanding. These characteristics increase the complexity of information dissemination during public health emergencies. In the context of the COVID-19 pandemic, social media is involved in all four stages of the crisis life cycle: the symptom, outbreak, diffusion, and recovery periods. Hence, social media undertakes complex divisions of roles and functions.

### 4.1. Symptom Period: Social Media as a Public Whistleblower

On the evening of December 30, 2019, the reminder message of “the coronavirus” spread in several WeChat groups, including the Wuhan University Clinical 04 and Cancer Center WeChat groups. Some doctors familiar with clinical cases spread it through WeChat groups, and although the initial information was slightly inaccurate, it brought the matter into the public eye. That night, WeChat groups, Douban, and Weibo began discussions. At 10 a.m. on December 31, 2019, “pneumonia of unknown cause appeared in Wuhan” rushed onto the Weibo hot search, ranking second in the list. Subsequently, mainstream media, such as Yicaijing, Beijing News, CCTV News, and People’s Daily, paid attention to it and followed up with reports. In the afternoon, the Wuhan Municipal Health Commission issued a circular on the pneumonia epidemic. In this manner, the WeChat group began with interpersonal group communication, and after community discussion and Weibo topic dissemination, it triggered the mass communication of mainstream media, and finally an official notification was made, and social media played the role of epidemic perception, monitoring, and early warning (Fig. 1). It was the original whistleblower of the new coronavirus.

The “whistleblowing” model of social media is an important source for public health epidemic surveillance and

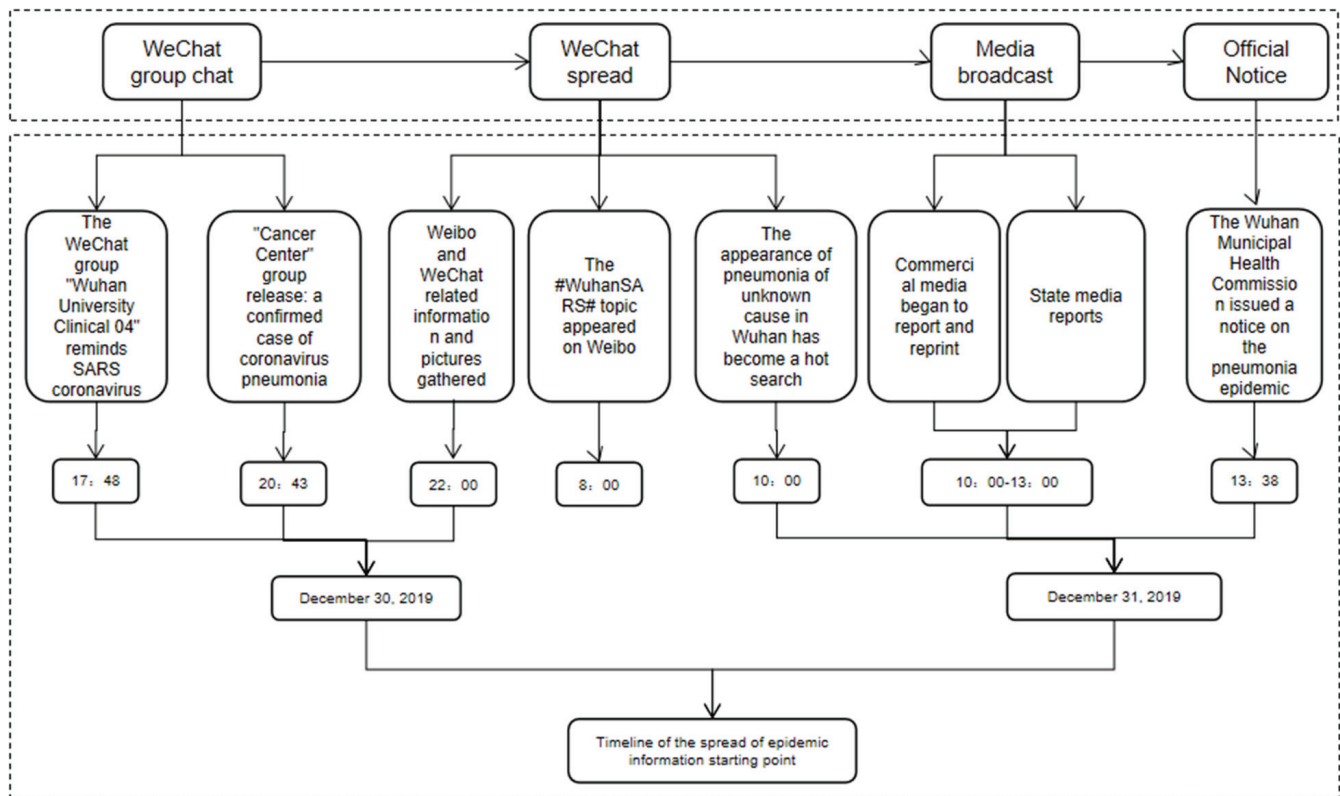


Fig. 1. Timeline of the spread of the pandemic.

early warning. In the field of international public health, the traditional mainstream approach to national governance is the use of an actuarial device, that is, precise management based on accurate information about events. In the case of successive global public health crises (e.g., the Ebola virus, West Nile virus, and bird flu) in recent years, a sentinel device that emphasizes vigilance and unpredictability is regarded as the norm, offering a reminder of the occurrence of major events without providing professional operation guidelines [13].

Under this trend, social media, as the public whistleblower, plays a central role in "whistleblowing" through early warnings, risk amplification, formation of information waterfall, and detonation of public opinion. We must pay attention to the public whistleblower function of social media; that is, we need to quickly blow the "whistle" in the early stages of unpredictable disease outbreaks and treat the early warnings of sudden public crises in a tolerant way. Wenliang Li and eight other "whistleblowers" presented a good case [14].

#### 4.2. Outbreak Period: Social Media as a Communicator

As the main victims of the COVID-19 pandemic, the public is the object of governments' immediate crisis information dissemination, the subject of media reports, and the object of information dissemination. During this period, WeChat and Weibo served as the main social media channels through which the public could send and obtain information. The public obtains the latest data on the

dynamics of the pandemic through social media. Social media has become a body sensor for emergency information, helping governments and emergency responders obtain detailed first-hand information, which is of great significance in improving situational awareness and emergency rescue. Social media has also broken the traditional top-down, one-way information dissemination model of emergency management by enabling two-way interaction between superior and subordinate departments, departments at the same level, and non-governmental departments and promoting the rapid dissemination and efficient sharing of emergency information. In terms of social public opinion monitoring, through timely capture, rapid classification, and intelligent analysis of social media big data, social public opinion can be effectively monitored to detect and control social risks in a timely manner, thereby preventing secondary and derivative crises.

Simultaneously, governments have been able to disseminate scientific information on epidemic prevention to the public in a timely manner through social media. Specifically, they have been able to combine real-time epidemic information with geographic location data and launch dynamic maps showing the disease outbreak, and even built-in applets to monitor changes in the number of suspected and confirmed cases in real time, including users' health and trip data. Social media has also been used to disseminate virus testing information, processing results, and related data on medical facilities while collecting and aggregating information on people's health. Hence, it can assist hospitals and emergency management

departments to link resources to people in need. Social media also provides no-contact doctor–patient communication platforms through which diagnosis, treatment, and follow-up plans can be shared, thus enabling telemedicine diagnosis. Social media also encourages hesitant people to seek vaccination in a timely manner and aggregates data to refute rumors.

As a communicator between parties, social media has created a new mode of participatory, collaborative, and self-organized emergency communication that has profoundly influenced and innovated existing modes of emergency communication.

#### **4.3. Diffusion Period: Social Media as an Assistant**

During the period of normalized prevention and control of an epidemic, economic development is the most pressing issue for the government and the public. In the context of the COVID-19 pandemic, governments have encouraged the public to seek vaccination and disseminated scientific information on epidemic prevention through social media. Such actions are conducive to promoting the orderly resumption of work, production, and school activities. Through social media, people can learn about dynamic information across the country in real-time and access mental health and safe travel services. Simultaneously, the public pays attention to and responds to “public sentiments and voices” on social media promptly, thereby helping the government engage in more comprehensive and effective epidemic prevention work and avoid the emergence of an online public opinion crisis. Take, for example, the case of Tonghua City, Jilin Province, on January 24, 2021, where there were 196 confirmed cases and 50 asymptomatic cases. The government ordered the closure of all districts in the city for disease management. Subsequently, netizens appealed through social media platforms. The case thus became a trending topic, garnering public opinion and eventually promoting the improvement of the government’s epidemic prevention and control measures, including those for addressing the insufficient supply of basic commodities [15]. To a considerable degree, social media assists the government by providing insights into social conditions and public opinion. Social media provide a good outlet for people to express their emotions. With the effective use of social media, the government can identify and understand people’s demands.

#### **4.4. Recovery Period: Social Media as a Facilitator**

Since the COVID-19 outbreak, social media has played an active role in emergency response, social recovery, and prevention. It has also become an important tool for the prevention and control of epidemics. At present, the Chinese government has used the Internet and social media to form a platform-based governance model for the COVID-19 pandemic based on opening up resources, such as infrastructure and government data, sharing the right to speak, and broadening production and operation, supervision and evaluation, and decision-making

functions. Through social media platforms’ interaction mechanisms, network effects, and value creation models, external supply and demand entities and relevant governance entities are linked together, helping realize multiple collaborative governance and service collaboration innovations by promoting benign interactions, mutual empowerment, and win-win cooperation [16]. Consider the public welfare platform of Wuhan Red Cross Society as an example. Following the COVID-19 outbreak, the platform’s inefficiency in distributing donated materials across the country has been questioned by the public. The platform was subsequently opened up through social media, thereby attracting professional market and social forces. The private pharmaceutical distribution company Jiuzhoutong has entered into cooperation with Wuhan Urban Investment, the Market Supervision Administration, the Municipal Statistics Bureau, and the Post Office to realize the efficient distribution of donated materials.

Social media profoundly affects and changes emergency management. It not only helps to promote emergency management to wider social groups, but also enables information exchange and emergency communication with unspecified social groups. This promotes emergency management practices and innovation.

### **5. Roles of Social Media in Crisis Communication**

The impact of social media on public health emergencies has actually been greater than expected. It has become a modern way of life, and social media users often have a dual identity as information publishers and receivers.

#### **5.1. Social Media as a Catalyst for Online Rumors**

Social media is an important communication tool during crisis events. The release of information on social platforms, such as Weibo and WeChat, during a crisis is an important source for people to understand the progress of the incident. However, the outbreak of any crisis also coincides with a strong flow of frequent rumors and various explanations of the event, which may cause confusion in the network environment.

#### **5.2. Social Media as a Diffuser**

In recent years, state media and government departments have opened their own social media accounts and used platforms such as portal websites, headend new media, keyword searches, and Internet functions to build transparency or even “feed” event information to the public. This advancement has brought truthful and accurate information to the public. However, these media platforms must take great caution, because their mistakes can spread quickly, thereby causing a crisis of trust in the government. At the same time, it is necessary to respect and attach importance to the rights of other

information-disseminating subjects on new media and follow the methods of investigation, processing, rescue, and verification to contribute to the rapid response of emergency management.

### 5.3. Social Media for Monitoring

The government should exert control over the new media and issue warnings regarding public health events in a timely manner. From crisis prevention to the aftermath, government departments should supervise, effectively guide, fully utilize, and accept the supervision of the new media. Doing so would help form a better environment for new media and optimize emergency management mechanisms for public health emergencies.

From the perspective of media innovation, the new media environment imposes higher requirements for the management of public health emergencies. At the same time, the new media environment not only engages in information release and dissemination, but also offers a venue wherein information mutates as it flows, rumors and supervision coexist, and commercialization tends to be higher. Such a changeable and free environment is a challenge and an opportunity for mechanism optimization in the direction of the epidemic.

## 6. Conclusion

### 6.1. Focus on the Whistleblowing Mode of Social Media and the Monitoring and Warning of Public Health Emergencies

Information dissemination during the pandemic has highlighted the characteristics of this public health emergency. This differs from other forms of crisis information dissemination in terms of content and intensity. Nevertheless, it still involves information on emergencies, natural disasters, and emergency rescue, as well as multiple factors, such as highly infectious threats and uncertain medical research findings, which create a risky and unstable transmission environment. In this communication environment, the traditional stratified “all-knowing and omnipotent” traditional communication system cannot easily play a role, especially in the early warning window period: “What we need to reflect on is that in this epidemic, China actually missed the window of early warning” [17].

### 6.2. Establishment of a New Network Gatekeeping Mechanism for Amateurization as the Main Body of Social Media Communication

Social media endows ordinary people with the ability to disseminate information, realizes mobilization, breaks down the traditional hierarchical structures, and forms mass amateurization [18]. The traditional gatekeeping mechanism involves independent information release and dissemination channels. Because of the amateurism of the main body of social media communication, the authenticity of information is not strictly checked and rumors can be easily spread.

Traditional fact-checking is performed by professional news media and related management agencies. Meanwhile, the current fact-checking in social media networks includes three mechanisms: The first is group checking through mass filtering and collaborative crowdsourcing. It is mainly based on relationship groups, identity, and a “play-the-group” effect. In a positive sense, citizen journalism generated through collaboration has become an important complement to professional media journalism, enabling marginalized voices to be heard and providing alternative narratives that differ from those in the mainstream media. However, it is easy for individuals in small groups to form polarized views or experience intensified emotions. The amateurism and direct target demands of communication subjects are also conducive to the proliferation of fake news. Given the lack of media literacy, communication mobilization may also result in malicious incitement. The second involves sharing content and building fan relationships on social media platforms. Platform data and algorithm recommendations form a digital pump valve that combines hashtags, sharing/commenting, and other technical tools to create a platform effect. Social media platforms control data content and system rules and play an increasingly important role in network gatekeeping. The third is media-based information dissemination and organizational control. These mechanisms form a media effect through authoritative, professional, and in-depth content, and facilitate the setting of an issue framework.

The interaction and integration of these three gatekeeping mechanisms are important when building new network gatekeeping mechanisms.

In summary, social media has become the main channel of information dissemination for risk communication during the COVID-19 pandemic. It has also become a key node in information dissemination at each development stage of crisis risk communication. In terms of communication theory, the theoretical bases of traditional news gatekeeping, news production, and news dissemination are changing, affecting the role of institutional media in news gatekeeping and agenda setting. Governments should not only pay attention to these beneficial contents but also prepare for disinformation because these conditions lower the threshold for the dissemination of information, facilitate the spread of fake news, and maliciously incite information noise and rumors. The terrible thing is not that people have power, but that people abuse the power in their hands. It is thus necessary for people to take the initiative to accept supervision, use new media as a new channel, and listen to the opinions of a wider range of people in order to improve the efficiency of the media and help people make the right decisions. From the perspective of media innovation, a more rapid and acute new media environment imposes higher requirements for the emergency management of public health emergencies. At the same time, the new media environment not only plays the role of information release and dissemination, but also has the characteristics of information mutation during transmission, the coexistence of rumors and regu-

lation, and higher tendency to commercialization, which constitute a challenge and an opportunity for mechanism optimization. These issues are not discussed herein and thus should be further studied and analyzed in future research.

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