Key considerations: online information, mis- and disinformation in the context of COVID-19 (March 2020)

This brief sets out practical considerations relating to flows of information, misinformation and disinformation though online media, particularly social media networks, in the context of the COVID-19 pandemic. It details various types of online media, key players and influencers on social media, and strategies for ensuring good information and disrupting mis- and disinformation. It is important to analyse different types of information across different channels, how it is spread and to whom, in order to determine how social media can be harnessed in both positive and negative ways.

The WHO recommends proactive communication during a public health emergency that, "*encourages the public to adopt protective behaviours, facilitates heightened disease surveillance, reduces confusion and allows for better allocation of resources – all of which are necessary for an effective response*".[1] With its global influence, social media requires particular consideration during times of public health emergencies and was highlighted as a key issue by the Social Science Working Group of WHO's Global Research Roadmap for COVID-19. Timely, accurate communication through all media sources is a critical component of ensuring trust in response activities.

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Summary considerations

- The current media landscape has the potential to facilitate the rapid development and spread of mis- and disinformation. Social media can also be used to quickly and effectively counter mis- and disinformation. Such positive opportunities must be identified and maximised.
- Mis- and disinformation can proliferate when there is a lack, or conversely, an overabundance of information. Their spread can lead to non-compliance with public health measures, perpetuate political conflict and discrimination, and cause negative psychological and social effects.
- Social media are global in scope, yet the behaviour of social media users is locally specific. Rapid assessments are needed to fully understand people's favoured channels, most trusted sources, level of literacy and media literacy, and preferred languages and formats for receiving and sharing messages. Such details are essential in order to best communicate with multiple population groups in an emergency.
- Public bodies should ensure that the information they share through social media is factual and originates from official sources (such as the WHO, CDC, Ministries of Health etc). They should push information and consistent messaging through multiple channels. A lack of up-to-date information can create a vacuum that is filled by speculation. Reporting inaccurate information should be the responsibility of all – from news agencies to individual users.
- People are more inclined to believe and share information when the message is clear and simple, when they trust the source of the message and the channel through which it was conveyed, when the message aligns to their pre-held beliefs, and when the message resonates with them emotionally (e.g., drawing on humour, fear or disgust); text heavy messages do not hold people's attention in the same way as emotional content. People have a greater level of assurance and trust in consistent information which they see featured on multiple sources, whatever those sources may be. The same is also true of mis- and disinformation which can gain traction and credibility as they circulate.
- If mis- and disinformation are not addressed as they arise, they can proliferate. Identifying and directly addressing false information and rapidly debunking 'rumours' can be very effective and create space for reliable and relevant information to circulate. Rumours often reflect underlying anxieties or pre-held social or political positions and beliefs; it is important to address their underlying causes. Communications that are solution-focused, promote a sense of self-efficacy, hope and agency, whilst building on existing resources and strengths can help mitigate fear and foster compliance with public health recommendations.
- In rapidly evolving situations such as health emergencies, it is acceptable for official sources to acknowledge that there are unknowns and to reassure the public that they will convey new information when it emerges. This transparent approach challenges people who circulate information that is not supported by evidence.
- Trust is also generated by when two-way dialogue is enabled. Accessible channels must allow people to ask questions, the answers to which are reflected in the information being shared. In this way, people are provided with pertinent information and see their realities and concerns acknowledged in broader communication.
- Trusted experts and 'social influencers' should be used to help communicate information in an engaging way and are often more trusted than official sources. Official bodies should collaborate with social influencers to amplify key messaging.
- Rather than censoring information which risks it moving to more private platforms such as WhatsApp, it may be more effective to flag information as inaccurate and flood the same channels with factual information.
- Further research is needed to better understand the sources and motivations behind health misinformation and to analyse the effectiveness of measures aimed at stemming its flow and mitigating its harmful effects.

The role of social media in public health emergencies

Social media are interactive forms of electronic communication through which users create online communities to share information, ideas, personal messages, and other content, and through which they can share, co-create, discuss, participate and modify user-generated content or self-curated content posted online. Social media have an increasingly visible and important role in communications during a public health emergency. Modelling suggests that information received through social networks and concerted public health campaigns can help to slow spread of disease and manage containment.[3,4,5] It is important to conceptualise social media within the wider communications ecosystem that includes other online channels as well as traditional media such as television, radio, print media and face-to-face communication. Information flows between and across these channels. The rapid adoption of social media has created new and dynamic opportunities for information, mis- and disinformation to be shared more widely and at greater speed than ever before. Misinformation is incorrect information shared in the misguided belief that it is correct; disinformation is incorrect information shared intentionally. The distinction is nuanced. The same content that can be characterised as disinformation, due to the motives of the original poster, can also be characterised as misinformation when it is subsequently shared by others who believe it to be true.[12] There is a broad spectrum of content related to COVID-19 circulating on social media and other online platforms.[6]

Types of content circulating on social media in relation to COVID-19

Factual information: Official and professional institutions, national governments and online news sites post accurate and up-to-date information related to COVID-19 on their websites and social media pages including information on case numbers, containment activities, vaccine and treatment development and public health advice. These sources of information are widely accessed.[8,9] Individuals also repackage and circulate official factual information in more digestible formats. Using WHO and CDC data, for example, a high school student in the US, created a map that is being maintained by a team of more than 40 volunteers crowdsourcing information on new cases from local news reports and government notification.[10] Factual information is also shared through posts in discussion forums, such as reddit, and personal social media accounts. As well as health information these can include broader personal concerns and accounts about the current situation.

Incomplete or biased information: This type of information may be misleading, although not necessarily inaccurate. It includes out of date, or out of context information which can create confusion, stress and rumours. For example, researchers at the University of Southampton, tweeted an out-of-date map showing global air travel. The map was misinterpreted by some viewers as showing estimated air travel of Wuhan residents in the two weeks prior to travel bans being imposed. The map was picked up by news outlets around the world, with one presenter stating the map showed five million Wuhan residents fleeing the city.[11] A tendency to sensationalise events can also lead to an unbalanced picture of what is occurring. Biased information is often linked to political agendas and may be associated with stigma and xenophobia.

Humorous content: These posts may not convey accurate information but are not intended to be considered truthful. People seek to ease the gravity of a situation by creating memes and videos that may be humorous or satirical. Such content adds to the 'infodemic' associated with COVID-19. Some analysis suggests that although humorous content act as a release and opportunity to bond, it can be contentious, based on underlying power-structures and assumptions that can serve as a trigger point for creating tension and antagonism in an already pressured environment.

Misinformation/disinformation: Mis- and disinformation about COVID-19 continues to circulate widely, often repeated across multiple media platforms before it is countered.[16] For example, there is speculation as to the origins of COVID-19 (e.g., the virus was developed as a bioweapon[13,8], or that it was created to generate profits from vaccines).[14] False information also circulates about prevention and transmission. One message, which has mutated across various platforms and in multiple languages lists incorrect information and advice about transmission and treating the virus and has been attributed to different sources including health professionals and UNICEF.[15] Various initiatives have been developed to debunk inaccuracies circulating online, such as the World Health Organisation's "myth busters" page.[7]

Social media channels used to communicate information about COVID-19

Preferred social media platforms differ by geographic location and demographic, and according to the changing information-seeking behaviours of individuals at different phases of an outbreak. People initially tend to use platforms with which they are familiar to communicate about an outbreak and health discussion forums can become a substitute for discussions people would ideally have with their normal health provider.[17]

Outside China, Facebook continues to have the largest social media market share globally (62% in February 2020). It is the most popular medium globally, whereas the use of other media including YouTube, Twitter, Instagram and WhatsApp vary according to region.[18] On WhatsApp, a free secure messaging app owned by Facebook, groups of up to 256 users exchange information directly in an encrypted format. It ranks as one of the most frequently downloaded apps throughout Europe, Africa and Asia.[19] In parts of Africa, WhatsApp is more popular than Facebook or Twitter for sharing news.[21] All kinds of media circulate on WhatsApp, including audio files, videos, text messages, images and links to external sites. Because it is private, it is difficult to monitor information flows on the platform.[19,22] At the time of writing, the reddit forum thread 'r/coronavirus' had 1.3million members, although it should be noted that just under 50% of all reddit users were from the United States.[20]

In China, where Facebook, YouTube and Twitter are blocked, popular alternatives include the instant messaging app WeChat, Weibo (a micro-blogging site similar to Twitter), Qzone (similar to a combination of Facebook and Tumblr), and the video sharing platforms, TikTok and Douyin. These platforms have seen a significant spike in use since the COVID-19 outbreak, with people finding new ways to communicate and entertain themselves whilst in quarantine. Weibo's usage has increased by 31%, and video-sharing platform Douyin by 102%. The Chinese government have used Weibo to provide data, detailed information, and public health messages about COVID-19. In addition to using it for health advice, young Chinese have also used Weibo for social interactions, to attend "cloud raves" (virtual dance parties) and to post humorous videos of their time in isolation.[23]

Online accounts that were critical of the government response at the beginning of the outbreak have disappeared, and the Chinese government censors all posts containing words from an ever-changing list that constitutes references to the virus. Chinese 'netizens' (a

a person actively involved in online communities) are continually finding creative ways to obviate the censors, by using abbreviations that mutate as the censors catch up with them, and even creating new languages. After an interview with a whistleblower doctor in Wuhan was published and then promptly censored on WeChat, the article reappeared in Morse code, braille, emojis, ancient Chinese characters, the hexadecimal computing code, Quenya (a fictional Elvish language created by J.R.R. Tolkien), and the Star Trek language Klingon.[24,25]

Key players and influencers

Groups of social media users can be differentiated by their motivations for sharing information. Understanding these motives is vital to identifying the best strategies for disseminating official information and for tackling the spread of mis- and disinformation. Three categories of key players in the social media arena have been identified: spreaders of factual information; spreaders of misinformation, who may pass on falsehoods with good or neutral intentions; and creators of disinformation, who create and spread falsehoods for political, economic or social gain. These three groups are also active in traditional media formats, however, the 90-9-1 rule of the Internet states that 90% of social media users just consume information, 9% have some interaction, and 1% interact regularly.[17,30] The challenge is to identify the 10% who may be passing on information in any given online community, and try to understand what motivates them to do so, as well as to identify the 1% that are active users who can potentially be engaged to use what influence they may have for the global public good. Online influencers often have economic resources and wield socio-cultural influence, dedicate substantial time to online communication, and have the ability and knowledge to influence algorithms.[26] Together, these aspects can be positively reinforcing thereby enabling users to build their follower base. Globally, access to the Internet is unequal and the majority of online content is in English, however, the online environment can, in some ways, level the playing field as individuals without economic resources, infrastructure or formal qualifications are able to compete with institutions that are more resource-rich.[27,28,29]

Spreaders of factual information: In addition to official organisations, individual social influencers are spreading factual information about COVID-19 through their personal social media accounts. Platforms such as reddit, and other crowdsourcing platforms such as Wikipedia, host health forums in which there is a tendency for individuals to attempt to counter misinformation with factual information. A recent reddit study indicated that members generally voted for posts with correct information, which were therefore given prominence and became more visible.[17] Experts also participate in such forums and respond with factual information to the questions users directly post.[17] Crowdsourced social media platforms and official platforms have different and relative strengths. Official sources circulate confirmed information, while the source or accuracy of crowdsourced information can be difficult to verify. On the other hand, crowdsourced platforms tend to produce responses more rapidly, as well as allowing freedom of speech, while official sources can be slow to respond and information is controlled by the government or official agency.

Spreaders of misinformation: People in this group unwittingly convey inaccuracies that they believe to be true. Users must be encouraged to check facts before re-posting. Internet users who challenge authority have been characterised as 'activists', who make well-intentioned attempts to produce new knowledge, but do not always get it right and "charismatic amateurs can become an influential source of misinformation."[27] Expert institutions that have been unable to respond to and/or correct misinformation fast enough have been documented as losing out to those who are more successful in using social media to their advantage.[27] The CDAC network distinguishes between three types of rumours: wish rumours, based on people's hopes; fear rumours, based on anxieties; and hostility rumours, based on threats.[12] Of the three, fear rumours tend to be the most prevalent in humanitarian contexts.

Creators and spreaders of disinformation: There are numerous creators of disinformation including politicians, high profile celebrity conspiracy theorists, and those wishing to gain economically and socially. Governments and organisations, including social media platforms, have come under increasing pressure to combat disinformation. For example, New York Attorney General recently ordered Alex Jones, an American radio show host and conspiracy theorist to stop marketing and selling products he falsely claimed would cure COVID-19. He claimed the US Department of Homeland Security was buying up emergency food provisions, whilst advertising food rations on his online store.[32] At times, Jones' website has received 1.4 million daily visits, surpassing mainstream news outlets such as The Economist and Newsweek. [33,34] Similarly, Jim Bakker, an American televangelist, has been sued for sales of purported COVID-19 cures that were promoted on his television show.[35] Research has shown that individuals and groups seek to capitalise on events by sensationalising them in order to grow their audience base and/or to create 'click bait' that translates into financial profit through their social media profiles.[28,36] The pro-Trump conspiracy theory and anti-vax group, QAnon, claimed that COVID-19 is a disease that was 'planned' and 'released' as part of a plot by Bill Gates, a conspiracy theory that gained traction with multiple shares on Twitter, Facebook and YouTube.[14] , During the current outbreak, United States officials have also reported that thousands of social media accounts linked to Russia launched a coordinated campaign, sending almost identical messages in multiple languages suggesting that the CIA manufactured COVID-19 as a biological weapon. The accounts had previously sent pro-Russia messages on other world events, and carried messages similar to Russian news outlets such as RT and Sputnik.[37] It is worth noting that the bioweapon narrative is not new and also circulated during previous outbreaks including Ebola in West Africa[38] and Zika in Latin America[39]. Conspiracy theories have been found to proliferate after unexpected or tragic events because they help people to explain or reduce feelings of lack of control or chaos.[48,49] Being aware of the conspiracy theories that will likely arise can enable partners to prepare messages to counter them when they do. However, other types of disinformation aims to feed anxieties and create confusion so people disengage and stop trusting all media. This type of disinformation and its potential impact is very difficult to counter.

Simplicity and language: Rumours and messages that gain traction are often very simple.[40] Messages that are catchy and use words or images in a clever way compel people to repeat the message. Simple and humorous memes (e.g., photos with comical text), tweets and multimedia messages including video or audio recording have greater potential to go viral. These formats are easily and quickly digestible, including by non-literate audiences or those not accustomed to concentrating on text-based communications for a prolonged period.[28]

Understanding the behaviour and motives of social media users during an outbreak

Three distinct phases of a disease outbreak have been identified during which people require and seek different kinds of information, and do so in different ways.[17, 40] 'Far at risk' is the earliest phase, during which an individual is geographically distant from the outbreak with no real immediate danger of becoming infected. 'Near at risk' occurs when an individual is present in an area where cases have been recorded, but not in specific places the individual usually frequents. 'Real at risk' occurs when cases have been diagnosed within the individual's immediate social circle, and the individual has been in contact with someone who has contracted the disease.[17] During the far at risk stage, people focus on *collecting* or consuming information, and tend to initially become aware of the outbreak through

news channels they usually use. As interest grows, people begin to search for information more actively, consulting increasing numbers of sources and comparing sources to determine which information is factual. When the context shifts to the near at risk and real at risk phases, there is a behaviour shift to more collaboration in which the online community works together to answer questions, and provide advice or support. In the near at risk phase, people are more likely to begin to post questions or speculations on the social media platforms they already use. They also begin to broaden their information sources and search across many platforms for expert advice, comparing less trusted with more trusted sources. They desire more detailed and specific information and begin to value speed of response in favour of accuracy. This is where misinformation has the potential to proliferate to greater degrees. In the real at risk phase, people once again restrict their information sources, eliciting information from and sharing with people in their close social circle, both online and offline. As the risk becomes more immediate and more personal, people desire information from people they relate to who are experiencing the same situation.[17,41]

There are a number of factors that work together to influence whether an individual will believe a message, and whether they will go on to share it with their networks. These include the level of trust the person has in the messenger and the channel being used to transmit the message; pre-existing beliefs and biases; the political and historical context; the emotional state and triggers of the person receiving the message; the amount of information available on the topic; and the format and style of the message itself.[40,28] People may be motivated to share information because they wish to explain a situation or an event, share useful or entertaining information, define themselves as 'in the know', develop social relationships by using information as currency, or feel connected to issues affecting them.[12]

Trust in the source and channel: Trust is an important determinant of whether a message will be believed. If information is delivered by a trusted friend or family member, or via a trusted news source or authority that aligns with the receiver's beliefs, it is more likely to be believed.[40] The most trusted sources differ across regional and social contexts. In today's digital culture, 'influencers' with large numbers of followers on social media are often more trusted than recognised experts or official sources.[28] Researchers have identified four aspects of information exchange that contribute to the credibility of a message: source (whether the source is familiar and trusted); message (whether it is relevant and well-presented); channel (whether the medium itself is familiar and trusted); and receiver (shaped by their social, political and historical context and emotional state).[42] In the far at risk phase of an outbreak, people access information through already trusted channels, hence they judge the message to be credible. As the outbreak progresses and people begin to more actively seek out information, they tend to reflect critically about the channel of information. It follows that it may be useful to push out public health messages through already popular and widely-used platforms during initial stages of the outbreak.[17] In general, people are most assured and most likely to trust messages when consistent information is delivered through multiple channels by multiple sources.[41]

Political, social and historical context and pre-held beliefs: Misinformation needs to be understood within the context in which it circulates. Rumours have been found to gain the most traction when they align with already held beliefs, when conditions are difficult or distressing, and when motivation exists to believe the rumour.[40,28] During the Ebola crisis in Sierra Leone, for example, rumours were found to be linked to long-term issues of structural violence. Deeply held suspicions of the United States, the government and foreign health workers provided fertile ground for the proliferation of rumours and theories about the cause of the disease and the intentions of the response. A distrust of local chiefs stemming back to the colonial era provided further fuel for rumours.[43] Similar scenarios were seen during the recent Ebola outbreak in the Democratic Republic of the Congo.[44] In relation to the COVID-19 outbreak, rumours have circulated that play to the political mistrust between the United States and Russia, and latent anti-Chinese sentiment has fed racist commentary around the world (including President Trump referring to COVID-19 as 'the Chinese Virus').[45]

Psychological and emotional motivations: Studies have found that content that elicits strong emotional reactions, such as disgust, fear, anger or surprise, are more likely to be believed as well as actively shared on social media.[46,28,47] This is evident in the current pandemic of COVID-19. Social media analytics company, Brandwatch, reported that the dominant emotion associated with coronavirus-related posts around the world was disgust and the second-most common emotion was fear. Another analytics company, Sprinklr, found that the emoji most commonly associated with the coronavirus in February 2020 was the crying-laughing emoji, pointing to the fact that humour also tends to be widely shared.[2] It has also been noted that misinformation will sometimes be shared knowingly simply for its humour value or to highlight the absurdity of claims (as discussed above).[28]

Lack of, or overabundance of information: A lack of accurate information can provide space for misinformation to proliferate. Research conducted by the WHO during the H5N1 outbreak in 2004 found that the majority of rumours occurred during the first few weeks of the outbreak, when little was known about the disease.[12] As more information became available and the questions behind the rumours were answered, the number of rumours circulating decreased. This is in line with a study that showed that users tend to share unverified stories, but cease to share them once the story has been proven to be false.[50] Conversely, an overabundance of information on any given topic, such as is occurring with the current COVID-19 outbreak, can make it difficult for social media users to select the correct information.[12] In this environment, messages that receive more air-time gain credibility, so that the more something is shared, the more people are likely to believe it.[40] Information is likely to be trusted if it admits what is and is not known, explains why and is amended when evidence changes. Hiding uncertainties generates further public mistrust.

Effects of mis- and disinformation

Non-compliance with public health recommendations: Misinformation, as well as confusing or inconsistent information, about public health measures can have the effect of creating mistrust in public health institutions, and consequent non-compliance with recommended public health measures. One example is the misinformed anti-vaccine content that has contributed to the decline in vaccine uptake, and which has led to an increase in measles cases in the United States, Britain and other countries.[51,52,53] In 2018-2019, widespread dis- and misinformation hindered the response to the Ebola outbreak in the DRC, undermining local confidence in health professionals, discouraging people from accessing treatment centres and vaccines, and contributing to violent attacks on Ebola treatment centres.[51] The same occurred during the Ebola outbreak in West Africa, where patients were reluctant to use treatment centres due to rumours the centres were spreading the disease. Their reluctance to present at the centres led to in increased spread of the disease.[40] A recent study on climate change concluded that people exposed to conspiracy theories about climate change were less likely to take actions to reduce their carbon footprint.[54] The same may be true with regard to personal protection against infectious disease.[48]

Perpetuating political conflict and racial discrimination: The outbreak of COVID-19 has led to a proliferation of anti-Chinese sentiment on and off social media and instances of online prejudice and bullying have been widely reported, with social media a primary platform for expressing xenophobia.[55] Racist messages on social media can translate into offline racism directed at people perceived to be of a specific group, as has occurred with people of Asian origin around the world in recent weeks.[55,27] Kenyan journalist Waihiga

Mwaura described how the pandemic has fuelled anti-Chinese prejudice in Kenya, building on pre-existing economic tensions between the two countries.[59]

Psychosocial effects: Social media have been shown to play both a positive and negative role in mental health and psychosocial wellbeing during COVID-19. Information overload can be psychologically overwhelming and distressing particularly when content is alarmist or false.[56] Instances of mass panic may be fuelled through social media as well as more traditional media.[57] The stockpiling documented globally is an example of the media snowballing the sense of threat, scarcity and urgency that can drive this behaviour.[58] It is important to note that panic may be an extreme term for what is essentially a normal human adaptive attempt to (re-)gain a sense of control in a situation that feels uncontrollable. Other types of stigma related to COVID-19 stigma have also been highlighted with patients and their families receiving direct online abuse from other parts of the world. The WHO advocates for the public to actively fill social media with empathetic and positive messages, and recommends that if schools are open, they should play an active role in discouraging negative online actions.[56] Social media can also provide a channel through which people can discuss their fears anonymously, allowing them to be more open than they may feel comfortable and willing to be offline.[60]

Broader societal effects: It has been noted that concerns spread on social media may travel faster than the virus itself, potentially leading to disproportionate public policies such as travel restrictions, quarantine and other social distancing measures, as well as to reactions of fear and anxiety among the population.[1] In the Ukraine, rumours that people on a plane arriving from Wuhan were infected with the virus spread rapidly, and local residents used Facebook and Instagram, as well as the messaging app Viber, to organise to barricade the town's streets to prevent a bus bringing the arrivals to a sanitorium for quarantine. A fake email claiming to be from the government fuelled fears that the arrivals had contracted the virus. The resulting rioting led to nine police officers being injured.[61]

Strategies for ensuring accurate information

As part of epidemic preparedness, mechanisms should always be in place for effective two-way communication with the public which can be scaled at the onset of an outbreak as necessary.[62] Public health authorities and responders should be ready to communicate correct and up-to-date information through effective, trusted channels from the outset in order to reduce the time that rumours and misinformation are able to proliferate due to a void of information. The following considerations should be considered.

Understand the communication ecosystem: Different regions, countries and social groups have differing preferences in terms of the media they use and trust, the sources they trust, and the language and format they prefer. It is important to understand who does and does not access online media – for whom messages may need to be conveyed differently, and to recognise the political and social context, which is also important in shaping how rumours are spread and how they will be received. Research to understand barriers and drivers of information flows and to identify influencers and opportunities for the use and misuse of information can enable more effective communication campaigns and help to target efforts to combat misinformation. Ideally, an in-depth qualitative information ecosystem assessment or a more targeted information needs assessment should be conducted as a preparedness measure for health or other emergencies.[1] Such assessments should also include the identification of communication partners in order to be able to launch a coordinated campaign and avoid contradictory messages.

Magnify the voice of experts: A key strategy for ensuring correct and up-to-date information is disseminated is to support the real experts to engage fully and regularly with the most popular information channels, even if these are more often frequented by a younger demographic. The way that United States academic Trevor Bedford has engaged with Twitter, and retired British nurse teacher John Campbell with YouTube during the current COVID-19 outbreak are excellent examples of this.

Employ adaptive engagement strategies: Strategies to target the creators of disinformation will differ to those targeting the general population of social media users, who have the potential to be either spreaders of factual information, spreaders of misinformation and spreaders of opinion that are relatively more or less evidence-backed. Technologies to affect algorithms and reduce exposure to disinformation are more likely to be useful in targeting creators of disinformation, while open, transparent and social communication is appropriate for the general population.

Provide clear communication through trusted and familiar channels: Authorities and response partners need to provide clear, simple and easily digestible information through trusted, familiar and tested communication channels. The necessary information and tools should be provided to enable and encourage people to follow correct health advice, and efforts should be made to convey real-time, accurate news about the pandemic to decrease uncertainty, fear and panic.[63] It is also important to be transparent and acknowledge when something is not known.[51] Analysis by Google has shown that many searches related to COVID-19 focus on a desire for useful information, such as how long to wash one's hands.[2] Simple instructions that are easy to remember are more likely to be followed. Further, easily digestible formats such as humorous memes with limited text, tweets, images and videos are the most likely to be shared.[28,40] Experts have pointed out that health authorities need to adapt their communication methods to the 'memetic' transfer of information that characterises the current digital communication ecosystem.[36] There are numerous examples of health authorities and response partners working together with social media platforms to be able to provide accurate information to users.

Engage in two-way communication and respond to the public's concerns: The public is not an 'empty vessel' waiting for information. Platforms which enable 'citizen science' and evidence-based experience to be shared can promote useful dialogue. Two-way communication is essential, with concerns should be directly addressed quickly and accurately. This is particularly important at the near at risk and real at risk stages, when people begin to ask questions and require specific answers with urgency. When misinformation and rumours appear it is important to address the underlying questions and fears.[40] Various social media platforms can facilitate this, such as reddit, which currently rates among the most popular social media platform in a number of countries.[65] The platform hosts discussion forums, where members can vote for their preferred posts, and the posts with the most votes rise to the top and receive more visitors. A study found that members on health discussion forums generally identified and voted for correct information, meaning that such platforms have a natural quality control mechanism governed by the '*wisdom of crowds*'.[17,63,66] Subject experts can be pre-positioned to answer questions on these forums should an emergency arise.[41,68] Discussion platforms can also be supported by trusted brands such as ProMED or WebMD and provide notifications with relevant health information and updates.[67] In some circumstances health discussion forums can substitute in-person interactions with health professionals.[63,67,17] Observation of the WHO Facebook page and YouTube channel, the United Kingdom's NHS, the CDC and other national government Facebook pages found that the thousands of comments posted on these pages are not directly responded to on the page or in the same thread, leaving space rife for the proliferation of false information.[69] A more positive example of engagement includes the creation of a series of Facebook groups by UNHCR in Lebanon run by refugees for refugees to share information, monitor and combat rumours. The groups have over 100,000 members. The online network

is linked to an offline network of volunteers, acknowledging the flow of information between online and offline platforms.[12] Such existing platforms with good penetration to specific at-risk groups should be supported to provide tailored content related to COVID-19.

Enlist trusted brands and influencers: People are more likely to believe and share information that comes from a source they trust. It is important to assess who the most trusted sources are, and enlist those individuals, institutions or brands to deliver messages. This may be health professionals rather than politicians,[70,51] or it may be teachers, religious leaders, or celebrities. 'Social influencers' with many followers on social media or trusted websites can be enlisted to spread correct information and debunk rumours.[47,27,71,17]

Improve media literacy: An important way to reduce the harmful effects of misinformation is to inform the public and the media about how to recognise misinformation and what to do when they see it. People should be encouraged to consider whether the source and the author is credible, to read beyond the headlines, check supporting sources, check the date and consult other credible sources to see if they can corroborate the information.[28] The WHO recommends minimising the amount of time people expose themselves to information on social media which they find upsetting, and advocate that people adopt a 'fact versus fear' approach.[56,72] Users should be encouraged to act responsibly and not share information unless they are sure it is correct.

Rumour tracking, community feedback and media monitoring: There are a number of methodologies developed for community feedback and rumour tacking during emergencies (e.g., the IFRC's community feedback portal developed during as part of the response to Ebola in DRC in 2018). An effective listening mechanism will require an assessment of the communicative ecosystem in order to know the channels people use to communicate and the cultural, linguistic and socioeconomic profiles of the population. Listening will help to understand the level of people's knowledge about the situation, the sorts of misinformation that are circulating, how people are reacting to the outbreak, the level of trust and confidence in the response, and the extent to which people are inclined to follow health advice. Media monitoring should also be undertaken, including using search engines and other forms of Internet alerts to monitor news sites and blogs.[1] An innovative and effective example of listening is Novetta's use of open source data feeds. By integrating and cross-referencing social media (WhatsApp, Facebook, Twitter), print media, broadcast media, and local field team analysis, they identify shifts in messaging trends or emerging threats and are able to provide operational data within 24-48 hours. This method has been used to track messaging trends in hard to access information environments such as West Africa and the DRC during Ebola outbreaks. Facebook's media monitoring tool, Crowdtangle, (available to journalists and researchers), makes it possible to search public Facebook, Instagram and reddit pages using preset keywords. It is possible to see which posts have been shared, and to track the origin and trajectory of messages. There are a number of mechanisms available to check the veracity of rumours. Examples include Brazil's Comprova, which focuses on WhatsApp and uses a team of journalists to investigate claims. Results of the investigations are posted on Comprova's website and 24 participating news outlets.[45] Other automated tools such as Reveal enable the verification of whether images, text and videos posted online are from credible sources.[76] Rumour tracking, community feedback and media monitoring must be coordinated across the response and involve multiple partners.[40] An interactive platform and dashboard showing the spread of misinformation around COVID-19 globally in real-time would be invaluable in understanding how best to intervene with communication campaigns.[55]

Psychosocial impact: Social media can be a helpful tool for protecting and promoting mental health and psychosocial wellbeing. Beyond purely a source of information, social media are now means of securing remote social support, which is a consistent predictor of wellbeing.[73] China has exemplified how social media have been formally harnessed as a tool during quarantine and movement restrictions. Mental health professionals and health authorities have provided online mental health services through different streams: online mental health education with communication programmes, such as WeChat, Weibo, and TikTok, for both medical staff and the wider public; free electronic books for mental health and COVID-19, including the "Guidelines for Public Psychological Self-help and Sounselling of 2019-nCoV Pneumonia", published by the Chinese Association for Mental Health; online psychological counselling services, including WeChat-based resources, throughout all 31 provinces, municipalities, and autonomous regions in mainland China; and online psychological self-help intervention systems/applications, including online cognitive behavioural therapy for depression, anxiety, and insomnia.[74] It is important to see such initiatives evolve in other counties where there are restrictions on movement and interaction. Reddit hosts r/COVID19_support, where users can support one another on a platform moderated by a qualified therapist.

Disrupting and influencing misinformation flows

There is an ongoing debate as to whether dis- and misinformation should be censored from social media sites, actively removed by social media companies, discouraged through law enforcement, or allowed but flagged as misinformation.

Promoting correct information: The WHO has partnered with Google, Twitter, Facebook, Tencent (a major shareholder in reddit) and TikTok to try to ensure content is accurate and users are directed to authoritative sites. When people search for information on COVID-19 on Google, YouTube or Facebook, they are now directed to the WHO website.[21,36,77] Twitter has also introduced a prompt that directs users to the CDC when they search for information and reddit provides a banner link to the most reliable of its many coronavirus forums on its homepage.[36]

Using technology to disrupt information flows: Social media platforms such as Facebook and WhatsApp have taken measures to restrict the flow of misinformation. Facebook has limited the number of shares to five chat groups and sought to ban posts, photos and videos containing misinformation about COVID-19, such as false cures.[8] WhatsApp has tested limiting the number of messages a user can forward at one time[45] and banned millions of accounts for sending bulk or automated messages in a bid to clamp down on disinformation campaigns.[19] Unfortunately, this has had the adverse effect of restricting platforms such as UNICEF's U-Report initiative from sending factual information to members in bulk. Instagram has also limited the distribution of content rated false by its fact-checking partners.[36]

Using the law to disrupt information flows: Many countries have legislation against the creation and distribution of deliberately false information, although in some cases, such legislation does not apply to social media platforms. Under an existing law, Kenyan citizens are subject to a fine of USD 50,000 or a two-year jail sentence for publishing or sharing fake news about an outbreak.[78] India recently passed new legislation making the spread of misinformation about COVID-19 a punishable offence.[79] There is little evidence to date of the effect of such legislation on the behaviour of social media users, however, and whilst there is clearly a difference between malign disinformation campaigns and an unintended sharing of incorrect information, firm legislation risks targeting individuals who meant no harm and were merely misinformed, as well as potentially curtailing free speech and quashing debate.[80] China's social media companies are responsible for removing illegal or politically sensitive content, and can face serious consequences if they fail to do so. As such, they tend to err on the side of caution and over-censor, which has had the effect of censoring factual health information and free speech.[81,82] In response to the current outbreak, Singapore changed its law to allow the state to order online platforms to remove content if it was

deemed to be against the public interest.[83] As an alternative to government regulations, the European Union introduced a 'voluntary code of conduct' against online misinformation in 2018, to which Facebook, Google, Twitter and other major social media companies have signed up.[84]

Flagging but not removing misinformation: There is some evidence that 'censoring' controversial information and suppressing debate can push disaffected users to online spaces supporting more extreme views, or underground to platforms such as WhatsApp, which cannot be easily monitored.[17] Instead, it may be preferable to flag misinformation as such whilst in parallel providing accurate information to debunk the claim.[85] For example, WhatsApp has introduced a 'forwarded' tag, to let recipients know that a message did not originate with the sender.[86] Facebook marks posts that have been found to be inaccurate as 'false' and downgrades them using algorithms. Anyone attempting to share the post receives a warning and is directed to a fact check page.[21] Reddit is a good example of a moderated platform where inaccurate and accurate information coexist, but where some discussion forums have been 'quarantined' with warnings that their content is unreliable, and others have been removed entirely. Inaccurate information that is not caught quickly by the moderators of the more responsible forums tends to be voted down by members in favour of accurate information, which rises to the top of the page. Here, discussion can take place openly, providing the opportunity for disagreements and misunderstandings to be resolved.[17] Studies have also shown, however, that efforts to alert people to the presence of misinformation can have the unintended effect of reducing their belief in accurate information.[48] Attaching warnings to items can cause items without warnings to be perceived as true, when in fact they may not have been verified.[87] This highlights the need for a concerted effort to produce correct information, listen and answer questions, and address the underlying causes of belief in misinformation, in addition to flagging information as inaccurate.[88,71] In general, misinformation in the online ecosystem can be countered by flooding the same channels where the falsehoods are proliferating with factual information to control the dominant narrative. Information gains credibility the more it is shared and seen.[22]

Contact

If you have a direct request concerning the response to COVID-19, regarding a brief, tools, additional technical expertise or remote analysis, or should you like to be considered for the network of advisers, please contact the Social Science in Humanitarian Action Platform by emailing Olivia Tulloch (oliviatulloch@anthrologica.com) and Santiago Ripoll (s.ripoll@ids.ac.uk). Key Platform liaison points include: UNICEF (nnaqvi@unicef.org); WHO (falerom@who.int); IFRC (ombretta.baggio@ifrc.org); and GOARN Research Social Science Group (nina.gobat@phc.ox.ac.uk).

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