Fighting Infodemic Becomes Must After Covid-19 Pandemic's Onslaught on Truth, Knowledge

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Abstract

Due to the Coronavirus (COVID-19) pandemic, which has resulted in tens of thousands of deaths and hundreds of thousands of infected cases, the international community has been confronted with one of the most urgent health crises in recent decades. With the COVID-19 pandemic, we confronted a new phenomenon known as an "Infodemic" or "epidemic of misleading information" regarding COVID-19. Presently, a large amount of unsubstantiated material on various elements of the COVID-19 disease, disease control and prevention techniques and its effects is being distributed via social media, news agencies and television networks. Due to their accessibility, social networks are increasingly becoming an integral part of our lives. They provide avenues where anybody can convey their ideas and post information without impeding or regulating their publishing validation. As a consequence, it facilitates the spread of "Fake News," material that is deliberately false. Because of the amount of social media users and the volume of followers, fake social media news could have major adverse social repercussions. Misinformation and disinformation can have detrimental effects on people's mental and physical health, increase stigma, jeopardize valuable health gains, and result in poor adherence to public health measures, hence reducing their efficiency and jeopardizing their ability to manage the pandemic. Misinformation can result in death. Without trust and accurate information, diagnostic tests go unutilized, immunization campaigns (or initiatives to enhance effectiveness of vaccines) fall short of their goals, and the virus thrives. What's more, disinformation is creating a rift in public debate on COVID-19-related issues, intensifying hate speech, increasing the chances of conflict, violent acts, and violations of human rights, and jeopardizing long-term prospects for advancing social cohesion, human rights, and democracy.

Keywords: COVID-19, false news, misinformation, infodemic, eHealth

Introduction

The Coronavirus (COVID-19) is the first global pandemic to extensively use social media and other forms of technology to keep people connected, informed, safe and

productive. Simultaneously, the technology we depend on to stay informed and connected is facilitating and magnifying an infodemic that is undermining the global response and jeopardizing pandemic-control measures.

A type of information tsunami accompanies every epidemic, but there will always be misinformation and rumours. This occurrence existed even in the Middle Ages. However, this phenomenon is amplified with social media and spreads quicker and wider, much like viruses that travel with individuals and spread further and faster. This has presented new challenges where timing is crucial because you have to be faster to fill the void. During an outbreak, what's at risk is ensuring that people do the proper thing to manage the disease or limit its impact. So, the purpose of the information is to make sure citizens are informed and to make sure they are informed to conduct themselves accordingly (Larson, 2020).

Some governments give counsel that contradicts World Health Organization (WHO), which confuses citizens. Is a social distance of one or two meters considered to be acceptable? Approximately how many days is self-isolation? Is wearing a mask or not a matter of personal choice? Mid-May, England permitted one person to visit, whereas Northern Ireland allowed six people gatherings but with some social distancing; In contrast, Belgium stated that four people were the limit. The guidelines are constantly changing as political leaders evaluate COVID-19's current state, and their choices' implications.

In social media conversations on COVID-19, immunity is a recurring issue. Discussions range from different strategies of establishing immunity to defending against COVID-19 to supposed remedies. COVID-19, its dissemination pattern, illness causes, and long-term implications are being revealed every day. The six months since the coronavirus was originally reported have seen substantial progress in the body of work accomplished, but it's not enough to quell the concerns, anxieties, and doubts.

Because vaccines and therapies for COVID-19 are not yet available, those advocating alternative treatment and prevention options are filling the void. During the 1918 'Spanish' flu pandemic, lozenges, laxatives, pine tar honey and snake oil were promoted as prevention and cure products. Today, boosting immunity in order to cure or prevent COVID-19 is a common mantra among many, with various remedies such as liquorice, 'antiviral herbs,' drinking hot water and lemon, or eating garlic, to colloidal silver (which is dangerous), being purported, and so on.

Directly challenging existing beliefs will not create a better understanding of immunity, which informs safer decisions. As a result of numerous studies, it has been shown that persuasive strategies tend to entrench rather than modify beliefs. Public education approaches that resonate with existing attitudes and sentiments are needed to increase public awareness of our immune systems and their functions.

Citizens today, more than ever, want to be in control of their health. The idea of strengthening your own immune system gives people a sense of being in control of

their health. To some extent, this is correct. Where necessary, eating healthy, vitamins, as well as exercise can go a long way in managing the severity of health conditions and diseases and save lives in some cases. What needs to be made clear is that nutrition, supplements, and yoga alone can't stop a bacteria or virus from infecting people (Larson, 2020). The community's involvement is critical in keeping the coronavirus (COVID-19) epidemic at bay. The propagation of this misinformation may lead to improper behavior and undermine the healthcare and government efforts to manage COVID-19, resulting in panic and in some cases xenophobia (Chong et al., 2020).

Over the previous few decades, the world of news media has seen a remarkable transformation. Digital sources have drastically extended the reach of social media, journalism, and public interaction. Local media websites, big newspapers, Facebook, Twitter, and Google have all become frequent places for individuals to check for news online. Smartphone notifications and mobile apps give the latest happenings to people across the world in real time. 93 percent of the American population stated they got their news from online sources in 2017 (Chong et al., 2020).

Among those surveyed, 36 percent said they got their online news via a news organization's app or website, 35 percent said they got their news from social media, and 20 percent said they got their news through a search engine; 15 percent cited an alert, text, or email from a news outlet, 9 percent cited other sources, and 7 percent cited family members (Owen, 2017).

eHealth Literacy

Role of eHealth Literacy in Controlling the Infodemic

Numerous opportunities to access real-time health-related information and misinformation arise as a result of the increasing usage of mobile devices. Public health officials must traverse a complex social environment to keep their health in check and employ proper preventative measures based on available knowledge during the current infodemic. Anxiety and uneasiness might be exacerbated by the sheer volume of COVID-19-related communications and information, creating significant challenges in promoting eHealth literacy.

The Ebola outbreak which took place in 2014 saw rumours on social media fuel anti-health-care worker sentiments as well as the ongoing anti-vaccine posts that appear to support debates around the safety of vaccines potentially lowered the rate of vaccination (Smith, 2017). These are well known examples of the negative implications of spreading deceptive news, and can be witnessed in the current pandemic (Oyeyemi et al., 2014).

When a COVID-19 vaccine becomes available, it is expected that anti-vaccination conspiracy theories will be flooded across social media and other digital networks, wreaking havoc on public health efforts to combat COVID-19.

It's critical to comprehend eHealth literacy's role in the COVID-19's outbreak control. While it's important to measure eHealth literacy in relation to infectious diseases using accurate techniques, it's even more critical that we look at the relationship between health-related disinformation and eHealth literacy and how it affects the public's decisions to take COVID-19-prevention measures like handwashing, practicing physical distance and wearing a mask.

As a result of COVID-19, focus on eHealth literacy evaluations and possible interventions must extend beyond functional health literacy (being able to receive applicable health information), the person, and the clinical care environment. In order to address disinformation about COVID-19 on social media, one solution is to improve health literacy among the general public and enhance community capacity through social involvement and dialogue.

To be sure, recent efforts by government agencies to work with social media platforms (WeChat, Weibo, Instagram and Google) to flag and fact-check false information have created opportunities for social support and collaborative learning for the general public in order to reinforce vital health literacy among the population. But additional studies are needed to determine ways in which critical health literacy may be improved at the community level.

The COVID-19 infodemic is infecting people faster than the actual virus in several locations, but health care professionals frequently overestimate the public's level of health literacy in dealing with health-related information.

Nurses are uniquely qualified to assist clients in understanding and utilizing health information to improve their health. Public understanding of information is a concern for all practitioners. According to the American Academy of Nursing's "universal precautions" for health literacy, clients' understanding of health-related information should always be validated (Loan et al., 2017).

Several factors need to be considered to successfully deliver eHealth. To begin, the healthcare system must have sufficient resources to provide services and appropriate information. To develop services and run current technology responsibly, service providers must have the appropriate skills. Patients also need a digitally connected home. Other than being conversant with digital technology, patients need the skills and drive to actively seek, find and fully absorb healthcare information as well as apply what they learn to address and contribute to solving a health issue. – this is referred to as eHealth literacy (Brors et al., 2021).

The eHealth Literacy Lily model organizes six key literacies into two categories: analytical (information literacy, media literacy and traditional literacy and numeracy) and context-specific (health literacy, computer literacy and science literacy). These six literacy types, when combined, form the foundational skills needed to improve patients' eHealth experiences.

Analytical Literacy

Analytical literacy skills are necessary for participation in daily informational life. During isolation and quarantine months, when citizens need to research and analyse support from their regular care via the internet to meet their needs, this is especially important. Patients may need to order medications from online pharmacies or food and supplies from an online supermarket, for example.

Context-specific Literacy

Problem types, specific issues and contexts are the focus of context-specific literacy skills. Many people face quarantine and isolation, which presents several challenges due to the current COVID-19 outbreak. Because of the crisis, people have been physically and socially estranged from healthcare providers, yet healthcare is being offered in a new environment using technology.

As a result, this may be difficult for those who have never used a computer, are unfamiliar with scientific terms, or have trouble adhering to self-care instructions. The COVID-19 outbreak showed us that eHealth literacy is a process-oriented skill that evolves when new technologies are adopted and settings such as individual, cultural, and environmental factors change. Patients' health status, educational background, health issues during their eHealth encounter, the technologies used and motivation for seeking information all influence eHealth literacy (Brors et al., 2021)

Measures taken towards the infodemic

Prebunking

Several methods of countering misinformation are supported by psychological research. One method is to debunk false information after its spread. However, inoculating citizens against fake news before being exposed is far more effective—a strategy known as prebunking. The inoculation theory, created in the 1960s to promote preemptive resistance to unwanted persuasion attempts, pre-bunking is founded on inoculation theory (Linden & Roozenbeek, 2021). 'Mental antibodies' are said to be generated when people are exposed to examples of common strategies used in manufacturing fake news, in the same way as a weak dosage of the virus triggers antibodies to prevent future infection. Many people being inoculated against the "virus" of information will prevent it from spreading (Linden & Roozenbeek, 2021).

A free experimental online game, Bad News, was created by Linden and Roozenbeek in association with the Dutch media literacy organization Drog to highlight this point. While learning six basic disinformation methods (including emotion, conspiracy theories, and polarization), players adopt a fake news tycoons' persona who aims to accumulate as many followers as possible through the active distribution of fake news.

This game functions as a "vaccine" against fake news by allowing players to actively reason through the process of spreading false information before being presented

with the "real" copy found on the web. They tested approximately 15,000 participants pre and post exposed to true and false news themes, which included prevalent misleading techniques as part of previously unseen content (Linden & Roozenbeek, 2021). The findings were not long ago featured in Palgrave Communications, and interpreted the intervention as successful. After playing, participants significantly reduced their trust in fake (but not real) headlines. The sample wasn't representative, and the intervention wasn't randomized, which is important to keep in mind. However, randomized controlled trials have begun being conducted using the game. The results reflect the intervention's robustness. It also proved to be effective outside of academia. For instance, they set out to create an intervention that would pique the interest of a large portion of the population and entice them to participate voluntarily. As a result, more than 500,000 people have played the game so far (Linden & Roozenbeek, 2021). Design firms, the Behavioral Insights Team as well as gaming blogs have all nominated the game for awards and given excellent feedback

Collaborative efforts with the UK Foreign Office have resulted in the game being translated into 13 different languages, including Serbian, Swedish, Esperanto, Greek, Polish, Czech, German, and Dutch (Linden & Roozenbeek, 2021). These findings emphasize the importance of using this strategy in other avenues being affected by misinformation. The perceived reliability of deceptive content across all languages was reduced significantly, which indicates that the ability of participants to spot misinformation is notably improved. Relevant demographic factors such as political ideology, education level, gender, and age significantly influenced the inoculation effect.

As a stand-alone strategy, "prebunking" is insufficient. In the post-truth era, it is an excellent first line of defense inside a multi-layered anti-misinformation strategy, which integrates behavioral science insights with computer science, public policy, and education ideas. Similar large-scale "vaccination programs" could be developed against misinformation by governments, social media companies and educational institutions. Such strategies can be adopted directly in education programs, customized for social media use, or other fields where online misinformation poses a threat.

Instead of just using debunking as a means of combating the online spread of misinformation, (social media) enterprises, educational and governmental institutions should also consider prebunking (inoculation).

Encourage People to Question Veracity of Claims

Another way to combat misinformation is by encouraging people to question the veracity of the claims they come across. Pennycook and his colleagues discovered that simple accuracy nudges improved participants' ability to distinguish between real and fake news in a COVID-19 misinformation test. Participants were shown a series of headlines, some false, some true, and were asked to rate how likely they were to

share each item. Compared to participants in the control group, those in the experimental condition shared more accurate news content. (Pennycook et al., 2021).

Implementing the Use of Sentiment Analysis (SA)

Sentiment analysis identifies positive or negative attitudes within text. Companies often use it to understand customers, measure the brand's reputation, and detect sentiment in social data. Since people are more open than ever to express their opinions and feelings, sentiment analysis is a helpful tool for monitoring and understanding this feeling. Automatically analysing information such as social media conversations and opinions in survey answers enables brands to identify what makes their customers frustrated or happy to customize services and products to satisfy customers' needs.

This concept can be applied in efforts aimed towards taking the infodemic under control. Understanding the feeling behind a piece of information can help determine whether it's true or false. Computer technologies offer a great opportunity to fight outbreaks of infectious diseases and play an important role in social media sentimental analyses in particular, because of their significant role in the analysis of sentiments among the population. Various research articles have shown that if professionals considered social media data, many epidemics and pandemics could be monitored quickly. Sentiment studies are therefore crucial based on recent developments in the research of pandemics such as COVID-19 which remains a controversial topic on social media worldwide (Alamoodi et al., 2020)

Types of Sentiment Analysis

SA models concentrate not only on polarity (negative, positive or neutral) they also focus on emotions and feelings (sad, happy, angry), urgency (not urgent or very urgent), and even intentions (not interested or interested). Category definition and customization are possible based on your sentiment analysis requirements. Some popular categories of SA are listed below:

Fine-grained SA

There are situations where polarity accuracy is critical for analysing a piece of information. In such a case, expanding your subgroups to feature:

Very Negative
Negative
Neutral
Positive
Very Positive

This is known as fine-grained sentiment analysis, and is great for translating 5-star ratings in reviews, for instance:

Five stars for Very Positive

One star for Very Negative

Emotion Detection

This form of SA seeks to identify sadness, anger, happiness and frustration. Most emotion detection systems rely on lexicons (lists of phrases and words and what emotions they depict) or sophisticated ML algorithms.

One disadvantage of using lexicons is that different individuals express their emotions in a variety of ways. Certain words and phrases commonly used to express anger, such as bad or kill (your customer service is killing me or this product is bad), can also express happiness (e.g., you are killing it, or this is badass).

Aspect-based Sentiment Analysis

While evaluating sentiments in texts, such as social media posts reviews, you will typically want to point out which specific aspects were mentioned in a positive, negative, or neutral way. This is where aspect-based sentiment analysis comes in.

Multilingual Sentiment Analysis

Multilingual sentiment classification may sometimes prove to be challenging. It necessitates a significant amount of resources and preprocessing. Most of these resources can be found online (for example, sentiment lexicons). In contrast, others must be created (for example, noise detection algorithms or translated corpora), but you need to know how to code if you were to use them.

Alternatively, you could automatically use MonkeyLearn's language classifier to detect the language in texts, then train a specially designed sentiment analysis model to group texts in your preferred language.

How it can be used

Sentiment Analysis (SA) is responsible for designing and implementing techniques, methods and models to understand whether a piece of information deals with subjective or objective information and or determining whether it is expressed in a neutral, negative or positive fashion and whether it is expressed weakly or strongly. Sentiment Analysis (SA) , a branch of NLP (Natural Language Processing) is sometimes referred to as Opinion Mining because a large portion of the subjective content shared by users on social media platforms are mere opinions (on chats, message boards, forums, review sites, and so on).

In fake news, the expression of sentiment is very important. Social media users often engage with posts when they think that content is exciting, but they do not feel they have no control over it. When users feel more in control, they tend to share a post. Sentiment-related behavior is sufficient to distinguish between human and social bot accounts by combining different sentiment variables. Attention-grabbing headlines and emotional engagement are key to increasing the distribution of information. Its no coincidence that clickbait is often related with the dissemination of misleading

information, since many people who are exposed to bogus news don't read past the headlines. Consequently, SA gives essential information about the substance of a piece of information to assess if it is genuine or should be called fake news (Alonso et al., 2021).

Detecting bogus news falls into two main categories, according to Conroy. Language-based approaches are used to gather and analyze the content of misleading messages in order to link language patterns (word usage, rhetorical linkages between linguistic elements, semantic similarities, syntactic and ngrams constructions) with manipulation in the first approach. As for the second, it was about network-based deception measures using network information such as structured knowledge network queries or message metadata. To detect fake reviews, SA is regarded to be an effective tool not so much for the detection of false texts as it is for detecting false negative reviewers who exaggerated the emotions they were attempting to express (Conroy et al., 2016).

According to Shu et al. fake news has psychological and sociological foundations, as well as models and attributes employed by detecting systems aimed at addressing this phenomenon, taking into account both news and social context models and features, which can rely on user networks, independent users, or posts. They believed sentiment analysis must be used to determine post-based features. People are open to expressing their opinions or emotions about fake news via posts on social platforms, like sensational or skeptical reactions. The topic was later on revisited by investigating weak social supervision for spam detection, concluding that user comments linked to original news content are useful for detecting deceitful information and explaining prediction results. As a result, they hypothesized that machine-generated content produced by effective deep generative models is a potential type of fake news which is readable, smooth, and appealing In terms of sentiment analysis, it was believed that opposing attitudes between news spreaders could be a symptom of fake news (Shu & Sliva, 2021).

Crowdsourcing

Crowdsourcing enlists the knowledge of many viewers or readers to identify potential flaws in news coverage and can effectively combat fake news. A great example is The Guardian's effort to use crowdsourcing to evaluate 450,000 documents concerning the United Kingdom’s Parliament member expenses. It received the documents but was short on manpower to assess their newsworthiness quickly.

When the newspaper realized this, it set up a public website that allowed users to search for documents and group them in four categories: interesting but well-known, dull, interesting or research this. A vast audience can be reached through digital platforms. For example, During the first 80 hours, the Guardian attracted 20,000 users who reviewed 170,000 papers. In addition, the participants helped the newspaper determine which records were the most troubling, necessitating more study and publicity in the media (West, 2021).

Intentional Actions by the News Industry

Press organizations should be pushed to continue to prioritize high-quality coverage to builds trust and attracts new readers. Over the last few years, several news organizations have seen a rise in viewership as well as readership, which has helped placed them on a more solid financial foundation. However, public trust in news spread by the media has plummeted, jeopardizing journalists' ability to hold leaders accountable and report the news. During this period of significant disorder and chaos, the world requires a viable and strong information and news outlet which keeps citizens in the know about long-term trends and current events.

News organizations must expose falsified news and disinformation while not legitimizing it. This can be attained by depending on in-house experts and established fact-checkers. Users can learn about news channels that are designed to mislead by using non-profit firms like Snopes, and Politifact, which assess statements made by leaders and describe them in detail. Candidates' evaluations and election campaigns in the United States and worldwide increasingly rely on these sources of information.

According to Professor Brendan Nyhan's research, categorizing Facebook posts as "disputed" minimizes the number of consumers who actually believe the false information by 10%. Furthermore, Melissa Zimdars, a media and communication professor of Merrimack College, grouped 140 online platforms which employ " dubious or decontextualized information and distorted headlines. This allows people to track down those who spread false information (West, 2021).

Government Actions

Independent, professional journalism is one of the things governments can do to improve the quality of journalism. For the public to make sense of complex changes and keep up with continuously changing political, economical, and social events, they rely on reporters. These "mega changes" have caused bewilderment, worry, and wrath in many locations. We urgently need a reliable Fourth Estate that is independent and not subservient to official authority in these times of turmoil (West, 2021).

Governments must avoid restricting the ability of the news media to report on events. These activities restrict freedom of expression and make it difficult for journalists to report on political developments. The American Government could perhaps serve as a model for other countries. As a result of American governments censoring or controlling the news media, other nations are following suit. Governments should desist from restricting content and holding digital platforms liable for misinformation. As a result, some people may be hesitant to communicate their political opinions for fear of being classified as fake news. We could unwittingly encourage authoritarian governments to suppress free expression by adopting unduly strict regulations (West, 2021).

Governments should also make improving news literacy a major priority in terms of funding. Particularly for those who are using the internet for the first time, This is the case because it is difficult for them to differentiate between true and false news, these individuals must learn to question news outlets instead of taking everything they read on online networking sites or digitized news sites at face value. A better understanding of information published on the internet is crucial as we head toward digital immersion. Accordingly, nonprofit groups, educational institutions, corporations, and journalists should collaborate to foster news literacy.

Education is particularly important for children and teenagers. Third-party assessments are important to readers who are still young, according to findings by Benjamin Bowyer and Joseph Kahne. However, the impact is limited. Inaccurate statements reduced reader persuasion in comparison to adhering to their former policy beliefs. People were less likely to change their minds if they had previously agreed with the statement. (Khane & Bowyer, 2021).

Strengthen Online Accountability

Increasing online accountability by enforcing the use of real names and cracking down on false news sources is a great step towards controlling the infodemic. Organizations can accomplish this using "real-name registration," which requires internet users to indicate their true identity on hosting platforms, making it much easier to hold people accountable for their. People tend to hide behind an alias when making false comments or engaging in unlawful activity. This applies to misinformation and fake news since people are more likely to engage in such activity in the event that they believe their acts will stay private and not made public. As the late, great Louis Brandeis famously said, “sunshine is perhaps the best of disinfectants.” ("OTHER PEOPLE'S MONEY - CHAPTER V — Louis D. Brandeis School of Law Library," 2021). It aids in keeping people accountable and honest in their public actions.

Using a social media account with a fake name is an exception for people living under dictatorship.

How the Public Can Protect Itself

People can safeguard themselves from misinformation by following a diverse group of people and points of view. Depending on a limited group of similar news outlets affects people's access to information and increases their vulnerability to being deceived. While this technique isn’t fool proof, it exposes a reader to diverse and well-thought viewpoints.

As a reader and viewer, you ought to be doubtful of news outlets in the online world. A significant number of online sites turn to deceptive and exaggerated news in order to increase clicks. They highlight the controversial or the eye-catching, even though the news hook is misleading. Consumers of news must be cautious and understand that not everything they read in the media is true and that a significant number of

media outlets intentionally spread information which is false. A top priority is studying ways of evaluating news outlets in order to defend oneself from being supplied with misleading information (West, 2021).

Conclusion

As a profession, journalism is constantly evolving. Due to the advent of new digital platforms, journalists now have access to innovative communication methods and a wider global audience than ever before. Conversely, hoaxes and disinformation (collectively called "fake news") propagate and impact how people view everyday events. Public faith in traditional media has dropped because of the expansion of cable news and talk radio, citizen journalism, and foreign players.

An important research problem is determining how people avert or seek information and how that affects their behavior, especially when the news cycle, which is dominated by the self regulated diffusion of information, affects how information is perceived and reported on.

Democracies are particularly vulnerable to fake news and sophisticated disinformation efforts, and there is rising discussion about how to best tackle these concerns without discrediting digital medias' benefits. To sustain a democratic system, consumers, corporations, and governments must work together to overcome these difficulties. It is the responsibility of the government to encourage citizens to read the news and to promote a robust, professional media in their areas. In order to build public trust, the news industry must produce high-quality journalism that corrects misinformation and fake news without legitimizing them

False news profiteers should be penalized, and online accountability should be improved by companies in the technology sector. Educational institutions should place a high premium on educating individuals about news literacy. Last but not least, people should read and watch a variety of news sources and be cautious of the stuff they are exposed to.

In May 2020 during the World Health Assembly, Resolution WHA73.1 was passed by WHO Member States on the COVID-19 response. It recognizes that to take the infodemic under control is a vital aspect of managing the coronavirus pandemic. The resolution encourages Member States to continue providing accurate COVID-19 content, to take steps to combat misinformation and disinformation, and to use digital technologies throughout the response. It also urges international organizations to combat disinformation and misinformation in the digital space, work to put a stop to harmful cyber activities jeopardizing health response, and facilitate the public dissemination of science-based data (WHO, 2020)

In response to the infodemic, civil society organizations and the UN system are pooling their collective knowledge and expertise. Simultaneously, as COVID-19 continues to cause anxiety and uncertainty, urgent action is needed to manage the infodemic, as well as collaborative efforts among civil society, multilateral

organizations, states and all other players with a clear and active role in combating misinformation

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