



COVID -19 Misinformation: Sources, Impact and Preventive Measures

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Abstract

Background: Online misinformation proliferation during the COVID-19 pandemic has become a major public health concern. The high infectivity and severity of the 2019 coronavirus disease (COVID-19), particularly in susceptible populations (e.g., the elderly and those with chronic conditions) have posed serious challenges to public health and caused a sharp increase in cases around the world. The World Health Organization (WHO) and governments must also deal with a "infodemic," which makes it difficult for people to identify reliable sources among an abundance of information, in addition to coordinating the response to the COVID-19 global health catastrophe. There are many preventive and interventive strategies to prevent and control it.

Keywords: COVID-19, misinformation, infodemic, online sources, public health concern, prevention.

Introduction

COVID-19 is more than just a viral pandemic ,as Online info-torrent of material about it has exacerbated much social and anti- social behavior. Rapid spread of massive misinformation is among the challenges facing COVID-19 containment efforts (1)

The term infodemic, defined as “an overabundance of information—some accurate and some not—that makes it hard for people to find trustworthy sources and reliable guidance when they need it,” (2) . It is important to understand why people believe and share false (and true) information related to COVID- 19— and to develop interventions to increase the quality of information that people share online (3).

COVID-19 pandemic

The emergence and spread of infectious diseases with pandemic potential occurred regularly throughout history. Major pandemics and epidemics such as plague, cholera, flu, severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) have already afflicted humanity. The world is now facing the new coronavirus disease 2019 (COVID-19) pandemic (4).

Ecological shifts in the host population, genetic changes in pathogen reservoirs, a lack of disease control, population growth, congested cities, climate change, and globalization have all contributed to the emergence of various epidemics (5).

Implementing public health measures like isolation, quarantine, and border control over the years has helped to keep infectious diseases under control and preserve the social order. These containment techniques are still in use today to manage the COVID-19 pandemic in the absence of pharmaceutical therapies (4).

Globally, 26 April 2023, there have been 764,474,387 confirmed cases of COVID-19, including 6,915,286 deaths, reported to WHO. As of 25 April 2023, a total of 13,343,360,939 vaccine doses have been administered. In Egypt, from 3 January 2020 to 26 April 2023, there have been 515,970 confirmed cases of COVID-19 with 24,826 deaths, reported to WHO. As of 25 April 2023, a total of 112,284,725 vaccine doses have been administered (6).

Misinformation sources and social media impacts

With the development of the internet and social media platforms, the epidemic of false news and misinformation has grown tremendously in recent years. Although information manipulation and deception are well documented in history, the weaponization of information in the twenty-first century is taking place on an unprecedented scale, necessitating immediate and decisive action (7).

“We’re not just fighting an epidemic; we’re fighting an infodemic,” said Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization (WHO) at a gathering of foreign policy and security experts in Munich, Germany, in mid- February, referring to fake news that “spreads faster and more easily than this virus.”(8).

Difference between : Mal-information, Misinformation and Disinformation**Disinformation**

“It is a deliberate, intentional lie, and points to people being actively disinformed by malicious actors” .so it is information that is false, and the person who is disseminating it knows it is false (9).

Misinformation

Misinformation is “false information that is spread, regardless of intent to mislead.”

So it is information that is false, but the person who is disseminating it believes that it is true (9).

Misinformation is inaccurate, incomplete, vague, or ambiguous information in a certain situation and context, and various social, historical, and cultural factors affect how individuals and groups perceive information and its accuracy .Thus, misinformation can be considered a type of information, as information forms in social processes and does not essentially carry the notion of truth. This is possible when information is defined as *informative* ,and the truthfulness of information does not define how people perceive and use it (10).

It could spark gossip, stigma, discrimination, erroneous theories, and changes in ideas and attitudes, which would ultimately lead to confusion and impede the improvement of both individual and public health during crises (11).

Mal-information

Mal-information is information that is based on reality but it is used to inflict harm on a person, organization or country (12).

Misinformation sources

Social media was extremely important in the information process during the COVID-19 pandemic as people flocked to it for news and information. As it spreads among those who are globally connected through social media sites, COVID-19 differs from any other health crisis in recorded history in this regard (13).

Social media platforms have become one of the primary channels for the quick distribution of information, with 53.6% of the world's population utilizing them, and this has had a considerable impact on the spread of misinformation . YouTube, with over 2 billion users, and Facebook, with over 2.89 billion monthly active users each .3.51 billion people were utilizing at least one of the following programmes at the start of 2021: According to US law, Facebook, WhatsApp, Instagram, or Messenger Twitter, Inc (13).

TikTok, with over 1 billion users , Twitter, with over 186 million users ,and Reddit, with roughly 52 million daily active users, round out the top three (15).

Teenagers and young adults are the groups most prone to virtual information, followed by middle-aged individuals in a little lower percentage. This feature causes information to move more quickly inside social networks and causes more people to react to breaking news and current events, particularly during pandemics (16).

Facebook is one of the most popular social media platforms in this regard, and it played a big part in exposing people to constant news and information regarding the COVID-19 pandemic. It was emphasised that Facebook has a greater influence than TV in influencing perceptions and attitudes in various fields (13).

Users frequently used Twitter, one of the most popular social media sites, during the pandemic to express their opinions about the disease's spread, share purported preventions and treatments, speculate about the

disease's origin, and discuss how governments should respond appropriately. As a result, it served as a channel for the dissemination of both false and true information (16).

Social media sites are double-edged sword and has positive and negative impacts.

Positive impacts

Without a doubt, social media platforms were a huge assistance in keeping in touch with family and friends. During times of lockdown, they helped to lessen boredom, distress, and melancholy. (17) Notably, social media platforms allowed for the dissemination of official information to the public and the ability to effectively address their queries and concerns. Other key benefits of social media platforms include the ability to organize conferences, work on research projects with doctors from around the world, carry on with work and education, and develop the health-related projects and applications (apps) discussed in this article (17).

Social media had a part in the spread of vaccine knowledge. The COVID-19 outbreak has made vaccines more visible on the front pages of major news outlets. Mainstream web media, which is the majority of people's main source of information, has largely been friendly towards vaccines. (18) .

Social media companies worked with health organizations and the government to implement a series of remedies. People are urged to use hashtag searches for information to make it simpler to discover the correct source in addition to using the "Stop the Spread" and "Reporting the Misinformation" apps. When looking for information regarding the current virus, the CDC advises using #COVID19 (19).

Negative impacts (risks of social media)

Public health around the world is seriously endangered by false information concerning COVID-19. People who are misinformed about the nature and course of the illness are less likely to follow official medical advice, which could lead to the spread of the pandemic and put them and others at risk (20).

Hygiene, sanitation, social isolation, mask use, lockdowns, and other health protection tactics will be less effective if mistrust of public health authorities spreads widely enough to significantly alter public behavior. In particular, false information regarding COVID illness treatments may lead people to try harmful therapies, and misinformation about potential vaccines may cause people to shun vaccination campaigns intended to immunize the public in the future (20).

It has been suggested that social media platforms like Facebook and Twitter should exercise stricter control over their material because it is believed that misinformation is primarily a social media problem. But conventional media also occasionally publishes false information. Here, it typically takes one of two forms: either active fact-checking and debunking of false claims and misinformation or the amplifying of false claims through wide coverage of significant people whose ideas and comments are regarded relevant (20).

As a result of media fatigue brought on by excessive information exposure, it is now a public health risk since it might cause people to relax their good protective actions. Additionally, false information and rumours about COVID-19 are obscuring beneficial practises (such hand washing and social withdrawal, etc.) and encouraging false behaviours that worsen people's physical and mental health outcomes by boosting the virus's spread. As an illustration, it was reported that a father of three in India killed himself after learning he had COVID-19 (21).

Another instance of risks related to poor health communication can be found in Nigeria, where health officials discovered numerous cases of overdosing on chloroquine (a medication used to treat the malarial parasite) after news of the medication's success in treating COVID-19 spread through the media (22).

Impacts of Misinformation during Covid-19

There are numerous sources of false information on what protects and treats COVID-19 circulating on the internet, despite the fact that both prevention and treatment of the disease require measures supported by scientific data. This is crucial because relying on such false information can have a negative impact on health outcomes by motivating people to choose hazardous or ineffective remedies (23).

Xenophobia

Mass media tell unique stories about various phenomena, including biomedical research. Public perception is profoundly impacted by narrative communication, particularly during times of healthcare emergencies (24).

These myths have a significant connection to the demonization and prejudice of immigrants. Several anti-immigrant and hate groups have turned the Covid-19 outbreak into a political issue by peddling several debunked conspiracies linking migration to the development of the Corona Virus (24).

The Corona Virus disrupts human society in an unimaginable way, causing hundreds of new cases every day. Our knowledge of Covid-19 is still developing as a result of the widespread disinformation. This false information undermines all the efforts made by health professionals around the world and is known for its negative effects, such as intolerance, racism, inequity, and unhealthy behaviours (25).

Throughout the world, misinformation fuels anti-foreigner and anti-Chinese attitudes. The social media platform is the main source of this false information. While online petitions to restrict Chinese clients were signed by business communities and posted on online platforms, conventional media also promotes highly racist content (26).

During COVID-19, they looked into how Americans saw Asians, particularly Chinese. The study used close-ended structured questions and a sample of 4,311 American respondents. The findings demonstrated a substantial correlation between xenophobia and anti-Asian views and the Covid-19 false information. The level of anti-Asian sentiment was initially minimal, but it quickly rose as a result of numerous myths, rumours, and the decontextualization of news reporting (27).

Psychological Distress

Furthermore, the spread of misleading information regarding Covid-19 is not a recent occurrence; the World Health Organization was contacted by numerous academics, researchers, journalists, and officials who stressed the serious risk to the public's mental and physical health (28).

People who are isolated, at danger for contracting a disease, or quarantined primarily rely on media for information, which is more prone to psychological problems. They use various media outlets to seek facts out of curiosity and fear. In this sense, false information is crucial in eroding mental health since it causes tension, anxiety, and fear. (29).

Regarding this, (30) looked into how Covid-19 and misconceptions affected people's mental health. The researcher conducted a topic review study and discovered that the three most common psychological issues in Covid-19 are anxiety, stress, and depression. Additionally, there was a high correlation between these diseases and public sleep disturbances. The researcher advised that the disinformation and its potential resources be combated in order to eliminate the syndromal mental health difficulties brought up by Covid-19.

As (29) pointed out, misinformation is a bigger problem when there is a worldwide healthcare emergency. Direct effects indicated that exposure to traditional media was strongly and negatively associated with both anxiety and depression, and that exposure to digital media and personal contacts was positively associated with anxiety and depression. Exposure to health experts was also positively associated with anxiety, while exposure to politicians was negatively associated with these feelings (31).

The grave risk that misinformation poses to public mental health is demonstrated by the fact that the misinformation exposure group significantly had 1.8 and 1.47 times higher levels of anxiety and depression symptoms, respectively, than the non-exposure group (32).

At the beginning of the COVID-19 pandemic, researchers hypothesised that false information could result in new psychiatric symptoms like fear and anxiety in people who aren't already mentally ill, exacerbate the condition of those who are, as well as start panic attacks, phobias, and obsessive-compulsive disorders and upset the caregivers of those who are affected (33).

The age group of 21 to 40 years has significantly greater levels of stress, anxiety, and depression. The primary explanation of this appears to be that this age group is worried about the pandemic's long-term effects and economic issues because they are the main active working forces in society and are consequently disproportionately affected by layoffs and business closures. According to some academics, young people may experience more anxiety because they have better access to information through social media, which can also lead to stress (34).

Some people have been found to develop manias, where it became so severe that the person had to be involuntarily committed due to being a danger to themselves or others. Others have been found to develop

misinformation related to COVID-19 that has even prevented them from continuing with their normal lifestyle (35).

In general, it has been reported that the "infodemic" of false information being circulated online, including potentially dangerous advice on "cures" for COVID-19, alarmist reports of anti-Asian propaganda, and conspiracy theories combined, has contributed to anxiety and stress for those already impacted by the pandemic (36).

Preventive measures against misinformation

The best defence against false information is prevention. It operates on the same tenet as a vaccine: individuals are presented with a small number of false facts, followed by an explanation of why those facts are incorrect (37).

Prebunking is a clever tactic that seeks to stop disinformation in precisely this kind. Its approach falls into three broad categories:

- (1) fact-based: correcting a misleading statement;
- (2) logic-based: exposing the deception and manipulation techniques; and
- (3) source-based: identifying the sources of disinformation

This method was created and evaluated by a postdoctoral researcher at the University of Cambridge using "Fake News," a gamified intervention that simulates a social media platform and instructs participants on how to distinguish between news headlines that are factual and those that aren't (38).

Van der Linden and Roozenbeek created "Go Viral!" as a new online game to dispel widespread misconceptions about COVID-19 when the infodemic hit. It shown that a single play might reduce bogus news' perceived veracity by an average of 21%. Participants can link with WHO's COVID-19 "Mythbusters" and share their findings on social media channels (39).

Health officials and educational campaigns frequently evaluate messaging based on what they wish to promote rather than what is truthful and supported by research since educational resources are limited. This increases the general public's level of mistrust and scepticism (40).

UK Government-WHO and US Government-CDC collaborative campaigns developed a number of social media infographics and messaging to illustrate the safety of COVID-19 vaccines to increase their motivation in reducing misconceptions (40).

The national survey revealed low vaccination coverage rates in Egypt when compared to the 70% WHO target; therefore, every effort should be taken to encourage vaccine uptake in order to reach the target required to stop the pandemic. In order to increase vaccination uptake through improved public health messaging, an intervention should focus on certain categories, including those who are younger in age, housewives, self-employed, residents of urban and frontier governorates, and those with low educational levels (41).

In Egypt, a hotline has been assigned to direct the public on how to register for vaccination appointments using the web-based application. For vaccination uptake to be effectively promoted, communication programmes that address vaccine side effects, vaccine skepticism, and vaccine safety misinformation are needed. The current "knock-doors" vaccination campaign launched by MOHP, which was based on the study's suggestions, may increase vaccine coverage by addressing registration issues, crowding, and disarray at immunization facilities. By directing efforts to make decisions on the hazardous groups for preventing vaccine reluctance, the survey's findings could greatly aid in the promotion of vaccination (41).

In May and June 2020, "Stop the Spread," another successful programme, was introduced on BBC World television, the website, and the app. Its goal is to make the public more aware of the extent of the COVID-19 myths, encourage people to check them out, and restrict their spread and the harm they can do as a result (42).

Another app called "Reporting Misinformation" urged users to verify and report false information to various social media websites. It has grown to be the second most visited COVID-19-related page and is available in 5 different languages. "Our best shot," a later effort created in Florida, urges the public to get immunized, use masks, keep washing their hands, and follow the recommendation to keep social distance.

Additionally, part of their effort was developing a workshop kit with tools and educational resources for community leaders to use in educating people about vaccinations (43).

Conclusion

With the development of the internet and social media platforms, the epidemic of false news and misinformation has grown tremendously in recent years. Although information manipulation and deception are well documented in history, the weaponization of information in the twenty-first century is taking place on an unprecedented scale, necessitating immediate and decisive action, social media platforms were a huge assistance in keeping in touch with family and friends. During times of lockdown, they helped to lessen boredom, distress, and melancholy.

Notably, social media platforms allowed for the dissemination of official information to the public and the ability to effectively address their queries and concerns. Other key benefits of social media platforms include the ability to organize conferences, work on research projects with doctors from around the world, carry on with work and education, and develop the health-related projects and applications (apps). To avoid further catastrophes, an efficient system for information dissemination on online media sites needs to be developed. Since discussing health matters can cause worry and terror, it is important to consider the psychological factors that enable people to spread and accept misleading and inaccurate information when developing this framework.

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