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THE FEAR ENDEMIC OF COVID-19: MYTHS, CONSPIRACY THEORIES AND CYBERCRIME IN THE CORONAVIRUS MULTIVERSE

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Abstract: The COVID-19 pandemic signals the age that digital technologies have come to dominate our realities and create their own, based on fear, insecurities and anxieties. Hyperspace has emerged as the main area of contesting and negotiating truth and reality. During the pandemic months dangerous trends set off online involving, the dissemination of myths and misinformation, the rise of conspiracy theories and the increase of cybercrime activities. The current paper looks these digital hyperrealities circulated during the first months of the COVID-19 pandemic to provide a deeper understanding, a wider awareness and an increased vigilance to protect from these threats. Above all, the COVID-19 pandemic has shown the power of information to form opinions, beliefs, attitudes and behaviors that have an impact on the life in the physical world. It also exposed the questionable operation of media disseminated information and the consequent produced knowledge by those who own, those who exploit, and those who thrive on, the digital technologies landscape worldwide.

Keywords: COVID-19, cybercrime, conspiracy theories, misinformation, digital technologies

Introduction

The COVID-19 pandemic signals a new age in the way digital technologies have come to dominate our social realities and create their own hyperrealities based on fear, insecurities and anxieties. The spatial domain of hyperspace emerged as the main area of contesting and negotiating truth and reality. Digital technologies control and manipulate information and the knowledge produced as a result. During the pandemic months numerous dangerous trends set off online involving the dissemination of myths and misinformation, the rise of conspiracy theories and the increase of cybercrime activities. The paper presents the results of a survey on misinformation and attitudes towards COVID-19 and then extends the investigation to an extensive literature search to map corona virus related myths, misinformation and conspiracy theories that have been circulating since the appearance of the virus and the beginning of the pandemic.

Research Design & Methodology

The survey included basic demographic questions, and a series of 25 questions exploring the participants' opinion on the origins of COVID-19 and popular facts and misinformation circulating in the main stream and social media. The survey was published on Google Forms and was forwarded

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online on social media and online professional networks without any specific restrictions to the respondents' demographics. The survey was available for a period of six months during which 1700 valid responses were collected.

Demographics

Most of the respondents were female (76%), will male respondents accounting for almost one fourth of the total responses (24%) (Fig,1). The age of the respondents ranged from less than 20yrs (4.7%) to over 50yrs (15.8%). Most of the respondents were between 20-30yrs (30.4%) and 31-40yrs (31.6%). Nationality responses were grouped per continent of origin (Fig.3). Most of the respondents were from Asia (incl. Middle East) countries (39.2%), followed by Europe (27.4%), Africa (19.2%), America (10.5%) and Oceania (3.5%).

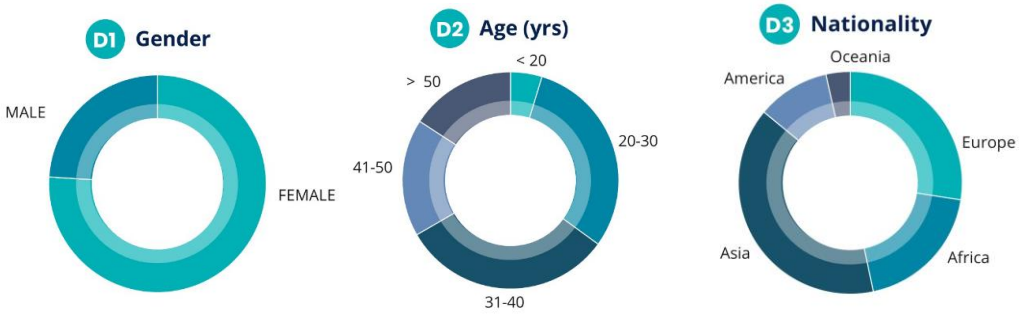
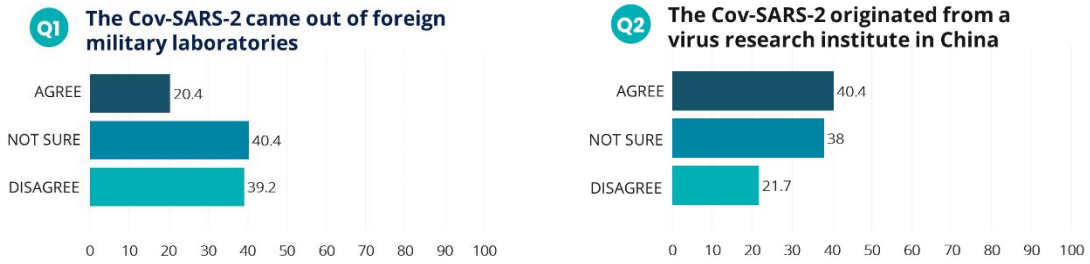


Figure 1: Gender, age and nationality of respondents.

Covid-19 Origins

Some of the post popular pandemic conspiracy theory ideas were initially tested. One of the most interesting findings is that respondents have been uncertain and confused about the widespread contradictory information circulating in the media and from mouth to mouth. In almost all responses given throughout this survey there has been a significant percentage being unsure of the facts (Fig.2).



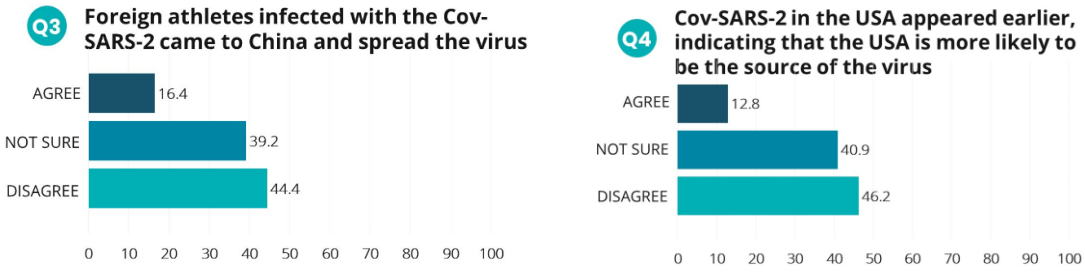


Figure 2: Beliefs on the origin of Cov-SARS-2.

Only a 39.2% strongly believed that the popular belief that Cov-SARS-2 came out of foreign military laboratories was false. A significant 40.4% was unsure and 20.4% strongly believed that this was a fact. Most respondents (40.4%) agreed that the virus originated in a research institute in China with only a 21.7% disagreeing to this belief. A 38% was unsure as to where the fact lies. Only a small percentage of respondents (16.4%) agreed to the idea of foreign athletes visiting China spread the virus, a 44.4% would disagree but again a significant 39.2% expressed their uncertainty on what happened. Similar percentages were given to the belief that the virus appeared earlier in the USA, so it must have originated from there (12.8% agreed, 46.2% disagreed and 40.9% were unsure).

Covid-19 Facts and Misinformation

A lot of misinformation has been circulating the world during and post the COVID-19 pandemic. The survey responses are shown in the following diagrams (Figures 3-19). The most important findings are highlighted here.

15.8% of the respondents agreed to the idea that spraying chlorine can kill the virus, with 22.8% being unsure (Fig.3). A small percentage (15.2%) believed that drinking water cannot protect you from the virus but 31.6% was unsure (Fig.4).

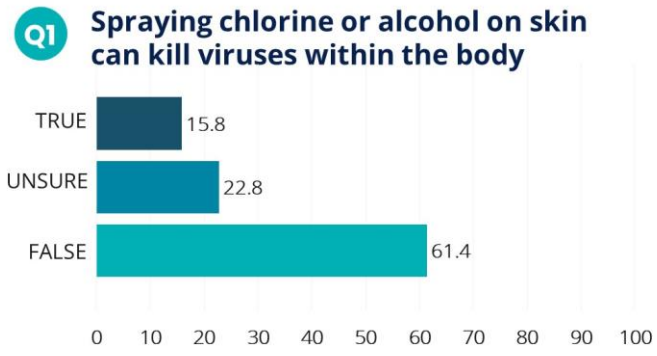


Figure 3: Misbelief that chorine and alcohol can kill the virus.

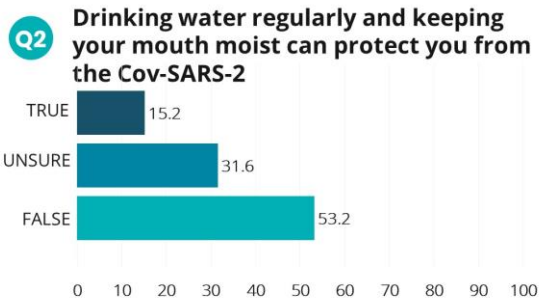


Figure 4: Misbelief that drinking water can prevent Cov-SARS-2 infection.

Most of the respondents (87.1%) would agree that one cannot catch COVID-19 from eating Chinese food (Fig.5). A 22.2% of the respondents believed that sanitizers cannot protect from the virus with 33.3% being unsure (Fig.6).

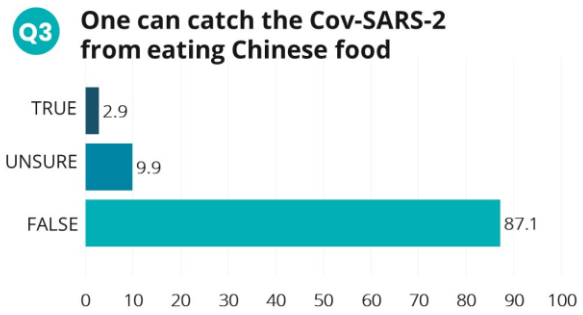


Figure 5: Misbelief that eating Chinese food transmits the Cov-SARS-2.

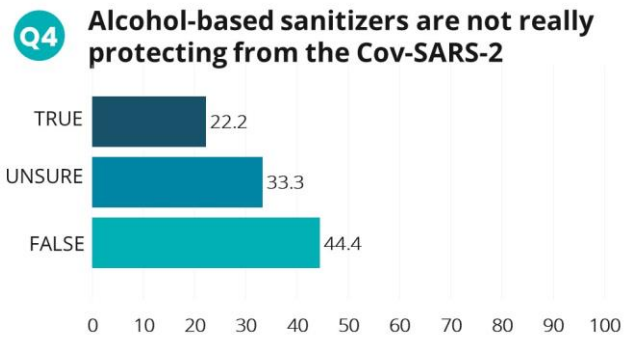


Figure 6: Misbelief that sanitisers do not protect from Cov-SARS-2.

About one third of the respondents 16.4% agreed and 17.5% were unsure that hand washing practices would not protect as much as gloves (Fig.7). One for the largest percentages of being unsure (53.2%)

was given to the question regarding the use of hydroxychloroquine, still with an 8.2% agreeing to that it can prevent COVID-19 illness (Fig.8).

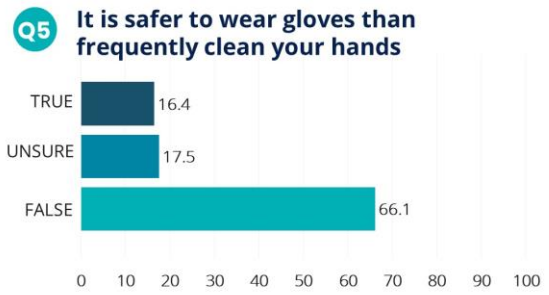


Figure 7: Misbelief that gloves can protect better from Cov-SARS-2.

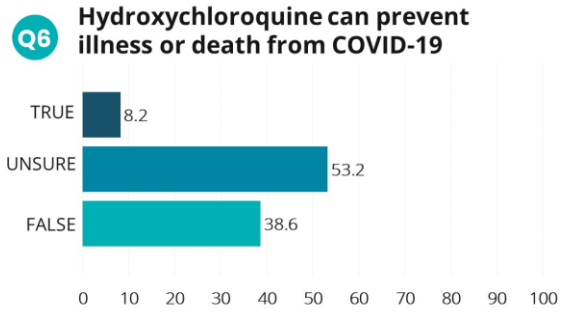


Figure 8: Misbelief that Hydroxycloroquine can prevent death from Cov-SARS-2.

Less than half of the respondents, 16.4% agreed and 39.2% were unsure, that water can transmit Cov-SARS-2 (Fig.9). Similar percentages of responses were given (12.8% agreed and 40.9% were unsure) to the misbelief that shoes can help spread Cov-SARS-2 (Fig.10).

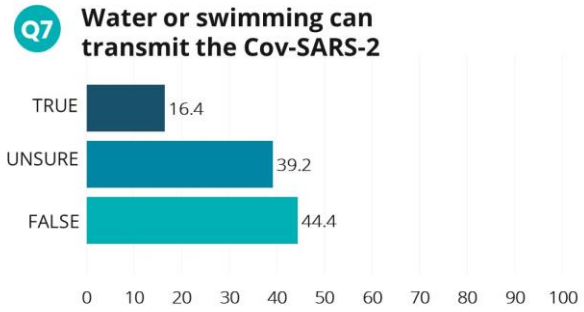


Figure 9: Misbelief that Cov-SARS-2 can be trasnmitted by water.

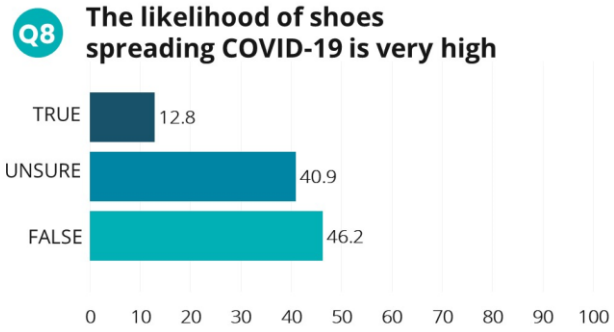


Figure 10: Misbelief that shoes can spread COVID-19.

Taking antibiotics to protect from the virus was seen as a correct practice by one third of the respondents (7.6% agreed and 24.6% were unsure) (Fig.11). Mask-wearing belief that can cause CO2 intoxication was either a conviction (30.4%) or uncertainty (32.3%) of two thirds of the respondents (Fig.12).

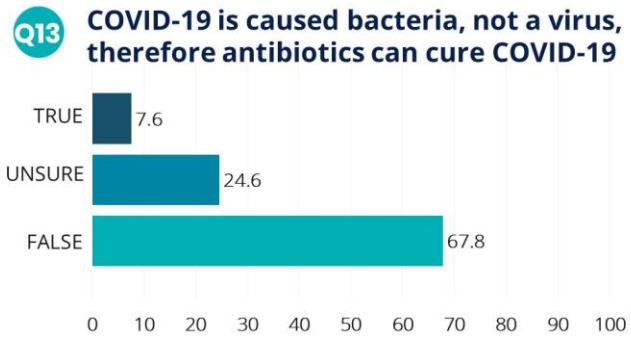


Figure 11: Misbelief that COVID-19 is caused by vacteria.

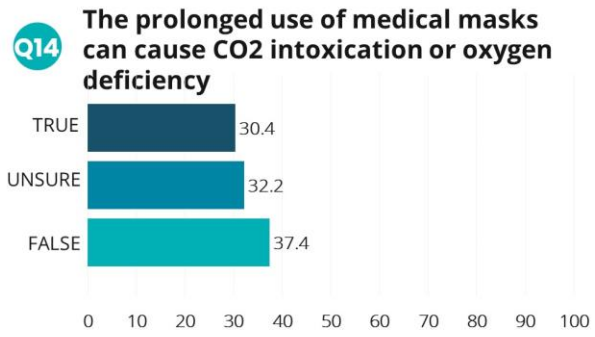


Figure 12: Misbelief that medical masks can cause intoxication.

A small percentage of respondents (8.2% agreed and 22.2% were unsure) believes that pepper can protect from, or cure, COVID-19 (Fig.13). Even a smaller percentage of respondents (4.1% agreed and 15.2% were unsure) believes that drinking bleach can protect from, or cure, COVID-19 (Fig.14).

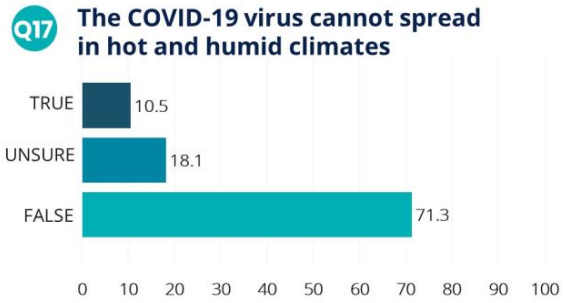


Figure 13: Misbelief that pepper can prevent COVID-19.

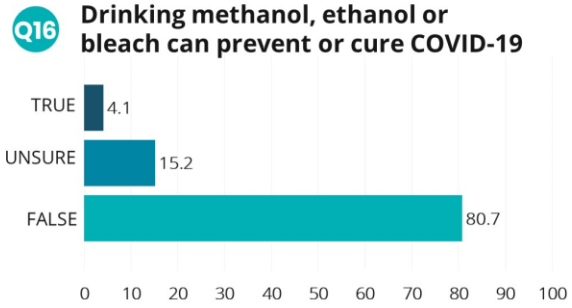


Figure 14: Misbelief that drinking mentanol can prevent COVID-19.

About one fourth of respondents (10.5% agreed and 18.1% were unsure) believes that COVID-19 cannot spread in hot weather (Fig.15). An 8.8% agreed and 25.7% were unsure that the 'breath holding test' was a valid way to diagnose COVID-19 infection (Fig.16).

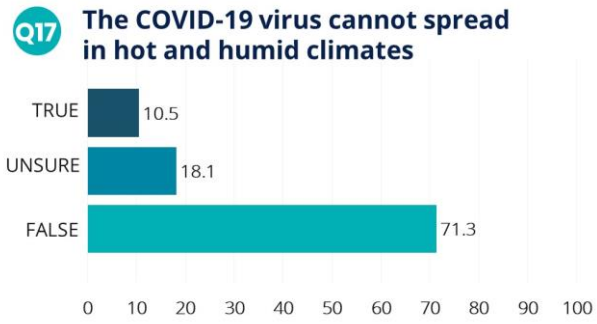


Figure 15: Misbelief that the virus cannot spread in hot weather.

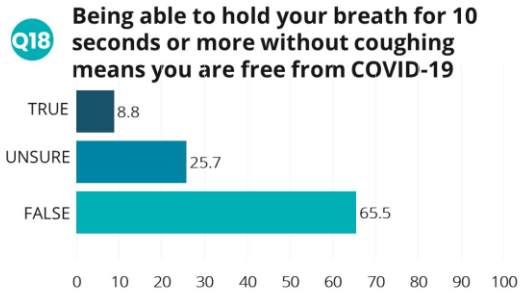


Figure 16: Misbelief that you can diagnose COVID-19 by holding your breath.

The belief that taking a hot bath would prevent COVID-19 was favored by a small percentage of the respondents (4.7% agreed and 14.6% were unsure) (Fig.17). One third of the respondents, 9.9% agreed and 28.7% were unsure, that saline nose rinsing can prevent COVID-19 (Fig.18).

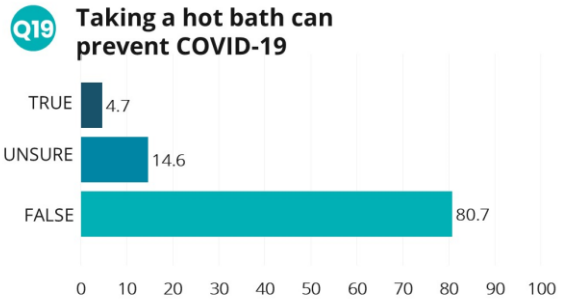


Figure 17: Misbelief that taking hot baths can prevent COVID-19.

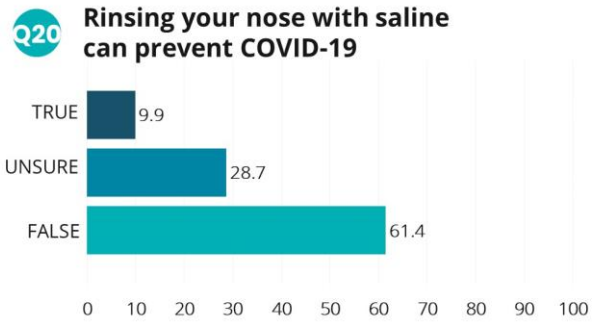


Figure 18: Misbelief that saline can prevent COVID-19.

Finally, a 12.9% would agree and a 26.3% was unsure that eating garlic can prevent COVID-19 (Fig.19).

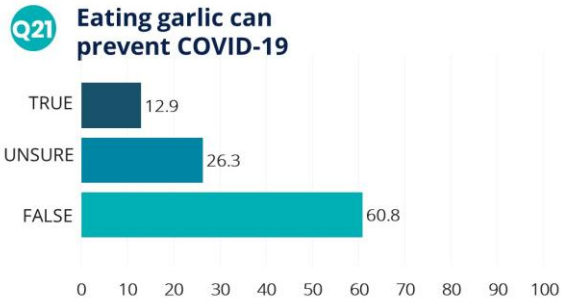


Figure 19: Misbelief that eating garlic can prevent COVID-19.

Coronavirus Mythology

COVID-19 vs. SARS-CoV-2

When communicating with the public, the World Health Organization (WHO) has chosen to refer to the virus responsible for COVID-19 as either 'the virus responsible for COVID-19' or 'the COVID-19 virus'. This decision is based on a risk communications perspective and aims to prevent the unintended consequences of using the name SARS, which can lead to unnecessary fear among certain populations. It is worth noting that the official names are:

Disease: Coronavirus Disease (COVID-19)

Virus: Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

Coronavirus 'Self-Check Test'

Not everything on social media is fact. One of the first dangerous myths that went viral right after the start of the pandemic was the 'simple self-check test,' which, of course, as all medical experts agreed, was completely inaccurate. It consisted of a 3-part post, written on an iPhone notes app, falsely claiming that people can find out whether they have COVID-19 simply by holding their breath for more than 10 seconds. If they could do that, without coughing, the claim was that they did not have the virus. The post went viral in Twitter, Facebook, and emails and it was inaccurately credited to Stanford Health Care. It was false and pure misinformation like many others that followed.

False claims surrounding COVID-19, such as the idea that not drinking enough water can lead to the virus entering the lungs, or that a solution of salt in warm water or warm water alone can kill the virus, lack any supporting evidence from other respiratory viruses. The spread of such misinformation can be incredibly dangerous and even deadly. It was claimed that a runny nose means common cold. This is not completely true again as a runny nose can be a symptom of the flu or allergies. Another myth claimed that the virus causes pneumonia and also infects the throat. Again, this is not entirely accurate as symptoms vary according to demographics and other factors. The claim that coronavirus patients will experience a drowning sensation is also not true and it is not supported by reported cases.

It was also falsely claimed that when patients get fever and/or cough the lung has usually 50% fibrosis and it is too late (Elassar, 2020).

The spread of incorrect information can be both unsafe and lethal. To verify if something that is reported about the coronavirus is correct, one should check with responsible authorities and not social media.

The Drinking Water Cure

One urban legend surrounding COVID-19 suggests that drinking water regularly and keeping the mouth moist can offer protection from the virus. However, this suggestion is not supported by any evidence. After the social media bizarre ideas, that COVID-19 can be cured with cocaine or stopped by avoiding ice cream or that COVID-19 can be prevented by drinking bleach, the suggestion was put forward that drinking water can help to prevent the infection (Gorvett, 2020).

This was extremely unlikely and simplistic. COVID-19 primarily spreads through breathing in tiny droplets containing thousands of viral particles. Swallowing a few viral particles is unlikely to impact the spread of the virus, and the virus can also enter the body through the nose or eyes. Even if the virus is ingested, gastric acid in the stomach will not impact the virus. MERS, a member of the coronavirus family, which emerged from Saudi Arabia in 2012, was found to be considerably resistant to gastric acid. The water drinking technique is not based on science or fact, it is just 'wobbly' theory. The danger lies in the false sense of security that it provides, diverting them from more serious protection methods.

Covid-19 Myths Busted

COVID-19 has generated a lot of fear and with fear come a lot of myths and misinformation; it is critical to distinguish between facts and fiction.

There are several practices that cannot protect against COVID-19, including swallowing or gargling with bleach, taking acetic acid or steroids, or using essential oils, salt water, ethanol, or other substances. Such practices can be dangerous. While it is unclear whether the coronavirus was deliberately created or released by people, it is known that viruses can mutate over time, and disease outbreaks can occur when a virus that is common in animals passes to humans. Most viruses do not remain alive on surfaces for long periods, so ordering or buying products shipped from China is unlikely to make a person sick. Face masks can protect against COVID-19, but they must be fitted tightly to prevent the entry of infected droplets into the nose, mouth, or eyes (Maragakis, 2020; Yan & Andrew, 2020).

It is inaccurate to believe that COVID-19 is no more dangerous than winter flu just because a lot of people who get coronavirus experience just flu symptoms. The truth is that the overall profile of the disease, including its mortality rate, looks more serious. If the COVID-19 1% fatality rate is accurate it would make it about 10 times more deadly than seasonal flu. The early notion that COVID-19 kills the elderly and younger people can relax does not seem to be entirely correct. Still, a lot of people who are not elderly may have underlying health conditions and can become critically ill from COVID-19. Still the disease has a higher chance of leading to serious respiratory symptoms (Devlin, 2020; Yan & Andrew, 2020).

Spraying chlorine or alcohol on skin cannot kill viruses within the body. Applying alcohol or chlorine to the body can cause harm, especially if it enters the eyes or mouth. There is little evidence that cats and dogs spread coronavirus. The majority of the global outbreak of COVID-19 has been caused by human-to-human transmission. It's important to note that hand dryers do not have the ability to kill the virus, and individuals should instead rely on standard hand washing techniques using soap and water or an alcohol-based hand rub. There is no evidence to support the belief that COVID-19 will die off in warmer temperatures, and it's worth noting that antibiotics only have the ability to kill bacteria, not viruses. While garlic has been shown to prevent the growth of bacteria, COVID-19 is a virus and therefore not impacted by garlic. Various home remedies, including vitamin C, essential oils, silver colloid, and sesame oil, have not been proven to be effective against the virus. It is important to note that COVID-19 cannot be transmitted through urine or feces, and individuals cannot contract the virus from eating Chinese food. Additionally, there is no evidence to suggest that the outbreak originated from individuals consuming bat soup (Newman, 2020; Yan & Andrew, 2020).

The Endemic of Viral Conspiracy Theories

Russia's Targeted Conspiracy Theories

Since its establishment in 2011, a biomedical lab in the Caucasus region funded by the US government to enhance infectious disease testing and monitor dangerous pathogens has become the subject of Russian disinformation campaigns and conspiracy theories. The lab has been falsely accused by Russian media and government campaigns of conducting secret government testing, engineering COVID-19, Ebola, flu outbreaks, and even producing poisonous nerve agents. Russian media and state defense officials, along with Russian TV channels promoting anti-Western conspiracy theories, have suggested that the lab is part of a secret US bioweapons program, designed to hurt China and potentially Russia, while profiting from the treatment and potential vaccinations for COVID-19 (Prothero, 2020).

COVID-19 'Bioweapon' Conspiracies

The virus of disinformation has been spreading faster than the coronavirus itself. As this paper is being written there is a renewed interest and inquiry on behalf of the U.S. administration to answer the origin of the virus. Chinese authorities assert that the virus probably emerged from a marketplace in Wuhan where bat meat was being sold. Propaganda media in China, Iran, and Russia have been promoting various narratives regarding the virus's origins, still without evidence, and have been promoting the idea that the recent world health crisis is the result of U.S. biological weapons (Tucker, 2020).

Some of these theories suggest that the US is weaponizing the crisis for political gain and thus causing the virus to spread globally. The Iranian media has been particularly aggressive in pushing their side of the story, which Western media has dubbed 'fake news,' suggesting that COVID-19 may be a U.S. or Israeli and Zionist manufactured bioweapon intended to harm Iran. This theory can be traced back to the conspiracy theorist radio host Alex Jones, who falsely claimed that the U.S. developed the SARS virus as a bioweapon. Russia has been amplifying Iranian statements that COVID-19 was a U.S. weapon aimed at Iran and China. Some fringe sites have suggested that the virus was the result of a botched bioweapons program in China, while China has blamed the U.S. for unfair media treatment because China dealt with the COVID-19 more forcefully than the U.S. (Tucker, 2020)

In times is crisis nation-states continuously spread disinformation and fabricate misleading stories about the root cause of the issue. A few select narratives open the way for developing or amplifying pseudoscience and revising histories about a problem's origin. No matter how hard new and social media are trying to distinguish among disinformation, misinformation and factual information around the epidemic, human curiosity and fear will conquer by continually spreading nonsense about coronavirus and only confusing the issue more.

Debunking COVID-19 Conspiracy Theories

When disinformation and misinformation start spreading it gets hard to tell what is a scam or rumor and what is important information. The way we work and entertain ourselves has been changed by COVID-19. Politicians in the U.S. have been pushing tactical conspiracy theories, that the coronavirus was bio-engineered by a Chinese lab. Chinese officials pushed back the conspiracy theory that the US bio-engineered the virus. The origin of conspiracy theories may be actual governments intentionally constructing them for strategic reasons. They are quite distracting for political reasons.

Conspiracy theories erode public trust in government institutions and medical institutions, who provide scientific and fact-based information and this can be damaging as people are disregarding the guidance provided by these institutions, engaging in behavior that puts themselves and the public at risk. Two factors that increase susceptibility to conspiracy theories are a sense of helplessness and the need to deal with a threat. Believing in conspiracy theories gives people a feeling of control. They have a casual explanation about random things happening, as human nature does not like randomness.

Conspiracy theories offer meaning at times when people are really vulnerable. There are numerous ways on how to debunk conspiracy theories. Instead of trying to persuade conspiracy theorists that their beliefs are false, the most straightforward and effective approach is likely to prevent individuals from succumbing to conspiracy theories in the first place. Additionally, it is important to address conspiracy theories in a way that does not reinforce or promote them (Calma, 2020).

Coronavirus and The Plague

Conspiracy theories have been prevalent during pandemics. Despite reports suggesting otherwise, it's untrue that Albanians possess genetic immunity to the virus, and the Bulgarian prime minister doesn't possess a mystical aura that protects him from COVID-19, as claimed by a fortune teller. COVID-19 conspiracies have ranged from absurd to outlandish, with YouTuber Dana Ashlie suggesting that the virus emerged due to the rollout of 5G technology in Wuhan (DW.com, 2020).

Conspiracy theories have consistently arisen during pandemics, with many of them purporting that a group is attempting to control and destroy a nation, institution, or even the world.

During the 14th century's plague outbreak, unfounded rumors circulated that Jews poisoned wells to control the world. In the 1918 Spanish flu outbreak, some people believed the pathogen was created by the German army as a weapon. During the 1950 Colorado potato beetle infestation, East Germany's socialist leadership accused the U.S. of orchestrating the infestation to harm their economy. The KGB spread rumors during the AIDS epidemic that the U.S. created AIDS as a biological weapon, and during the Ebola outbreak, conspiracy theories emerged that the virus was a bio-weapon created by the U.S. or Great Britain (DW.com, 2020).

Conspiracy theories lack supporting evidence and are often prevalent during the early stages of pandemics when little is known about the disease. Digital technologies have facilitated the spread of rumors and misinformation, making it easier for conspiracy theories to go viral. To combat pandemics, it's important to promote education, media literacy, good mental health, and not resort to irrational solutions like drinking Corona beer to combat coronavirus-related fears.

Hoaxes and Other Conspiracy Theories

From measured caution to unmitigated panic, the response on social media towards COVID-19 has varied. False rumors, hoaxes, and misinformation about the virus have been circulating, along with conspiracy theories and racist paranoia (Dickson, 2020).

The government introduced the coronavirus in 2018, and Bill Gates was also somehow responsible: Facebook groups associated with QAnon and anti-vaccine movements shared a patent link that suggested the government had introduced coronavirus to make money off of a potential vaccine. The Gates Pirbright Foundation was linked to funding a livestock disease and immunology project by QAnon theorists. In 2018, Gates presented a simulation at a Massachusetts Medical Society event, which suggested that a flu similar to the 1918 pandemic could kill millions, stating that the global public health community was not equipped to deal with such an event. Although Gates was advocating for better preparedness in fighting pandemics, social media twisted his message to portray him as a globalist billionaire, ominously predicting the engineering of a global catastrophe for personal profit.

There is a vaccine or cure for coronavirus that the government won't release: A viral Facebook post claimed that the government has a vaccine or cure for COVID-19, but they are not releasing it. The post contained a screenshot of a CDC patent application for a coronavirus vaccine, indicating that the virus was introduced by the government to benefit pharmaceutical companies. However, the patent screenshot actually applied to SARS, not COVID-19.

Coronavirus originated with Chinese people eating bats: Social media has hastily concluded that the coronavirus outbreak was caused by Chinese people eating bats, based on viral videos showing people consuming bats or bat soup. However, survey data from 2006 indicates that the practice of eating exotic animals had declined since the 2002-2003 SARS outbreak. There is no evidence linking eating bats to the coronavirus outbreak, and it is important to avoid criticizing cultural practices.

The virus is no worse than the common cold: A supporter of former President Trump claimed online that the media was exaggerating the threat of COVID-19 to undermine the Trump administration, and that the virus was no more serious than a common cold. However, we now know that COVID-19 has different symptoms and a higher mortality rate than the common cold.

Hand dryers are effective at killing coronavirus: Chinese social media has propagated the idea that using a hand dryer for at least 30 seconds is an effective way to prevent the spread of coronavirus. However, the World Health Organization (WHO) has stated that this method is not effective.

Coronavirus is a bioweapon engineered by the Chinese government (or the CIA) to wage war on America (or China): However, there is no evidence in the genome sequence of the virus that suggests it was engineered.

Author Dean Koontz predicted the coronavirus: Dean Koontz's novel predicted a deadly virus called 'Wuhan-400' but there are no similarities between this fictional virus and COVID-19. Wuhan-400 is described as a deadly virus that kills its victims by creating a toxin that eats away at brain tissue.

The Simpsons predicted the coronavirus: Screenshots allegedly from The Simpsons' 1993 episode 'Marge in Chains' about an outbreak of a mysterious illness have been circulating online. However, the illness referred to in the episode is actually called 'Osaka flu' and has no connection to the current COVID-19 pandemic.

A 'miracle' bleach product can cure coronavirus: Supporters of the far-right conspiracy theory QAnon have been promoting a bleach-based product called Miracle Mineral Solution (MMS) as a cure for coronavirus. This is a dangerous product that can cause serious health problems such as vomiting, diarrhea, and liver failure if ingested.

Vitamin C (quarantini cocktail) can help you ward off coronavirus: Some people on social media have suggested that taking vitamin C supplements can help ward off coronavirus, but there is no evidence to support this claim.

Coronavirus will go away by summertime: Many public figures have suggested that COVID-19 will go away by summertime, but this has not been the case.

COVID-19 Scams, Fraud And Misinformation

Cybercriminals Take Over

Immediately after confirmed COVID-19 cases emerged worldwide, cybercriminals began utilizing three core tactics to exploit people's fear and uncertainty for personal gain. These tactics include phishing and social engineering scams, the sale of fraudulent or counterfeit goods, and the spread of misinformation.

The cybercriminal activity surrounding this global pandemic has the potential to cause financial damage and promote dangerous guidance. Health organizations such as the WHO and the CDC are frequent targets for impersonation due to their perceived authority. Attackers have been observed using URLs or document downloads promising important safety documentation or infection maps to tempt victims. An advertisement for a method to deliver the AZORult malware via an email attachment disguised as a John Hopkins map of the virus's outbreak was posted on the Russian cybercriminal forum XSS by a user. Phishing scams impersonating official email correspondence from the WHO have contained links to purported documents on preventing the spread of the virus. Malicious domains have been used to spread misinformation, host phishing pages, and COVID-19-related fraud schemes. COVID-19-related misinformation, also known as an ‘infodemic,’ has primarily been spread via social media and private messaging platforms.

The shift to digital learning or work-from-home arrangements has resulted in a significant increase in cyber threats for universities, schools, health institutions, and other organizations. The abrupt migration of people from closely monitored and secured enterprise and university networks to largely unmonitored and often insecure home WiFi networks has created a massive target for cybercriminals. The reliance on mobile devices has also increased due to working from home or remote locations,

making mobile attacks particularly effective as they prompt immediate responses from users. (Securitymagazine.com, 2020).

During a crisis, cybercriminals will attempt to exploit people for financial gain. They often create fake websites to trick victims into transferring money to support those in need. However, with event cancellations, cybercriminals are resorting to phishing scams that use fake news and other tactics to obtain victims' credit card information or credentials. It is crucial to maintain a skeptical approach and be extra cautious these days. If you're unsure whether a request for help or a link is legitimate, it is best to delete it or turn away from it.

Coronavirus Phishing Emails

Phishing attacks aimed at exploiting public fears about the deadly virus have significantly increased. Cybercriminals send emails posing as legitimate organizations, with information about the coronavirus. The emails may contain an attachment or embedded link that can download malicious software onto your device. Once the malware is installed, cybercriminals can take control of your computer, access your personal and financial data, and even steal your identity.

There are various types of coronavirus-themed phishing emails, such as CDC alerts falsely claiming to link to a list of cases in your area, health advice emails offering purported medical advice, and workplace policy emails targeting employees' email accounts. To avoid scammers and fake ads, it's crucial to recognize the sense of urgency they're trying to create. Responding to such ads could lead to downloading malware, receiving useless products, or sharing personal information like name, address, and credit card number. Avoid any ads that capitalize on the coronavirus or any email seeking personal information, with an illegitimate email domain or web address. Look out for spelling, punctuation, and grammar errors, which are likely signs of a phishing email, as well as generic greetings like 'Dear sir or madam.' Phishing emails often create a sense of urgency or demand immediate action (US.norton.com, 2020).

It is important to note that legitimate information about the coronavirus can be found online through resources such as the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), and the National Institutes of Health (NIH).

Malicious Campaigns

Cybercriminals have taken advantage of COVID-19 to launch various malicious campaigns, including email spam, BEC, malware, ransomware, and malicious domains. They often use timely hot topics, occasions, and key personalities in their social engineering strategies. Malicious attacks related to the coronavirus, including malware and spam, have been reported globally.

Cybersecurity research showed that most of the emails, purportedly from official organizations, contained updates and recommendations connected to the disease and included malicious attachments. The most popular email subject has been 'Corona Virus Latest Updates' containing recommendations on how to prevent infection. Some spam emails were related to shipping transactions, either postponement due to the spread of the disease or one that provides a shipping update. Other, in languages other than English, contained 'important information about the virus,' or a supposed

'vaccine for COVID-19.' Cybercriminals also have been taking advantage of coronavirus maps and dashboards, with fake websites that lead the download and installation of malware.

Cybersecurity research indicates that many emails, purportedly from official organizations, contain updates and recommendations related to the disease and have malicious attachments. The most popular email subject is 'Corona Virus Latest Updates,' which provides recommendations on how to prevent infection. Some spam emails relate to shipping transactions, either postponed due to the spread of the disease or providing a shipping update. Other emails, in non-English languages, contain 'important information about the virus' or a supposed 'vaccine for COVID-19.' Cybercriminals are also exploiting coronavirus maps and dashboards by creating fake websites that lead to the download and installation of malware. (Trendmicro.com, 2020).

To prevent malware and malicious domains from causing harm, cybersecurity experts and companies recommend using software that blocks them. It's also advisable to have multilayered protection to safeguard against all potential threats and prevent users from accessing any malicious domains that could deliver malware.

Conclusion

The COVID-19 pandemic has revealed our vulnerability to digital technologies and has alerted our human perception to reach a deeper understanding and awareness, and an increased vigilance to protect ourselves from the dangers of false information, dangerous conspiracy theories based on illogical and scientific premises, and direct cybercrime threats attempting to exploit human hear and insecurity in times of crisis.

Moreover, the COVID-19 pandemic has revealed the power of information to form opinions, beliefs, attitudes and behaviors that have an impact on human perception and social in the physical world. It has also exposed the problematic operation and intentions of numerous news and social media agents who have been disseminating misinformation or 'trash' information. Consequently, this inevitably leads to question the production knowledge, based on such information, by those who own, those who exploit, and those who thrive on, the digital technologies landscape worldwide.

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