

## Myth and Truth about 5G Network Technology: Conspiracy Theory

Oduroye Ayorinde P<sup>1\*</sup>, Oyelowo, Timothy Olaniran<sup>1</sup>, Sarumi, Jerry Abayomi<sup>2</sup> and Ajulo, Emmanuel Bamidele<sup>1</sup>

<sup>1</sup>Caleb University, Imota, Lagos State, Nigeria

<sup>2</sup>Lagos State University of Technology, Ikorodu, Lagos State, Nigeria

\*Corresponding Author: Oduroye Ayorinde P, Caleb University, Imota, Lagos State, Nigeria.

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### Abstract

In today's world, the rapid dissemination of information on social media and other digital platforms has brought about information pollution such as misinformation, disinformation, fake news, and different types of propaganda. This study was based on the rational myth theory as concern the 5G Network. The following myths were identified and debunked - 5G Effect on Ecosystem, 5G and Tissue heating, 5G and Cognitive function, 5G and Cancer and many more. Secondary materials like journal articles, books and WHO reports on COVID-19 were read to extract some known myths about the pandemic and thereby bring out the truth about the 5G network technology and its associated benefits that can help policy makers to make quality decisions that will benefit the populace as concern the 5G technology.

**Keywords:** 5G Technology; COVID-19; Social Network; Fifth Generation Cellular Network; Pandemic Outbreak; Novel Coronavirus Disease; Conspiracy Theory; Fake News

### Introduction

The India Times of May 3, 2022 acknowledged that 5G is the fifth generation cellular network technology that will enable users to achieve more benefits and this technology is slowly replacing 4G networks in different parts of the world, 5G meets the needs of smartphone users in accessing data at any time [2]. The beginning of December 2019, witnessed an outbreak of the novel coronavirus disease known as COVID-19. The global spread of the pandemic outbreak was associated with the fifth generation mobile telecommunication technology - (5G). Many agencies, industries, Governments and scientists have condemned the notion that 5G helps to spread Covid-19 as "utter rubbish" [4]. Ahmed W, Vidal-Alaball J, Downing J, and López Seguí F. (2020) reported a popular theory that linked 5G to the spread of COVID-19, which unfortunately led the citizens of United Kingdom to burn the 5G towers in the country [3]. This act of vandalism was also reported

by Shanapinda in The Conversation, that about 20 mobile phone masts across the UK were destroyed or vandalized [16].

**Figure 1:** False theories linking 5G to coronavirus 1.

False theories linking 5G to coronavirus have proliferated rapidly with the help of social media platforms. Photograph: Ben Duffy Photography/Vodafone retrieved from <https://www.theguardian.com/technology/2020/apr/14/arsonists-attack-phone-mast-serving-nhs-nightingale-hospital> on 12/10/2022.

Shanapinda (2020) then condemned the act, he is of the opinion that promoting misinformation is wrong and destructive [16]. In like manner, a new phone mast serving NHS Nightingale hospital in Birmingham was also hit in a suspected arson attack [4]. Misinformation has done a lot of damages to the implementation of 5G technology for development.

**Figure 2:** A telecoms mast damaged by fire in Sparkhill, Birmingham. Photograph: Carl Recine/Reuters. Retrieved from <https://www.theguardian.com/technology/2020/apr/06/at-least-20-uk-phone-masts-vandalised-over-false-5g-coronavirus-claims> on 12/10/2022.

**Statement of problem**

The advent of COVID-19 has made individuals and corporate bodies to ascribe the outbreak of the pandemic to 5G network. In reaction to this, there arose a lot of myths and conspiracy theories surrounding the 5G technology which have impacted its implementation in many countries of the world.

**Aims and Objectives**

The aim of this paper is to examine many of the Myths and Truths about 5G network technology. The objectives are:

- To state some of the myths
- To debunk them
- To state the truth about the 5G network technology
- Benefits Associated With 5G Network Technology

**Methodology**

A number of secondary materials like journal articles, books and WHO reports on COVID-19 will be read to extract some known myths about the pandemic and bring out the truth about the 5G network technology and its associated benefits.

**Review of related works**

Ovenseri-Ogbomo G., Ishaya T., Osuagwu UL, Abu EK., Nwaeze O., Oloruntoba R., Ekpenyong B., Mashige KP, Chikasirimobi T, Langsi R., Charwe D.D., and Kingsley Agho K. (Vol. 4, 2020 November 03, 2020) in their work titled “Factors associated with the myth about 5G network during COVID-19 pandemic in sub-Saharan Africa” that was published in the Journal of Global Health Reports. Their survey was administered on 2032 participants between April 18 - May 16, 2020, during the compulsory lockdown period in some sub-Saharan Africa countries. Participants were enlisted via Facebook, WhatsApp, and authors’ emails. The aim of the analysis was to find out whether applicants assumed that 5G technology was the cause of the coronavirus outbreak or not. The result of the study indicated that 7.4% of the adult who participants from SSA held the belief that 5G technology caused COVID-19 pandemic, which was a myth [13].

Ahmed W., *et al.* (2020) carried out a study on how to develop an understanding of the drivers of the 5G COVID-19 conspiracy theory and proposed policies to deal with such misinformation. The result of the study was published in the Journal of Medical Internet Research of May 6, 2020 in Vol 22, No 5. The methodology of the study was a social network analysis and content analysis of Twitter data for a 7-day period that is from Friday, March 27, 2020, to Saturday, April 4, 2020 in the United Kingdom. The result of the study showed that fake news websites including YouTube videos were the sources of disseminating fake news to the people. An account with the sole aim of spreading conspiracy theory on Twitter was also identified. The study finally revealed that there was a lack of an authority figure that was actively combating fake information [3].

In year 2020, Kausar, S., Tahir, B. and Mehmood, M.A. did a study on “ProSOUL: A Framework to Identify Propaganda From Online Urdu Content,” and was published in IEEE Access in year 2022. In order to identify the origins and substance of propaganda

distributed in the Urdu language, the study suggested a framework called "Propaganda Spotting in Online Urdu Language (ProSOUL)". Information pollution, which has become a serious threat to the online digital world, has provided a number of challenges for social media platforms and governments throughout the world, the report claims [8,13].

### Theory of myth

Four basic theories of myth were stated by Google which are "the rational myth theory, functional myth theory, structural myth theory, and the psychological myth theory". The rational myth theory states that "myths were created to explain natural events and forces". This study is not concern about other types of myth theory but the rational myth theory as concern 5G Networks with understanding that more lights will be shown about the natural events and forces surrounding the pandemic. Myths are stories that are based on tradition as stated by Google. While some are entirely made up, others have roots in reality. Myths, however, are more than just stories; in both ancient and modern civilizations, they have deeper significance. The universe and human existence are described in myths, which are cherished narratives.

### Conspiracy theory

Thousands of conspiracy theories abound on the social media and some are propagated on some websites. Some theories have enveloped the globe about the alleged hazardous nature of this technology, which some claimed can be devastating to human health. Adepetur (2020) posited that "high level of apprehension and uncertainty is daily sending jitters down spines in different parts of the globe, with numerous conspiracy theories flying everywhere". The story has been the same from China to United Kingdom, United States to Belgium, and Canada to South Africa [1]. The following were identified to be the key fake news which has influenced the beliefs of the people globally:

### 5G effect on ecosystem

During the Covid-19 outbreak there were rumors, news and videos circulating on social media and different news platforms that 5G deployment has made it possible for the pandemic to kill animals and birds within their ecosystem especially in areas where the technology was deployed. There was also report that the behavior of sparrow and bees were affected due to the deployment of the 5G technology. The change in behavior of sparrows could

be as a result of climate change while the killings could be as a result of break out of diseases affecting only birds. This myth was debunked in the sense that Electromagnetic radiation (ER) has long term effects on birds especially crows, owls, and sparrows. Also, Scientists were able to prove that ER does not affect the family of crows and pigeon as much as sparrows [15].

Electromagnetic radiation has a minimal impact on the tissues of birds. On bees, Rajesh, *et al.* (2021) stated that scientists found out that excessive exposure of cell tower radiation killed honey bees in most of the places in UK, Netherlands, and USA. However placing all these changes on 5G technology may not be entirely correct as 5G millimetre wave have less ability to disperse widely to the extent that it will cause such a huge impact as recorded [15].

Concerns have also been raised about auctioned bands interference with water vapor bands that are required for weather forecasting satellites. However, eliminating all the concerns raised about 5G on ecosystem will require painstaking technical assessment and rigorous pattern tests in order to articulate preventive measures necessary for the ecosystem balance.

### 5G and tissue heating

Tissue heating is another area of concerns that has been linked to 5G technology. The 5G technology relies on Millimetre wave (MM wave) spectrum which is a band of spectrum between 30 and 300 gigahertz (GHZ) to generate high speeds. According to [15] Rajesh Kumar, *et al.* 2021 in their article "Adverse Effects of 5<sup>th</sup> Generation Mobile Technology on Flora and Fauna: Review Study," millimeter waves can penetrate skin up to 1.0 millimeters thick and their absorption depends on a variety of variables that vary depending on gender, skin type, body type, hydration level, and skin thickness. They went further based on previous work that penetration power of millimetre waves is not deep in the human skin because it can only create the thermal effect.

[19] A 2020 WHO paper titled "5G-Mobile Networks and Health" The primary method by which radiofrequency fields interact with the human body is tissue heating. The amount of radiofrequency radiation caused by modern technologies barely raises the body's temperature. As the frequency rises, less energy is absorbed by the body tissues and is instead concentrated more on the surface of the body (skin and eye). No negative effects on public health are

predicted as long as the overall exposure is below international standards. There is therefore need for more studies on 5G impacts on human tissue.

Other conspiracy theories that 5G accelerates the new coronavirus has been debunked to be false, the claim that 5G might suppress the immune system and that viruses can communicate through radio waves has also be debunked to have no credible facts. Neither of these theories is backed up by evidence. The new coronavirus is also affecting countries and regions where no 5G is present [10]. The rumor has caused a great step back in the implementation of 5G technologies which has resulted in the denial of benefits that are associated with 5G technologies.

### 5G and cognitive function

Another area of concern is 5G effect on cognitive function, but there has not been much study in this area. However, there are a quite a number of researches on Electromagnetic field (EMF) from different researchers on effect of EMF on cognitive functions with different findings [7]. Deniza Omur Gulsum., *et al.* 2017 in their work "Effects of short and long-term electromagnetic fields exposure on the human hippocampus" highlighted different findings by researchers on the effect of RF-EMF on cognitive reasoning, while some researchers observed no effect of exposure to EMF emitted by mobile phones on concentration capacity and memory, some other had contrasting findings while other suggested that electromagnetic radiation exhibited beneficial effects on short-term memory. However [7], Deniza Omur Gulsum., *et al.* concluded in their small study that use of mobile phones for more than 90 min in a day is associated with increased problems of concentration and attention but no impact on memory task when the mobile phone is used over prolonged period of time.

[6] Curcio Giuseppe, 2018 in his mini review of 43 literatures on exposure to mobile phone emitted EMF concluded that there is no evidence of a negative influence of mobile phone emitted EMFs on different aspects of human cognitive function and researchers used different methodology, dosimetry or statistical analysis, generalizing the findings could be a herculean task thus the need for more research work in this area.

### 5G and cancer

Cancer is another health issue raised against 5G deployment by public and various researchers. There have been a lot of studies on

radio frequency (RF) electromagnetic fields (EMF) on humans with conflicting result. [20] WHO/International Agency for Research on Cancer (IARC), 2011 classified radio frequency electromagnetic fields as possibly carcinogenic to humans based on an increased risk for glioma, a malignant type of brain cancer, associated with wireless phone use [5]. Carlberg and Hardell, 2017 concluded in their study that RF radiation should be regarded as a human carcinogen causing glioma. However [18], Vila., *et al.* 2018 found no clear association with radio frequency (RF) or intermediate frequency (IF) electromagnetic field (EMF) and glioma or meningioma. This calls for more studies to determine the risk of 5G contributing to development of cancer. Theories relating to 5G and Cancer have been debunked to be false on the ground that the level of radiation from 5G is far below levels of electromagnetic radiation thought to cause damage to cells in the human body [10].

### 5G and DNA

All of this is likely caused by the fact that radiofrequency communications used in 5G and other technologies involve radiation, which for many people conjures images of Chernobyl, the atomic bomb, and cancer. However, only the shorter-wavelength frequencies in the upper portion of the electromagnetic spectrum (from the edge of UV to X-rays and gamma radiation) are "ionizing", which means they can damage DNA by rupturing molecular bonds.

The wavelengths of non-ionizing radiation, which includes the remainder of the visible spectrum, infrared, microwave, and radio waves, are too long to be able to remove electrons from atoms. Consequently, they are unable to harm living things in the same way as X-rays or gamma radiation may. In other words, microwaves cannot physically cause cancer in the same way that gamma rays do.

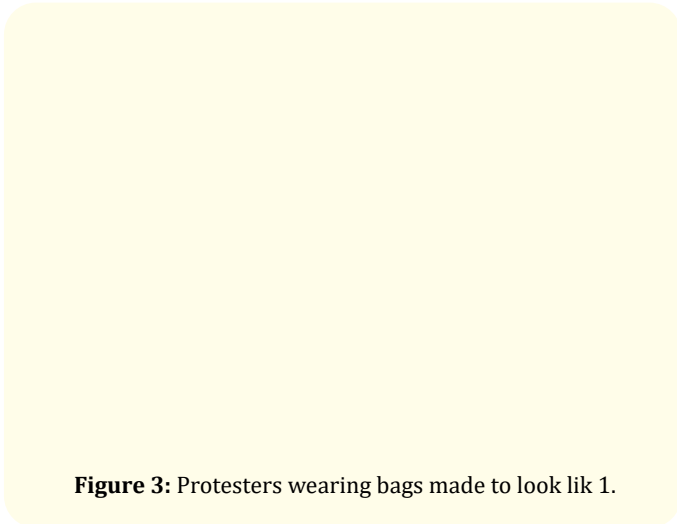
The danger of developing health issues is not supported by any credible or consistent scientific evidence when it comes to cell phone use. Because 5G would employ frequencies currently covered by current federal rules, regulatory authorities in the US think there won't be any new safety concerns.

If you're interested in more information, the NCI publishes lengthy factsheets on both the connection between electromagnetic fields and cancer risk and cell phones. One extremely well-established health risk associated with cell phones is an increase in traffic accidents brought on by persons talking on the phone or texting while driving.

### 5G and microchip

Bill Gates rumors and 5G conspiracies have gained popularity in Serbia, especially on television and in the tabloid press, where information is frequently gleaned from English or Russian sources. Lazara Marinkovic, a disinformation reporter for BBC News Serbian, says, “So we get to witness the same fake news stuff as the UK, US, or elsewhere”.

Celebrities like Novak Djokovic, who disclosed his anti-vaccination stance in April, and his wife Jelena, who uploaded a video promoting suspicions about 5G, have contributed to the rumors. David Icke, a British conspiracy theorist who was banned from Facebook and YouTube, has been credited with spreading the 5G accusations throughout the English-speaking globe.



**Figure 3:** Protesters wearing bags made to look like cellphones.

Protesters wearing bags made to look like cellphones rallied against 5G technology last year in Bern, Switzerland. Credit... Stefan Wermuth/Agence France-Presse — Getty Images retrieved from <https://www.nytimes.com/2020/04/10/technology/coronavirus-5g-uk.html>

Videos showing him talking about a connection between 5G and the virus have been taken down from social media, but they can still be seen online. These videos have received hundreds of thousands of views on Russian YouTube and Facebook accounts.

### 5G and data privacy

Conspiracy theories abound over 5G. They exhibit the ongoing resistance to change that almost all revolutionary new technologies

encounter. Having said that, 5G will usher in novel goods, services, and practices. And some of them might result in bad things.

There are valid reasons to exercise caution. The privacy issue is one that is valid. The amount of data moving over cellular networks will significantly increase with 5G. By the end of 2020, the amount of monthly mobile data traffic in the world would have surpassed 49 exabytes (or 49 billion gigabytes), according to Ericsson.

In 2026, it is anticipated to reach 237 EB each month. Furthermore, unlike now, machines rather than individuals with cellphones will produce approximately half of this data. In contrast to the 5 billion 5G IoT connections, the World Economic Forum predicts that by 2025 there would be 2.6 billion “human” 5G subscribers.

Obviously, the potential of leaks, both unintentional and intentional, increases as more data from more (diverse) sources is collected. The issue of unauthorized corporate or governmental access to personal data is often brought up. However, it’s crucial to keep in mind that 5G stakeholders are well aware of these flaws. In fact, they included a number of privacy protections in the network architecture itself.

Additionally, 5G is being introduced into a world where consumers have greater legal rights than ever before. However, there are clear security and privacy problems. Physical security is provided by the “traditional” centralized 5G setup; data centers can even have guards and fences around them. Mobile edge computing (MEC) servers, in contrast, are decentralized. There may be thousands of them. Because of this, it’s crucial to keep an eye on and limit access.

Furthermore, just because a network is private doesn’t mean that no data ever leaves it. There will still be information flow between many private networks and public infrastructure. To stop data leaks, businesses and MNOs must maintain sufficient isolation. Additionally, they demand “data in motion” security that satisfies the 5G networks’ strict criteria for high throughput and extremely low latency. Many currently used technologies won’t be able to keep up.

### Benefits associated with 5G network technology

Greater data transmission rates than 4G LTE are possible with 5G. This translates to greater network dependability, quicker



downloads, and more connected devices supported than before. It represents a development in 4G technology.

### High speeds

In comparison to 4G and 4G LTE, 5G operates more quickly on mobile phones and other devices. Instead of taking minutes, it enables customers to download movies, videos, and music in seconds. Organizations can use the network's 20 Gbps speed for services like automation, enhanced web conferencing, etc.

### Low latency

In comparison to 4G, 5G offers lower latency, which will effectively enable emerging applications like AI, IoT, and virtual reality. It also makes it simple for mobile phone users to open websites and browse the web. Another benefit is that it provides means to access the internet whenever you need to find some crucial information.

### Increased capacity

With 5G, capacity might be up to 100 times greater than with 4G. It dramatically improves performance by allowing businesses to switch between cellular and Wi-Fi wireless solutions. It also provides very efficient ways to access the internet.

### More bandwidth

The increased bandwidth provided by 5G is one of its main advantages because it will speed up data transport. Mobile phone users can also receive a quicker connection with more bandwidth by choosing a 5G network.

### Powering innovation

Connecting with a wide variety of devices, such as drones and sensors, requires the use of 5G technology. It provides tactics for quickening IoT adoption, enabling companies to boost output and carry out additional tasks.

### Less tower congestion

Congestion on 4G wireless networks makes it difficult to access crucial data and causes other issues. However, because 5G networks have higher speed and more bandwidth, customers can avoid them.

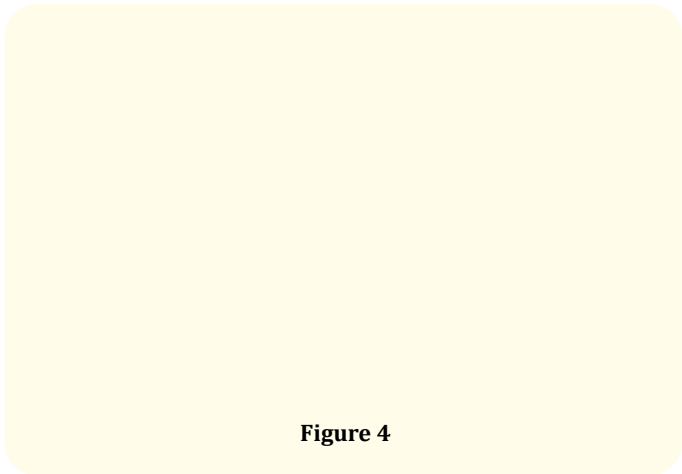


Figure 4

## Conclusion

Since these conspiracies have the potential to impede global development, scientists are working hard to ensure that they are disproved. In order to stop the disease from spreading further, public health efforts, such as health education strategies, are crucial to dispelling the notion that 5G was connected to the COVID-19 epidemic. Policymakers should insist on the efforts of isolating viewpoints that are based on fake news because studies have shown that people who are speaking their views against the conspiracy theory, link baiting, or sharing hilarious tweets enhanced the profile of the conspiracy theory without realizing it. The effect of spreading Conspiracy theories related to COVID-19 around the world made the World Health Organization to declare the spread of the misinformation an 'Infodemic'[17]. WHO also gave advice – Mythbusters to the public on how to manage Coronavirus disease (COVID-19), such as the regular use of alcohol-based sanitizer because hands cleaning protect patients, health workers, caregivers and everyone from infection, this is one of the key measures to prevent disease [12].

There are a lot of moves and policies by concerned organizations to stop or reduce the spread of the propaganda relating 5G to COVID-19, for example, Facebook has made a lot of efforts to stop the promotion of baseless conspiracy theories linking Covid-19 to 5G, for example, it has clearly stated that materials, posters or groups encouraging attacks on 5G masts violates their policies and they have removed a number of pages, groups and posts that encourage the Conspiracy Theory [14]. Social groups like "Stop 5G UK group",

“Destroy 5G Save Our Children group” and other groups have been removed from the Facebook, also, publications by “Hope not Hate group” have been removed to stop the spread of misinformation concerning this next-generation mobile technology [14].

There was a report credited to The Department for Digital, Culture, Media and Sport on Twitter that “there is absolutely no credible evidence” of a link, that 5G technologies is associated with COVID-19, to individuals and corporate bodies rumors and conspiracy theories on 5G technologies causing COVID-19 has become a thing of concern [9]. Hadi, M.U and Ali, M.K. confuted scientifically the “5G appeal” in their work and they also discussed the effects of 5G on health, it’s consequences on privacy, it’s concerns on pandemics, ecosystem and what the world health organization is doing in fighting the conspiracy theory as concerns its implementation. They also postulated a direction to negate false claims concerning 5G technologies [11].

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