



Myth and Truth about COVID-19 and Vaccination

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

SARS-CoV-2, also known as COVID-19, is a novel coronavirus that has spread from Wuhan, China to every continent except Antarctica. On March 11, 2020, the World Health Organization (WHO) changed the situation's classification from a public health emergency of international concern to a pandemic. To date (17 April 2021), the novel coronavirus — officially known as "severe acute respiratory syndrome coronavirus 2," or SARS-CoV-2 for short — has caused over 140 Million infections and approximately 3 Million deaths around the world. In INDIA, the virus has infected nearly 14.3 Million people, with nearly 1,74,000 of them dying. (April 17, 2021) We have conducted a literature search around pub Med, Medline, Scopus, WHO, and web of science to distinguish the effect of myth vs. truth about COVID 19.

Present study concludes Citizens' consciousness and the avoidance of misconceptions play a critical role in managing the pandemic, and as a result of this awareness, India's fatality rate is at 3.3 percent, with a recovery rate of 12.02 percent, according to the Health Ministry of India. The extraordinary effort to attain widespread vaccination coverage has been greeted with an assault of incorrect and misleading information. Misinformation has the potential to harm vaccination uptake. Debunking misleading claims is a prominent way of combating vaccination misinformation. As a result, dealing with COVID-19 vaccination disinformation involves proactive measures to "immunise the public against misinformation."

Keywords: COVID-19; vaccination; myths; facts; pandemic.

1. INTRODUCTION

When the term "pandemic" appears in newspapers, people become afraid, and with panic comes distortion of true facts and rumours. If COVID-19 continues to spread, it is critical for populations to intervene to deter further infection, mitigate the effects of the epidemic, and promote regulatory efforts [1].

COVID-19 makes no distinctions based on boundaries, ethnicity, disability status, age, or gender.

Human conduct is conditioned by experience and attitudes of people. Thus, public behaviour may have a major impact on the progression of the 2019 corona-virus outbreak (COVID-19).

Infodemic (the term used by WHO regarding the spread of misinformation) In the meantime, much of the network and media are overwhelmed by disinformation. The rapid spread and unprecedented actions taken to curb this have caused uncertainty with the viral diffusion via social media of unscientific/unsubstituted/speculative ideas. The initiative aims to provide transparent and effective guidance for safe operations by early detection of deterrence, early recognition and control of COVID-19 [2].

Educating and raising awareness will inspire people to become champions for disease prevention and control at home, education, and in their neighbourhood through teaching others how to prevent virus transmission.

With countries going through lockdown in an attempt to '**flatten the curve**' in social relations by social distancing in order to break the transmission chain, it's critical not to put one's faith in any miracle remedies or conspiracy theories about COVID-19. As a result, below are a few widely held misconceptions about the

novel coronavirus, none of which are scientifically significant [3].

Controlling the spread of novel coronavirus requires public participation, which is both necessary and effective. However, given the novelty of the situation, it is critical to raise public awareness so that prompt preventive actions may be taken. Misinformation and misconceptions spread by online groups, on the other hand, lead to severe consequences in the fight against this novel illness.

Being knowledgeable about the disease and how it progresses is the most efficient way to deter or minimise infection.

1.1 Objective

This study reviews public knowledge of COVID-19 & vaccine, fallacies surrounding it, symptoms, treatment, transmission, the relevance of information sources, types of material to include in awareness campaigns, promotional channels, and their repercussions in India, with a focus on these elements. Knowing the disease and how it evolves is the most effective means of preventing & limiting the infection.

2. MYTH vs FACT

1) **Myth-** COVID 19 should not extend to high-temperature or high-humidity areas.

Fact- This infection will spread in any setting, regardless of temperature. Coronaviruses generally live for a shorter amount of time in higher temperatures and higher humidity than in colder or dryer conditions [4].

2) **Myth-** Can the corona virus be avoided by wearing a mask?

Fact- Masks are only useful when combined with regular hand washing with an alcohol-based

hand rub or soap and water. If you wear a mask, you must understand how to do it and correctly dispose of it.

The Ministry of Health in India has urged people to wear masks (mostly homemade) as they leave their homes. There is no scientific evidence that masks, including those made at home, protect against the novel coronavirus. However, there is evidence that masks will save an asymptomatic COVID-19 patient from unintentionally transmitting the virus. As a measure, federal agencies have updated their guidelines for wearing masks [5].

3) **Myth-** Colloidal silver, vitamins, teas, and essential oils cures COVID-19.

Fact- No, there is no evidence that colloidal silver, supplements, teas, or essential oils have a specific function in treating COVID-19 symptoms. [6]

4) **Myth-** Snow and cold weather destroy the latest coronavirus.

Fact- Regardless of the exterior temperature or atmosphere, the current coronavirus or other viruses cannot be killed by cold weather since the average human body temperature stays about 36.5°C to 37°C [6].

5) **Myth-** The virus is killed by our stomach acid if we drink enough water.

Fact- This is not believed to be the primary transmission pathway. Instead, the biggest risk comes from inhaling small droplets containing thousands of virus particles when a person coughs or sneezes — whether they're fresh off the press or have been hanging in the air for hours. [6]

6) **Myth-** Mobile networks spread COVID-19

Fact- It's a joke with no technological foundation; viruses can't spread over radio waves or via cell networks.[6]

7) **Myth-** The current coronavirus can be killed by a UV disinfection light.

Fact- Since UV radiation can cause skin discomfort, UV lamps should not be used to sterilise hands or other areas of skin. Including the fact that it would be used to sterilise surgical instruments and other tools. The World Health

Organization (WHO) recommends washing one's hands with soap and water for 20 seconds on a regular basis [6].

While small quantities of UV (sunlight) are required for the development of vitamin D in humans, excessive exposure can have both acute and chronic health consequences for the skin, eyes, and immune system.

8) **Myth-** A hot bath can help deter infection.

Fact- According to the WHO, average body temperature stays constant between 36.5°C and 37°C regardless of bath temperature. As a result, a hot bath does not protect against infection. [8]

9) **Myth-** Garlic strengthens the immune system.

Fact- The truth is that this rumour circulated across Nigeria. Garlic may have antimicrobial effects. However, there is no proof that consuming garlic has saved people from the latest coronavirus in the recent epidemic. [8]

10) **Myth-** Spraying alcohol or chlorine on the current coronavirus in our bodies will destroy it.

Fact- No, it does not. Spraying alcohol or chlorine on our bodies would not destroy viruses that have already infiltrated our bodies. Spraying certain chemicals can be hazardous to clothing and mucous membranes (i.e. eyes, mouth). Under the right concentrations, both alcohol and chlorine may be used to clean surfaces [8].

11) **Myth-** Covid-19 can be cured by drinking alcohol.

Fact- There is no evidence to back up this argument. While alcohol-based hand sanitizers are a recommended precaution against any infection, unnecessary or frequent alcohol intake may increase the risk of health problems [9].

12) **Myth-** COVID-19 can be treated with ginger, lemon, sugar, and Indian spices.

Fact- There is no evidence for this, except that certain Indian spices can have a minor antibacterial influence. COVID-19, on the other hand, is caused by a virus, not a bacterium.[9]

13) **Myth-** COVID-19 is transmitted by mosquitos.

Fact- According to the Union Health Ministry of India, coronavirus infection cannot be spread by

mosquito bites. "The modern coronavirus is a respiratory virus that spreads mainly by droplets generated when an infected person coughs or sneezes, as well as saliva and nasal discharge." [10].

14) **Myth-** Covid-19 can be dispersed from China by Parcels.

Fact- It's wrong. Some primary studies have shown that the new coronavirus has been in existence for some time on surfaces like cardboard, but it cannot be distributed by packages from China [10].

15) **Myth-** Rinse the nose regularly with saline aid to prevent new coronavirus infection.

Fact- No evidence exists that people have shielded against fresh coronavirus infection by routinely rinsing the nose with saline [10].

16) **Myth-** The virus can be spread by breastfeeding from mother to infant.

Fact- Studies of women with COVID-19, Severe Acute Respiratory Syndrome (SARS-CoV), and other coronaviral infections have shown that the virus is not found in breast-milk but it is not clear if mothers with COVID-19 will spread the virus in breast milk. Breast milk protects against a large number of diseases.

The CDC therefore advises that a mother with flu continues to breastfeed her child or feed pumped breast milk while taking measures to prevent the baby transmitting the virus.

(Academy of Breastfeeding Medicine, 2020) [11]

17) **Myth-** The effects of COVID-19 are exacerbated by taking ibuprofen.

Fact- Ibuprofen is an anti-inflammatory nonsteroidal medicine (NSAID). It is used for fever reduction and pain treatment. Patients and healthcare providers should continue using NSAIDs (e.g. ibuprofen) in accordance with EU national treatment recommendations [12].

18) **Myth-** Exposure to the sun or temperatures above 25°C eliminate the diseases of coronavirus (COVID-19)

Fact- It doesn't matter how sunny or humid the weather is. COVID-19 have been recorded in countries with a warm atmosphere. We must

thus shield ourselves and ensure that our hands are cleaned routinely and properly as well as that our skin, mouth and nose are not touched [13].

19) **Myth-** If you have cough and high fever, see a hospital.

Fact- Dr Randeep Guleria, Director of AIIMS, says you should not visit a health hospital during a pandemic as it makes a healthy person more prone to get the virus. If a person has any symptoms at all, you can consult a doctor on the phone, and thus seek the way forward [13,14].

20) **Myth-** Foods that are not vegetarian (meat) can contribute to infection.

Fact- The new coronavirus has jumped animals into a human and initially is a zoonotic illness, it is well-known. But this virus has not been carried by any known animal species to date. Medical experts have asked people not to indulge in rumours and to consume non-vegetarian foods, but they should be prepared for hygiene with utmost caution [14].

21) **Myth-** 10-second retention of the breath function as Covid-19 test?

Fact- No, Dr. Faheem Younus, University of Maryland's head of Infectious Diseases, says that an infected person can even breathe longer than ten seconds. The aged, on the other, are not in a position to do this job, but they are not infected in any way [14].

22) **Myth-** Novel coronaviruses can be detected by thermal scanners

Fact- That's not completely accurate. However, medical specialists and physicians treating patients with Covid-19 said that early testing has shown how people with no signs can even be afflicted with the virus. A heat scanner measures the body's temperature and is excellent to diagnose anyone with high fever [14].

23) **Myth-** Restrictions such as the 'Janata curfew,' which went into effect on March 22nd in India, was designed to destroy the majority of viruses.

Fact- The novel coronavirus that causes COVID-19 is primarily spread among people who are in near proximity to one another. It is a droplet virus that is spread by the affected person's coughing or sneezing if the droplets hit surrounding

people. We will get contaminated if we cross our mouth and nose after shaking hands with the infected. This is the most common way for the virus to spread from person to person, but it can also happen if someone contacts a surface where coronavirus droplets have embedded.

Since this virus may live on various surfaces for varying amounts of time, anywhere from a few hours to a few days, a 14-hour curfew is hardly enough to destroy any or most of them from public surfaces, whereas a longer-term lockout may aid.

And so, a little bit of social distance tends to crack the chain. The true explanation for the lockdown is this. It makes it easier to identify and quarantine people that have the disease [15].

24) Myth- Since the Indian immune system is stronger than the western immune system, Indians will be able to tolerate COVID-19 infection better.

Fact- If this were so, Indians would have been the healthiest people on the planet, with a life expectancy higher than that of other countries. India is currently ranked 128th in the world for life expectancy. Out of all the countries in the world, India was hit the worst by the 1918 influenza pandemic, with 5–10 percent of Indians dead [15].

25) Myth- Vibrations created by clapping hands destroy the coronavirus.

Fact- Clapping hands, in reality, produce sound waves. This echo is then detected by waves in our eardrums, which cause oscillations in the fluid in our inner ear. A virus is a million times smaller than the eardrum and will not be able to detect these sounds. There is absolutely no justification to presume that this is the case. [16].

26) Myth- Religious chants have the ability to destroy the virus.

Fact- For the same cause as mentioned previously. Something as weak as a virus will not be able to detect the vibration produced by chanting [16].

27) Myth- The virus can be killed by inhaling steam.

Fact- No, if you're not careful, you might get a bad steam burn [16].

28) Myth- COVID-19 is inhibited by the smoke and gas generated by fireworks and firecrackers.

Fact- No, it's not true. Inhaling the smoke and gas from a firework or firecracker is hazardous because it contains sulphur and nitrogen oxides, all of which are toxic to humans, and it does not destroy the COVID-19 virus [16].

29) Myth- Is it true that antibiotics will inhibit and cure the modern coronavirus?

Fact- Antibiotics are only effective against bacteria, not viruses. Antibiotics should not be used as a method of prevention or treatment since the current coronavirus (2019-nCoV) is a virus; however, they are required to combat accessory or external bacterial infections [16]. While Pfizer, a pharmaceutical firm, has reported promising results from a coronavirus (Covid-19) clinical trial in France using its azithromycin (Zithromax) drug in combination with hydroxychloroquine [17].

30) Myth- Young and stable individuals do not need any precautions or physical separation.

Fact- While they may be able to fight the infection, consider those in the immediate vicinity who may be old, infirm, or simply have weakened immunity. They may quickly catch the infection, so physical separation is essential. Alternatively, for reasons no one knows, there have been a few reports of mortality and severe illness in even young and stable patients. As a result, just because you're young and stable doesn't mean you'll be immune to the illness or its effects [18].

31) Myth- Only the old, not the young, are affected by the novel coronavirus.

Fact- This is untrue. People of all ages have been infected with the novel coronavirus. People with co-morbid disorders such as elevated blood pressure, coronary disease, or lung disease, according to doctors, are at a greater risk of contracting Covid-19. In the presence of a Covid-19 patient, however, a completely healthy person may become infected [18].

32) Myth- Covid-19 monitoring is possible as a part of blood donation.

Fact- This is untrue. At this time, one does not donate blood unless and until one is completely certain that he or she is not sick [19].

33) **Myth-** COVID-19 as a whole restores order to nature and forces us to reflect

Fact- COVID-19 certainly serves as a reminder that we live in an interconnected, interdependent environment, and that diseases caused by animal viruses infecting humans are at least one result of habitat loss and illicit wildlife trade. Controlling this would allow us to live happy, healthy lives while still leaving a safer environment for future generations [19].

34) **Myth-** The modern coronavirus was purposefully produced or emitted by humans.

Fact- Genomes of the causative agent, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), have been reviewed and analysed by scientists from a variety of countries, and the prevailing conclusion is that this coronavirus, like so many others, evolved in wildlife. Conspiracy theories only serve to spread panic, misinformation, and bigotry, sabotaging international cooperation in the fight against the virus. (Charles Calisher, 2020) Genomic experiments clearly conclude that the novel coronavirus that causes Covid-19 emerged in bats, with hardly any absolute evidence that it was developed in a lab. (Gregory, 2020) (Begley, 2020) (Shan-Lu Liu, 2020) [20][21][22]

35) **Myth-** Because the COVID-19 vaccine was created so fast, it is dangerous.

Fact- The approved vaccinations have been shown to be safe and effective. Despite their rapid development, they have gone through the same rigorous Food and Drug Administration process as conventional vaccines, fulfilling all safety criteria. There were no missed steps. Instead, we may credit the shortened period for vaccine development to unprecedented global collaboration and funding. Clinical studies and safety assessments took roughly the same length of time as previous vaccinations [23].

36) **Myth-** The COVID-19 vaccination will cause genetic changes in me.

Fact- The first vaccinations approved for emergency use contain messenger RNA (mRNA), which encourages cells to produce the “spike protein” present on the new coronavirus. When the immune system identifies this protein, it mounts an immunological response by producing antibodies, teaching the body how to protect itself from future infection. The mRNA

never penetrates the nucleus of the cell, which is where our DNA (genetic material) is stored. The body eliminates the mRNA as soon as the instructions are completed [23].

37) **Myth-** The COVID-19 vaccination has a tracking device.

Fact- A video that has been posted thousands of times on Facebook makes misleading claims about the goods of Apject Systems of America, a syringe manufacturer with a federal contract to produce medical-grade injectable devices for vaccinations. The company offers an optional version of their product that includes a microchip within the syringe label, which assists providers in determining the origin of a vaccination dosage. The chip is not introduced into the individual receiving the vaccination [24].

38) **Myth-** The COVID-19 vaccination has detrimental effects, including allergic responses.

Fact- Some vaccination clinical trial participants had adverse effects comparable to those seen with previous vaccines, such as muscular soreness, chills, and headache. People can experience severe adverse responses to vaccination components, which is exceedingly unusual. As a result, physicians advise patients with a history of severe allergic responses — such as anaphylaxis — to the vaccine's components not to obtain the vaccine [25].

39) **Myth-** The COVID-19 vaccination causes female infertility.

Fact- According to social media misinformation, the vaccination teaches the body to target syncytin-1, a protein in the placenta that may cause infertility in women. The fact is that the spike protein and a placental protein share an amino acid sequence; nevertheless, scientists claim it is too short to elicit an immune response and so has no effect on fertility [25].

40) **Myth-** Because I've previously been diagnosed with COVID-19, I don't need the vaccination.

Fact- There is evidence that if you have already had COVID-19, you can still benefit from the vaccination. At this point, doctors are unsure how long a person is protected from becoming ill again after recovering from COVID-19. Natural immunity, or the immunity gained as a result of an illness, differs from person to person. Some

preliminary data shows that innate immunity may be short-lived [25].

41) **Myth-** I no longer need to wear a mask after receiving the COVID-19 vaccination.

Fact- Masking, handwashing, and physical separation are still required in public until a large enough proportion of individuals are immune. Persons who have been completely vaccinated can meet with other fully vaccinated people without wearing masks [25].

42) **Myth-** Can you have sex after getting vaccinated?

Fact- Without a doubt. Vaccinations have no negative impact on an individual's sexual life, and having sex has no negative impact on the vaccines. It is, nevertheless, recommended to avoid unprotected intercourse and utilise barrier contraception for at least 12 weeks after immunisation [26].

43) **Myth-** Can you give blood? If not, how long will it take?

Fact- People can give blood after receiving a vaccine as long as they are in good health and show no signs of sickness. There is no time limit between becoming vaccinated and becoming eligible to give blood [26].

44) **Myth-** Are pregnant women and nursing moms safe with vaccinations?

Fact- “The CDC recommends all pregnant women or those considering pregnancy, as well as those who are breastfeeding, to be vaccinated against COVID-19,” stated CDC Director Dr. Rochelle Walensky. “The vaccines are safe and effective, and there has never been a more imperative need to boost immunizations as we confront the highly transmissible Delta variant and catastrophic COVID-19 outcomes among unvaccinated pregnant women [26].

45) **Myth-** Can menstrual vaccination injections be taken?

Fact- Taking your vaccination shot Covid-19 during menstruation is entirely safe. Sore arms. Headaches. Low-grade fevers. These are some of the expected side effects of a COVID-19 vaccine — a sign that the body's mounting an immune response and learning how to fend off the coronavirus [27].

46) **Myth-** COVID-19 is so low in lethality; therefore, I don't have to be immunised.

Fact- The risk of serious inflammation and hospitalisation are reduced by vaccines. Vaccinated individuals may have a lower risk of transmitting COVID-19. It protects the community of those who are vulnerable, impoverished, and unable to be vaccinated when many individuals are vaccinated. All medically qualifying persons are urged to receive the vaccine while the immunisation is optional.[28]

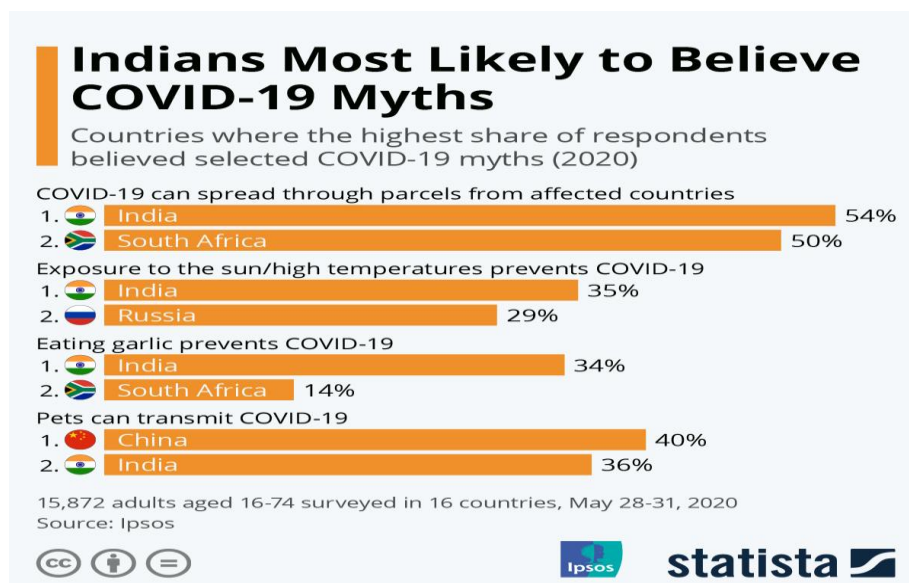


Fig. 1. According to a survey by Ipsos, a shockingly high number of Indians believe myths surrounding the coronavirus

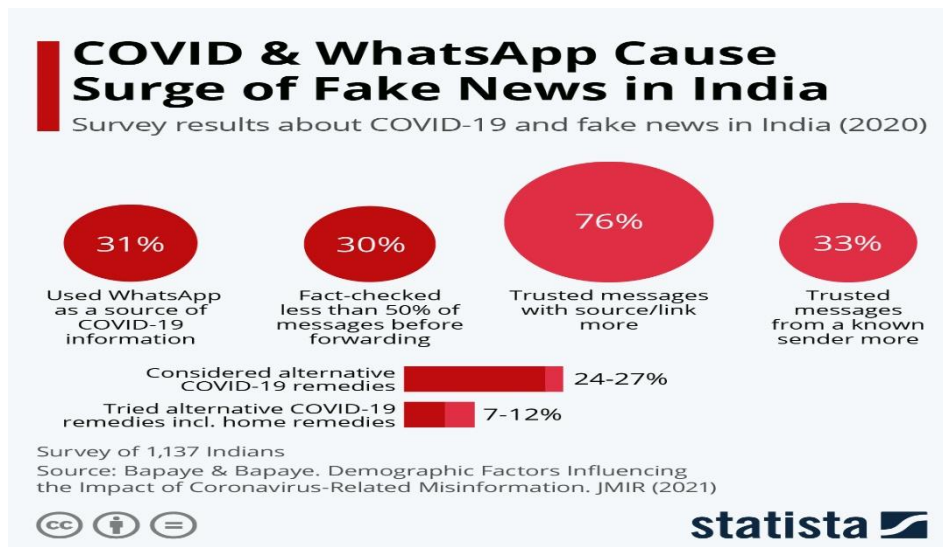


Fig. 2. A scientific study published in the peer-reviewed Journal of Medical Internet Research by doctors from Rochester, New York, and Pune, India, provides some insight into the behaviour of Indian internet users during the pandemic on WhatsApp, one of the primary sources of COVID-19 misinformation in the country

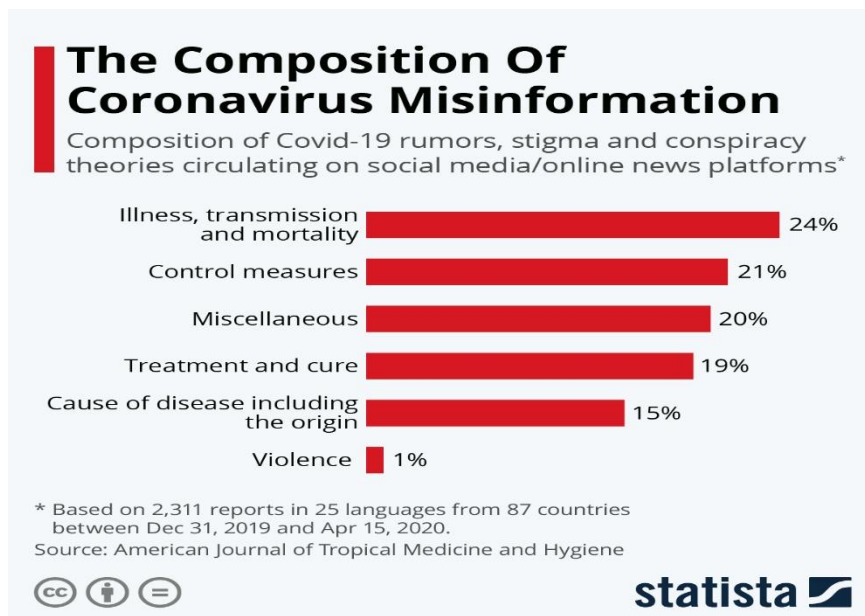


Fig 3. A recent research published in the American Journal of Tropical Medicine and Hygiene assessed the circulation of misleading information in 25 languages across 87 nations between December 31, 2019 and April 15, 2020, and discovered that it did, in fact, contribute to fatalities and injuries

3. CONCLUSION

The COVID-19 pandemic has wreaked havoc on the financial and social systems. While research has progressed, it is still in its early stages and will take time and money to convert into treatments and vaccines [29].

Pandemics, such as the latest epidemic, cause havoc in developed nations with little financial resources and a fragile healthcare infrastructure. However, the fact that countries all over the world have banded together to combat this threat offers hope.

In the context of COVID-19, lack of awareness could have significant consequences. Effective awareness campaigns that include relevant information from credible sources can enhance people's understanding, and they must be effective in generating constructive attitude among the public regarding the adoption of preventive measures.

As people, it is our responsibility to heed official advice, not believe in urban legends, and educate ourselves.

For breaking the chain, practise has shown that social distancing, quarantining the suspicious, restriction, strict quarantine, and seizing the hotspots are the best methods.

Citizens' consciousness and the avoidance of misconceptions play a critical role in managing the pandemic, and as a result of this awareness, India's fatality rate is at 3.3 percent, with a recovery rate of 12.02 percent, according to the Health Ministry of India [30].

Using cutting-edge technology to map public travel, such as the Aarogya Setu software as an e-pass. In the battle against COVID-19, it's a crucial tool. It's crucial that once anyone tests positive, anyone who has come into touch with them will be tracked down." Prof. K. Vijaya Raghavan, Principal Scientific Adviser to Government of India [31,32,33].

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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