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EDITORIAL

Medical misinformation in the digital age

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Widespread medical misinformation in the digital age poses a major challenge to public health. Social media and online platforms have increased both the reach and speed of false or misleading information, weakening disease prevention efforts, diminishing trust in healthcare, and disrupting evidence-based medical practice.

The rapid digitalization of health information-especially via social media—has led to an unprecedented volume of both accurate and misleading content. The so-called infodemic complicates health literacy and decision-making for the public, fueling mistrust, policy resistance, and poor adherence to guidelines. Medical misinformation is now recognized as a critical threat to global health security, demanding collaborative and innovative approaches. Day by day it becomes harder for people to distinguish between reliable and false information among the abundance of news. So, it is crucial to manage the spread of misinformation, even though we can't completely stop it due to how widely digital media is used. [1-3]

Health impact of medical misinformation

Vaccine hesitancy and disease outbreaks:

False claims, such as the debunked link between vaccines and autism, have driven vaccine hesitancy and disease resurgence. [4] Measles outbreaks across Europe and the United States have been directly linked to such misinformation, with various regions noting large numbers of unvaccinated cases among outbreak clusters. [5]

Public Health Policy Resistance:

Misinformation reduces trust in health authorities, leading to lower compliance with guidelines—conspicuously noticable during the COVID-19 pandemic. Studies link misinformation exposure to increased vaccine hesitancy and nonadherence to public health measures.

There are many myths that have spread widely, like the vaccination affects women's fertility or a probability to change a person's genetic architecture. Misinformation also extends to supposed treatments - people have claimed that drinking alcohol, cow dung, cow urine, colloidal silver, certain teas, or essential oils can cure COVID-19. However, all of these are false, and there is no solid scientific evidence to prove that any of these remedies are effective. [2, 6]

Disproportionate effects on vulnerable groups: Socioeconomic factors and low digital health literacy make some populations especially susceptible, compounding existing health disparities and undermining targeted

interventions. Those with less trust in healthcare, lower health literacy, and a more favorable attitude toward alternative medicines tend to be more susceptible to medical misinformation. Vulnerability is influenced by psychological, social, and informational factors rather than one single trait. Medical misinformation leads to worse health outcomes and increased death rates. For example, misbeliefs during pandemics have caused preventable deaths, such as the COVID-19 pandemic where misinformation is estimated to have raised mortality. [6, 7]

Platforms like Twitter and Facebook facilitate the viral spread. Automated accounts (social bots) and echo chambers reinforce and accelerate the propagation of misinformation. The poor control on health information on social media is a key reason why there's a growing concern to regulate the quality and accessibility of information available online. While most health experts and policymakers now agree that tackling health misinformation is important, it's still a challenge to stop the spreading of false or misleading health messages on social media, which might affect public health in the coming years. [2, 3]

Posts that evoke strong emotions or align with personal beliefs are more likely to be shared. Misinformation often employs emotional strategies, such as eliciting fear, anxiety, anger, or sadness, to capture attention and persuade people, sometimes bypassing rational analysis. This emotional appeal makes misinformation more compelling, especially when it resonates with an individual's existing attitudes or provides simple, emotionally satisfying explanations for complex health issues. [1, 2] In times of crisis, a lack of accessible, authoritative information creates fertile ground for rumors and speculation. [3] Vaccines, pandemic diseases, alternative treatments, and drug safety are frequent targets. [2, 8]

Countermeasures for medical misinformation

Digital and media health literacy initiatives

Rampant public education programs on legitimate platforms are necessary to help individuals assess the reliability of sources and recognize misinformation. Critical thinking and fact-checking skills at all educational levels need to be invigorated. [9] Encouraging the public to make a habit of verifying information through trusted, reputable sources, such as peer-reviewed journals, official health organizations, and expert consensus, before sharing or acting on it. Tools and resources that facilitate fact-checking should be encouraged.

Healthcare professional engagement

Encouraging clinicians and researchers to engage actively online, providing credible and evidence-based information, and countering misinformation are rational approaches to addressing this problem. [1] Professional societies and journals must discourage and address misinformation from within the healthcare community. [9]

Digital media platform accountability

Digital platforms should enhance misinformation detection through the use of artificial intelligence, collaborate with health agencies, and facilitate rapid correction mechanisms for viral falsehoods.

Regulations such as labelling or restricting harmful content have already been proposed by government agencies of various countries and tested during public health emergencies, and need to be more organized.

Medical misinformation in the digital age is a persistent and evolving threat to public health. Multi-pronged interventions spanning public literacy, professional vigilance, digital governance, and targeted research are essential for mitigating its harms. The medical and scientific community should come together to collectively foster digital environments that promote trust and accuracy in health information.

Regards,

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Abbreviations

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