Bridging divides:
bioethics insights in navigating
trust and polarization
in a post-covid era

Superar divisiones:
conocimientos de bioética para navegar
la desconfianza y polarización
en una era post-covid

Joseph Tham*
Pontificio Ateneo Regina Apostolorum, Rome, Italy

Abstract

The polarization of opinions and positions during the COVID-19 pandemic is unmistakable. While there are many areas of debate, our primary focus surrounds the controversies of the COVID-19 vaccine. The SAGE Report (WHO 2014) on vaccine hesitancy listed three critical factors —complacency, convenience and confidence— which recurred during the pandemic. Of these, trust or confidence emerges as the central driver of polarization. Distrust spans various dimensions: government, science, pharmaceutical companies, novel vaccines, and information sources linked to peer groups and social media. Polarization

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* Full Professor, Pontificio Ateneo Regina Apostolorum, Rome, Italy.
E-mail: jtham@legionaries.org https://orcid.org/0000-0002-6514-4107
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is not due to information scarcity but is deeply intertwined with social identity. The echo chamber effect exacerbates this phenomenon, reinforcing beliefs within like-minded circles. The paper explores how different trust facets significantly influenced vaccine hesitancy during COVID. Finally, there is a need to reevaluate the effectiveness of vaccine mandates and social media screening, do they reduce hesitancy or inadvertently worsen polarization by eroding trust?

Keywords: COVID-19, vaccine hesitancy, WHO, social media.

1. Introduction

The COVID-19 pandemic is behind us, and most of the world has moved onwards, reluctant to visit the dark three-year period where close to 7 million people perished. Even though it was not the deadliest, the COVID-19 pandemic was unprecedented in many ways (1). Globalized travel and communication quickly turned a focal mutation into a worldwide plague. At the same time, global efforts promptly found ways to limit the contagion and alleviate the devastating effects of the virus through testing, quarantines, vaccination, and medications. Advances in global communication allowed the world to function with minimum human contact for several years but, at the same time, increased the phenomenon of *infodemic*, where the truth or fakeness of the virus's nature became politicized and weighed (2).

Numerous uncertainties and ongoing debates persist regarding the virus's origin, severity, mortality rates, transmission modes, the usefulness of masks and other protective protocols, movement limitations, lockdowns, social distancing, contact tracing, and quarantine measures. Additionally, questions remain about the accuracy of various tests and the optimal medical guidance for cure, inoculation, and alternative medicine.

While the world has moved forward, and COVID-19 no longer dominates global headlines, there is value in reflecting on this tragic

experience. This paper explores the controversies surrounding vaccines and their hesitations regarding their effectiveness and safety. Additionally, it delves into the polarization surrounding vaccine implementation across different world regions. The central argument of this paper posits that vaccine hesitancy primarily stems from a lack of trust in institutions rather than a dearth of reliable information. The lack of trust is found in government due to politicization, distrust in science and scientists, the problem of expertise due to social media, and the trust in peer groups. Addressing conspiracy theories and misinformation within this context should focus on building trust rather than insisting on facts. The paper concludes by raising questions about vaccine mandates and the delicate balance of countering "fake news" without exacerbating the erosion of trust.

1.1. The WHO report on vaccine hesitancy

Six years before the onset of the pandemic, the World Health Organization generated a comprehensive report on vaccine uptake. The Report of the SAGE Working Group on Vaccine Hesitancy was published on November 12, 2014. Since 2011, the Strategic Advisory Group of Experts (SAGE) on Immunization has been studying the phenomenon of vaccine reception in different parts of the world.

This report is significant because it predates the COVID-19 pandemic and addresses the problem of vaccine hesitancies ahead of 2021-2022 during the vaccine rollout. Analyzing this 2014 publication can illustrate the well-documented phenomenon in a non-polemic way and help us with an objective and more relaxed analysis of the polarizations during the COVID-19 pandemic.

The SAGE report traced its origin in the well-documented hesitancy of certain groups towards the MMR vaccines related to autism and HPV vaccines concerning religious objections. The definition summarizes the report:

> Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services. Vaccine

hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence (3).

This report assumes a general medical consensus that vaccines are a public health measure to prevent the spread of viral infections, improve the population's chances of survival, and thus protect communities from the threats of viral epidemics and pandemics. Indeed, there is sufficient evidence demonstrating the success of vaccine programs over the past 50 years since their inception. Nonetheless, there continue to be vocal groups vehemently opposed to vaccination as effective, proven, and generally safe (4,5). This paper, addressing polarization, is aware of the diversity of opinions and will consciously assume the majority position on the goodness of vaccination taken by the WHO and its corresponding SAGE report, thus seeing vaccine hesitancy as undesirable.

We will now review some of this report's findings and see how they predicted the pandemic six years later. Indeed, the report recognizes that hesitancy toward vaccines forms a continuum: from those who accept them totally to those who refuse all forms of vaccines to those in between who accept some but delay or refuse others.

The 2014 SAGE report notes that this hesitancy is not new. It is a complex social and behavioral phenomenon affecting individuals and communities. It is a multifaceted global issue that varies across countries, contexts, timeframes, immunization programs, and specific vaccines. Assessing vaccine hesitancy precisely on a global and regional scale is challenging due to variations in country definitions and limited data availability. The Working Group Matrix of Determinants of Vaccine Hesitancy, supported by systematic reviews and consistent findings, highlights various factors influencing hesitancy. These determinants may have opposing effects in different settings and regions (6).

The three significant factors that affect vaccine hesitancies are convenience, complacency and confidence/trust. Convenience and constraints encompass vaccine availability, affordability, ease of access,

recipients' understanding of information, information processing, media influence and advertisements, altruism and the greater public good.

Complacency incorporates several aspects related to vaccines. These include recognizing the essential role of vaccines in disease prevention, understanding one's life and health responsibilities, evaluating the balance between risks and benefits, and considering self-efficacy in making informed decisions.

2. Distrust and vaccine hesitancy

The key factor influencing vaccine hesitancy is confidence. It encompasses trust or lack of faith in government policies, doctors, health authorities, pharmaceutical companies and doubts about vaccine technology. Additionally, it involves sources of information about vaccines, particularly from social media and peer groups, and the inclination to accept "conspiracy theories" and "fake news."

According to the SAGE Report, vaccine hesitancy tends to be more prevalent among certain groups. These include minority communities (such as Indigenous, Latinos, and Blacks), religious groups with specific beliefs or claim exemptions, young people, children, and pregnant women. A person's education level can either amplify or mitigate hesitancy. Hesitancy arises from safety, previous experiences, and interactions with healthcare providers. Perceptions of risk, severity, and efficacy of illnesses also play a role. Additionally, information gaps, influence from anti-vaccine proponents, religious beliefs, and a desire for a natural lifestyle impact vaccine acceptance (7).

Many of the factors mentioned in these reports reappear during the pandemic. Specific concerns regarding the COVID vaccines are well documented: The novelty of mRNA, and adenovirus-based vaccines, the speed of their development, and concerns about unforeseen adverse effects. Distrust of vaccine benefits, worries about commercial profiteering by pharmaceutical companies, and a preference

for natural immunity were also factors to consider.(8) A systematic review of 47 studies shows a direct correspondence between trust and vaccine acceptance.

The analysis shows that trust has been used extensively concerning the COVID-19 vaccine, governments, manufacturers, healthcare systems, and science. The review showed that trust in the COVID-19 vaccine strongly correlates with vaccine acceptance ($R = 0.78$, $p < 0.01$) (8).

Substantial evidence shows that the primary hurdle in vaccine acceptance lies more in trust than information. Specifically, distrust in institutions associated with vaccinations precedes the accuracy of information received. Unfortunately, many public health policies failed because they emphasized correct information and scientific validity with overly simplified messages (8,9).

3. Government and politicization

Under normal circumstances of stability and peace, citizens can trust their governments to take care of them and work for the common public good. In times of uncertainty, people frequently turn to those in authority for guidance. However, because there could be different approaches to handling a national health crisis, and political differences can be accentuated with both sides appealing to scientific facts that are still evolving, science is frequently co-opted to serve partisan, economic, or social agendas. Throughout history, science has been politicized, leading to enlightenment and controversy. For instance, consider the trial of Socrates (470–339 BC), who faced accusations of corrupting youth through his teachings. This historical episode illustrates how science can be weaponized for political ends.

Similarly, the Galileo Galilei affair exemplifies the clash between scientific truth and politics. Politics played a role in the polarization of views on the COVID pandemic and vaccination in different places. Governments with less partisan tensions tended to fare better if

parties cast aside their differences to handle the pandemic. In other places, the disease became entangled in politics, fueled by statements from political leaders and amplified through media channels. It is easy to see that national and international politicization has affected public acceptance of vaccines (10).

3.1. The inexact science of science

Polarization arises partly because of the nature of science, which is inexact, and questioning established knowledge is integral to the research process. As some authors astutely describe,

> Science "is inherently uncertain… the bottom line is that science is easy to challenge because uncertainty always exists and questioning extant knowledge is part of the research process" (10).

The scientific method involves a continuous cycle of hypothesis testing through experimentation. However, despite its rigorous approach, persisting uncertainties are part of the scientific process. Contrary to the glamorous portrayal of medicine in Hollywood, medical research is slow and resource-intensive. It typically takes a decade or more for scientific consensus to emerge from studies, peer reviews, and conflicting claims. Expert opinions naturally vary, and these differences are often hashed out in medical and scientific journals. Indeed, this process has been changing, and in recent years, high-quality evidence has become difficult to ascertain (11).

The pandemic has underscored widespread misconceptions about science. The novel nature of the virus makes predicting its behavior challenging. Furthermore, before COVID-19, there was no unanimous scientific agreement on the effectiveness of measures like masks, social distancing, and lockdowns in containing the virus. Previously confined to scientific journals, heated debates among experts now spill over to the internet and social media. The resulting information overload blurs the lines between facts, opinions, and hypotheses, causing unease and anxiety in the public.

Governments attempt to reassure citizens by presenting policies as indisputable, expert-backed solutions. However, this overlooks the inherent ambiguity of scientific inquiry. By excluding these uncertainties, they risk leaving the public with the impression that there is no scientific consensus.

The rapid pace of vaccine development presents advantages and challenges in developing and distributing vaccines as the primary defense against the COVID-19 virus. Skepticism arose due to the usual lengthy medication approval process, which typically spans several years. Additionally, the novel nature of mRNA vaccines raised apprehensions. Beyond their efficacy, misconceptions persisted regarding vaccine side effects and mortality rates. Furthermore, a gap exists in public understanding regarding the nuances of disease epidemiology, statistical significance, and the intricacies of false positives and negatives.

3.2. The death of expertise

Given the inherent uncertainty in scientific knowledge, the influence of social media has reshaped the perception of expertise and knowledge. Ordinary individuals now find themselves empowered to assert their self-education, often positioning themselves as self-proclaimed geniuses. In this era, the definition of an expert has become malleable, open to anyone who confidently claims to possess a unique set of insights and methods (12).

Tom Nichols notices this phenomenon in his 2017 book *The Death of Expertise* (13). He observes that while everyone today can access so much knowledge, they are more resistant to learning than ever. With the death of expertise, everyone is an expert on everything, according to Nichols. Tackle a complex policy issue with a layman today, and you will get snippy and sophistic demands to show ever-increasing amounts of "proof" or "evidence," even though the ordinary interlocutor in such debates is not equipped to decide what constitutes "evidence" or to know it when it is presented. Neverthe-

less, evidence is a specialized form of knowledge that takes a long time to learn, so articles and books are subjected to "peer review" and not to "everyone review."

In the thought-provoking book, the author offers several insightful pointers. While experts are not infallible, they are more likely to be correct than the average person. Recognizing this should not cause insecurity; instead, it acknowledges that an expert's view is better informed due to their expertise. Experts come in various forms. Education contributes, but proper knowledge often results from a blend of education and practical experience. In any discussion, individuals must acquire enough knowledge to engage meaningfully. Relying solely on the "University of Google" falls short; having a strong opinion does not equate to genuine understanding. Finally, he concludes that while everyone's political opinions matter in a democracy, as a layperson, one's political analysis holds less weight and likely is not as robust as perceived.

The growth in Internet use and reliance on social media sources such as YouTube, Facebook, Twitter, and TikTok has changed the landscape of information gathering. A recent study shows that 72% of Americans and 83% of Europeans use the Internet as a source of health information (12). Social media platforms are the primary sources of vaccine information and misinformation. For instance, during the 2019 measles outbreak, an analysis of 1,300 Facebook pages indicated that anti-vax pages grew by 500%, while pro-vaccine pages grew by only 50% (12).

Social media also forms echo chambers or filter bubbles, where like-minded users encounter content aligned with their beliefs. YouTube's personalized recommendations, shaped by users' watch history, can inadvertently lead to more exposure to vaccine information conforming to their bias. Studies find that social media users are likelier to exhibit vaccine hesitancy than consumers of traditional media sources (such as TV, newspapers, and radio). This effect is especially pronounced on platforms where algorithms tailor future content based on users' past interactions and where content remains relatively unregulated. Socio-demographic and political factors also

play a central role in vaccine hesitancy. Research suggests that younger, more educated individuals of higher socioeconomic status actively seek information online (12).

A recent study harnessed AI machine learning methods to delve into the *echo chamber* phenomenon prevalent in social media. The analysis uncovered intriguing patterns by analyzing an extensive dataset of 60 billion general tweets and 675 million vaccine-related tweets from 2013 to 2016. The findings indicate that user profiles often engage with others who hold similar viewpoints. Notably, anti-vaxxer profiles tend to cluster together in small, tightly knit groups within the digital landscape. This research shows how social media platforms can inadvertently reinforce existing beliefs and isolate users within their ideological bubbles (14).

Another interconnected phenomenon emerges in times of uncertainty: *conspiracy theories*. These theories often thrive when the world feels unpredictable. They serve as a mental anchor, offering narratives that impose order during rapid cultural or economic shifts. As previously noted, these theories frequently target institutions like the government, scientific bodies, and pharmaceutical communities. These theories can lead to a specific immunity against scientific information when skepticism abounds. The echo chamber effect on social media platforms can further reinforce existing beliefs and amplify conspiracy narratives (15,16).

The debate surrounding fake news and the responsibility of social media platforms to combat and potentially censor it has raged for years. Some argue in favor of freedom of expression, even defending the right to express controversial or unproven theories. Simultaneously, there is a need to suppress online racism, hate speech, abusive content, child pornography, terrorist recruitment, and other dangerous or unhealthy ideas. Striking the right balance is a delicate task, and there is no straightforward standard for determining when specific ideas cross the line into hazardous or "fake" territories.

Vaccine hesitancy was influenced by the infodemic even before COVID. A 2018 study involving 5,323 participants across 24 countries revealed that individuals with high conspiratorial thinking, substantial

reactance, and aversion to blood and needles were likelier to exhibit vaccine hesitancy. Interestingly, demographic factors, including education, played a minimal role in explaining this phenomenon (17).

Amid the pandemic, disinformation emerged as a critical national and public health concern. The proliferation of diverse websites presenting varying opinions, distorted facts, or fabricated data further muddied the waters as readers tried to distinguish fact from fiction. Fake news complicated the relationship between social media platforms and governmental oversight. Coupled with widespread mistrust, uncertainty about medicine, politicization, and erosion of expertise—the fake news problem exacerbated the situation (18-20).

3.3. Trust and peer groups

Given the importance of trust and confidence in accepting or rejecting vaccination, a certain mistrust of institutions, scientific enterprise, and authority, and the proliferation of social media as an alternative source of information, what are the possibilities for increasing trust during the COVID crisis?

In times of uncertainty, people tend to rely on their peers for information and examples. To immunize oneself or not is not an individual action but a social one. It entails a sense of identity and belonging and the social ties of peer groups such as religion, work, friends, political affiliation, family, and neighbors (21). The problem is less related to one's education level and ability to understand complex information. The socializing force of peers, be it in religious groups like the ultraorthodox Jews in Israel or green advocates in Australia, exerts tremendous influence. Psychologists and sociologists are beginning to identify the importance of ill-defined "gut beliefs" about liberty and individual rights, authority and power struggle, and bodily or mental purity (22,23).

A study on reinforcement by *Vaccine Status Identification* (VSI) analyzed data from Germany and Austria, involving 5,305 participants across three waves (December 2021, February 2022, and July 2022).

VSI is crucial in shaping public discourse and responses to vaccination policies, impacting societal polarization (24).

Vaccination status identity accounts for people's perceptions of public discourse, discrimination, and responses to mandatory vaccination policies. Identification with one's vaccination status significantly impacts the polarization of attitudes and behaviors related to COVID-19 vaccination. VSI is influenced by media use, political preferences, and social norms, contributing to group-based polarization. Interestingly, vaccinated groups tend to feel morally superior and are tempted to shame the vaccine-hesitant individuals. In contrast, unvaccinated individuals perceived harsher consequences and discrimination due to the vaccine mandates. The stronger the VSI among the unvaccinated, the greater the attempt to resist and evade the mandates and reclaim their lost privileges as citizens.

The ethical justification for vaccine mandates remains a pressing question. Governments often view immunization as a crucial public health tool to combat virus spread and end the pandemic. When persuasion and incentives fall short, some governments have implemented varying degrees of vaccine mandates, restricting movement, work, or access to certain areas for the unvaccinated. While this approach successfully nudged some fence-sitters who were not ideologically opposed to vaccines, it triggered a significant backlash from vehement vaccine opponents. As a result, polarization on this issue intensified, leaving governments with the complicated task of balancing individual rights and the greater public good (25).

4. Conclusion

In the intricate landscape of vaccine acceptance, trust weaves its threads through various interconnected factors. This paper not only sheds light on past events but also provides a crucial interpretative framework for public institutions and healthcare systems in the future.

Despite pre-existing knowledge about vaccine hesitancy, the COVID-19 pandemic caught most societies off guard. Ethical blind spots and management missteps were evident at multiple levels. Confidence and mistrust played pivotal roles in navigating this global crisis. Learning from this experience through further research is essential, even if societies are reluctant to dwell on the past. Valuable lessons lie therein. As we swiftly move beyond the pandemic, the who SAGE report about vaccine hesitancy and mistrust serves as a warning: Will we repeat the same mistakes in the future (26)?

Effective pandemic planning necessitates trust-building and strategic communication. Governments should collaborate with social scientists and communication experts to offer nuanced, less dogmatic statements about science's capabilities. Simplistic soundbites that overpromise the benefits of public health measures—such as masks, social distancing, and vaccination—can backfire when reality diverges from expectations. Once credibility is compromised, rebuilding trust becomes challenging.

Healthcare professionals and scientists should master the art of making technical details relatable to the public. Storytelling and testimonies can convey clear, consistent, and actionable information. They should be bold in explaining complex concepts, including the hypothetical nature of scientific advancements and the inherent uncertainties in every public policy. Education thrives when trust and mutual respect exist.

Society grapples with balancing accurate information and controlling news dissemination on social networks in our information-driven era. Achieving perfection is unlikely due to divergent opinions and political biases. As global boundaries blur, questions about truth, fake news, and their arbiters remain. The current rise of AI technology could alleviate or exacerbate this challenge—time will tell.

The surge in conspiracy theorists and the echo chamber effect has not waned after the pandemic. Although there is heightened awareness and government oversight, the specific actions and vigilance levels that social media platforms will adopt are still being

determined. How should media platforms actively filter and remove "fake news" or "conspiracy theories"?

Recognizing that peer groups and communities serve as crucial trust forums, vaccination programs should consider engaging these groups from a bottom-up perspective rather than imposing a top-down approach to messaging.

Lastly, societies must carefully assess the impact of vaccine mandates on confidence and trust, researching if they were empirically effective in saving more lives.

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