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# Who is watching the World Health Organisation? 'Post-truth' moments beyond infodemic research

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The World Health Organization (WHO) has established a public research agenda to address infodemics. In these, 'an overflow of information of varying quality surges across digital and physical environments'. The WHO's expert panel has raised concerns that this can result in negative health behaviours and erosion of trust in health authorities and public health responses. In sponsoring this agenda, the WHO positioned itself as a custodian that can flag illegitimate narratives (misinformation), the spread of which can potentially result in societal harm. Such 'post-truth' moments are rife with the coronavirus disease 2019 (COVID-19) public health emergency. It provides an opportunity for researchers to analyse divisions in knowledge labour, which can help explain when 'post-truth' moments arrive. The first COVID-19 example for this division foregrounds the development of knowledge in an academic context. Added to this is the infodemic or disinfodemic research agenda and personal health responsibility, whose academic contributors are similar. In contrast, the division of labour for messenger ribonucleic acid (mRNA) vaccine research foregrounds the role of vaccine manufacturing pharmaceutical companies in driving and promoting related knowledge production.

**Transdiciplinary Contribution:** This analysis focuses on intergroup contradictions between the interests of agencies and their contrasting goals and across different types of knowledge division. Many intergroup contradictions exist, and a few intergroup examples are also described. An overarching contradiction was identified where rushed guidance based on weak evidence from international health organisations may well perpetuate negative health and other societal outcomes rather than ameliorate them.

**Keywords:** COVID-19; divisions in knowledge labour; intergroup contradictions; international health organisation; mRNA vaccines; pandemic.

## Introduction

What counts as rumours, disinformation, misinformation and malinformation in health communications has emerged as an important global concern, especially during acute public health crises. Already in February 2020, even before the coronavirus disease 2019 (COVID-19) pandemic had taken hold, the World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus raised concerns that the COVID-19 outbreak was already accompanied by an *infodemic*.[1] He warned that an overflow of information of varying quality might surge during any public health event that begins suddenly and unexpectedly. He argued that this could pose a new health risk by interfering with the public's ability to find high-quality health information with which they could better protect themselves, their families and their communities from harm. Experiences with health misinformation during the Ebola, human immunodeficiency virus (HIV), polio and Zika epidemics have been claimed to reveal costs to public health and to health systems when rumours and misinformation are amplified.[2] It is also necessary to flag that poor public health communication responses can further aggravate such negative outcomes, as can the misuse of public health. An example of the latter being the hepatitis B vaccine program's use for identifying the children of Osama Bin Laden's household.[3]

To improve public understanding by anticipating, identifying and responding to such communication risks, the WHO recently established a public research agenda for managing infodemics.[4] An infodemic is defined as an:

> [O]verflow of information of varying quality that surges across digital and physical environments during an acute public health event. It leads to confusion, risk-taking, and behaviors that can harm health and lead to erosion of trust in health authorities and public health responses. Owing to the global scale and

> high stakes of the health emergency, responding to the infodemic related to the pandemic is particularly urgent. Building on diverse research disciplines and expanding the discipline of infodemiology, more evidence-based interventions are needed to design infodemic management interventions and tools and implement them by health emergency responders.[4] (p. 2)

This agenda posits that addressing infodemics on digital platforms is of central importance to any pandemic response. To coordinate research on these risks in an emergent discipline, from June to October 2020, the WHO convened online consultations with more than 100 experts from 20 disciplines across more than 30 countries. It developed, shortlisted and prioritised research questions for the infodemic public research agenda as a novel discipline. Five focus areas or 'streams' were identified for immediate action. These streams span: (1) the evaluation of infodemic impacts, (2) how to study them, (3) what drives them, (4) identifying approaches to better manage them and (5) considerations for developing new tools for infodemic management.[4] This agenda is intended to serve as a reference point for the WHO, partners, research agencies and academia to build a global capacity that can better manage contemporary and future global health threats.

## Analysing divisions of knowledge labour in researching COVID-19 'post-truths'

The 'COVID-19 pandemic' is a shared *discourse*, a way in which people talk about a global health topic as part of a shared concern. Their conversation can draw on varied *discourses*, semiotic ways of construing aspects of the world (physical, social or mental) that can generally be identified with different positions or perspectives of various groups of social actors.[5] Specific discourses (such as statistical models for pandemics) are often developed by professional experts. They work in a complex division of knowledge labour to produce different forms of 'educational knowledge'. Bernstein defined such knowledge as 'uncommonsense' knowledge:

> [*I*]t is knowledge freed from the particular, the local, through the various languages of the sciences or forms of reflexiveness of the arts which make possible either the creation or the discovery of new realities'.[6] (p. 770)

Bernstein pointed to the '*pedagogic device*' as the social mechanism underpinning knowledge production.[7] This device comprises three levels for analysis, either '*distributive*', '*recontextualising*' or '*evaluative*': a set of *distributive rules* orders the regulation and distribution of a society's worthwhile knowledge store. This knowledge store is transformed into pedagogic discourse for educational transmission through *recontextualising rules*. Such pedagogic discourse becomes ordered by *evaluative rules* into a set of criterial standards to be attained.

Kwok et al.'s Table 1[8] shows how the *divisions of knowledge labour* for COVID-19 are delineated. Emile Durkheim's theory for *Division of labour* proposes that this division encompasses the separation and specialisation of work among varied personnel with different expertise.[9] *Separation* entails that various tasks in a work process become separated into various component and cofunctioning processes, which *agents* do. Bernstein described how knowledge work is done by a network of individual human agents and *socialising agencies*. Such agencies may comprise families, peers, groups, schools or colleagues at work.[7]

**TABLE 1:** Division of knowledge labour in COVID-19.

| Rules | Discourse activity by *field* | Agents in the pandemic |
|---|---|---|
| Distributive rules | Production of discourse in *Higher Education* | Epidemiologists, immunologists, microbiologists, pathologists, virologists |
| Recontextualising rules | Recontextualisation of discourse on *Media Platforms* | News media, health officials in the government, politicians, 'fake' news spreaders, anyone on social media platforms |
| Evaluative rules | Reproduction of discourse in *Government* | The most senior government officials who evaluate the scientific discourse and transform the assessment into policies and practices |

*Source*: Adapted from Kwok H, Singh P, Heimans S. The regime of 'post-truth': COVID-19 and the politics of knowledge. Disc Stud the Cult Polit Edu. 2021;1–15. https://doi.org/10.1080/01596306.2021.1965544, (p. 6).[8]

COVID-19, coronavirus disease 2019.

Each transformation of knowledge takes place in a particular *field* (see Table 1), within which different expert agents work. This *field* of knowledge production may be marked by a *hierarchical* knowledge structure, such as in the health sciences, whose very general propositions and theories integrate knowledge at lower levels. Alternately, the structure may be *horizontal*, such as in the humanities. It contains a series of specialised languages and expert modes of interrogation, plus criteria for the design and sharing of texts.[10]

The three rules and their associated fields comprise a pedagogic device that is an arena of conflict and struggle. Social groups attempt to dominate the development of educational knowledge. Rival groups attempt to appropriate the device to impose their own rules via constructing particular *code modalities*. Code refers to a 'set of organizing principles behind the language employed by members of a social group'.[11] Code modality is a principle of hierarchisation. Hence, the device or apparatus becomes the focus of challenge, resistance and conflict.[7]

Kwok et al. describe how the global health crisis of COVID-19 presents a fertile ground for exploring the complex division of knowledge labour in a 'post-truth' era.[8] Much has been written about 'post-truth', producing multiple definitions. Generally, 'post-truth' is considered an information disorder in which rumour and disinformation blight digital platforms and other communication channels. Fake news and alternative facts are spread as misinformation, which can result in negative outcomes linked to malinformation. Post-truth's advent is also marked by multiple forms of expertise and fact-checking, dog-whistle politics appealing to emotion, denial of science and consequently the return of fascism.[12,13,14] In contrast to this broad conceptualisation of post-truth, knowledge production is a narrow concept useful for exploring the social conditions of knowledge. Researchers

can analyse divisions in knowledge labour for explaining where 'post-truth' moments arrive.

## Division of knowledge labour in COVID-19: An example

Kwok et al.'s Table 1 was designed to support an analysis of the division of knowledge labour in relation to COVID-19. It features the higher education (HE), media and government fields. According to this framing, the distributive rules for COVID-19 discourse development are driven by university experts. *Distributive rules* govern the fields where the production of new knowledge takes place. For example, an epidemiological scholar at a university is an agent who produces a statistical model that predicts COVID-19's potential mortality and morbidity.

*Recontextualisation* can be seen as the appropriation of external discourses, where discourses are incorporated into strategies pursued by groups of social agents within the recontextualising field.[15] *Recontextualising rules* regulate the translation of knowledge and comprise the prevalent discourse to which lay people are exposed. A news journalist would recontextualise the epidemiologist's calculations in a lead article edited for that newspaper's audience.

Kwok et al.[8] argue that the era of post-truth is marked by the intense and visible pressures that arise from such pedagogisation of medical knowledge. *Pedagogisation*[16] refers to the process by which specialist knowledge that is inaccessible to the public becomes translated into novel forms that nonspecialist audiences can access and understand more readily. There are many digital platforms that support such forms of recontextualisation, which can range from movie-length videos to pithy tweets. In response to this information, Internet audiences can add their own comments.

Key opinion leaders from outside the medical field can readily access social media to recontextualise the health narrative. New recontextualisation organisations are formed in response to nonexperts' attempts to wield power over medical discourse. These range from collaborations between public media organisations and research institutions to 'fact-checkers' reliant on algorithms and fast data for cross-checking relevant information.

The vast increase in communication through recontextualised sources has led to the mystery and incoherence of medical knowledge becoming more obvious and more visible in the post-truth era.[8] This increases the challenge to universities and commercial medical enterprises wanting to retain public trust in the scientific and medical knowledge that they have developed and the resulting public interventions.

What counts as 'valid' knowledge and practice in the division of knowledge labour is determined by *evaluative rules* – according to Bernstein.[7] Whoever can evaluate such validity is the most influential and powerful person or group in that division. As the COVID-19 pandemic was predicted to cause an unprecedented number of deaths across the globe, the initial step of government health officials was to consult with selected epidemiologists who had produced predictive models of how many deaths would happen in the pandemic. Only senior political officials had the power to transform the predictions of those epidemiologists into policy actions that impacted entire populations around the globe. Consequently, political leaders in the upper echelons of government hold the greatest evaluative power according to this analysis of how the division of knowledge labour impacts knowledge transfer to the public.

This analysis clarifies that researchers need to explore the relations between and within each division's fields. This analysis can reveal areas of contradiction and conflict. For example, political leaders may be driven by very different concerns in the political field than epidemiologists working in academia. Scholars across a variety of disciplines may disagree on the efficacy of measures taken by governments to protect citizens' safety. As national statistics for confirmed infections and COVID-19 deaths are released, epidemiologists will critique each other's statistical models, focusing particularly on the assumptions inherent in their different models and their resulting predictions.

## Aim

### Exposing contradictions within and between key COVID-19 divisions of knowledge labour

Kwok et al.'s division of knowledge labour in COVID-19 foregrounds the university as the pre-eminent producer of COVID-19 knowledge.[8] By contrast, this article proposes that relationships with other influential knowledge development fields must be considered, for example, pharmaceutical companies that manufacture experimental therapies and direct research to determine whether these products are 'safe and effective'. Such areas of knowledge development are vitally important to analyse regarding their potential contributions to the COVID-19 discourse. It is also important to consider how stakeholders may have similar aims that purport to serve public health, but in reality they prioritise agendas of expanding markets or securing new sponsorship. Powerful agents can collaborate across divisions of knowledge labour for establishing an institutional oligarchy. Its hegemonic collaboration can supress alternative viewpoints that contest and query powerful agents' interests.

This reflects our disagreement with the view that distributive rules in HE can escape the external influence of powerful agents, such as industry and government. In contrast, we believe that it is necessary to study the silent type of collaboration that can exist between powerful agents who pursue their own, and collective, ambitions at the expense of public health and academic knowledge.

As we discuss subsequently, this is glaringly evident in the narrow options that the public are presented for managing COVID-19.

Elaborating the earlier example for epidemiologists can illustrate the influence of key agents outside the university: Statistical modelers are paid by specific interests, and modelers are aware of the preferences of funders' interests. Experts whose knowledge claims achieve the highest visibility may be consulted because they are at specific institutions that benefit from funding streams whose sources are highly instrumental in politics. Media have their own criteria for selecting 'valid' sources; models that predicted minimal change would seem ill-suited for scary headlines and selling newspapers. Well-established modelers with better predictions have consequently been ignored. As a result, the pandemic models discussed at universities can strongly reflect the influence of other fields – entities in fields are not isolated while setting distributive, recontextualising and evaluative rules. In public health, this reflects the reality of clear funding streams operating to push vested interests that can be beneficial but may also be harmful. Companies can exert a significant influence on what is acceptable for universities to research via funding grants provided by these firms. Exploring contradictions between fields, such as commercial and academic ones, is useful to highlight major concerns with how the evidence about COVID-19 is presented to the public. In particular, the 'post-truth' moments that scholars researching the infodemic may be unaware of should be spotlighted for investigation.

## Method

In this opinion piece, we elaborate on where 'post-truth' moments may arrive in three types of division of knowledge labour: the first is the infodemic research agenda (see Table 2), the second is research into mRNA vaccines (see Table 3) and the third concerns research into individual health responsibility to protect against fatal COVID-19 outcomes (see Table 4) and the risk of onward viral transmission. For this public health crisis, we are concerned with the relationships between health communication, public health policy and recommended medical interventions. The second and third types of knowledge division were chosen as the guidance vetted by the WHO will and has had major social consequences for people's health, especially the poor and working class in Southern Africa.[8]

Following Gerrard[17] and Malcolm's[14] call, we focus on the underlying principles that govern knowledge, its transformation and transmission via fields and organisations. Special attention is given to the intergroup contradictions that are present between agencies. Such 'contradictions' exist within and between the categories. Contradictions occur between agents and agencies with different interests, which are directed by and reflected in their divergent goals. An analysis of these contradictions is helpful for broadening our understanding of where 'post-truth' moments lie and what disinformation the WHO's infodemic research agenda might miss or neglect.

## Division of knowledge labour in the infodemic research agenda

The distributive and recontextualising rules in the division of knowledge labour for the infodemic research agenda (see Table 2) are close to that of COVID-19 (Table 1). However, the infodemic research agenda contains different evaluators, specifically international health organisations responsible for global health. One such organisation is the WHO, a United Nations agency whose goal is to connect 'nations, partners and people to promote health, keep the world safe and serve the vulnerable – so everyone, everywhere can attain the highest level of health' (WHO, 2022).

As a global health organisation, the WHO leads the infodemic research agenda. In this role, WHO positions itself as a custodian of evaluative rules for the infodemic. As a custodian, it flags narratives that it considers illegitimate

**TABLE 2:** Division of knowledge labour in the infodemic research agenda.

| Rules | Discourse activity by *field* | Agents in the COVID-19 infodemic |
|---|---|---|
| Distributive rules | Production of infodemic research discourse in *Higher Education* | Researchers in computer science and informatics, health science, informatics, media and communications, politics, psychology, and other salient disciplines |
| Recontextualising rules | Recontextualisation of infodemic research discourse on *Media Platforms* | Journal editors and publishers, journalists, public relations experts on digital platforms, dissident scholars |
| Evaluative rules | Evaluation of which discourses constitute rumour, disinformation, misinformation and malinformation by *International Health Organisations* | Leaders in the: WHO, Centres for Disease Control, United Nations Educational Scientific and Cultural Organization, Organisation for Economic Cooperation and Development |

WHO, World Health Organisation.

**TABLE 3:** Division of knowledge labour on mRNA vaccines.

| Rules | Discourse activity by *field* | Agents in the pandemic |
|---|---|---|
| Distributive rules | Production of 'vaccination' discourse by *Vaccine Manufacturing Pharmaceutical Companies* | Pharmaceutical company leadership, Company researchers |
| Recontextualising rules | Recontextualisation of discourse on *Media Platforms* | Public relations and news media experts, health officials in the government, politicians, vaccination scholars, 'anti-vaxxers' on digital platforms |
| Evaluative rules | Evaluation of the vaccination discourse by the *Centre for Disease Control* | The most senior government health officials who evaluate the mRNA vaccines research and approve their rollout for inoculations |

mRNA, messenger RNA, ribonucleic acid.

**TABLE 4:** Survival rates for different ages infected with COVID-19.

| Age of patient (years) | Probability of survival (%) |
|---|---|
| 0–19 | 99.997 |
| 20–49 | 99.98 |
| 50–69 | 99.5 |
| 70+ | 94.6 |

COVID-19, coronavirus disease 2019.

(misinformation), whose spread as disinformation can potentially result in societal harm, as malinformation. This approach on the COVID-19 'misinfodemic' is shared by another two evaluators, both popular health organisations:[18] the United Nations Educational Scientific and Cultural Organisation has developed two policy guides for tackling the COVID-19 'disinfodemic' (2020, 2022). The Organisation for Economic Cooperation and Development (OECD) has also provided guidance regarding OECD policy responses to 'COVID-19 misinformation' (2020).

The evaluative rules in the infodemic research agenda follow international health organisations' guidance regarding what constitutes false and misleading discourses. Researchers are urged to study such discourse as dangerous threats that undermine these health authorities' guidance to the public. The grand narrative that the WHO infodemic research agenda claims is that it exists solely for the public health benefit in building knowledge and taking actions that might prevent excess deaths and other harms in viral pandemics. The WHO positions itself and its partners (such as Centres for Disease Control and Prevention and public health agencies) as scientific authorities that arbitrate what constitutes medical truth or, alternatively, disinformation. Accordingly, the WHO adopts the status of the ultimate truth provider, an organisation whose verdicts can be accepted without question.

This has the potential to create an intragroup contradiction when infodemic scholars at universities research the WHO's decisions but learn that these and related guidance have shifted dramatically, sometimes with no clear justification. For example, Table 5 lists the key guidelines provided by the WHO for 'mitigating the risk and impact of epidemic and pandemic influenza'. However, a cursory glance shows that the public health measures applied in 2019 would be radically altered just months later. This was from the very beginning of the COVID-19 pandemic, so clearly before new research could have established that these previously accepted, wide-ranging guidelines would be ineffective against the spread of COVID-19.

Scholars who are dependent on research funding from the WHO or those whose funding sustains the WHO (including the Bill and Melinda Gates Foundation) might choose not to criticise such sudden and unexplained shifts in guidance. A linked concern is that it is unclear who the original funders of the infodemic research agenda were. There does not seem to be a line item for it in the WHO's programme budget for the 2020–2021 period. Scholars in the recontextualisation field whose dissent flags the weak, or nonexistent, evidence base for such shifts in the WHO's guidance will also find themselves in contradiction with both the distributive and evaluative fields.

The WHO may also face contradictions if its role as a custodian and evaluator of measures against COVID-19 conflicts with those of its existing funders. The WHO has increased its dependence on external funders, including pharmaceutical companies and investors, particularly the Bill and Melinda Gates Foundation. Organisations such as the Global Alliance for Vaccines and Immunization (GAVI), the Vaccine Alliance and the Coalition for Epidemic Preparedness Innovations (CEPI, focused on epidemics) have arisen alongside the WHO and have private investors and corporate entities represented directly on their boards. These entities channel further funding into the WHO. Most privately sourced WHO funding is 'directed', meaning it is for specified programs and outcomes, for which the WHO staff funded by this source must therefore work. Such an undue influence on the evaluation of COVID-19 discourse may explain the WHO's changed guidance on mRNA vaccines. The pandemic provided an opportunity for the expedited approval of mRNA vaccines as 'trusted vaccines' despite incomplete phase III trials of unusually small size.[19,20] This also required the definition of a 'vaccine'[21] to be altered so that the mRNA products could be classified as 'vaccines' in contrast to the traditional definition accepted for decades, if not centuries.

**TABLE 5:** World Health Organization recommendations for non-pharmaceutical public health measures versus epidemic and pandemic influenza.

| Number | Recommendation in 'Non-pharmaceutical Public Health Measures for Mitigating the Risk and Impact of Epidemic and Pandemic Influenza World Health Organisation' (2019) | Page |
|---|---|---|
| 1 | 'Active *contact tracing* is not recommended in general, because there is no obvious rationale for it in most Member States'. | 38 |
| 2 | 'Home *quarantine* of exposed individuals to reduce transmission is not recommended because there is no obvious rationale for this measure, and there would be considerable difficulties in implementing it'. | 47 |
| 3.1 | 'The effect of reactive *school closure* in reducing influenza transmission varied but was generally limited'. | 50 |
| 3.2 | 'In such cases, the adverse effects on the community should be fully considered (e.g. family burden and economic considerations), and the timing and duration should be limited to a period that is judged to be optimal.' | 52 |
| 4 | 'The strength of evidence on *workplace closure* is very low because the identified studies are all simulation studies'. | 54 |
| 5 | 'The effect of measures to avoid *crowding* alone in reducing transmission is uncertain'. 'Timely and sustained application of measures to avoid crowding may reduce influenza transmission, although the quality of evidence of its effectiveness is very low.' | 57 |
| 6 | 'No scientific evidence was identified for the effectiveness of *travel advice* against pandemic influenza; however, providing information to travellers is simple, feasible and acceptable'. | 61 |
| 7.1 | '*Entry and exit screening* for infection in travellers is not recommended, because of the lack of sensitivity of these measures in identifying infected but asymptomatic (i.e. pre-symptomatic) travellers'. | 63 |
| 7.2 | *Entry and exit screening* are 'Not recommended due to the overall ineffectiveness in reducing the introduction of infection and delaying local transmission'. 'Involuntary screening may have ethical or legal implications'. | 64 |
| 8 | 'Overall, *border closure* is not recommended unless required by national law or in extraordinary circumstances during a severe pandemic, and countries should notify WHO as required by IHR. This is due to the very low quality of evidence, economic consequences, resource implications and ethical implications.' | 69 |

Note: Table based on the original design by Abir Ballan, shared via her personal Telegram account in May 2021. https://t.me/abirballan1/377

WHO, World Health Organization; IHR, International Health Regulations.

## The division of knowledge labour for messenger RNA vaccine development

Conventional division of knowledge labour diagrams (see Table 1 and Table 5) places the HE or tertiary academic field as the leader of discourse production. By contrast, the division for mRNA vaccine research (see Table 3) highlights how companies manufacturing vaccines drive contemporary research and the distributive rules in knowledge labour. Academic institutions are not the most important contributor to mRNA vaccine innovation, as only wealthy pharmaceutical companies have the financial and other resources to drive this research, especially at the 'lightning speed' that became their stated, indeed over-arching, goal. This required that within just a few months, a complex combination of resources be deployed across a myriad of clinical trial sites spread across the globe.

An example of this is Pfizer's clinical trials of its BioNTech Comirnaty mRNA vaccines; within just 4 months, it scaled this trial to include 46 000 participants at 150 sites in six countries.[22] Pfizer's clinical development team used predictive models for COVID-19 incidence at the local level to select potential sites and optimise their site selection. Artificial intelligence and machine learning were used by Pfizer's scientists to 'perform quality checks and analyse vast amounts of trial data in near real time. Participants' data could be refreshed every 4 h'. The use of supercomputing reduces 'the computation time for complex calculations and scientific simulations by 80% – 90%', resulting in a reduction in labour-intensive research outcomes from years to months and weeks.

The production of vaccination discourse by manufacturers features very different contradictions between and within agencies than does the production of COVID-19 or infodemic knowledge. In the first place, the role that pharmaceutical companies have in producing vaccination discourse is massively conflicted. Conflict of interest arises in pursuing such costly research on novel mRNA vaccines, because whether the company producing these therapies will ultimately benefit financially from the future sales of these therapies depends entirely on the published efficacy and safety results from their own research.

Well-documented failures in the Pfizer trial of their COVID-19 vaccine highlight the dangers of these contradictions. The original trial was scheduled to last for two years; however, after three months, the study's patients were 'unblinded'.[23] The control group had been offered the mRNA vaccines, which effectively prevented a long-term study of the treatment's safety.[24] Other major flaws in the study included falsified data, the employment of inadequately trained vaccinators and slow follow-up on adverse events reported in Pfizer's pivotal phase III trial.[25] Staff who conducted quality control checks were overwhelmed by the volume of problems they were finding. That study also found that all-cause mortality was higher in the 'vaccinated' than in the control group[26] (Table S4, p. 78) which should have been recognised as a safety signal. Pfizer only acknowledged one excess death (16 vs. 15) in the vaccinated group in its six month safety report. It was:

> [*S*]o damning that it should have closed the case against this vaccine but captured FDA officials nevertheless gave Pfizer their approval; the broken VAERS system and the mainstream and social media all conspired to conceal the evidence of the crime when vaccinated Americans began dying in droves, and CDC implemented its own retinue of enshrouding machinations to cloak real-life carnage.[26] (p. 79)

Pfizer responded by attempting to have all the relevant information from the trial sealed from public scrutiny for 75 years, contrary to the stated priority of providing facts to counter 'misinformation'. Following a Freedom of Information Act request, this decision was rescinded by a Federal Court in the northern district of Texas that ordered that the relevant data be released at a rate of 55 000 pages per month. This lack of transparency has been strongly criticised in the *British Medical Journal* (BMJ):[27] 'Pfizer's pivotal covid [*sic*] vaccine trial was funded by the company and designed, run, analysed and authored by Pfizer employees'. The company and contract research organisations that carried out the trial hold all the data. Unfortunately, there is 'inadequate availability of COVID-19 vaccine trial documents and data; individual participant data will not be available for months, perhaps years, for most vaccines'.[28] The widespread 'use of interventions without full data transparency' raises 'concerns over the rational use of COVID-19 vaccines'.

Indeed, original concerns about the proprietary of the Pfizer COVID-19 trial were raised by an employee of a large clinical research company contracted to conduct that trial.[25] Predictably, the whistle-blower, Brook Jackson, immediately lost employment. Agents inside vaccine manufacturers confront an intragroup contradiction if their research produces negative findings for their employer's products. A recent evaluation of serious adverse events of special interest observed in phase III randomised trials of Pfizer and Moderna's mRNA COVID-19 vaccines has recommended the need for formal harm–benefit analyses, particularly those that are stratified according to risk of serious COVID-19 outcomes such as hospitalisation or death.[29] This was based on the finding that the excess risk of serious adverse events of special interest surpassed the risk reduction for COVID-19 hospitalisation relative to the placebo group in both trials.

A major intergroup contradiction exists in evaluators, such as the CDC and European Medicines agency, receiving large proportions of their budget from the industry they are supposed to regulate.[30] Another potential conflict of interest exists in these evaluators being entirely dependent on vaccine-producing companies for the accurate (and honest) reporting of results from their vaccine trials. The Pfizer experimental product was initially promoted to stop the spread of COVID-19, thereby allowing a 'return to normality' according to Pfizer's CEO, Albert Bourla.[31] However, unlike previously

well-tested vaccines, the mRNA vaccines proved ineffective at halting transmission of the supposed infectious agent.[32] Moreover, the waning effectiveness of even third doses of 'vaccinations' soon became apparent.[33,34,35] As a result, natural infection provides superior long-term protection.[36]

Vaccine-manufacturing pharmaceutical companies need to protect their intellectual property – vaccine ingredients are proprietary. This may present a challenge to regulators' third-party evaluations of these firms' research. It also presents a contradiction in the recontextualisation field where sceptics can claim that mRNA vaccines contain harmful substances.

In stark contrast to the challenges in the recontextualisation field that an absence of information creates, releasing too much information also creates its own challenges. For example, Pfizer shared 80 000 pages of information on its research trial in a 'Pfizer dump'. Critics had a huge amount of information that they could recontextualise, such as in viral tweets that falsely claimed the dump to reveal vaccine efficacy as only 12%, not the 95% that Pfizer claimed.[37] Critics of the WHO's COVID-19 response have flagged how its funders' economic and ideological interests have shaped research funding into preventive or alternative treatments. The director of the National Institute of Allergy and Infectious Diseases, Dr Anthony Fauci and NIH receive substantial amounts from their patents, while the CDC sells vaccines.[26]

A lack of correspondence between the claims from experimental clinical trials and those in the real world led to the public's first-hand experience of this failure. It would have been expected that international health authorities would have modified their guidelines, especially as they relate to mandatory vaccine policies. However, this was not the case. Instead, the WHO remained silent, as they have been failing to address issues of vaccine safety.[38] For example, the response to the finding that more deaths have occurred in the first year of the vaccine rollout than all the other vaccines over the past 30 years met with the excuse that 'we had to overlook the safety measures because this was a deadly pandemic'.[39]

Another contradiction exists between the deliberation and recontextualisation fields, where vaccine-manufacturing pharmaceutical companies can use their large online advertising budgets to influence content on digital platforms and fact-checking. With the contemporary Internet facilitating control by large technology companies, a related concern is tied to their financial investments in vaccine manufacturers. Large advertising payments and investments may result in hidden algorithmic influence on Big Tech platforms, where algorithmic amplification shapes the margins of 'acceptable opinion': mRNA vaccines may be foregrounded in top search results that only feature positive stories. In contrast, algorithmic censorship can be applied to negative news on mRNA technologies, and unfavourable reports are fact-checked. An example is the 'fact-checking' messaging from Facebook which flagged the sharing of a legitimate BMJ investigation. It described a Pfizer contractor who may have falsified data and skewed findings in its original jab studies.[25] This article's Facebook shares were accompanied by a 'missing context' warning claiming the article might 'mislead people'. This was linked to Lead Stories, Facebook's fact-checker's website.

It is also pertinent to note that the division of knowledge labour for mRNA vaccine development should not be considered separately from that for COVID-19 or the infodemic research agenda. Strong contradictions may emerge from the relationships between multinational pharmaceutical companies and agencies in the two distributive and evaluation fields. Multinational pharmaceutical companies are referred to as 'Big Pharma' because of their large size and large profits resulting in their acquisition of significant political influence.[40] Less well known is how these same companies direct the research agenda in academia and medical research discourse through the lucrative grants that they distribute liberally. For example, each dean of a prestigious university's medical faculty must attract funders to help cover the high running costs compounded by budgetary shortfalls resulting from shrinking government subsidies. Cost recovery is achieved by placing research levies on all grants to faculty researchers. Such levies can range from 20% at a typical South African university to 70% at leading medical research universities in the United States. This money helps sustain the faculty's staffing and infrastructure. Large grants from wealthy institutions are highly valued because they generate large research levies. In South Africa, the three most prized funders are the National Institute of Health, the Bill and Melinda Gates Foundation and the Wellcome Trust. The latter two provide much of the funding for local vaccine-related research and their investment is large, running to hundreds of millions of South African rands, even for individual trials run by single South African universities.[41]

Another important contradiction exists between the decolonial agenda of African governments versus the high costs of purchasing mRNA vaccines manufactured overseas. Localisation of vaccine manufacturing capacity by lower- and middle-income countries necessitates that most of the equipment, personnel and consumables be imported for years, further limiting benefits to the local economy.[13] Notwithstanding the huge advertising budgets of Big Pharma companies, there may be a rejection of mRNA vaccine technologies within local markets. For example, Africa's first COVID-19 vaccine plant led by Aspen pharmacare risked closure because of not receiving orders for Aspenovax.[42]

In exploring COVID-19 post-truths, researchers should consider the discourses related to grant making and sponsorship rules (see Table 6). While not constituting a pedagogical device, both are important in shaping the direction of the research that will either be encouraged or discouraged. Research organisations dependent on external funding to cover their annual budget shortfalls will be more susceptible to the influence of those funders on their research

**TABLE 6:** Grant-making and sponsorship discourse activity and agents.

| Rules | Discourse activity by *field* | Agents in the pandemic |
|---|---|---|
| Grant-making rules | Production of discourse for evaluating research rationales by *Corporate Funders* | Pharmaceutical company, research foundations and other grant makers, |
| Sponsorship rules | Production of discourse for potential COVID-19 research funders by *Research Organisations* | Leadership in HE and at other research organisations, academic journals |

HE, higher education; COVID-19, coronavirus disease 2019.

programs. External funders have their own criteria for evaluating what constitutes an attractive research project, and the primary consideration will be to generate future revenues for their company as required by United States (US) law – the concern of 'shareholder primacy' established by the 1919 Dodge vs. Ford Motor Co. case.

As a result, in the projects they support, there will always be the inevitable tension between the funder's desire for an industry-favourable outcome on which future product sales are wholly reliant versus the potentially devastating effects of the finding that their product is either ineffective or harmful. Or even worse, that it is both harmful and ineffective. This raises questions about Pfizer's apparent disinterest in full transparency.[25,27,28]

There is also a contradiction in funding research that might support the development or marketing of rival products or lead to an existing product to fail. The most egregious examples of this have been the suppression of out-of-hospital treatments shown to be potentially effective if used early in COVID-19 infections, especially ivermectin.[43] In part, this reluctance to pursue alternative, out-of-hospital treatments is explained by the need for vaccine manufacturers to have an Experimental Use Application (EUA) applied to their vaccines. An EUA cannot be granted if alternative, effective treatments are already available.

South Africa provides an excellent example of the complexity of these conflicts of interest. All internationally competitive medical faculties in South Africa receive very substantial funds from the three linked international organisations already mentioned that support vaccine research – the Bill and Melinda Gates Foundation, the National Institute for Health and the Wellcome Trust. Indeed, one might argue that there is a direct relationship – perhaps not causal – between the international standing of the different South African medical faculties and the magnitude of the funding each receives for research into vaccines, mRNA vaccines and their development. A natural consequence is that three of the most influential members of the South African President's Coronavirus Command Council are heavily funded by these organisations. The Bill and Melinda Gates funding for vaccine research in Africa is granted to just two South African medical faculties, who have reportedly received upwards of $154 million over the years.

In addition to influencing university research, large pharmaceutical companies also have the budgets to influence academic publishers and health councils, as discussed by Blaylock.[39] In South Africa, concerns have been raised about the independence of the South African Health Products Regulatory Authority (SAHPRA), which receives or has received funding from the Bill and Melinda Gates Foundation. Recently, SAHPRA terminated the 'Compassionate Use Access Programme' for ivermectin in South Africa.

Another potential site of contradiction exists where flawed interventions and policies may be coerced through global health organisations and via local government by more powerful international organisations. The WHO's policy may reflect the interests of more powerful organisations, such as the World Economic Forum, and the influence of donors, such as the Bill and Melinda Gates Foundation.[44]

## World Health Organization ignores personal health behaviours that can reduce the risks of fatal COVID-19 outcomes

The WHO document states that:

> [*A*]n infodemic can lead to confusion, misunderstanding of health information, risk-taking and behaviours that can harm health under the public health response, and lead to mistrust in health authorities. Therefore, people need timely, accurate, and accessible information in the right format and amount during epidemics to adopt health-promoting behaviours to protect themselves, their families, and their communities against the infection.[4] (n.p.)

Clearly the focus of this document is ostensibly to protect the 'people' – presumably the public – from harm by providing correct information that will assist them to adopt health-promoting behaviours, the goal of which is to protect everyone from infection. Having stated that this is their goal, it is reasonable to expect that the WHO can establish clarity for the most appropriate actions for achieving these goals. This raised the question whether the WHO provided information that would assist individuals to alter their personal health behaviours – as opposed to the measures of hard lockdowns and border closures enforced on all.

As described previously,[45] very early in the 'pandemic' it was found that not everyone is at equal risk for a fatal COVID-19 infection. This information should have been crucial in developing an appropriate global response to the 'pandemic' and in advising individuals of their probability of developing the disease. With this information, those at greatest risk could have prepared themselves more effectively. Such COVID-19 discourse seems largely been ignored in HE. It was never stated that the gradient of risk for a fatal COVID-19 outcome differs by more than 400-fold between the young, who are essentially at zero risk, and the elderly, especially those who live in nursing homes and in whom close to 40% of all COVID-19 deaths were reported, for example, in England and Wales. By contrast, the CDC suggested that this is over 8000-fold. An early study found that people above age 65 account for 91% – 95% of all COVID-19 deaths in eight

European epicenters for the outbreak. People younger than 65 years had a 34–73-fold lower risk than those older than 65 years. The absolute risk for COVID-19 death ranged from 1.7 per million people for those younger than 65 years living in Germany to 79 per million in those residing in New York City. After age 80, the risk of death rose steeply to 1 in 6000 in Germany and 1 in 420 in Spain.

Already in September 2020, the US Centers for Disease Control and Prevention in Atlanta, Georgia, released survival rates for different ages in the United States that suggested the risk was very low at young ages. Similarly, the South African data shows exponentially increasing risk from age 49 for fatal COVID-19 outcomes (see Figure 1).

The second important risk factor also identified very early in the 'pandemic' was the presence of underlying medical conditions (comorbidities). In the Netherlands, Italy and New York City, respectively, 99.7%, 99.3% and 98.2% of all deaths occurred in those with one or more underlying comorbidities. The most important comorbidity is underlying poor metabolic health, characterised by the medical condition of insulin resistance, often presenting as the metabolic syndrome, visceral obesity, hypertension and Type 2 diabetes mellitus (T2DM).

**TABLE 7:** Division of knowledge labour on personal health responsibility in a pandemic.

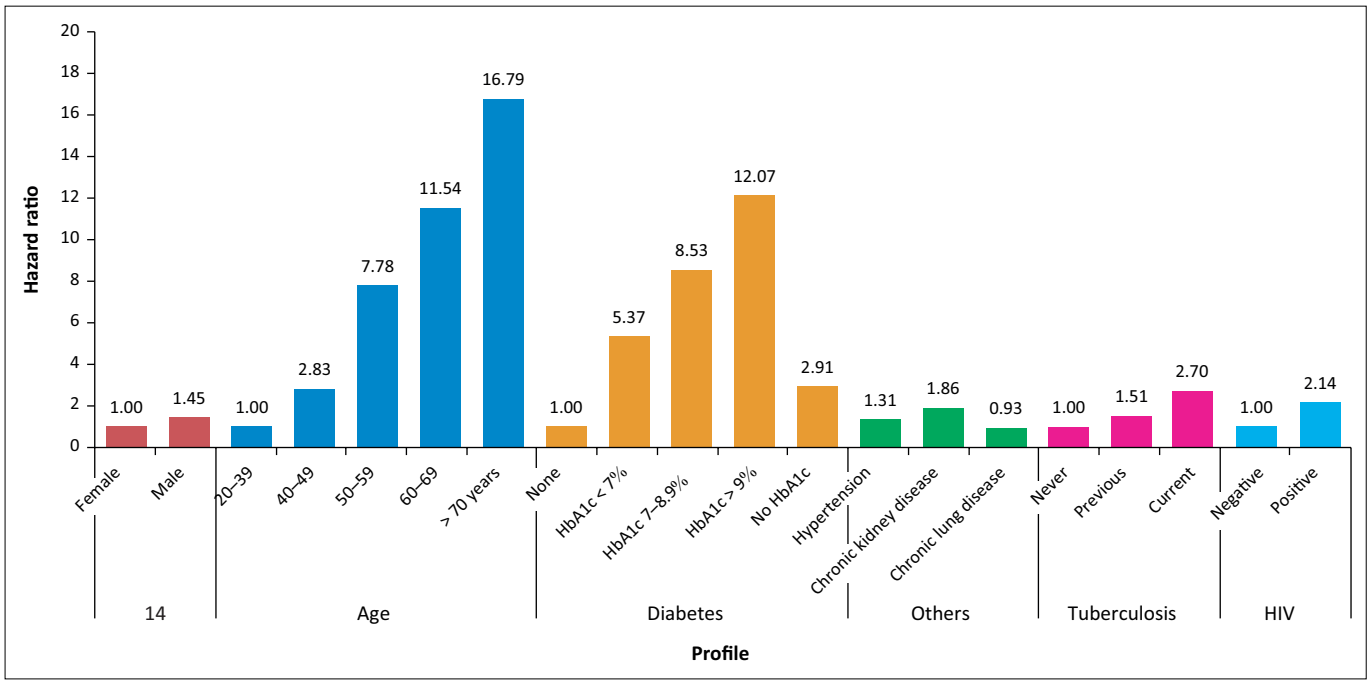
| Rules | Discourse activity by *field* | Agents in the pandemic |
|---|---|---|
| Distributive rules | Production of discourse in *Higher Education* | Epidemiologists, immunologists, microbiologists, pathologists, virologists |
| Recontextualising rules | Recontextualisation of discourse on *Media Platforms* | News media, health officials in the government, politicians, 'fake' news spreaders, anyone on social media platforms |
| Evaluative rules | Reproduction of discourse by *International Health Organisations*. | Leaders in the: WHO, Centres for Disease Control, United Nations Educational Scientific and Cultural Organisation, Organisation for Economic Cooperation and Development |

WHO, World Health Organisation.

In one of the very earliest studies of 5700 persons hospitalised in New York City for COVID-19 infection, these comorbidities were present in the following proportions: (1) hypertension, 56%; (2) obesity, 42% and (3) T2DM, 34%. In September 2020, a large Western Cape (South Africa) study of 501 fatal cases of COVID-19 reported that just two factors – age and T2DM – massively increased the risk of a fatal outcome (Figure 1). Age above 50 years increased the risk between 8- and 17-fold. People with T2DM and elevated hemoglobin A1C values, indicating poor diabetic control, were at 5–12 times greater risk for a fatal outcome than were those without T2DM. In contrast, a history of tuberculosis increased the risk 2.7-fold, and human immunodeficiency virus (HIV) just two-fold. Other studies found other markers of abnormal metabolic control including visceral obesity (2.5–11-fold increase risk).[46,47]

From left: sex, age, type 2 diabetes mellitus (T2DM), other chronic diseases, tuberculosis, HIV. Note that an HbA1c value in excess of 7% is diagnostic of T2DM; higher values indicate more advanced disease. Reproduced from data in Table 5.[3,48]

Physicians treating T2DM patients with COVID-19 infections should also have been informed that any patient with an elevated blood glucose concentration on hospital admission was at a four-fold greater risk of a fatal outcome.[49] Patients with T2DM whose blood glucose levels exceeded 10 mmol/L




*Source*: Adapted from Boulle A, Davies M-A, Hussey H, et al. Risk factors for COVID-19 deaths in a population cohort study from the Western Cape Province, South Africa. Clin Infect Dis. 2021 Oct 5;73(7):e2005–e2015. https://doi.org/10.1093/cid/ciaa1198

HIV, human immunodeficiency virus.

**FIGURE 1:** Hazard ratios for risk of fatal outcome in COVID-19 infections in the Western Cape.[66]

during COVID-19 infection had a significantly worse survival rate (98.9% versus 89.0%) than those with better glucose control. Similarly, mortality measured at 60 days in patients with T2DM was 80% versus 92% in those without T2DM. Elevated blood glucose concentrations in COVID-19 patients with T2DM are harmful because: (1) they increase the ability of the COVID-19 virus to replicate, and (2) they amplify the inflammatory response in the lungs and adipose tissue,[50] among other effects.[51]

Evidence also accumulated early in the 'pandemic' showing that vitamin D deficiency may be a key determinant of more severe COVID-19 outcome.[52,53,54] Thus, some proposed early on that patients with COVID-19 infections should receive supplemental magnesium, vitamin D and zinc[55] and that these supplements should be taken for prophylaxis. Subsequently, selenium deficiency was added as another potential nutritional deficiency that could worsen COVID-19 outcomes.[56] Interestingly, an analysis of self-reported data found that a cohort of 18 497 persons who chose not to be vaccinated, comprising 6% of 297 618 such persons, were less likely to suffer severe COVID-19 outcomes than those who chose to be vaccinated.[57] In part, this might be because those who chose to be unvaccinated were more likely to adopt nutritional and other interventions known to be beneficial in preventing more serious COVID-19 infections. Given such overwhelming evidence for the importance of personal responsibility, what contradictions might explain why its discourses seem largely ignored in the COVID-19 discourse from HE and government?

In the first place, personal responsibility is not a commercial site for generating large profits, some of which may be donated in supporting HE research. Research into effective, low-cost interventions seems to be at odds with the economic interests of both grant recipients and Big Pharma donors. Replacing costly treatments with low-cost alternatives would not only greatly diminish the profitability of existing funders but also reduce the pool of new ones, as well as the size of future donations from all such donors.

Another contradiction exists in the exclusion of primary healthcare workers from the distributive rules for personal health responsibility during the pandemic. In particular, dissident health professionals and academic scholars who promote personal responsibility have faced censorship on campus and by medical authorities.[58] Lacking an opportunity to share their knowledge in public created a contradiction whereby marginalised experts have turned to the recontextualisation field for working around public health authoritarianism.

A further contradiction exists in the scientific enterprise in HE lending itself to being an arena for misinformation.[59] In science, the old information of an outdated theorem's paradigm and its axioms is an obstacle to a better understanding. Such outdated understanding may be 'low-quality' information. However, from the perspective of orthodoxy, views that support new paradigms are unverified knowledge and potentially 'misinformation'. Any international health organisation that wishes to be an evaluator must have the scientific expertise for managing this ongoing paradox or irresolvable contradiction. Organisations such as the WHO may theoretically be able to convene such knowledge, but their dependence on funding from conflicted parties would normally render them ineligible to perform such a task.

How different modalities of knowledge become presented to the public is crucial for understanding 'post-truth' dimensions in a pandemic.[8] This article alerts researchers to a broad range of 'post-truth' moments and flags the danger of relying on global health authorities to be the sole custodians of who is allowed to define what comprises an information disorder. In each case, challenges to such scientific propaganda should not automatically be (mis-) characterised as *low-quality* or *harmful* information. Rather, the digital voices of responsible dissenters can be valuable in protecting scientific integrity and public health.

# Review findings

## The need to watch the World Health Organization and other health 'custodians'

The WHO describes its main goal as leading and championing 'global efforts to give everyone, everywhere an equal chance to live a healthy life' (2022). However, very early in the COVID-19 epidemic, it was clear that this was not the case. For example, it has been claimed that of the 800 000 persons in the United States who died with a diagnosis of COVID-19 infections, as many as 640 000 could have been saved had proven early out-of-hospital treatments such as hydroxychloroquine and ivermectin been mandated.[39,60,61] Instead, 'these knowledgeable doctors were prevented from employing otherwise safe drugs with the intention of saving COVID-19-infected people'.[33]

Thus:

> [*N*]either Anthony Fauci, the CDC, WHO nor any medical governmental establishment has ever offered any early treatment other than Tylenol, hydration and call an ambulance once you have difficulty breathing. This is unprecedented in the entire history of medical care as early treatment of infections is critical in saving lives and preventing severe complications. Not only have these medical organizations and federal lapdogs not even suggested early treatment, they attacked anyone who attempted to initiate such treatment with all the weapons at their disposal – loss of license, removal of hospital privileges, shaming, destruction of reputations and even worse.[62] (p. 2)

The WHO is complicit in all COVID-19 deaths that could have been prevented by the initiation of early effective treatment. A probable explanation for why early treatment was not encouraged in the United States lies in the windfall that the COVID-19 'pandemic' brought to the US hospital companies. The Federal Care Act provided a disincentive for out-of-hospital care of COVID-19 infections by offering $12 000 for each patient admitted to intensive care units

(ICU) and $39 000 for each patient in the ICU placed on a respirator.[33] Early on, it was found that 60% of patients placed on ventilators were more likely to have a fatal outcome.[63] This mortality rate was reduced with time as care providers became more skilled in the use of this form of treatment. Or alternatively, they realised that this form of treatment was more likely to produce a fatal outcome than was its avoidance. Blaylock[39] makes the point that billions in federal COVID-19 aid are now being used by the hospital 'giants' to purchase financially endangered hospitals – an unintended consequence of the failure to promote out-of-hospital treatment with proven effective repurposed medications.

With regard to vaccine harms, the mantra of 'safe and effective' from the WHO and other public health institutions is called into question through orthodox methods of review of the vaccine data provided by the vaccine companies themselves.[29] The gigantic profits for investors in COVID-19 vaccines have bankrolled mandatory vaccine policies that have led to significant individual harms while returning ascribed 'benefits' that have continually diminished in scope.

## Conclusion

It seems that the WHO's advice was not evidence based, leaving plenty of scope for speculation in the recontextualisation field. We have described this and many other intergroup contradictions that exist within, and between, divisions of knowledge labour in the COVID-19 pandemic. The changed nature of vaccine knowledge production is spotlighted, and its accelerated division of labour is driven by the dominating financial interests of those companies that manufacture the experimental therapies. Manufacturers of these novel therapies dominate the division of knowledge labour in mRNA vaccine production. These companies also exert undue influence on academic institutions and health organisations that are expected to be independent of external influences in their search for truth.

The division of knowledge labour in the COVID-19 pandemic regarding the promotion of vaccine uptake, and safety has influenced the WHO's reluctance in tracking vaccine injuries. The WHO did not promote a range of relatively simply health-promoting behaviours known to improve personal resistance to infection, especially of those who are the most at risk of a fatal COVID-19 outcome.

We argue that the contradictions in the development of mRNA vaccine production knowledge strongly influence outcomes related to personal health knowledge. Most notably, the WHO's failures in its acceptance of the need for vaccinating all the world's people even before proper clinical trials establishing that these novel experimental therapies were both 'safe and effective'. The WHO also failed to address the issue of personal responsibility in optimising personal health choices and behaviours.

Given such massive failures, to be credible, the WHO infodemic research agenda should open earnest discussion on whether its own choices and guidelines have contributed to 'misinformation', 'disinformation' and even 'malinformation'. It should also address the other COVID-19 myths, which officials continue to promote (PANDATA, 2021).[64] Without such epistemic humility, this research agenda can be criticised, as the agenda's actual goal may be to direct attention away from the multiple failures of government and health authorities in fighting a pandemic with inappropriate measures. In particular, given that prioritising vaccines over other measures has had huge social costs for Africa's poor.[65]

The CDC, NIH and WHO's endorsement of multinational pharmaceutical companies' products is particularly troubling. It marks a 'new normal' of institutional capture by industry-sponsoring regulators who become their 'lobbyists'. This contrasts to the silo efforts of external influence in the past, for example by lobbyists working for Big Tobacco or Big Food.[63] They spun embedded scientific research touting the 'benefits' of smoking and processed foods. At the same time, evidence of harm was attacked as 'junk science'. At least with cigarettes and ultra-processed foods, many individuals have the choice to buy or avoid paying. In stark contrast, tax-paying publics have no such option in avoiding the steep costs of mRNA vaccines. Public taxes pay for these treatments, while less expensive and potentially more effective interventions are ignored. Paying for vaccines takes funding away from interventions that would address wider and more pressing global health needs, in particular, poverty, malaria, tuberculosis and T2DM.

As outsiders and dissidents from the COVID-19 consensus, we have raised several constructive criticisms of the infodemic research agenda. Such concerns seem apposite to the ideology of the pro-vaccine, Great Reset agenda of the WHO and its economic stakeholders. We suspect that our unrequested advice and unwanted criticism will simply be ignored, so we welcome your feedback.

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### Authors' contributions

T.M.N., the senior author, conceptualised the manuscript's direction and focus; wrote the first draft and was responsible for all visualisations. T.M.N. provided the major input to all subsequent revisions. D.B. contributed to the investigation's

formal analysis, providing specialist health sociology input and reviewing and editing the final draft. T.D.N. edited all drafts; provided critical comments on the flow, meaning and content of the manuscript and assisted the investigation with specialist medical input.

## Ethical considerations

This article followed all ethical standards for research without direct contact with human or animal subjects.

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## Data availability

The authors confirm that the data supporting the findings of this study are available within the article.

## Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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