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Parallel vaccine discourses in Guinea: ‘grounding’ social listening for a non-hegemonic global health

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ABSTRACT

Misinformation has been identified as a major threat to public confidence in vaccines, particularly during epidemics. As a response, social listening has become a popular and heuristic public health tool for detecting misinformation and adapting vaccine communication. In this article, we take a critical stance on the normalised approach to social listening which solely relies on the analysis of online discourses. We highlight that the current social listening paradigm inherited a reductionist and utilitarian approach from commercial marketing that struggles to grasp – and even misrepresents – the complexity of health-related perceptions and knowledge. This study draws from online COVID-19 vaccines discourses in Guinea and ethnographic fieldwork among Guinean healthcare workers. While the online social listening showcased a predominance of individual and collective safety concerns, distrust towards African elites and Western actors, fieldwork revealed that healthcare workers’ vaccine perceptions were more nuanced and largely shaped by complex kinship relations spanning across online and offline social landscapes. Furthermore, healthcare workers often displayed frontstage and backstage vaccine discourses, their vaccines related representations and claims could evolve depending on the context of enunciation. We advocate for grounding social listening in global health to avoid disconnection from the public. Failure to accomplish this could result in a detached and hegemonic form of ‘social hearing’, rather than authentic social listening. In light of this, the transdisciplinary methodology exemplified in this paper represents one possible solution.

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Introduction

Sub-Saharan Africa has been as a source of concern for global health leaders and specialists since the beginning of the COVID-19 pandemic, long before the continent felt its impact. In early 2020 – as the epidemic rampaged through China and most of the post-industrial world – experts anticipated a catastrophe for African nations, reasoning that they were deprived of the necessary solid health systems and purchasing power to secure vaccine stockpiles (Berhan, 2020). Projecting high mortality rates for the continent, global health experts anticipated that Africa would fall into chaos because of

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Covid-19, reviving imaginaries of Africa as the land of viral (re)emergences and diseased bodies (Comaroff, 1993; Dozon, 1991). This anticipation was also fueled by the continent's reputation for difficult introductions of new medicines and resistance to vaccines (Afolabi & Ilesanmi, 2021; Peeters Grietens et al., 2014). COVID-19 vaccination for Africa became an additional (and ambivalent) priority for many within the global health community (Nachega et al., 2021).

To maximise COVID-19 vaccine uptake, numerous studies launched with the aim of understanding *vaccine hesitancy* in different African settings (Leach et al., 2022). Vaccine anxieties (Fairhead & Leach, 2012), hesitance towards or refusal of vaccination are as old phenomena as vaccines themselves (Moulin, 1999). *Vaccine hesitancy* has risen in the last decade as a unifying concept to encapsulate barriers to vaccination and been understood as a continuum between full acceptance and refusal of vaccines (MacDonald & SAGE Working Group on Vaccine Hesitancy, 2015). Individuals may refuse or delay some vaccines and not others, they may also, with time, change their mind and accept a vaccine they previously refused to take (Larson, 2020). Vaccine confidence and acceptance may thus be conditional (Heyerdahl, Vray, et al., 2022) and volatile (Larson & Broniatowski, 2021). In the COVID-19 context, vaccine hesitancy and refusal have been closely associated with 'misinformation', disinformation, and the related 'infodemic' (Tangcharoensathien et al., 2020). The urgent global concern for combatting the 'infodemic' brought attention to the necessity of 'listening' to lay individuals to address misinformation and sway people to comply with public health measures. In line with this strategy, the World Health Organization (WHO) supported the publication of a milestone report titled 'Finding the Signal through the Noise' (Cunard Chaney et al., 2021), which deemed 'social listening' – defined as a set of methods to collect and analyze both online and onsite (lay) discourses – to be essential to contemporary global health action for vaccine confidence and uptake. Social listening quickly became a popular component in COVID-19 vaccine confidence-building initiatives.

The application of social listening to the field of Global Health, however, should be considered through a critical lens, as it entails the production of scientific knowledge about local people and their health-related perceptions and knowledge. Historicisation of social listening suggests that this approach originally emerged in the late 2000's as a marketing tool created by companies to collect and analyze user-generated online comments about their brands (Pomputius, 2019). While several social media analyses have used qualitative methods to characterize relatively small samples of user generated content on H1N1 (Ahmed et al., 2019), Ebola (Roy et al., 2020) and Zika (Stalcup, 2020), most social listening initiatives opt for quantitative and largescale analyses. These draw from the resource opportunity offered by vast quantities of publicly available online data or 'Big data', combined with the epistemic influence of the blooming computer science techniques of natural language processing and machine learning. Although these data-intensive techniques may promise better insight, decision-making, and even empowerment (Williams, 2022), they are also the technical core of the current age of surveillance capitalism (Zuboff, 2019). Given this origin, social listening could feed the already problematic drive for cost-effective, technical and reductionist solutions to chronic and emerging issues in Global Health, if this practice and its methods are not reviewed.

Despite the WHO's emphasis on incorporating both online and onsite data for social listening (Cunard Chaney et al., 2021), our analysis of the top 20 cited papers on the topic in relation to COVID-19 (Supplementary Material, Table S1) revealed a predominant reliance on online data. Only two studies incorporated an onsite data collection component, with the remaining four being reviews or commentaries without primary data. This suggests that in practice, social listening in global health remains largely tied to its roots in online marketing data analysis.

While social listening provides easy access to public discourse and helps identify emerging vaccine narratives (Greco & Polli, 2019) and can be an asset in context of limited access to the field (lockdowns), its reliance on online data presents significant limitations, especially concerning representation. For instance, social media platforms like Twitter and Facebook, commonly used for online social listening, have a user base skewed towards males and the well-educated (Statista, 2022, 2023). Moreover, in Global South contexts like Guinea, internet

access is limited —22% of the population (Simon Kemp, 2021)—, causing social listening efforts to disproportionately represent wealthier, more connected individuals. Additionally, language barriers, along with subjective keyword choices, may exclude certain population segments (Gallotti et al., 2020), further limiting the representativeness of online social listening efforts.

An additional limitation of many social listening initiatives involves their reduction to merely classifying ‘inaccurate’ information, overlooking the understanding of grassroots concerns (Heyerdahl, Lana, et al., 2022). Standardized Global Health approaches frequently dismiss local apprehensions arising from intricate, evolving realities, categorizing them as ‘misconceptions’ (Alenichev et al., 2020). In their quest for information deficits and inadequacies, such practices may reassert historical power imbalances when they reduce local, non-biomedical knowledge to an inferior position. Moreover, the increasing ‘technicalization’ of social listening tends to oversimplify knowledge and neglects its social embeddedness, thereby limiting our understanding of complex issues like vaccine hesitancy. In contrast, some, like Attas et al. (2022), have appreciated this social embeddedness, analyzing locally broadcast discourses and employing ethnographic observations in their work.

In order to overcome the limitations of social listening that solely uses online data and to deepen our understanding of vaccine hesitancy, this study grounds social listening by incorporating onsite data collection in the form of ethnography and seeks understanding of vaccine sentiments (rather than assessing the accuracy of vaccine claims). Developing a comparative analysis of online vaccine narratives and in-depth interviews with Guinean healthcare workers, we highlight the multiple and sometimes contradictory arguments developed by actors, based on the context of their enunciation. This context is itself dependent on the temporalities of research interactions (e.g. in the beginning or at the end of interactions, during the initial encounter or after multiple interactions, at the beginning of the pandemic when immunization was not even an option or at the start of the vaccine rollout). Instead of interpreting participants’ vaccine skeptical arguments as incoherence, conspiracy theories, or products of ignorance, we analysed their possible underlying logics embedded in local realities and relationships. We reveal how healthcare workers’ recognition of the COVID-19 epidemic in Guinea did not necessarily entail a call for vaccination in Guinea or more broadly Africa. Additionally, we show how the identity of the information transmitter (inscribed in real social networks, whether or not the information was transmitted online) remained a strong driver of confidence in the shared information. These insights from taking a grounded approach to social listening demonstrate that Global Health theory and praxis can be and should be brought closer to the populations we claim to listen to.

Methods

This paper aims to develop a rich understanding of vaccine sentiments and decisions among Guinean healthcare workers, by accounting for socially-embedded knowledge and by taking a non-normative stance that focuses on openly discussing vaccine sentiments rather than classifying claims as accurate or not.

We employ a grounded social listening approach, integrating online and onsite methods, exploring healthcare workers’ vaccine views and the local resonance and impact of prevalent vaccine discourses on Guinean social media. In Guinea, the first Covid case was declared on 12 March 2020 and confirmed 38,000 cases as of June 2023.¹ The first patient was an expatriate from the European Union, followed by members of the Guinean political and economic elite who were exposed through international travel. This study took place between mid-2020 to mid-2021, encompassing the launch of the vaccination campaign in Guinea in January 2021. The rate of vaccination remained low; at time of writing only 24% of the population had received complete vaccination.²

For online social listening, we characterized public vaccine discourses on Facebook, more prevalent in Guinea than Twitter (Statcounter, 2023). Through CrowdTangle we gathered and

anonymized the top 50 vaccine-related public Facebook posts from Guinea-based pages (January 2020 - January 2021) and also accessed their five most 'liked' comments via browser. These public comments didn't require a Facebook account for access. Thematic analysis was conducted using NVivo© (Mac version 1.5) to characterize the online vaccine discourses.

Onsite methods involved ethnographic fieldwork in Mamou, Kindia, Forecariah, and capital Conakry, with 13 in-depth interviews (IDIs) with healthcare workers conducted in January 2021 and casual discussions with health students, social workers, and the general population from the beginning of the pandemic to September 2021. Topics for IDIs included COVID-19 perceptions, vaccination willingness, and patient handling experiences.

Work was conducted at all public health system levels, from Poste de Santé to Centre de Santé Amélioré and prefectural hospitals. Building trust through everyday interactions with healthcare workers, interviews were recorded, transcribed, and translated as needed, subject to participants' consent.

Sampling

Using a snowball sampling strategy, participants represented a diverse healthcare worker population in terms of gender, age, status, and discipline.

Analysis

Field notes and interviews were transcribed and coded using an initial coding grid that reflected the interview items. A second cycle of inductive coding was applied to account for emerging themes.

Ethics

The study received double ethical approval from the Institutional Review Board of the Institute of Tropical Medicine Antwerp and from the National Health Research Ethics Committee of the Republic of Guinea (validation reference: 068/CNERS/20). Data was anonymised, and all names in the paper are pseudonyms given by the researchers.

Results

Debates about the significance of Covid-19 and relevance and safety of Covid-19 vaccination

Questioning the virus existence, presence and severity

At the onset of the vaccination campaign, the main obstacle to accepting a COVID-19 vaccine may have been skepticism about the virus's reality, presence or significance in Guinea given the relatively low patient and death numbers in Guinea compared to other regions. While most Guinean health workers we interviewed accepted Covid's reality, Dr. Antoine, a senior scientist, pointed out widespread disbelief among the Guinean public.

Many people do not even believe that this disease exists. Many people think that Covid-19, like malaria, is a disease that one can carry and that can disappear one day[. . .] I see the population walking around the city of Kindia without a mask, it is clear that it [Covid-19] is not their concern.

Online, a few users downplayed the severity of the virus and a few posts suggested that the virus had been created for nefarious purposes (see Safety concerns section). Notably, no post in our sample indicated that covid was not real, but posts that did may have been deleted from Facebook or not available through CrowdTangle.

In interviews, skepticism towards the health information campaigns was a recurring theme, with political opponents, according to Dr. Camara, a seasoned pediatrician, viewing the COVID-19 epidemic as a replication of alleged state implication in the advent of the 2014–16 Ebola epidemic and presumed financial exploitation of the international epidemic response.

Some people say that it [Covid-19] was *sent* [introduced intentionally among the population] as it was said for Ebola, 'it was Professor Alpha Condé [Guinean president from 2010 to 2021] who sent it'. People keep talking about it all. [...] much more than denying the reality of Covid-19, it is perhaps expressing their dissatisfaction with the quality of care.

Other participants suggested that some people perceive COVID-19 communication as a strategy to distract from more critical, persistent political issues or as a means of social control. Online, several users observed a double standard in the application of COVID-19 control policies by the authorities. They highlighted the government's decision to allow the March 2020 constitutional referendum, which would enable the president to seek a third term, despite the pandemic:

Ah, my Guinea and its government only remember COVID-19 after election campaigns and results... 🤔🤔 My Guinea has an incredible talent, huh. Corona was on vacation and now it's back, darn it 🤔🤔🤔

For healthcare workers like Dr. Benedicte, Mr. Ibrahim, and Ms. Gallice, contacts in Europe and the US, some of whom have succumbed to Covid-19, confirmed the virus's reality via WhatsApp and Facebook. Yet, recognizing the presence of COVID-19 didn't automatically lead to support for COVID-19 vaccination in Guinea.

Perceived low priority of Covid-19 vaccination

Guinean online narratives opposing COVID-19 vaccines often claimed inadequate preventative efficacy and overall health utility. These vaccines were frequently considered unnecessary in Guinea or Africa generally, particularly in comparison to Europe. Furthermore, COVID-19 was depicted as less of a threat to Africans than other infectious diseases or hunger as illustrated from this popular public Facebook post from March 2020:

The 'malnutrition' virus is a deadly 'virus' that kills 8,500 children daily, or 1 child every 10 seconds... However, this 'virus' did not have the same media impact as COVID-19 because, not being contagious, it poses no threat to the privileged people of the planet... However, there is a very effective vaccine: food. - Pascal Melsens

To stress that individuals may treat COVID-19 lightly Ibrahim indicates the disease is locally described as *durma* (*durma* means flu in *Pulaar*). This belief that Africans were less susceptible to COVID-19 was echoed by several interview participants, including Dr. Facinet, a pharmacist from a public hospital in Conakry:

I'm confident that there is the virus but what I'm saying particularly, Africa, we were born in the dust. So, we get the flu all the time. So as such, I say to myself, hasn't Africa developed a natural immunity? That's what's going to make maybe most Africans escape [infection], because of immunity. When you see China, like the most developed countries, these are people who have never experienced disease. So, their body has never been in contact with a germ.

Likewise, resonating with online content, several HCW question the legitimacy of a vaccination program that mobilizes energy and workforce for an ailment with perceived limited burden, compared to malaria, measles, and other communicable diseases that weigh heavily on health services and population alike.³

Side effects and perceived experimentation

Concerns over the safety of COVID-19 vaccines were prevalent in both online discussions and our interview data. Notably, a recurring theme was the perception of Africans being used as 'guinea pigs' for vaccine testing. This sentiment was widely shared online, as exemplified by a popular Facebook post from April 2020:

We are not damned animals, GO TEST YOUR VACCINE ELSEWHERE!!!! *Latotako!!! [it won't happen in Pulaar]* Let's wake up dear Africans. Family, let's share. [the post]

This notion of Africans being used for vaccine experimentation was echoed in our interviews, which further highlighted concerns over the rapid development of the vaccine and the potential for unforeseen side effects. As Dr. Haida, Senior medical doctor in an otolaryngology department, pointed out:

To produce a vaccine, it takes several years [...] Producing a vaccine in less than a year raises a lot of questions.

In addition, the perceived low COVID-19 burden in Guinea contributed to the suspicion of ongoing experimentation, as some health actors questioned the need for vaccination under these circumstances:

If there are few patients, what is the point of vaccination? And we don't know what the consequences of taking this vaccine would be. In a word, the studies on these vaccines have been botched. In reality, we are guinea pigs. And I'm not prepared to be a guinea pig.

This fear did not correlate at all with the proportion of clinical trials run on the African continent. Their number remains limited.⁴

Likewise, during an interview in early 2021, Ms. Jasmine, a nurse who lost a sibling to Ebola, argued that the vaccines should be used and tested first in Europe. Her argument builds upon both the equity of attending the most affected (Europeans) and the precaution of not starting among Africans as an additional token to building trust:

When you call the Europeans, they always tell you that they are locked up. For me, where the vaccines are made, that's where they should be used to mitigate the epidemic, and then they will be taken there [Europe], that's what gives the reassurance. When we start vaccinating there and it works, Africans will automatically accept it, because they will think that it started there and that there have been many improvements. But if we leave Europeans suffering and dying from Covid without vaccinating them and we come to vaccinate Africans, no, it won't be easy.

The fears expressed by healthcare workers are symptomatic of their perception of the position allocated to Africa and its population on the global stage. A strong theme emerging from our interactions with participants was that projects offered to African countries (Guinea in particular) by wealthy countries rely on unequal conceptions of Africans, such as: good enough to be exploited (i.e. to receive second hand clothing, low quality frozen meat, or computers), too numerous and thus subjected to birth limitation programs, and not wealthy enough to be seen as a market for which to develop specific products (especially drugs). The perceived pervasiveness of these stereotypes influence the attitude towards vaccination programs (perceived as coming from powerful actors from the North) and also fosters frequent rumours, including considering vaccines as a sterilization tool.

Online, the Covid vaccine was often construed as a tool for undermining the African population by either sterilizing, infecting or killing recipients, with whites/western and WHO imagined as the main protagonists. Such conspiracy theories circulating online gained however no traction in our interviews and informal conversations.

Politicization of Covid-19 vaccine rollout

Perceived inconsistencies in the official vaccination narratives

Many participants voiced concerns over discrepancies in the vaccination campaign. The official strategy by the ANSS (Agence Nationale de Sécurité Sanitaire) identified Pfizer, Sinopharm, and AstraZeneca as vaccines for the campaign. However, 10000 Sputnik V doses, contrary to the Guinean COVID-19 scientific committee's advice,⁵ were administered in Guinea, with a total of 100,000 doses delivered by June 2021. Local government officials were often hesitant or

declined to discuss vaccination strategy, due to its politically charged nature and potential harm from perceived criticism of state policies. However, numerous health workers suggested in IDIs and informal conversations that public health measures lacked coherence, appearing influenced by political factors. Although the lay public may not directly observe the underlying tension among health authorities, it becomes apparent through implemented policies and insights from health workers, which reflect the intricate geopolitics of vaccines. Dr. Antoine and Dr Haida suggested that the vaccine choice was not based on thorough scientific evaluation but reflected Guinean elites' bilateral relationships with foreign nations, as Dr Haida specified:

Whether it's the Russian, Chinese or American vaccines, I don't trust them, because beyond everything, there is the geopolitical war, each one wants its product to be... so, each one has its influence in certain areas. For example, whether we like it or not, since the arrival of Professor Alpha Condé to power, Guinea is under Russian-Turkish influence, because these two countries have invested a lot of money in it. In reality, the President is right somewhere.

Frontline healthcare workers, along with the public, acknowledge the role of international politics in dictating the vaccine options available in Guinea. They also recognize Guinea's dependency on specific nations like Russia and China, a relationship rooted in an extraction-based economy.⁶

Perceived role of elites

Amidst the perceived individual and collective risks of COVID-19 vaccination, numerous Facebook users, including public figures, sought political action against what they viewed as a collective threat. These individuals accused African elites of manipulation, collusion with harmful foreign plans, or mere incompetence. Throughout 2020 and early 2021, many users advocated for directing the 'vaccine experimentation' towards the powerful, such as African elites or Western populations. Among these, a notable post garnering over 800 likes originated from a Guinean media's Facebook page. This post featured Ivorian Reggae star Tiken Jah Fakoly presumably advocating for vaccine testing on African leaders' circles:

#Vaccin_Coronavirus #Tiken_jah_Fakoly The first African president who will authorize a so-called COVID-19 vaccine in his country, the trials will start with his family members first.

April 4, 2020- translated from French

As a matter of fact, in the final week of 2020, Guinean authorities announced that the vaccine rollout would commence with the top 25 national political figures, including the head of the ANSS and ministers. Their vaccinations, broadcasted to stir interest and trust among the public, continued a tradition in Guinea. For example, during the 2015 Ebola vaccine trials and the 2012 oral cholera vaccine campaign – the first on the continent – Sakoba Keita, head of the ANSS, publicly received the first dose.⁷ In 2021, the effect of this well-publicized operation, prominently featured on national TV, was challenging to gauge due to the public's mixed reactions. Several interviewees noted that some people suspected authorities did not receive the 'real vaccine', mirroring online rumors linked to similar high-profile vaccinations in Europe. Conversely, others appreciated the elites' vaccinations as a show of leadership or as a practical measure, considering them frequent international travelers and potential virus carriers.

Calls to Pan-African resistance to Covid-19 vaccine introduction

Frequently, vaccine narratives on Facebook advocated for a continent wide rejection of COVID-19 vaccines, perceiving them as either reckless experiments or direct threats to African birth rates. Several posts urged Africans to advocate for vaccine separatism, using phrases like 'to each their own vaccine', and calling on African 'youth', 'intellectuals', and the 'diaspora' to continue raising awareness online about perceived malicious vaccine-related 'plans'. However, these widely shared online

narratives didn't significantly resonate with Guinean healthcare workers and laypersons in formal and informal interviews.

Facing the hierarchical duty to vaccinate

For many in the medical profession, the broadcasted vaccinations of high-level politicians were a sign that they too would soon need to follow in the vaccination queue. Some healthcare workers may share their reluctance to get vaccinated with their acquaintances, including foreign social science researchers, but they would not dare voice it to their hierarchy or openly refuse the vaccination organized on their professional premises. Like Dr. Antoine, a medical doctor, they need to improvise if they want to avoid the jab:

The last time we chatted, we talked about this: They're going to send someone over to my work place to say that 'everyone has to get the jab'. So, I've got to come up with a reason to dodge the vaccination, maybe by saying I won't be around. I don't have the guts to straight up say that I won't get vaccinated. I'd rather say I won't be there. But the next day, guess where they're going to call me in, saying I'm messing up the system? [at the police station]

For Dr. Antoine, vaccination is a hierarchical mandate; refusal could jeopardize his role as a state physician and his standing and reputation as a citizen. To a lesser extent, lay individuals also see vaccination as a practical response to power dynamics. Vaccination is mandatory for university access or intercity travel (where Chinese or Russian vaccines suffice), or for travel to Europe (where Pfizer or Moderna vaccines are required).

The shapeshifting nature of vaccine discourses

The real in the virtual: kinship and volatile vaccine perceptions

In early 2021, AstraZeneca enjoyed public favor, whereas the Chinese vaccine Sinovac faced challenges in acceptance. In Maferinyah (Basse Côte region), a breastfeeding woman reported that her healthcare worker husband discouraged her from receiving Sinovac due to the lack of data on its impact on breastfeeding mothers and infants.

Koné, a sociology student and social worker involved in promoting the vaccination campaign, recounts the struggle healthcare professionals had in instilling trust in the Sinovac vaccine:

Some people are afraid of the vaccine because they don't trust the Chinese because all they do is junk. It was like that and it took a lot of time to convince people because they said they wanted to wait for Pfizer or AstraZeneca but since it was Sinopharm that was first offered on the market, we had no choice, we were forced to make people aware of this product.

Koné notes that eventually, healthcare workers relied on their own positive vaccine experience with Sinovac to promote trust in the Chinese vaccine.

Western vaccines weren't immune to reputation shifts either. After the thrombosis controversy⁸ and expiry issues⁹ in Europe in spring 2021, AstraZeneca's reputation took a hit in Guinea. In Maferinyah, residents mentioned that some relatives from Conakry alerted them about AstraZeneca due to its poor reputation in Europe. Therefore, the decision to receive a specific vaccine was influenced by discussions about their safety, mediated by relatives through various communication channels.

Parallel vaccine discourses and hegemony in global health

The discourses surrounding COVID-19 vaccines did not only vary between vaccines and across time, they also fluctuated depending on their context of enunciation. During IDIs, several healthcare workers at first appeared to support the COVID-19 vaccination, only to later confess their unwillingness to get vaccinated for safety-related concerns.

Such perplexing and seemingly contradicting turnarounds of vaccine discourses were frequent throughout study. Ms. Gallice, who is a senior nurse, first explained that the African populations were

reluctant to vaccinate and she advocated for more awareness campaigns, she later confesses that she would herself not take the vaccine because she lacks information on their composition and their health effects. She explains that after seeing colleagues recovering from Covid-19, she believes there is less risk for her to get COVID-19 than to take what she considers as an 'unknown vaccine'. Ms. Esi, a senior nurse in Kindia, held similarly shifting vaccine discourses in the course of the conversation. Although she initially developed a discourse coherent with her professional role (i.e. as a nurse she defended COVID-19 vaccination), when the conversation reached a more familiar status, she expressed worries about adverse events and consequences following vaccination, and she highlighted that there are no long-time observations of the vaccines' adverse events locally and globally.

Discussion

We uncovered the relevance and importance of the nature of the interaction (e.g. interpersonal, in public, or within a hierarchical relation), showing that relationships intertwine with multi-layered and co-existing front stage and backstage discourses to shape not only people's perceptions but also their behavior. More specifically, the relationship between interlocutors can determine the ability of vaccine discourses to shape vaccine decisions. Through examining relations, we showed how trust and power are central to the formation of health decisions. Trust is often associated with kinship, a domain that is not captured by solely online social listening. In some cases, power (or hierarchical) relations can lead to more pragmatic action, where either due to government mandate (for health personnel) or more indirect means, individuals are left with little to no option but to vaccinate.

Interview participants discussed denial of COVID-19 within the Guinean population, even though they all personally accepted the reality of the virus and its presence in Guinea. Interestingly, these claims were not explicitly made in the online sample data. This may be due to content management efforts by Facebook to suppress posts considered as COVID-19 misinformation (Facebook, 2021) or not make them available through CrowdTangle, the tool the company provides journalists and researchers to access public Facebook posts.

A perceived double standard in the Guinean response policy was a common theme across both online and interview data. The notion that authorities benefited from the virus, by attracting foreign aid for the response, was prominent in interviews. This belief was typically attributed to the general population, and often encapsulated in narratives of mistrust towards state power, biomedicine, and western influence – sometimes referring back to the colonial era.

The opinion that the virus was not a priority for Guinea or more broadly Africa surfaced in both interviews and social media posts, with many emphasizing more pressing health issues like malnutrition, Malaria, and Aids. This was particularly prominent in interviews with healthcare workers, where a belief in a more robust immune response to the coronavirus among Africans was commonly expressed.

Safety concerns regarding the vaccine were prevalent in online discussions. This narrative, asserting that the vaccination campaign would be experimental and that Africans would be used as 'guinea pigs', was partly echoed in the interviews. Participants questioned the vaccine's rapid development, its relevance in areas with perceived low COVID-19 burdens, and sometimes explicitly voiced fears of becoming a 'guinea pig' (*cobaye* in French). Online narratives were more extreme, alleging that the vaccine would be used to harm Africans through sterilization or inducing illness.

These conspiracy theories often pointed fingers at Western powers, the WHO, or Bill Gates. Similar narratives were found globally during the pandemic, often under the guise of the 'Great Reset' (Christensen & Au, 2023) or the 'Plandemic' (Baines et al., 2021), fitting into archetypal discourses framing global elites as creating pandemics or control devices for political or financial gain, or population control. Variations of these conspiracy discourses also appeared during past epidemics, including Zika (Smallman, 2018), Aids (Nattrass, 2013) cholera in contemporary (Heyerdahl et al., 2018) and 19th century outbreaks (Bardet et al., 1988), reconfigured in their context to incriminate perceived power actors.

One key feature of the vaccination related conspiracy narratives circulating in online Guinean posts was the claim that the vaccine would be used to sterilize African populations. Vaccination sterility rumors are very frequent in the African continent and have been previously described at length (Kaler, 2009). Strikingly, it is important to recognize that the project of slowing the demographic growth of the African population is at the heart of all Global Reproductive Health interventions in Africa (United Nations, 2021); lower birth rates are seen as a condition for economic development and better health for women. Moreover, in the Guinean context contraceptive methods are often normatively referred to as acts of ‘vaccination’ with contraceptive implants presented on the ground as a ‘vaccination device’ against pregnancy. This can lead to a spectrum of questions, concerns, and anxieties on the nature, effects, and objectives of vaccination.

Our results also underline that virus and vaccination perception are dynamic. The reality and presence of epidemics fluctuates, different vaccines emerge with changing reported effects (i.e. efficacy, side effects) and new policies (e.g. travel restrictions) come into play all of which mediated through global information ecosystems. This is consistent with findings from northern contexts including longitudinal variations in COVID-19 vaccine acceptance and attitudes in the United States (Fridman et al., 2021), and the notion of volatility of vaccine confidence (Larson & Broniatowski, 2021).

Our findings uncover the intricately layered nature of healthcare practitioners’ vaccine discourses, emphasizing that their spoken ‘truths’ shift with the context of enunciation. To illustrate, a healthcare professional might receive vaccine skeptical information via social platforms like Facebook or WhatsApp. This information, coupled with their personal commentary, might be shared with peers, friends, or patients. Yet, they may simultaneously suppress their vaccine apprehensions from their superiors and publicly advocate for vaccination, thereby manifesting the phenomenon of ‘unspoken vaccine hesitancy’ (Heyerdahl, Dielen, et al., 2022). Concurrently, they might be exploring avenues to circumvent workplace vaccination.

Rather than viewing this behavior as inconsistent, it can be interpreted as a testament to the multifaceted nature of human conduct. Healthcare professionals often navigate the precarious balance between private vaccine hesitancy and the professional obligation to endorse vaccination, embodying Berliner’s (2022) concept of the ‘multiple self’. Their spoken opinions on COVID-19 vaccines vary according to context.

Utilizing Goffman’s (1959) theoretical framework of front stage (public) and back stage (private) performances provides a valuable lens to decipher healthcare workers’ vaccine discourses. Healthcare workers, therefore, might voice conflicting perspectives on vaccination, oscillating between front stage and back stage settings.

These differential discourses involve specific actors in a hierarchical relationship, resonating with Ricoeur’s (1983) emphasis on context of enunciation. This perspective helps comprehend why seemingly contradictory discourses may be simultaneously produced by the same individual. Regardless of private vaccination hesitations, their professional identity often mandates acceptance. In the context of the tightly regulated Guinean health system, compliance to vaccination signifies conformity, shaping professional perception and reputation. Despite personal apprehensions or perceived low susceptibility to Covid-19, the majority of health actors we interviewed were vaccinated. While a 2021 survey of 3547 Guinean healthcare workers found half reported being vaccinated (Toure et al., 2022) our findings suggest that an unknown portion of them may experience unspoken vaccine hesitancy despite their vaccine uptake.

Kinship emerged as key factor in discourses’ impact on decisions to vaccinate. Strikingly, relatives residing in northern countries or in large cities remain the most trusted and influential sources of information for both lay population and healthcare workers in Guinea regarding COVID-19 risk and vaccine usefulness and safety. Pandemic events are perpetually covered in an information ecosystem that spans public and private spaces worldwide, encompassing news outlets, institutional websites, social media networks, and instant messaging apps. However, news events – like a new variant’s emergence, vaccine prequalification, or suspected

thrombosis side effect – do not remain static. They are reinterpreted and shared with what Carlson (2016) named ‘embedded meanings’. The portrayal of vaccination campaigns is largely affected by the relationship between the individual who appropriates, reinterprets, and shares information and the receivers of this information. Vaccine-related anxieties, desires, and concerns (Fairhead & Leach, 2012) are thus partly nurtured by family ties maintained through virtual networks.

During the COVID-19 pandemic, discourses challenging the safety and effectiveness of vaccines gained significant global attention, prompting numerous online social listening initiatives (Supplementary Material, Table 1), contradicting WHO’s recommendation to include onsite data in social listening initiatives (Cunard Chaney et al., 2021). Our study, utilizing the case of Guinea, underscores the need for a more comprehensive, grounded and nuanced approach to social listening. This should encompass both offline and online sources and adopt a non-normative standpoint to better grasp the intricacies of vaccine sentiments and practices.

Rather than dismissing skepticism around vaccination programs as mere conspiracy theories, these views should be perceived as reflections of enduring global relations, particularly between Western and African nations, and as comprehensive considerations based on everyday observations. These discourses do not negate the validity of vaccination but articulate concerns about immunization, both as a product of North-South relations and as a public health practice.

Foucault’s seminars on ‘*paresia*’ (2016) argue that in ancient Greece, for the discourse of the *paresiaste* (the one who speaks truth) to be recognized as ‘true’, one of the conditions is that it be inscribed in a *kairos*: a singular time. Displaced from their context, discourses lose authenticity. Analyses relying only on online discourses fail to capture this embedded truth-making, leading to simplistic misrepresentations of context on behalf of Global Health authority. These reductions simplify complex social structures into measurable markers, challenging our understanding of how these systems operate.

In light of the interconnected discourses revealed in our study, we argue for the advancement of social listening methodologies. While online-only methods provide quick, cost-effective access to public discourses on vaccines, they are inherently limited by data representation biases and a proclivity to prioritize information accuracy over understanding people’s concerns. Additionally, social media-based narratives are often constrained by factors like text length, user identity, context, and real-life implications of shared opinions.

This over-reliance on online discourses tends to transform social listening into a superficial exercise of social *hearing*, rather than *listening*, potentially leading to inaccurate representations and consequent issues. We propose an effective approach to social listening through grounded data collection, such as in-depth, onsite ethnographic research. This approach provides context, offers insights into real-life decisions, and grants access to a wider array of voices, necessitating field interaction and data collection. Grounded social listening allows us to recognize and understand individuals’ pragmatic negotiations of power relations and hierarchies within their societies, thereby providing a more comprehensive understanding of their responses to health policies.

In an era of global health dominance, we observe a reductionist tendency to simplify intricate social realities into quantifiable markers. This begs the question of why these formidable systems are in operation. This question has been approached by scholars like Gündoğan (2008) and Schirru (2016), who invoked Gramsci’s (2021) concept of hegemony to decipher the impact of global biomedicine on communities. Inextricably linked to the neoliberal surge since the 1980s, hegemony’s influence has pervasively reshaped societal dynamics, promoting a ‘common-sense’ societal outlook that masks entrenched ideologies and power structures.

Global Health, arising from the deterritorialization and subsequent reterritorialization of African healthcare structures, exemplifies such hegemonic forces. It encourages a biomedical reductionist paradigm, thereby bolstering the cultural, economic, and epistemic dominance of the Global North. The overemphasis on individual choice, especially in the realm of vaccine acceptance, distracts from significant issues of access, equity, and the impacts of colonial and neocolonial disparities. Straying

from the biomedical narrative is often discredited as ‘myths’ or ‘conspiracies’, contrasting with ‘legitimate’ biomedical truths, thereby reducing complex socially-embedded knowledge to mere labels of misinformation or under-education.

It is crucial not to view the recognition of these varied truths and their inherent contradictions as a critique of inconsistency among healthcare professionals. Instead, it provides an avenue for more nuanced, often overlooked voices to emerge from the dominant Global Health narrative.

In this way, we strengthen the work of other social science teams working on the African continent and contributes insights that will allow the field to:

move beyond existing WHO notions of ‘vaccine readiness’ to address the longer-term structural, social and political relations in which vaccine delivery and distribution are embedded; and beyond narrow assumptions about vaccine demand or hesitancy to address the underlying anxieties, both positive and negative, felt by populations, embedded in bodily, social and wider political experience. (Leach et al., 2022, p. 8)

In conclusion, if the assemblage of Global Health similarly aims to promote grounded social listening, it must engage the pillars of social sciences for their ability to untangle the threads of complexities and context. Otherwise, the field may struggle to account for and understand lay individuals’ perception of diseases and public health intervention underlined in recent epidemic responses, including during the West African Ebola epidemic (Abramowitz, 2017). The COVID-19 pandemic has shown us the growing complexities that must be faced and what is at stake. Global Health cannot afford to become increasingly disconnected from those it intends to listen to.

Limitations

The study has several limitations that may have impacted the scope of patterns uncovered in the data. First, publicly available Facebook posts may not be representative of all posts on Facebook and Facebook posts may not be representative of public discourse in Guinea, including regarding vaccination. Posts that state Covid is not real or that vaccines are harmful may have been removed from Facebook or not made accessible in CrowdTangle; as with all contemporary social media analyses, the effect of human and algorithmic content moderation can impact the collected sample. While we suggest to ground social listening to lessen hegemonic tendencies of global health practice, as researchers affiliated to health research and biomedical institutions we are, to a certain extent, actors in the field of global health and easily identified as such by participants. While we have witnessed changes in discourses and opening up about vaccine hesitancy with some interviewees (as rapport was built and interpersonal confidence strengthened), it is still possible that interviewees kept their ‘front stage’ discourses and decided not to reveal their vaccine-related sentiments.

Notes

1. <https://ourworldindata.org/coronavirus/country/guinea#what-is-the-cumulative-number-of-confirmed-cases> consulted on June 21 2023.
2. National Agency for Health Security of Guinea (ANSS) weekly epidemiological update, November 2022 (*Réunion hebdomadaire d'information épidémiologique, 17 novembre 2022, ANSS, Conakry*).
3. In Guinea Malaria death rate was nearly 30 times higher than COVID-19 (83,6 and 2.8 deaths per 100,000 individuals respectively using latest 2019 data for malaria and 2021 data for Covid which bore the greatest burden for the country during the pandemic to date. Source: <https://ourworldindata.org/covid-deaths>; <https://ourworldindata.org/malaria>, consulted on June 21 2023
4. Consider the disparity in the number of clinical trials conducted in Guinea versus France, as seen on clinicaltrials.gov. This discrepancy underscores the pharmaceutical industry's limited interest in the African market and reinforces the call to treat vaccines as ‘global common goods’ (Cassier, 2021).
5. The scientific council echoed WHO's concerns regarding availability and integrity of clinical data, which led to WHO suspending the prequalification of the vaccine in September 2021, see <https://www.euronews.com/next/2021/09/16/sputnik-v-who-suspends-approval-process-for-covid-vaccine-due-to-manufacturing-concerns>, consulted on June 22 2023.

6. State arrangements like the trade-off of Bauxite mining access for road infrastructure, vaccine provision, and public health funding exemplify this trend. Cases in point include the Sino-Guinean hospital in Conakry, the Russian research centers in Kindia, and the complete renovation of the National Road N1 - Guinea's main road – by a Chinese company.
7. LW Heyerdahl unpublished field notes from the reactive cholera vaccination campaign in Conakry and Forécariah, 2012.
8. AstraZeneca was temporarily suspended in mid-March 2021 in several countries including European following cases of blood clots <https://time.com/5947134/astrazeneca-covid-vaccine-stopped/> consulted June 23 2023
9. AstraZeneca's reputation was further damaged when Health professionals from Mamou questioned the trustworthiness of AstraZeneca's vaccine due to concerns about its expiry date. This mistrust stemmed from the African Union's delivery of outdated stock, which, despite manufacturer assurance of extended validity, compromised AstraZeneca's reputation.

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Data availability statement

The data used in this study is held at the Institute for Tropical Medicine in Antwerp, Belgium. Interview data is not publicly available given difficulties in fully anonymizing transcripts of participants in depth interviews. The Facebook online public data can be accessed through the Facebook CrowdTangle platform.

Ethical review

Approved by the Institutional Review Board of ITM (Ref: 1437/20). This fieldwork was part of both this ITM project and the project “*The shadow cast by Ebola on the SARS-CoV2 epidemic. Analysis of public policies, actors' practices and popular representations relating to COVID-19 for a better Guinean response to the pandemic*” (carried out in partnership between the CERFIG, the UGLSC, the CNFRS and the IRD). It received the Ethics Committee validation 068/CNERS/20.

References

- Abramowitz, S. (2017). Epidemics (Especially Ebola). *Annual Review of Anthropology*, 46(1), 421–445. <https://doi.org/10.1146/annurev-anthro-102116-041616>
- Afolabi, A. A., & Ilesanmi, O. S. (2021). Dealing with vaccine hesitancy in Africa: The prospective Covid-19 vaccine context. *The Pan African Medical Journal*, 38, 3. <https://doi.org/10.11604/pamj.2021.38.3.27401>

- Ahmed, W., Bath, P. A., Sbaffi, L., & Demartini, G. (2019). Novel insights into views towards H1N1 during the 2009 pandemic: A thematic analysis of Twitter data. *Health Information and Libraries Journal*, 36(1), 60–72. <https://doi.org/10.1111/hir.12247>
- Alenichev, A., Peeters Grietens, K., & Gerrets, R. (2020). Conceptions within misconceptions: Pluralisms in an Ebola vaccine trial in West Africa. *Global Public Health*, 15(1), 13–21. <https://doi.org/10.1080/17441692.2019.1632368>
- Attas, F., Keita-Diop, M., Curtis, M.-Y., & Le Marcis, F. (2022). Discours radiophoniques, épidémies cartographies et représentations locales de la Covid-19 en Guinée [Radio discourses, epidemic cartographies and local representations of Covid-19 in Guinea]. *L'espace Politique*, 44. <https://doi.org/10.4000/espacepolitique.10007>
- Baines, A., Ittefaq, M., & Abwao, M. (2021). #scamdemic, #plandemic, or #scaredemic: What parler social media platform tells us about Covid-19 vaccine. *Vaccines*, 9(5), 421–421. <https://doi.org/10.3390/vaccines9050421>
- Bardet, J.-P., Bourdelais, P., Pierre, G., François, L., & Claude, Q. (1988). *Peurs et terreurs face à la contagion: Choléra, tuberculose, syphilis; XIXe-XXe siècles* [Fears and terrors in the face of contagion: Cholera, Tuberculosis, Syphilis; 19th-20th centuries]. Fayard.
- Berhan, Y. (2020). Will Africa be devastated by Covid-19 as many predicted? Perspective and prospective. *Ethiopian Journal of Health Sciences*, 30(3), 459–467. <https://doi.org/10.4314/ejhs.v30i3.17>
- Berliner, D. (2022). *Devenir Autre: Hétérogénéité et Plasticité Du Soi*. La Découverte.
- Carlson, M. (2016). Embedded links, embedded meanings. *Journalism Studies*, 17(7), 915–924. <https://doi.org/10.1080/1461670X.2016.1169210>
- Cassir, M. (2021). Covid 19 et biens communs mondiaux: Les enjeux d'une nouvelle géographie de la production des vaccins [Covid-19 and Global Commons: The Challenges of a New Geography of Vaccine Production]. *La Vie de La Recherche Scientifique* 20(425), 10–13.
- Christensen, M., & Au, A. (2023). The great reset and the cultural boundaries of conspiracy theory. *International Journal of Communication*, 17(2023), 2348–2366.
- Comaroff, J. (1993). The diseased heart of Africa: Medicine, colonialism, and the black body. In S. Lindenbaum & M. Lock (Eds.), *Knowledge, power, and practice: The anthropology of medicine and everyday life* (pp. 305–329). University of California Press.
- Cunard Chaney, S., Benjamin, P., & Mechael, P. (2021). *Finding the signal through the noise. A landscape review and framework to enhance the effective use of digital social listening for immunisation demand generation*. Health Enabled, with technical guidance and support from GAVI, the Vaccine Alliance, UNICEF, the Vaccination Demand Hub and WHO.
- Dozon, J.-P. (1991). D'un Tombeau l'autre (OnE grave can hide another). *Cahiers d'Études Africaines*, 31(121/122), 135–157. <https://doi.org/10.3406/cea.1991.2111>
- Facebook. (2021). *Together against Covid-19 misinformation: A new campaign in collaboration with the WHO*. Together Against COVID-19 Misinformation: A New Campaign in Collaboration with the WHO | Meta for Media. <https://www.facebook.com/formedia/blog/together-against-Covid-19-misinformation-a-new-campaign-in-partnership-with-the-who>
- Fairhead, J., & Leach, M. (2012). *Vaccine anxieties: Global science, child health and society*. Routledge.
- Foucault, M. (2016). *Michel Foucault: Discours et vérité précédé de La parrèsia* [Michel Foucault: Discourse and truth preceded by Parrhesia]. Henri-Paul Fruchaud, Daniele Lorenzini.
- Fridman, A., Gershon, R., Gneezy, A., & Capraro, V. (2021). Covid-19 and vaccine hesitancy: A longitudinal study. *PLOS ONE*, 16(4), e0250123. <https://doi.org/10.1371/journal.pone.0250123>
- Gallotti, R., Valle, F., Castaldo, N., Sacco, P., & De Domenico, M. (2020). Assessing the risks of 'infodemics' in response to Covid-19 epidemics. *Nature Human Behaviour*, 4(12), Article 12. <https://doi.org/10.1038/s41562-020-00994-6>
- Goffman, E. (1959). *The presentation of self in everyday life* (Anchor books ed.). Doubleday & Company.
- Gramsci, A. (2021). *Cahiers de prison. Anthologie* [Prison notebooks. Anthology]. Gallimard.
- Greco, F., & Polli, A. (2019). Vaccines in Italy: The emotional text mining of social media. *RIEDS - Rivista Italiana Di Economia, Demografia E Statistica - the Italian Journal of Economic, Demographic and Statistical Studies*, 73(1), 89–99.
- Gündoğan, E. (2008). Conceptions of hegemony in Antonio Gramsci's southern question and the prison notebooks. *New Proposals: Journal of Marxism and Interdisciplinary Inquiry*, 2(1), 45–60.
- Heyerdahl, L. W., Dielen, S., Nguyen, T., Riet, C. V., Kattumana, T., Simas, C., Vandaele, N., Vandamme, A.-M., Vandermeulen, C., Giles-Vernick, T., Larson, H., Grietens, K. P., & Gryseels, C. (2022). Doubt at the core: Unspoken vaccine hesitancy among healthcare workers. *The Lancet Regional Health – Europe*, 12. <https://doi.org/10.1016/j.lanepe.2021.100289>
- Heyerdahl, L. W., Lana, B., & Giles-Vernick, T. (2022). Rethinking the infodemic: Social media and offline action in the Covid-19 pandemic. In M. Yano, F. Matsuda, A. Sakuntabhai, & S. Hirota (Eds.), *Socio-life science and the Covid-19 outbreak: Public health and public policy* (pp. 73–82). Springer. https://doi.org/10.1007/978-981-16-5727-6_4
- Heyerdahl, L. W., Ngwira, B., Demolis, R., Nyirenda, G., Mwesawina, M., Rafael, F., Cavailler, P., Bernard Le Gargasson, J., Mengel, M. A., Gessner, B. D., & Guillermet, E. (2018). Innovative vaccine delivery strategies in response to a cholera outbreak in the challenging context of Lake Chilwa. A rapid qualitative assessment. *Vaccine*, 36(44), 6491–6496. <https://doi.org/10.1016/j.vaccine.2017.10.108>
- Heyerdahl, L. W., Vray, M., Lana, B., Tvardik, N., Gobat, N., Wanat, M., Tonkin-Crine, S., Anthierens, S., Goossens, H., & Giles-Vernick, T. (2022). Conditionality of Covid-19 vaccine acceptance in European countries. *Vaccine*, 40(9), 1191–1197. <https://doi.org/10.1016/j.vaccine.2022.01.054>

- Kaler, A. (2009). Health interventions and the persistence of rumour: The circulation of sterility stories in African public health campaigns. *Social Science & Medicine*, 68(9), 1711–1719. <https://doi.org/10.1016/j.socscimed.2009.01.038>
- Larson, H. J. (2020). *Stuck: How vaccine rumors start—and why they don't go away*. Oxford University Press.
- Larson, H. J., & Broniatowski, D. A. (2021). Volatility of vaccine confidence. *Science (New York, NY)*, 371(6536), 1289. <https://doi.org/10.1126/science.abi6488>
- Leach, M., MacGregor, H., Akello, G., Babawo, L., Baluku, M., Desclaux, A., Grant, C., Kamara, F., Nyakoi, M., Parker, M., Richards, P., Mokuwa, E., Okello, B., Sams, K., & Sow, K. (2022). Vaccine anxieties, vaccine preparedness: Perspectives from Africa in a Covid-19 era. *Social Science & Medicine (1982)*, 298, 114826. <https://doi.org/10.1016/j.socscimed.2022.114826>
- MacDonald, N. E., & SAGE Working Group on Vaccine Hesitancy. (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine*, 33(34), 4161–4164.
- Moulin, A. M. (1999). Premiers vaccins, premières réticences [First vaccines, first reluctances]. *Pour La Science*, 22(264), 12–15.
- Nachega, J. B., Sam-Agudu, N. A., Masekela, R., van der Zalm, M. M., Nsanzimana, S., Condo, J., Ntoumi, F., Rabie, H., Kruger, M., Wiysonge, C. S., Ditekemena, J. D., Chirimwami, R. B., Ntakwinja, M., Mukwege, D. M., Noormahomed, E., Paleker, M., Mahomed, H., Tamfum, J.-J. M., Zumla, A., & Suleman, F. (2021). Addressing challenges to rolling out Covid-19 vaccines in African countries. *The Lancet Global Health*, 9(6), e746–e748. [https://doi.org/10.1016/S2214-109X\(21\)00097-8](https://doi.org/10.1016/S2214-109X(21)00097-8)
- Natrans, N. (2013). Understanding the origins and prevalence of AIDS conspiracy beliefs in the United States and South Africa. *Sociology of Health & Illness*, 35(1), 113–129. <https://doi.org/10.1111/j.1467-9566.2012.01480.x>
- Peeters Grietens, K., Ribera, J. M., Erhart, A., Hoibak, S., Ravinetto, R. M., Gryseels, C., Dierickx, S., O'Neill, S., Muela, S. H., & D'Alessandro, U. (2014). Doctors and vampires in sub-Saharan Africa: Ethical challenges in clinical trial research. *The American Journal of Tropical Medicine and Hygiene*, 91(2), 213–215. <https://doi.org/10.4269/ajtmh.13-0630>
- Pomputius, A. (2019). Can you hear me now? Social listening as a strategy for understanding user needs. *Medical Reference Services Quarterly*, 38(2), 181–186. <https://doi.org/10.1080/02763869.2019.1588042>
- Ricoeur, P. (1983). *Temps et Récit, Tome 1. L'intrigue et le récit historique* [Time and narrative, Volume 1. The plot and the historical narrative]. Seuil.
- Roy, M., Moreau, N., Rousseau, C., Mercier, A., Wilson, A., & Atlani-Duault, L. (2020). Ebola and localized blame on social media: Analysis of Twitter and Facebook conversations during the 2014–2015 Ebola epidemic. *Culture, Medicine, and Psychiatry*, 44(1), 56–79. <https://doi.org/10.1007/s11013-019-09635-8>
- Schirru, G. (2016). L'hégémonie de Gramsci entre la sphère politique et la sphère symbolique [Gramsci's hegemony between the political sphere and the symbolic sphere]. *Mélanges de l'École française de Rome - Italie et Méditerranée modernes et contemporaines*, 128–2, Article 128–2. <https://doi.org/10.4000/mefrim.2967>
- Simon Kemp. (2021). *Digital 2021: Guinea*. Datareportal. <https://datareportal.com/reports/digital-2021-guinea>
- Smallman, S. (2018). Conspiracy theories and the Zika Epidemic. *Journal of International and Global Studies*. https://pdxscholar.library.pdx.edu/is_fac/21
- Stalcup, M. (2020, March 16). The invention of infodemics: On the outbreak of Zika and rumors. *Somatosphere*. <http://somatosphere.net/2020/infodemics-zika.html/>
- Statcounter. (2023). *Social media stats Guinea* | Stat counter global stats. <https://gs.statcounter.com/social-media-stats/all/guinea/1955>
- Statista. (2022). *Distribution of Twitter users worldwide as of January 2022, by gender*. <https://www.statista.com/statistics/828092/distribution-of-users-on-twitter-worldwide-gender/>
- Statista. (2023). *Distribution of Facebook users worldwide as of January 2023, by age and gender*. <http://www.statista.com/statistics/376128/facebook-global-user-age-distribution/>
- Tangcharoensathien, V., Calleja, N., Nguyen, T., Purnat, T., D'Agostino, M., Garcia-Saiso, S., Landry, M., Rashidian, A., Hamilton, C., AbdAllah, A., Ghiga, I., Hill, A., Hougendobler, D., van Andel, J., Nunn, M., Brooks, I., Sacco, P. L., Domenico, M. D., Mai, P. . . . Briand, S. (2020). Framework for managing the Covid-19 infodemic: Methods and results of an online, crowdsourced WHO technical consultation. *Journal of Medical Internet Research*, 22(6), e19659. <https://doi.org/10.2196/19659>
- Toure, A. A., Traore, F. A., Camara, G., Magassouba, A. S., Barry, I., Kourouma, M. L., Sylla, Y., Conte, N. Y., Cisse, D., Dioubaté, N., Sidibe, S., Beavogui, A. H., & Delamou, A. (2022). Facilitators and barriers to Covid-19 vaccination among healthcare workers and the general population in Guinea. *BMC Infectious Diseases*, 22(1), 752. <https://doi.org/10.1186/s12879-022-07742-3>
- United Nations. (2021). *Reproductive health in the African region. What has been done to improve the situation?* <https://www.un.org/en/chronicle/article/reproductive-health-african-region-what-has-been-done-improve-situation>
- Williams, S. (2022). *Data action: Using data for public good*. MIT Press.
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. Profile books.