

RESEARCH ARTICLE

COVID-19 vaccine anxieties: exploring social and political drivers of vaccine attitudes in Kono District, Sierra Leone

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Abstract

As COVID-19 spread rapidly during the early months of the pandemic, many communities around the globe anxiously waited for a vaccine. At the start of the pandemic, it was widely believed that Africa would be a significant source of infection, and thus, vaccinating African communities became a primary goal among local and global health authorities. However, when the COVID-19 vaccine became available in March 2021 in Sierra Leone, many people viewed it with scepticism and hesitation. While much literature has focused on access and distribution-related challenges for vaccination in the region, a growing number of studies discuss vaccine hesitancy as driving low vaccine uptake. Shifting attention to understanding the determinants of vaccine hesitancy remains fundamental to increasing vaccination rates, as negative vaccine perceptions tend to delay or prevent vaccination. This study sought to do this by assessing, through semi-structured qualitative interviews, vaccine-related attitudes and experiences of residents of Sierra Leone's Kono District. In contrast to studies that utilise “knowledge-deficit” models of belief, however, this study drew upon the vaccine anxieties framework (Leach and Fairhead, 2007), which views vaccines as being imbued with personal, historical, and political meaning. Findings suggest that important bodily, social, and political factors, including fear of side effects, the spread of misinformation prompted by poor messaging strategies, and distrust of government and international actors, influenced people's COVID-19 vaccine attitudes and behaviours. It is hoped that the study's findings will inform future policies and interventions related to vaccine uptake in Africa and globally.

Keywords: Vaccination; COVID-19; Sierra Leone

Introduction

As COVID-19 spread rapidly, eventually leading to 769,369,823 confirmed cases and 6,954,336 deaths globally as of August 2023, communities around the world anxiously waited for a vaccine to shield themselves and their loved ones (WHO, 2023b). Early in the pandemic, it was widely believed that Africa would be a significant source of infection because of poor surveillance and diagnostic capacity, with case modellers predicting upwards of 3.6–5.5 million COVID-19 hospitalisations in the region (WHO, 2020). Vaccines were thus readily promoted as necessary tools to prevent the spread of COVID-19. To improve global accessibility to COVID-19 vaccines, COVAX—a risk-sharing mechanism for pooled procurement—allocated 115 million doses to 49 African nations (Grenfell and Oyeyemi, 2023).

However, when the COVID-19 vaccine became available in Sierra Leone in March 2021, it did not gain traction with local communities. By December 2021, only 7.4% of the total population was fully vaccinated, and then only 14% of Sierra Leoneans were vaccinated by March 2022 (UNICEF, 2021; WHO, 2023a). In contrast to other regions, Africa has lagged substantially behind; while the global vaccination rate was 154 vaccine doses per 100 individuals in July 2022, African countries had administered only 41 doses of the COVID-19 vaccine per 100 people (Africa CDC, 2023; African Union and Africa CDC, 2022). By September 2022, only 22% of African populations had been fully or partially vaccinated compared to 60% of the global population (Africa CDC, 2023; African Union and Africa CDC, 2022). Because sub-Saharan Africa is a data-scarce environment, there is a need to better understand why vaccination rates have remained so low, hindering vaccination campaigns (Wollburg *et al.*, 2023; World Bank, 2021). For instance, rates remain low despite vaccine availability and vaccine development and distribution infrastructure improvements, as evidenced during recent yellow fever and Ebola vaccine campaigns in Angola and the Democratic Republic of the Congo (Yusufari, 2021).

While much of the literature to date has focused on access- and distribution-related challenges, a growing number of studies also point to vaccine hesitancy as playing a role in individuals' and communities' low uptake of the COVID-19 vaccine. Assessing the factors driving vaccine hesitancy is essential for informing attempts to increase vaccination rates among African populations, as negative attitudes likely influence when and under what circumstances people choose to become vaccinated. Paying attention to the “view from below” (Abramowitz *et al.*, 2015)—or the local community perspective—is especially important as vaccine behaviours may be more malleable when met with historically and contextually sensitive interventions (Fisayo, 2021). This study, which draws upon in-depth, semi-structured interviews, seeks to explore the vaccine attitudes and experiences of individuals living in the Kono District of Sierra Leone. However, it diverges from other studies examining vaccine hesitancy that have commonly relied upon “knowledge-deficit” models of belief, such as the health belief model, which is one of the most pervasive frameworks for explaining behaviours related to the COVID-19 vaccine (Yang *et al.*, 2022). Instead, this study draws upon the vaccine anxieties framework (Leach and Fairhead, 2007), which views vaccines as “substantially emotional, social, and political devices” (Fisayo, 2021, 881). Study findings will be useful for informing future policy and interventions related to vaccine uptake in Sierra Leone and beyond.

Drawing on the vaccine anxieties framework

The vaccine anxieties framework (VAF), developed by Leach and Fairhead (2007) in response to rumours and controversies about vaccines at the beginning of the 21st century, renders nuance to supply and demand explanations for low vaccination rates in African contexts. Further, as Leach and colleagues (2022) explain, the VAF brushes past assumptions in the popular health belief model that knowledge translates to beliefs, instead highlighting the significance of “social, political, and historical (including colonial) contexts in which these are embedded” (Leach *et al.*, 2022, 2). By recognising these various aspects of anxiety, the VAF adds complexity to understanding individuals' lived experiences and how they shape attitudes towards vaccines and vaccine decision-making.

To apply the VAF, it is necessary to acknowledge the role of the body, society, and broader political context in driving vaccine hesitancy (Leach and Fairhead, 2007). The bodily dimension highlights how the physical body and the aetiology of health impact attitudes towards vaccines. For instance, various studies across Africa have demonstrated fears of potential side effects and doubts about safety as reasons for low uptake of the COVID-19 vaccine (Abubakari *et al.*, 2023; Leach *et al.*, 2022; Wollburg *et al.*, 2023). A study by Abubakari and colleagues (2023) examining vaccine attitudes in five African countries discovered fears that vaccines might cause infertility or compromise reproduction. Similar fears relating to tetanus toxoid vaccines can be traced back to

the 1990s and early 2000s (Leach and Fairhead, 2007). Research has also shown that African populations avoided the COVID-19 vaccine due to low perceptions of infection risk and disease severity (Abubakari *et al.*, 2023; Wollburg *et al.*, 2023). Observations from Sierra Leone indicate that individuals commonly perceived vaccines as being necessary for children rather than adults and that such misconceptions likely drove scepticism towards the COVID-19 vaccine since it was primarily targeted at older adults (Leach *et al.*, 2022; Mokuwa, 2023).

According to the VAF, social dimensions of vaccine anxiety encompass the web of families, communities, clinics, and health systems that influence considerations of vaccines. Existing research has shown that individuals often seek the approval and advice of other vaccine-seekers, namely their family members and friends, though religious leaders and other community members' advice is also commonly considered (Leach and Fairhead, 2007). Several studies from Africa demonstrate that interactions with healthcare workers also influenced people's attitudes about the COVID-19 vaccine, both positively and negatively (Ackah *et al.*, 2022; Enria *et al.*, 2016). Recently, the embrace of non-traditional vaccine advice on the internet has emerged, with research revealing that anti-vaccine campaigns were influential in the early part of the COVID-19 pandemic, gaining traction along various community routes and social media channels (Adepoju, 2021; Osuagwu *et al.*, 2023). A recent survey in sub-Saharan Africa by Osuagwu and colleagues (2023) found that social media users were twice as likely to resist COVID-19 vaccines. In addition to these factors, several demographic trends have been noted, with studies from various African countries indicating that men were more accepting of the vaccine (Ackah *et al.*, 2022; Wollburg *et al.*, 2023). Wollburg and colleagues (2023) found that older individuals and those with higher levels of education were more likely to be sceptical about the vaccine. However, these findings are inconsistent, as Ackah and colleagues (2022) reported higher COVID-19 vaccine acceptance with higher education. They also found that being a healthcare worker correlated with greater vaccine acceptance (Ackah *et al.*, 2022).

On the broadest level, the political dimension of the VAF includes people's lived experiences and conceptualisations of the role that national and international systems play in vaccine creation and distribution. It also involves fear of vaccines being used as a political tool and wariness towards vaccines not accepted by international bodies, such as the World Health Organisation (WHO) or the Pan-African Union (Leach and Fairhead, 2007; Leach *et al.*, 2022). In the context of the COVID-19 pandemic, research demonstrates that a lack of trust in the medical institutions and governmental bodies creating and distributing vaccines often discouraged populations from getting vaccinated. One study from five sub-Saharan African countries, for instance, unearthed fears that medical and governmental institutions were microchipping vaccines (Abubakari *et al.*, 2023). A study from Senegal further revealed fears that Western pharmaceutical firms were using Africans as lab subjects for testing the COVID-19 vaccines (Desclaux *et al.*, 2024). Additional research from Sierra Leone found citizens wary of vaccines following incorrect or misleading government messaging (e.g., when vaccines advertised as "free" were not free at the point of care) (Leach *et al.*, 2022).

Importantly, distrust of vaccines and the institutions that distribute them is grounded in a long history of abuse by Western actors and pharmaceutical manufacturers on the African continent. This includes, perhaps most notoriously, the 1996 Pfizer drug trials, which tested an unapproved meningitis vaccine on an infected population of children in Northern Nigeria without consent, leading to injury and deaths (Jegede, 2007). It is essential to consider this history in the face of contemporary vaccine campaigns to uncover the interface between structural and lived realities and individual vaccine decision-making (Enria *et al.*, 2021). Analyses of recent Ebola vaccine campaigns, for instance, demonstrate African populations' continued distrust of foreign vaccine manufacturers (Kummervold *et al.*, 2017). In Sierra Leone, the EBOVAC-Salone trial, funded by the European Innovative Medicines Initiative, reported rampant mistrust, with some individuals believing trial staff were stealing blood or that vaccines were killing Africans. In the face of such sentiments, Tengbeh and colleagues (2018) call for better engagement with local leaders in

developing and rolling out future vaccine campaigns. This article intends to better contextualise public mistrust of the COVID-19 vaccines and other social and bodily drivers of vaccine anxiety in this setting to add further nuance to public health recommendations.

A history of vaccination in Sierra Leone

Because Sierra Leone has long been globally connected and integrated along cross-continental trading routes, the nation has a lengthy record of cross-cultural exchange, including vaccination campaigns. During an early smallpox outbreak in 1905, for example, British colonial administrators orchestrated an inoculation campaign, though it failed due to poor funding (M'bayo, 2018). By the 1860s, the concept of vaccination had become generally well understood in the Colony of Sierra Leone; it is referred to as *maklet* in Krio, Sierra Leone's lingua franca (Mokuwa, 2023). Infectious diseases like smallpox and measles, which once claimed many lives, have since been eradicated or significantly reduced following mass vaccination efforts (Leach *et al.*, 2022).

Over the last half-century, Sierra Leone's healthcare system, and specifically its vaccination agenda, has improved despite challenges. The country's Expanded Programme on Immunisation (EPI) was first established in the 1960s as a children's programme for vaccination for childhood diseases like polio and measles and for women of childbearing age who suffered from Tetanus Toxoid (Bilkis, 2021). The Government of Sierra Leone's Comprehensive EPI Multi-Year Plan (2014) revealed that after re-launching in 1974 (Senessie *et al.*, 2007), it eventually achieved higher vaccine coverage for communities (GoSL MOHS, 2014). By 1990, 75% of children between one and two years of age were fully covered for each of the EPI's priority target diseases (Kamara, 1991). Over time, the program has expanded to encompass much broader immunisation campaigns for both children and adults across Sierra Leone (Bilkis, 2021).

The Expanded Programme for Immunisation has had to adjust its goals following the nation's civil war from 1991 to 2002, during which social and healthcare services were disrupted and a massive displacement of populations ensued. The conflict caused immunisation coverage for all diseases to fall to or below rates reported in earlier periods (Senessie *et al.*, 2007). The government has since focused on rebuilding infrastructure for revising immunisation routines, with support from agencies like the United Nations Children's Education Fund (UNICEF) and the Global Alliance for Vaccinations and Immunisation (GAVI) (Senessie *et al.*, 2007). Vaccination has remained a fundamental strategy for preventing the spread of infectious diseases (GoSL MOHS 2014). Recently, the 2014–2015 Ebola epidemic presented a novel opportunity to promote vaccination in response to the development of a novel vaccine. Key lessons were learned from this experience, including the importance of centering local realities and contexts (Enria *et al.*, 2016; Tengbeh *et al.*, 2018), and attempts have been made to integrate these lessons within COVID-19 vaccination initiatives (Mason and Nghia, 2022).

The COVAX facility first shipped AstraZeneca-Oxford COVID-19 vaccines to Sierra Leone in March 2021 (United Nations Sierra Leone, 2021). To support the rollout of the vaccine, the government engaged in case-level data reporting, and surveillance systems were expanded to integrate COVID-19 vaccination programs (Kinkade *et al.*, 2022). The first rollout of vaccines ended in June 2021 when vaccine supplies of AstraZeneca under COVAX and vaccines from Sinopharm agreements with China ran out (Leach *et al.*, 2022). In addition to limited supplies, African Union (AU) member states, including Sierra Leone, also faced roadblocks including a limited healthcare workforce, hard-to-reach areas, and a lack of transportation, infrastructure, and refrigeration, all of which led to strains on vaccine rollout (African Union and Africa CDC, 2022). To address the logistical issue of reaching remote areas, 600 teams administered a second rollout of vaccines to rural areas in late August 2021 (Leach *et al.*, 2022). Davies (2023) reports that community health centres were the primary sites for accessing vaccines. To encourage vaccination

in places like Sierra Leone's Bombali District, UNICEF-employed social mobilisers received COVID-19 vaccines publicly in local traditional meetings (Davies, 2023). Despite these efforts, vaccine rates remained low (Leach *et al.*, 2022; WHO, 2023a); hence, additional research is needed to understand why people resisted vaccination.

Methods

The data presented in this manuscript are drawn from a study undertaken between June 2020 and January 2022 exploring community-based experiences and perceptions of the COVID-19 pandemic in Sierra Leone. The research was based in the Kono District in eastern Sierra Leone. Kono, known for its lucrative diamond mines, was a central site of conflict during the country's civil war (1991–2002), and as a result, the district remains underdeveloped, with limited access to healthcare and other social services, though the situation has been improving in recent years. The study was conducted in Koidu, Kono's largest urban centre, with a population of over 196,418 according to the 2021 census (Stats SL, 2022). The city's history, coupled with the post-war resettlement of local residents by the District's Paramount Chief to make lands available to foreign mining companies, makes Kono an interesting site to examine social and political anxieties relating to public health interventions. According to Kono Government Hospital data, as of June 2022, the district had recorded 117 confirmed cases of COVID-19 (63.2% male) and 21 deaths.

Data for this study were primarily gathered via semi-structured interviews with 42 individuals (25 male, 17 female) who were sampled using purposive and snowball sampling methods. Recruitment was aided by the second author's prior ethnographic research in Koidu. Participants ranged from 21 to 66 years of age, and the majority had at least some level of schooling (including several individuals with advanced degrees). While some were employed in the private or nonprofit sector, most worked in the informal economy (farming, mining, etc.).

Due to pandemic travel constraints, interviews were conducted remotely by the second author using the WhatsApp communications application or by a locally based Sierra Leonean research assistant with training in qualitative methods. Interviews were conducted in English or Krio, were audio recorded with permission, and required 30 minutes to 2 hours to complete. As a supplement to interviews, participant observation was also conducted in Koidu during June 2022. During this time, the second author informally discussed COVID-19 with community members and took field notes while passing time in community members' homes, work sites, and places of recreation and worship. Interview transcripts and ethnographic field notes were then analysed using an inductive approach, by which different themes were identified directly from the data. These various themes were used to create a codebook, which was applied to sort data systematically throughout all transcripts and field notes.

This article focuses specifically on people's attitudes and behaviours concerning the COVID-19 vaccine. Because the vaccine did not arrive in Sierra Leone until March 2021, it did not become a focus of interviews until after this date, and thus only 15 participants were asked specifically about the vaccine. Data analysis draws solely upon these interviews in addition to relevant field notes from participant observation.

The College of Charleston's Institutional Review Board (IRB) and the Sierra Leone Ethics and Scientific Review Committee approved the study. Informed consent was obtained from all participants before agreeing to participate, and pseudonyms are used below to ensure confidentiality.

Results

Attitudes towards receiving vaccines

Study respondents had strong opinions about COVID-19 vaccines, sometimes in favour of but often against the vaccines. Most participants—including those who had already received

it—expressed clear views of doubt or uncertainty. They cited reports among their communities that the COVID-19 virus did not exist in Sierra Leone (i.e., “that they are faking us”), causing some people to question the necessity of a vaccine. Compared to television depictions of devastation in Europe, some Sierra Leoneans at first struggled to comprehend COVID-19’s threat and thus perceived that “it only exists in the white man countries.” However, attitudes about vaccines were prone to change throughout the pandemic in response to people’s experiences and encounters with the virus. As Hassan, an IT worker, recounted in the early months of the pandemic:

Tension was created amongst the people with a feeling that the sickness was not real. Not until later, when it started killing people, when it became so endemic . . . that was only when people began to accept the fact that it is a fearsome and deadly sickness.

Even among those who did believe COVID-19 was real, as several participants explained, many still doubted the virus’ threat since they did not believe themselves to be immunologically vulnerable. For some, COVID-19 symptoms were mild enough that they were difficult to distinguish from those of other viruses, such as the common cold. For others, consideration of other lingering threats like tuberculosis and HIV took precedence over COVID-19. As Komba, another IT technician, explained:

There are other diseases that are worse than COVID-19 that can kill every day more than COVID-19. Like me sitting here I am suffering from upper GIP [gastric inhibitory peptide] that they have recently diagnosed, that up until now I am not getting proper medication to cure.

Other participants felt that the risk of COVID-19 infection or illness was heightened among foreigners but posed less risk to Africans. Obi, a male pastor who was interviewed following the vaccine rollout but who had not yet received the vaccine, stressed that given certain environmental conditions, such as the warm climate during the dry season when COVID-19 first arrived, Sierra Leoneans were less vulnerable to COVID-19 infection. Obi explained that when one’s immune system is “warm,” it is “not easy for those other viruses or diseases to enter your system and succeed.” Alternatively, Musa, a community health worker, claimed that Africans were better able to ward off infection than Westerners because of their immune systems, which were made strong due to their heartier, calorically dense diet of palm oil and carbohydrates. This unique consideration of environmental conditions and diet reveals a general feeling of superior immunological protection from the COVID-19 virus among Sierra Leoneans.

While some participants viewed the COVID-19 vaccine as unnecessary, about one-quarter of participants, who desired to be protected from the virus, had concerns regarding its efficacy, especially given its newness and potential for side effects. Some, for instance, desired to be vaccinated but felt that the available vaccines had been too hastily rolled out. Seydou, a young high school-educated man, complained of delays in vaccine manufacturing but also stressed how he did not want the manufacturing to be sped up, fearing this would lead to a carelessly designed vaccine. Although he got vaccinated once he learned about the vaccine’s availability through national radio broadcasts, and also ensured that his family members were vaccinated, he still complained that the vaccine offered relief but could not terminate or eradicate the virus.

Vaccine concerns also arose among participants who revealed fears relating to adverse side effects. Sahr, a male youth volunteer who was interviewed nearly a year after the vaccine became available, worried about an adverse reaction to the vaccine, although he expected to recover from any reactions and was planning to be vaccinated soon at a local health centre. However, others were not so convinced. One pressing concern that severely deterred many, especially women, from getting the vaccine was a fear that it would lead to infertility. Two months following the vaccine rollout, Abeni, a young female teacher, said she had not yet gotten the vaccine. She described fears

of the vaccine that she had heard from others, saying, “If you are a woman, if you take it [the vaccine], you will not bear even a child.” Abeni, who herself had decided to get vaccinated despite the risks, explained that many people—especially pregnant women—avoided hospitals for fear of being forced to get vaccinated.

Despite feelings of doubt or worry related to the COVID-19 vaccine being the majority attitude among participants, there was a minority who expressed more positive views of the vaccine. Four participants of different ages and education levels emphasised how the vaccine would protect them. Sahr explained his decision to get vaccinated in the future by saying, “The vaccine can build my body resistance, it can secure me and be able to protect my family and protect other people that I come into close contact with.” Several participants also expressed positive views of the vaccine, specifically because the government recommended it. However, despite these more favourable views of the vaccines, most participants in the study expressed some anxiety about them.

Social drivers of vaccine anxiety

In addition to revealing how people felt about COVID-19 vaccines, this study also assessed the various factors driving people’s attitudes. Findings indicate that social factors influenced their vaccine decision-making, particularly information shared via social media and more formal public health communication channels. Some recalled how family members in Sierra Leone and abroad and their close connections on social media made them doubt the vaccine. Conversations revealed that social media commonly prompted confusion due to the vast and quick spread of misinformation across popular platforms such as Facebook and WhatsApp. Ibrahim, a retired teacher who had already received two vaccine doses before speaking with us, explained, “When you go to social media you will see many people condemning the vaccine . . . Sometimes, it creates worries in me. I will become so upset because I’ve taken the two dosages (laughs) . . . yes, I have taken the two already. So, I’m in the Hands of God now.”

Misinformation shared via social media specifically fuelled fears of harmful side effects, a heightened risk of sickness, or even death from the vaccine. As Obi, the pastor, explained, “I saw a certain guy saying that this vaccination that they are giving to people has the tendency to stay in the immune system for a two-and-a-half-year period . . . going towards the third year if any sickness occurs it will just be worse than the previous one.” As a result, he had not sought vaccination. Similarly, Ibrahim worried that, “it changes people’s DNA . . . those people who have got vaccinated should be preparing themselves for their death.” Lawal, a clergyman, explained his reluctance to get the vaccine because of information he gleaned from social media that “if you place a magnetic bulb on the spot where somebody is vaccinated it will produce light.” On the contrary, Lawal revealed that while much of the information he saw on social media caused him concern, some of his social media connections (including a relative from Australia) were trying to convince him to get the vaccine. While ultimately, he remained reluctant, this case demonstrates social media’s potential to both promote and deter people from getting vaccinated.

In addition to social media, findings suggest that poor “sensitisation” (public health messaging) about the vaccine may also explain communities’ low vaccination rates. Nine participants specifically expressed alarm by a lack of health communication in local communities upon the vaccine’s arrival, stressing that increased sensitisation would have made a substantial difference. Adama, an elderly female farmer, felt that while sensitisation measures related to social distancing and facemasks were effective, health communication measures were lacking in promoting the vaccine’s safety and efficacy. Specifically, once the vaccine became available in her community and she inquired more about it, she became wary of the need for two vaccine doses. Further, Seydou, referenced above, reported that many of the individuals responsible for the dissemination and administration of these vaccines lacked adequate education about the vaccine, arguing that “the

government needs to hire competent and qualified people that can easily convince people . . . that can sensitize people to see the need.”

Obi reinforced the idea that the government was too slow to act and should have known a vaccine was imminent and prepared for its eventual arrival. He stated, “It took over two, three to four months [for the vaccine to be developed], so they should have been ready.” To him, the government missed a significant opportunity to sensitise communities on the benefits of a vaccine while it was under production and before its physical rollout. In addition to this complaint, several respondents expressed frustration that vaccine information was not more widely accessible on a grassroots level. As Ibrahim, the retired teacher, noted, “if it [sensitisation] would have reached from the chieftdom to the grassroot level, people would have made a move [to get the vaccine].” Paul, another clergyman who was reluctant to get vaccinated, recommended that sensitisation campaigns employ well-equipped public health messengers to go “from village to village.” Instead, messaging was sometimes perceived as out of touch with local realities. Ibrahim noted that much of the messaging via local radio stations failed to reach farmers who left early in the morning to get to their farms. Another proposed solution was to utilise more social workers in distributing the vaccine, who could be “available at community centres just like the health workers” to help educate people about the benefits of vaccination. While not all participants were as critical as the individuals mentioned earlier regarding public health messaging, these findings demonstrate an overwhelming consensus that more public health communication and higher-quality messaging should have been in place.

Political drivers of vaccine anxiety

In addition to social factors, political factors, including mistrust of the state and foreign actors, impacted people’s views of the COVID-19 vaccine. Community members expected the national government and international organisations working in Sierra Leone to orchestrate a rollout of preventive measures to stop the spread of COVID-19. However, the reality of these interventions often failed to meet their expectations. Political tensions were high, and an atmosphere of distrust led to diverse reactions to measures issued by the government. For instance, suspicion of political party conspiracy was apparent, with several respondents noting a difference in response to the COVID-19 pandemic (which transpired when the Sierra Leone People’s Party (SLPP) was in office) compared to the prior Ebola outbreak (led by the opposition All People’s Congress (APC) party). For example, Hawa, a young hairdresser, described how things were better during the APC administration. In contrast, the SLPP administration deprived communities outside Freetown of food and other necessities, exacerbating the crisis. Osman, a petty trader and miner, complained of SLPP party favouritism regarding jobs related to pandemic response. Instead of retaining the more experienced leaders who dealt with Ebola, he noted that “99.9 percent of them [employed in COVID response] are all SLPP and this is their first experience for a job in a pandemic or epidemic job . . . If they suspect that you are from the other party, you will not have the job.”

Political tensions that imbued the COVID-19 response also influenced people’s reactions to the vaccines. Fears that the government was somehow benefiting from the vaccine at citizens’ expense were rampant, with over a third of participants indicating mistrust of the state’s intentions regarding the vaccines. A perception that the Sierra Leonean government was profiting off vaccine campaigning and international aid circulated among community members. As Ibrahim said, “some people looked at it as a political gimmick: that the government just wanted to make money.” These frustrations were partly fuelled by the lack of transparency with which the government absorbed and distributed aid and vaccines. Ibrahim also noted how political attitudes likely underlaid people’s responses to state-led sensitisation campaigns, noting how some critics of the state perceived that vaccination status was being used to restrict people’s freedom of movement. He explained as follows:



Figure 1. Painted Depiction of President Maada Bio Receiving a COVID-19 Vaccine on the Wall Outside the Entrance Gate to Kono Government Hospital.

In connection with the vaccination, when it reached a time that the government started putting measures in place . . . like, for those in higher government offices . . . that, people may not be allowed to enter without showing proof of either one or both doses of vaccination. People just took it to be the government forcing people to take it.

While many participants were wary of the vaccine due to their attitudes towards the government, others held more positive views of domestic vaccine promotion. Seydou, who received the vaccine and persuaded the rest of his family to do so, for example, praised the government's approach to vaccine delivery, especially for making it accessible and available locally through Kono's peripheral health units. A conversation with Thomas, a teacher-in-training, during summer 2022 revealed that he and his wife had received the vaccine as soon as it was made available in Kono. He trusted that the vaccine was safe and effective because he believed the government had the people's best interests at heart. In fact, he was surprised by the suggestion that the government would do harm, explaining, "They would not kill people. They have love for the people. They have a stake in the country . . . No, it is not political." Like Thomas, Adama, a farmer and local community leader, disputed any politicisation of the vaccine, arguing that it was meant to save them and that people were taking it out of free will. Kumba, a female high school student who received the vaccine at a local hospital, echoed this sentiment; specifically, she felt the vaccine must be safe because the President received it on live television with videos circulating on social media (see Figure 1). These findings indicate that people's attitudes towards the vaccine may have been directly tied to their overall impression of President Maada Bio and his administration.

While some people's attitudes towards the COVID-19 vaccine were impacted by their feelings towards the state, others were driven by their perceptions of the international community, which was largely responsible for producing and sharing the vaccines in Sierra Leone. Rumours circulated about what people perceived to be the West's "true" intentions in sending their vaccines to Africa. Approximately a quarter of participants expressed fears that Western governments—

where vaccines such as Moderna and Johnson & Johnson were manufactured— were using vaccines to harm Africans. Sia, a teacher who had not yet been vaccinated but intended to, communicated general fears that the vaccines were purposefully being used to spread rather than protect against the COVID-19 virus. As she described:

They [community members] said because if they get vaccinated, they will get infected because it's the virus . . . because they said since COVID-19 didn't kill in Sierra Leone that much as compared to countries abroad like India or America where many people died, so it's the same COVID-19 they are trying to spread here. So, people are refusing to get vaccinated.

Paul went a step further, claiming that the vaccine was made to “kill the Africans.” Adama echoed this fear:

What I heard about the vaccine is that people are saying that nobody should take it, they said because they want us, the Sierra Leoneans or Africans, to die in good numbers. That is why they have brought it to us so that we can die in good number.

These fears gripped many and reflected a widespread distrust towards Western governments, pharmaceutical companies, and international bodies like the WHO, which were all promoting vaccination. Considering the widespread nature of these rumours, two participants also critiqued international actors for failing to put them to rest. According to Ibrahim, “The WHO needs to be active in counteracting those rumours, more especially those relating to the COVID vaccines . . . WHO needs to be very vigilant, you know, so that they will give assurance to people.” The failure of international entities such as the WHO to correct misinformation about COVID-19 vaccines led many to feel abandoned or let down.

Finally, attitudes were similarly mixed concerning people's perception of the international community, influencing how they perceived vaccines. Though in the minority, several community members had more positive views of internationally developed vaccines. For instance, before the arrival of a COVID-19 vaccine, Mariatu, a traditional birth assistant, was hopeful that the international community would develop a vaccine and treatments for Africans. She explains:

They should try and develop a medicine so that the sickness will go away from this country . . . Because for us blacks, we can obey laws, but we don't have the cure. So, it's the whites who know about medicine and proper medication.

Another participant, Ibrahim, harboured a positive association with the vaccine precisely because of its promotion by the WHO. He stated, “The government is working hand in glove with WHO, right, and WHO is in charge as the umbrella organisation for all health issues. So, if the government is working hand in glove with them that's a very good step taken.” As these quotations illustrate, people expressed conflicting attitudes regarding the vaccine that were very much intertwined with the unique political climate of Sierra Leone.

Discussion

This study sought to uncover the vaccine attitudes of residents living in Koidu, Sierra Leone utilising Leach and Fairhead's (2007) vaccine anxieties framework. This framework renders nuance to the global literature on vaccine hesitancy (both within and outside of mass pandemics), as it recognises that individuals' understandings of their bodies, social networks, and lived realities with national and international institutions shape vaccine decision-making (Leach and Fairhead, 2007). Study participants expressed primarily negative attitudes towards COVID-19 vaccines due

to fears of harm, ineffectiveness, or perceptions that vaccines were unnecessary. Many expressed concerns about COVID-19 vaccines due to rumours they heard over social media, though they also blamed insufficient public health messaging. Political worries about national mismanagement and international intentions of harm with vaccine rollout also deterred people from becoming vaccinated.

As findings indicate, participants espoused feelings of doubt or uncertainty towards the vaccine because they did not believe the virus posed a significant threat. These findings align with other work from sub-Saharan Africa demonstrating populations' low perceptions of risk from COVID-19, with the exception of healthcare workers (Ekpenyong *et al.*, 2021). Specifically, some individuals perceived themselves as immunologically protected even without a vaccine. According to a study by Desclaux and colleagues (2024), Senegalese individuals similarly believed they had "natural resistance" to COVID-19. People's low perceptions of risk in this setting could be attributed to their lived experiences and even some trained innate immunity to other infectious diseases (Ayenigbara *et al.*, 2021; El-Sadr and Justman, 2020). This study additionally revealed unique considerations of environment and diet as being protective against the COVID-19 virus. Respondents also conveyed their perceptions that specific populations, namely foreigners, were at greater risk than others, findings that align with those of Ayenigbara and colleagues (2021). While this was not discussed amongst participants in this study, Mokuwa's (2023) research in Sierra Leone found that people tended to associate vaccination exclusively with children, which could have influenced their perceived need for the vaccine. Such sentiments may help to explain the general feeling among study participants that governmental vaccination measures were overly burdensome.

A second reason people harboured negative attitudes towards the COVID-19 vaccine related to beliefs about the vaccine's safety and efficacy. For instance, respondents expressed concerns about the vaccine due to its newness. Additional research from Sierra Leone similarly documents how communities perceived vaccines as being developed too quickly, limiting their effectiveness (Richards *et al.*, 2024). Other study participants associated the COVID-19 vaccine with a host of adverse side effects, a finding that aligns with those of various studies from Africa (Abubakari *et al.*, 2023; Ajeigbe *et al.*, 2022; The Africa Center for Disease Control and Prevention, 2020; Wollburg *et al.*, 2023). Notably, while most participants were reluctant about receiving the vaccine, this feeling was not universal. Indeed, there is literature to suggest that some African populations had more positive views of the COVID-19 vaccine, with one study demonstrating greater vaccine acceptance when citizens had confidence in their government's response to COVID-19 and believed that the state had their best interests at heart (Ngangue *et al.*, 2022). Literature from Sierra Leone indicates that populations may become more accepting of vaccines over time, following lived experiences with disease and vaccine delivery by trusted messengers (Enria *et al.*, 2021; Leach *et al.*, 2022; Meriggi *et al.*, 2024).

Another significant finding of this study was that negative vaccine attitudes were spurred by misinformation disseminated over social media. This mirrors other literature from sub-Saharan Africa, which notes a correlation between vaccine hesitancy and engagement with vaccine myths and misinformation online (Kabakama *et al.*, 2022; Osuagwu *et al.*, 2023). Participants spoke explicitly about the role of social media in fuelling the spread of rumours over microchipping, for instance, concerns that have appeared elsewhere, including in Malawi (Njoga *et al.*, 2022). Additional research has found that people grappled with fears of adverse side effects, fed by online misinformation (Menezes *et al.*, 2021; Leach *et al.*, 2022; Osuagwu *et al.*, 2023). Findings also coincide with literature demonstrating that social media has driven fears of adverse side effects from COVID-19 vaccines (Leach *et al.*, 2022; Menezes *et al.*, 2021). Of note, this study indicated that social media was also an avenue whereby people could receive more positive messaging about the COVID-19 vaccine. Research from Nigeria has found that social media use was associated with increased vaccine acceptance (Adebisi *et al.*, 2021), indicating its potential for use in health promotion initiatives. Ajeigbe and team (2022) argue that civil society has a role to play in

countering misinformation online when equipped with social listening skills and trained in role-playing forms of engagement that are civil and sensitive.

To overcome vaccine hesitancy related to misinformation, findings suggest that community messaging initiatives take a more grassroots approach and enlist and equip trusted local health messengers. Enria and colleagues (2021) and Ajeigbe *et al.* (2022) note that empowering trusted messengers can promote local ambassadors and liaisons to increase vaccine confidence through maintained dialogue. Since fears of vaccine side effects frequently relate to general fears of going to health centres and broader contextual issues that local messengers could be privy to, they can gain the trust of community members and bring to light common anxieties and concerns (Enria *et al.*, 2021). Findings further emphasise the need to consider issues of timing and access as related to vaccine communication channels, especially so as not to clash with farming and trading cycles (Enria *et al.*, 2021).

As this study further indicates, political factors—including mistrust of national and international political actors—also significantly affected vaccine attitudes. Participants' mistrust of the state propelled fears that it was not prioritising citizen's interests. For instance, people voiced concerns that the Sierra Leonean government was squandering international monetary donations for COVID-19 response, worries that the study authors expand upon elsewhere (McLean and Malcolm, 2023). Njoga and colleagues (2022) suggest that state embezzlement of funding designated for public health emergency services may have occurred across the continent. In Sierra Leone, such fears are perhaps unsurprising, considering a 2015 audit, which found that approximately one-third of international aid for Sierra Leone's Ebola response was unaccounted for (Shepler, 2017). As other research indicates, accusations of economic mismanagement were not reserved for the state alone but trickled down to government employees (such as health workers) and societal elites (Leach *et al.*, 2022). For instance, residents of Kambia, Sierra Leone became wary of government-recommended vaccine cards after nurses were found selling them to supplement income (Enria *et al.*, 2021). Distrust towards representatives of the COVID-19 response is likely fuelled by past experiences during Ebola when members of the response were charged with profiting off the containment of citizens (Richards *et al.*, 2019).

Distrust of the government was also linked to accusations that the SLPP administration was “playing politics,” which participants felt led to discrimination within the COVID-19 response. For example, one individual observed that without government-issued vaccine cards, one could not access specific spaces, fuelling accusations of “political gatekeeping” that heightened fears of further politicisation of the response. These attitudes tended to be strongest among those whose political party affiliation did not align with the current administration. It is also worth considering that distrust of the government may have stemmed from what citizens perceived to be an overly militarised response to COVID-19. As Benton (2021) notes, Sierra Leone's current President, Julius Maada Bio, enlisted the Ministry of Defense rather than the Ministry of Health and Sanitation to lead pandemic response activities, causing citizens to feel that the response was insensitive to their health and social needs. Further, the government's strategy was much like the one employed during the Ebola epidemic, which McLean (2024) argues contributed to resentment and distrust.

In addition to distrust of domestic entities, fears of harmful Western intervention also drove vaccine scepticism. For example, study participants cited a common belief that Western governments who manufactured vaccines aimed to harm Africans. These beliefs were also present during the recent Ebola vaccine trial in Sierra Leone (EBOVAC Salone) (Enria *et al.*, 2016), as indicated earlier. Scholars have highlighted that vaccine rumours are often rooted in histories of slavery, colonialism, and neocolonial distributions of wealth and power, making them essential “social commentaries” about Western medical interventions (Tengbeh *et al.*, 2018).

Finally, interviews revealed public dissatisfaction with the role played by the WHO during the COVID-19 response. Participants mainly critiqued the organisation's failure to stem the flow of misinformation about imported vaccines, critiques that have been reported elsewhere (Balde *et al.*,

2022). It is worth noting that across the continent, many African nations patiently waited for scientific guidelines, equipment, and medical supplies to be available from international actors like the WHO, but that none were rapidly forthcoming (Umvilighozo *et al.*, 2020). While the WHO's sluggish response to the prior Ebola epidemic in Sierra Leone was initially blamed on politically motivated appointments, the truth is that the WHO's geographic and cognitive dissonance from the reality on the ground in West Africa made it woefully inadequate (Benton and Dionne, 2015). As Benton and Dionne (2015) argue, international coordination of the response to Ebola was fraught with colonial mismanagement and cultural incompetency. As such, it is perhaps not surprising that trust in international agencies has crumbled over recent years in this context. These findings suggest that policymakers should attempt to better understand how and why mistrust manifests in the rollout of and messaging about vaccines. It is also clear that governments and international actors will need to work to rebuild trust by increasing transparency regarding pandemic measures and international aid flows.

Conclusion

Sierra Leoneans' attitudes towards the COVID-19 vaccines are linked to a complex web of personal, social, and political factors. The unique, context-driven nature of these attitudes is best revealed by the vaccine anxieties framework, which centres on socio-political factors as essential considerations driving vaccine attitudes. As this study shows, community members held mixed attitudes towards the COVID-19 vaccine, though their feelings about it were overwhelmingly negative. Insufficient public health messaging and the spread of misinformation via social media often led to confusion about vaccines. Further, conspiracies about the government and perceived politicisation of vaccine campaigns fuelled scepticism, limiting vaccine uptake.

Due to the study timing and, thus, restricted sample size included in this analysis, further research is warranted. For instance, more attention needs to be paid to individual rather than community and normative perspectives of vaccines to uncover how people's attitudes related directly to their vaccine decision-making. Additionally, it is necessary to understand better the specific factors driving vaccine acceptance so that such knowledge can be leveraged in future public health messaging interventions. Because study participants were only interviewed at a single point in time, and often early into the unfolding of the pandemic, the data do not account for how vaccine attitudes may have shifted over time. As indicated above, other literature points to a growing acceptance of the COVID-19 vaccine as health communication improved, replacing earlier negative perceptions (Leach *et al.*, 2022; Meriggi *et al.*, 2024). Finally, information regarding when and where participants went for vaccination (if they did), which vaccine they received, and whether they received booster doses, was not systematically recorded in this study. Longitudinal analyses that integrate this level of detail regarding vaccine behaviours are thus also called for. Such research will continue to add to a literature base that is more attuned to vaccine supply and access issues rather than people's perceptions of vaccines. Because people's attitudes and experiences ultimately determine vaccine behaviours, study findings emphasise the need to include local communities as critical assets in the co-evolution of future global vaccine campaigns.

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