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Article

COVID-19 Vaccine Hesitancy: The Experience of Congo, Democratic Republic of the Congo and Guinea-Bissau

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Abstract

This article investigates the underlying causes of COVID-19 vaccine hesitancy in three sub-Saharan African countries: the Republic of Congo, the Democratic Republic of the Congo (DRC), and Guinea-Bissau. Employing a qualitative ethnographic design, the study engaged 752 participants, including healthcare professionals, community members, traditional practitioners, and various local leaders, through semi-structured interviews and focus group discussions. Findings indicate that vaccine hesitancy is fluid and contextual with three principal drivers: (1) denial of COVID-19's existence, often reinforced by skepticism among healthcare workers and the belief that the disease is foreign or a governmental scheme for financial gain; (2) misinformation, including rumors about vaccine incompatibility with certain foods, and fears of sterility and witchcraft; and (3) a firm reliance on traditional medicine, seen as effective alternative to biomedical interventions. The study highlights the significant role of inconsistent public health messaging and conspiracy theories in fueling resistance to vaccination. It reflects the necessity of a multisectoral approach that integrates government, health authorities, anthropologists, and other social scientists, as well as community leaders, to foster trust and improve vaccine acceptance. Enhanced education, transparent risk communication, and culturally sensitive community engagement and dialogue are recommended as critical strategies to counter misinformation and build public confidence. While the study's multidisciplinary and multi-country scope strengthens its conclusions, it only included three countries and provided limited socio-demographic data about the participants. Ultimately, overcoming vaccine hesitancy in these settings requires addressing both historical and contemporary distrust, as well as integrating traditional health systems into public health strategies.

Keywords: COVID-19; vaccination hesitancy; vaccine refusal; Congo; Democratic Republic of the Congo; Guinea-Bissau

1. Introduction

On 30 January 2020, COVID-19 was declared a Public Health Emergency of International Concern (PHEIC) [1]. The Director-General of the World Health Organization (WHO) pronounced on 5 May 2023 that COVID-19 was a longstanding and persistent health issue and no longer constituted a PHEIC [2]. The decision followed the recommendations of the fifteenth meeting of the International Health Regulations (2005) (IHR) Emergency Committee (EC) regarding the status of the COVID-19 pandemic. COVID-19 rapidly became a global health crisis, with significant differences in incidence and mortality across countries [3]. In mid-2025, there were roughly 778 million confirmed cases of COVID-19 reported to the WHO globally, including over seven million deaths [4]. The African continent accounts for just over one per cent of the global number of cases.

Vaccination stands out as one of the most effective and vital public health interventions, significantly reducing the transmission of infectious diseases such as rubella, measles, and, more recently, COVID-19 [5,6]. Unlike vaccines for routine childhood immunizations, which are developed over extended periods, COVID-19 vaccines were created in record time, sparking public concerns regarding their necessity and safety [7]. Although vaccination programs can be costly and complex, they are far less expensive than the economic, educational, and social restrictions that would be required in their absence [8]. Nonetheless, vaccination skepticism remained prevalent worldwide [9].

Vaccine hesitancy is defined as the postponement or refusal of vaccines even when vaccines are accessible [10]. It covers a wide range of behaviours, from delayed acceptance to outright rejection and is not merely synonymous with anti-vaccination attitudes. Vaccine hesitancy is not a recent phenomenon. Anti-vaccination movements date back to the 1800s and have historically contributed to delayed vaccine adoption in various countries. Mandatory vaccination laws were first enacted in Bavaria in 1807, followed by Sweden in 1816, England in 1853, and Italy in 1859 [11]. The WHO has long recognized vaccine hesitancy as a barrier to achieving herd immunity against life-threatening diseases. Notably, in 2019—before the COVID-19 pandemic—the WHO identified vaccine hesitancy as one of the top ten threats to global health [12].

COVID-19 vaccine hesitancy has been reported worldwide [8,13–15]. In Africa, two primary factors contributed to suboptimal COVID-19 vaccination coverage, i.e., initial vaccine unavailability and persistent vaccine hesitancy despite access to the vaccine [8,9,16,17]. Although vaccine availability has improved over time, coverage rates remain low [18,19]. As of mid-2025, roughly one billion doses had been administered on the continent, with just over half of the population estimated to be fully vaccinated [20]. A comprehensive analysis reveals that COVID-19 vaccine acceptance rates varied across different settings, ranging from 21.0% to 97.9%, with mean rates of 59.8% in 2021 and 58.0% in 2022 [21]. In 2021, Southern and eastern African regions had the highest vaccine acceptance rates (83.5% and 68.9%, respectively). Concerns about the speedy COVID-19 production, religious beliefs, lack of trust in vaccine effectiveness, and adverse social media reports were found to be major causes of vaccine hesitancy [21]. A systematic review identified factors associated with vaccine hesitancy, including low education levels, social media influence, concerns about vaccine safety, and fear of side effects [22]. Conversely, vaccine acceptance was associated with higher education, higher income, older age, and pre-existing comorbidities.

Vaccine hesitancy among health care staff is a matter for concern. A study found that COVID-19 vaccine hesitancy among healthcare providers varied widely across five sub-Saharan African (SSA) countries, affecting 45.7% of healthcare providers in Burkina Faso, 25.7% in Tanzania, 9.8% in Ethiopia, 9% in Ghana, and 8.1% in Nigeria. Key predictors of hesitancy included younger age, being a nurse rather than a doctor, and doubts about vaccine effectiveness, with concerns about side effects and fears of experimental or unsafe vaccines frequently cited among the unvaccinated [23]. Research on vaccine hesitancy among healthcare workers, academics and tertiary students in Nigeria, found that only 29% were vaccinated from September to December 2021 [24]. Reasons for hesitancy included difficulty in registration protocols (21.3%), adverse social media reports (21.3%), religious beliefs against vaccination (16.7%), and poor confidence in preventive measures (11%). Health

concerns deterring vaccination included innate immunity issues (27.7%), worries about allergic reactions (24.6%), and blood clot problems in women (21.4%).

A successful vaccination program necessitates multiple critical components: adequate financing, robust production capacity, equitable access, reliable transportation networks, and appropriate storage facilities [25]. However, vaccine hesitancy, which is manifested in public resistance to being vaccinated, hampers well-equipped and planned vaccination programs. Such resistance is driven by colonial legacies, inequities in global health research, social and cultural contexts, and a lack of community involvement and public trust, which are the roots of vaccine hesitancy [26]. Anthropologists and other social scientists underscore the enduring impact of colonial medical history and exploitation in research, which has fostered persistent distrust and fuelled conspiracy theories linking vaccines to population control and exploitation [27,28]. Their research has explored how risk perception and cultural beliefs influence vaccine acceptance [29] and how communities navigate medical pluralism, balancing traditional and biomedical approaches [30].

The drivers of adherence to COVID-19 public health and social measures (PHSMs) and vaccine uptake are dynamic and context-specific, hence the need to continuously assess them through well-designed studies. The WHO Regional Office for Africa (AFRO) decided to conduct qualitative research on the drivers of population adherence to PHSMs, with the overall objective of understanding the socio-behavioural determinants of population adherence to recommended COVID-19 prevention measures. Specifically, the aim was to study community perceptions of vaccination against the disease and the reasons for vaccine hesitancy in three SSA countries.

2. Methodology

2.1. Study Design

This exploratory qualitative study focused on the ethnography of social groups, using emic and etic analyses [31]. As the aim was to explore the diversity of opinions on vaccine hesitancy, in-depth interviews (IDIs) and focus group (FG) sessions were conducted; however, these methods are not suitable for measuring the prevalence of opinions within a larger population [32].

2.2. Study Setting

The research was conducted in three countries among those most affected by hesitancy towards COVID-19 vaccination: the Republic of Congo (Congo), the Democratic Republic of the Congo (DRC), and Guinea-Bissau. In each country, two sites were selected based on the incidence of COVID-19 and the level of public reluctance to preventive measures, specifically vaccine hesitancy (Table 1).

Table 1. The research sites in the Congo, DRC, and Guinea-Bissau, along with the number of participants at each site by gender.

		Semi-structured in-depth interviews		Focus groups	
City	Areas for data collection	Female	Male	Female	Male
Republic of Congo					
Brazzaville	Mungali municipality (quartiers 41-49)	15	15	49	50
Pointe-Noire	Arondissement Lumumba	15	15	36	44
Democratic Republic of Congo					
Kinshasa	Gombe, Kimbanseke, Kokolo, Binza Ozone	14	16	50	50
Lubumbashi	Gambela, Camp Assistant, Tingitingi	14	16	45	55
Guinea-Bissau					
Bissau	Bairro Militar, Pilum, Quelele, Bandim	15	15	50	45
Bafatá	Bairro 4, Nema-Rua, Porto-Sinthian, Bilali-Pista	15	15	50	48

2.3. Study Participants and Sampling

The selection of participants for IDIs and FG was purposive; the criteria for participation were age (18 years or older), gender, and category of position.

To maximise diversity among participants, each site identified leaders belonging to the following categories: religious leader (RL), youth leader (YL), and woman leader (WL) in women’s associations with more than 100 members, traditional practitioner (TP) and driver, i.e., a person who drives a vehicle for the transport of people (DR). Further, teachers (TEA), healthcare professionals (HP), and community health workers (CHW) were selected at random according to a criterion of age, category of position and place of residence, further aiming for an equal representation from the general population of females (GPF) and males (GPM). At each site, participants were selected based on their in-depth knowledge of the population and its activities. Further, the participants were purposively sampled from all categories of leaders mentioned above in consultation with the Ministry of Health, public health institutes, and the COVID-19 coordination team.

For IDIs, the interviewers identified prospective interviewees according to the above criteria, who were then interviewed in their household or workplace, at their own choice. The facilitators invited prospective participants for the FGs to a neutral location for each session and covered their transportation costs. Each participant in the focus group came from different neighbourhoods and did not know each other. At the end of the session, each participant provided their telephone number for a follow-up, in case of need.

2.4. Data Collection

In each country, in the period from April to October 2022, 60 semi-structured IDIs (n=180, for three countries), 20 FGs (n=60, for the three countries), and participant observations were conducted. In total, 752 participants (52% male) from the three countries were included, comprising 368 women and 384 men (Table 1). The mean age of participants was 38 years (range 18–70).

Table 2. The number of semi-structured IDIs and FGs by category of participants in the three countries.

	Semi-structured interviews	Focus group sessions
Religious leader	18	6
Women leader	18	6
Youth leader	18	6
Traditional practitioner	18	6
Community health worker	18	6
Health worker	18	6
Drivers of vehicles for the transport of people	18	6

Interview guides generated from study objectives were used for the IDIs and FGDs (Supplementary material). To enhance study validity, draft interview guides were discussed internally with a group of researchers to explore the extent to which they accurately reflected the concept of vaccine hesitancy (construct validity) and comprehensively captured all the dimensions of the subject of study (content validity). The tools were then revised based on inputs from this process. Well-trained facilitators conducted the interviews. At each site, investigators and facilitators received training in which the study design was explained and discussed, as well as the data collection process.

2.5. Analysis

The IDIs and FG discussions were audio recorded, and interview notes were taken. The audio recordings were transcribed verbatim from local languages into English, French and Portuguese. The analyses were carried out using ATLAS. ti 8.4.5 (1136), including familiarization with the data, generation of initial codes, search for themes in the codes, as well as examination, definition, and identification of themes. Data from the three data collection models were triangulated. The results are presented according to emerging themes, and in-text citations are used to illustrate and support the analysis.

2.6. Ethics

The Research and Ethics Committee of the WHO Regional Office for Africa approved the research protocol. In each country, the respective Ministries of Health provided ethical approval for the country-specific protocols. All participants were informed beforehand with an information sheet outlining the purpose of the study, their rights, time commitment, potential risks, benefits, and that they were free to participate or leave the study sessions at any time. All the participants provided a written informed consent (Supplementary materials).

3. Results

The reasons identified for vaccine hesitancy in Congo, DRC and Guinea-Bissau turned out to be remarkably similar. Our findings indicate that denial of the existence of the COVID-19 disease, widespread misinformation and conspiracy theories about the COVID-19 vaccine, and a perceived availability of alternative treatments were crucial factors that contributed to the vaccine hesitancy. It happened that a participant highlighted more than one or two reasons for rejecting the vaccine. Participants at times changed opinions when discussing the issue, particularly in FGs.

3.1. Denial of the Existence of COVID-19

Across all participant categories in each of the three countries, individuals described a range of arguments and beliefs that reflected their denial of the existence of COVID-19. Below, we organize these findings according to the major themes that emerged.

3.1.1. Never Seen a COVID-19 Patient

Many healthcare professionals expressed skepticism about the existence of COVID-19 in their country or city, a doubt shaped by their own experiences with the disease. Some reported that, despite testing positive, they continued to interact with others who subsequently did not test positive. This experience fuelled their uncertainty. One health professional shared his personal account of what happened when he contracted COVID-19, illustrating how such experiences contributed to ongoing doubts among colleagues:

I tested positive for COVID-19 and was instructed to stay at home, so I did not go to work, and no one followed up with me. During this time, I continued to play cards and drink tea with my friends. A few days later, I was declared negative, and none of my friends contracted COVID-19. (HP, Bissau)

Additionally, some healthcare professionals reported that they had never encountered a COVID-19 patient, leading them to doubt whether the disease had really reached their country or city. One health professional in Congo recounted:

Previously, I was skeptical myself because nowhere locally was it shown where COVID-19 patients were being treated. We only saw footage on television of how things were handled abroad, and on WhatsApp, we saw images of people with COVID-19. If we could show the hospital and the patients—even with their faces concealed and without revealing the hospital's location—it would help convince people that COVID-19 is real. (HP, Pointe-Noire)

This health professional, like several others, changed their mind after later understanding the severity of COVID-19. The similarity of symptoms for COVID-19 with other known diseases also contributed to the belief that it did not exist, as one woman in Lubumbashi pointed out: "In any case, there is great doubt. They say that this kind of fever has always existed, and that COVID-19 is a lie". As evident in section 3.3, the traditional practitioners recognised the symptoms and maintained they knew how to treat them.

3.1.2. COVID-19: Foreign Disease and a Money Maker

In Guinea-Bissau, the Congo, and the DRC, many people believed that their authorities only pretended COVID-19 had entered their countries to gain access to international aid funds.

While accusing the authorities of lying about COVID-19 to make money, a traditional practitioner in Kinshasa pointed out that the government's way of explaining the modes of transmission of the disease was inconsistent with reality:

In my entourage, people do not accept this disease because we observe our way of life, of walking in the markets, in buses; there is no distancing, so that we would have a lot of deaths; but it is a way for the State to make money, so how can people accept the existence of COVID? We don't accept it, and even we traditional practitioners don't accept it. (TP, Kinshasa)

This inconsistency, he argued, explains why many people did not believe in the existence of COVID-19.

Participants not only accused the country's authorities of using COVID-19 to generate revenue, but also health professionals. One driver in Pointe-Noire maintained that some people persistently denied that COVID-19 caused death and remarked: "Even when we bury a person who died from COVID, people continue to deny the existence of the disease and say that doctors do all this to make money".

Furthermore, many members of the local communities argued that COVID-19 originated in Europe and affected only foreigners, particularly Europeans. A Congolese female leader in Pointe-Noire confirmed: "COVID-19 comes from Europe, and they are the ones who will die from this disease, because for us here, the disease does not exist.

3.1.3. Inconsistent Recommendations

Some study participants argued that contradictions between real life and warnings against COVID-19 resulted in confusion among the population. Others pointed out contradictions between global prevention recommendations and the decisions made by the authorities in their country. These contributed to public doubts about the authenticity of official claims regarding the existence of COVID-19. A driver in Kinshasa argued:

They advocate for preventive measures, yet they bring us TRANSCO [public transport], fully aware that the disease is present in the country. How can these measures be enforced in TRANSCO when buses are crowded, with some passengers standing and others sitting close together? If authorities truly believed the disease existed, they would not bring these kinds of buses. With all that is happening in Zando [marketplace] in the TRANSCO bus, we would be dead already. Let them look for another way to make money because there is no COVID. (DR, Kinshasa)

Community members also wondered why the rules and regulations for prevention were not consistent across different areas, such as modes of transport. A youth leader participant in Kinshasa said, "Regarding travel, if it's by plane, you're required to take the COVID test. However, if it's by boat, you're exempt from this requirement. Why is this distinction made? There are more people in boats than in planes" .

In the Congo, the lifting of preventive measures—including mask mandates, school and business adaptations or closures, restrictions on domestic movement and public transportation, stay-at-home orders, and international travel controls such as entry restrictions, quarantines, and testing—further reinforced public denial of COVID-19. One teacher in Brazzaville said, "Why do people say that the disease in question does not exist? Because the State no longer does the things it did when there was really COVID" .

3.2. Misinformation About the COVID-19 Vaccine

In all three countries, diverse confusion and misinformation circulated among the different participant categories, regarding both the eligibility for COVID-19 vaccines and their effectiveness, on the one hand, and conspiracy theories and ideas about the mark of the beast, on the other.

3.2.1. Eligibility for COVID-19 Vaccines

Among participants, there was considerable confusion regarding eligibility for COVID-19 vaccination and its effectiveness. Across the three countries, individuals cited a range of concerns that influenced their decision to decline the vaccine.

A prevalent belief was that a medical examination was necessary before receiving the COVID-19 vaccine. Many participants asserted that taking the vaccine without first undergoing a medical check-up would be tantamount to risking one's life or committing suicide. However, the cost of such examinations was seen as prohibitive, further discouraging vaccination. For some, eligibility was also linked to age: children were viewed as the primary candidates for vaccination, while adults believed they should only be vaccinated if they intended to travel. In Guinea-Bissau, for instance, an "international vaccine" was understood to be one administered to travellers, and a healthcare professional in Bissau noted: "Some participants believed that having already received what they referred to as 'international vaccines' was sufficient protection against COVID-19".

Doubts about the vaccine's effectiveness were widespread, including among healthcare professionals. Many questioned whether the vaccine would prevent COVID-19 infection. Many questioned whether the vaccine would actually prevent COVID-19 infection. As one woman in Congo explained:

This vaccine is not good if you have diabetes or high blood pressure—you might hesitate, so you need to have check-ups before taking the vaccine, especially for the elderly. However, since the State and the WHO don't cover the costs of these check-ups, it's difficult due to their expense. If the WHO could address this, it would be beneficial, as other diseases may also be present in the body. (GFP, Pointe-Noire).

Additionally, the rapid development and availability of multiple COVID-19 vaccines fuelled community suspicion. Some healthcare professionals expressed mistrust, arguing that strict adherence to preventive measures would be more effective than relying on what they perceived as an "experimental" vaccine.

3.2.2. Conspiracy Against Africans

Some meant that if vaccines were manufactured quickly, it was because COVID-19 was an invention of the West and nothing more than a conspiracy against Africans. Thus, manufacturers were perceived to control vaccinated persons with electronic chips that allowed the vaccine to spread slowly in the body. The vaccine was seen as a weapon to reduce the African population by making them sterile.

The refusal of certain persons to be vaccinated, for instance, health workers, encouraged people to refuse to take a vaccine that could cause death or sterility. The vaccine was considered to have adverse effects on men's virility, making them sexually weak. One teacher in Brazzaville, Congo, argued that men rejected the vaccine: "They refuse because they are told that it weakens men". A driver in Kinshasa argued likewise: "They say that if you get vaccinated, after a few years you will lose your strength and you will die early".

Among women, the vaccine was associated with sterility, as purported by a healthcare professional in Lubumbashi:

Young girls from 15 to 30 years of age [reject], because according to the information that circulated on social media, if you are vaccinated, you will not give birth. That's why they were afraid to be vaccinated. If there is good awareness and good information is provided, the vaccination rate will increase. (HP, Kinsasha)

Other healthcare professionals underlined the need for crucial information to reassure the population about the importance of the vaccine. One of them told the following story:

One woman told me she learned that the vaccine prevents women from having children. I told her that I got the vaccine, and I got pregnant, so that confirms that you can have children after vaccination. She said, 'Thank you, nurse, I will come and get vaccinated.' (HP, Brazzaville).

3.2.3. The Mark of the Beast (666)

In DRC, Guinea-Bissau, and the Congo, the COVID-19 vaccine was sometimes regarded as “the mark of the beast” or “666”. Particular churches and traditional practitioners have explicitly forbidden their followers from receiving the vaccine, including some Ngunza communities in the Congo, the Church of Blacks in the DRC, and various revivalist churches in Guinea-Bissau. These prohibitions led some healthcare professionals to refuse vaccination on the grounds of their religion. The association of “666” with witchcraft further reinforced these beliefs. According to participants, COVID-19 was perceived as a manifestation of witchcraft that modern vaccines could not prevent, creating a preference for “traditional vaccines,” which were seen as incompatible with COVID-19 vaccination. For instance, in the Pointe-Noire region of Congo, individuals who had undergone *tsambe*—scarification performed by traditional practitioners to protect against evil spirits and disease—were unwilling to accept modern vaccines.

Across all three countries, rumours circulated about the incompatibility of the vaccine with certain foods or drinks. A driver explained:

At the hospital, after you leave, you receive reliable information, but those at the ‘rond-points’ do not provide trustworthy advice. They tell you that after vaccination, you must follow specific rules to avoid weakening yourself or making the vaccine less effective: do not smoke, do not consume cola, do not drink alcohol, and do not wash with soap where you received the injection. (DR Brazzaville).

Some participants believed that a vaccinated person could no longer transmit the virus. One youth leader in Brazzaville expressed strong confidence in the vaccine’s benefits: “The vaccine plays a very important role in the body, strengthening antibodies and preventing both infection and transmission of COVID-19”.

In all the countries, the role and importance of prevention appeared to be undervalued by communities, which focus more on treatment than on preventive measures. Regarding vaccines as a preventive tool, some individuals prefer not to take any risks, considering that they could potentially harm the health of populations. Still, many had faith in traditional medicine and herbal remedies.

3.3. Alternative Treatments

In the three countries, participants from all categories, but mainly community members, emphasized the importance of traditional practitioners whom they trusted.

Many individuals who acknowledged the existence and seriousness of COVID-19 placed strong confidence in traditional healing practices and herbal medicines. Members of the public, as well as some healthcare professionals and community health workers, reported seeking treatment from traditional practitioners for COVID-19.

The opinions among the traditional practitioners in DRC on COVID-19 varied. One community health worker in Kinshasa, who also practices as a traditional practitioner, shared: “COVID-19 definitely exists in our country: I personally suffered from it and recovered thanks to a medicinal plant-based mixture—lemon grass, mango tree, *lumbalumba*, and other ingredients—that I used as a wrap”.

Another traditional practitioner described his therapeutic approaches and those of his colleagues:

COVID-19 exists, but we use traditional remedies; we rely on medicinal plants. We prepare what we call *kiukou*: boiling water with various medicinal plants such as *lumbalumba*, *kasikindongo*, and other herbs. You wrap yourself in this to induce sweating and reduce fever. This is our way of combating the disease, because it is not new to us. We Congolese are skilled in this, and we understand what it is. (TP, Kinshasa)

However, the perspectives varied, as some practitioners rejected the existence of COVID-19 and accused the authorities of using the disease to make money (section 3.1.2). In contrast, others explained that they had known the symptoms for a long time and were confident in curing them. One traditional practitioner, who argued the disease was not new to them, explained:

As health professionals, we believe this disease does not exist because we are told it manifests as fever and breathing difficulties. We traditional practitioners have medicines passed down from our ancestors that allow us to treat and cure all these symptoms, whether in children or adults. That is why we are not afraid of COVID-19 and do not accept its existence in our country; we have seen these symptoms for a long time and know how to treat them. (TP, Kinshasa)

A traditional practitioner in Brazzaville said, “COVID-19 is a chemical disease caused by their chemical experiment, compared to what I see when I treat people with diseases caused by dust; it’s like *bassou*, you feel heat”. A Bissau-Guinean practitioner associated COVID-19 with witchcraft when he explained, “COVID-19 is like the wind, in that it is an unknown curse”. Thus, he recommended ritual ceremonies in addition to other treatment. Therefore, traditional practitioners explained the origin and nature of COVID-19 in diverse ways.

4. Discussion

This study presents the results of socio-anthropological research aimed at understanding the low uptake of COVID-19 vaccination in three SSA countries: Congo, DRC, and Guinea-Bissau. The findings reveal that vaccine hesitancy has primarily been driven by three factors: denial of the disease’s existence, a lack of trust in the COVID-19 vaccine, and a perceived availability of alternative treatments.

The COVID-19 pandemic affected SSA countries to a lesser extent than had been expected [33]. Yet, all of them needed to mobilise and implement PHSM, including COVID-19 vaccination campaigns. At the end of 2023, 36.5% of the population in Guinea-Bissau had received at least one dose, 14.3% in the DRC, and 12.0% in the Congo [18]. Our study, based on data from 2022, reveals public skepticism against vaccination in all countries, with many citing safety concerns and not relying on the government. These findings align with the results of a cross-sectional survey, in which approximately two-thirds of the participants in Kinshasa expressed hesitancy towards vaccination [34]. Similar concerns were raised by participants in Ebola-affected areas in North Kivu in eastern DRC [35]. Safety concerns were also raised in Guinea-Bissau; however, in contrast to the slow take-up by the general population (36.5%), the COVID-19 vaccination coverage of Bissau-Guinean healthcare professionals is among the highest in West Africa at over 90% [18]. Furthermore, the pandemic had limited effect on childhood vaccinations in the early phases of the pandemic [36]. Peer-reviewed literature on vaccine hesitancy in Congo is scarce; a survey before the rollout of COVID-19 vaccination indicated that over 80% of the population was willing to become vaccinated [37]; these results are in stark contrast to reported coverage of 12.0% who had received at least one dose at the end of 2023 [18].

Widespread adherence to vaccination protocols among health professionals has been shown to promote vaccine uptake [38–40]. Denial of COVID-19 emerged as a universal concept among participants across the three countries and participant categories, including healthcare professionals. In our study, healthcare professionals contributed to the denial of the disease. Reasons reported for rejecting vaccination included denial of the disease, concerns about vaccine efficacy and side effects due to rushed production, conspiracy theories, mistrust, and religious beliefs, aligning mainly with other research [23,24,38,41,42]. As a result, their public denial of the disease may have facilitated the widespread dissemination of these claims, undermining community confidence in both the COVID-19 response and vaccination efforts. Considering the less-than-optimal COVID-19 vaccination status in SSA [20], healthcare professionals need to become better informed and engaged in promoting vaccinations. Fear of community stigma may have contributed to disease denial among healthcare professionals at the same time as public trust in vaccinators may have eroded, particularly in cases where recruitment was perceived as nepotistic [41].

Our study highlights the role of the government in propagating narratives that enforced denying the existence of COVID-19. The trivialization or relaxation of preventive measures (PHSM) reinforced beliefs that the disease’s transmission was misunderstood, that COVID-19 did not exist, or that it did not affect Africans to the same extent as other populations. Furthermore, the study reveals that

inconsistencies between government policies and actions have further confused the public, fostering doubts about the authenticity of information regarding COVID-19 and fueling suspicions of political motives. These issues, combined with challenges in adhering to PHSM in public spaces such as markets, buses, and ceremonies, strengthened these misconceptions. The findings align with those of other studies and underscore the need for responsible risk communication and community engagement through interdisciplinary teams that involve government, anthropologists, and local communities [43–45]. For example, during the emerging COVID-19 pandemic in Guinea-Bissau, adolescents raised doubts about the existence of the disease in their country [46]. Meanwhile, Quranic schoolboys, despite being knowledgeable about preventive measures, lived in crowded conditions that did not allow for proper implementation of these measures [47].

The overlap between COVID-19 symptoms and those of other known diseases fueled skepticism about the disease's existence, as already documented [48]. Likewise, rapidly changing policies hindered effective communication and vaccine rollout, while frequent amendments led to confusion, disrupted outreach efforts, and interrupted vaccine implementation [49]. A lack of information, especially among the general population, often leads to misconceptions about the disease and vaccination. Vaccine hesitancy was also linked to beliefs that foreign actors orchestrated both the pandemic and vaccination campaigns, with some perceiving Africans as test subjects for vaccine trials [26–28,50]. Ideas that COVID-19 vaccines cause sterility are well-documented [51,52]. These findings highlight the urgent need for a thorough risk communication strategy to combat misinformation and infodemics in times of global health threats, as the COVID-19 pandemic [40].

Our study found that religious beliefs and practices recognizing supernatural occurrences are deeply embedded in daily life and impact healthcare decisions. Many individuals turn to prayer when ill or confronted with an epidemic [47,53]. While religious beliefs relating to the “mark of the beast” are found among specific population subgroups, denial based on lack of observing the disease, misinformation, faith in traditional remedies, and conspiracy theories contribute to hesitancy to become vaccinated on a broader scale. Traditional practitioners also play a vital role in epidemic response, given their close ties to the communities in which they live. Their inclusion and collaboration with formal health systems are essential. Trust in the efficacy and accessibility of traditional medicine remains strong, making traditional therapies a cornerstone of healthcare for many Africans. However, research reveals that medical pluralism—the simultaneous use of multiple therapeutic systems—is the predominant healthcare behaviour across the region [54].

We embarked on this study to gain a deeper understanding of the diverse barriers encountered during COVID-19 vaccination sessions in the three countries. Thus, a qualitative study design based on anthropological traditions was chosen rather than a survey to quantify different opinions. The reasons for COVID-19 vaccine hesitancy identified in this study are essentially the same in the Congo, DRC, and Guinea-Bissau. These encompass three main themes: denying the existence of COVID-19 as a disease, rejecting the vaccine, and faith in traditional medicine. While all these themes are evident in many other SSA settings [21,23,42,55–58], our study highlights the recognition that many participants simultaneously claim diverse reasons for rejecting the new COVID-19 vaccine, grounded in different observations and personal experiences. Some also admit that their opinion has changed over time. Some reasons are grounded in religion, which can be notoriously difficult to change. In contrast, others are rational, such as those who have never seen a COVID patient, worrying about the new vaccine's quality due to rapid production, and concerns about different rules for different types of transport. A lack of trust in international and governmental policy feeds into and fomented conspiracy theories. Implementers must respectfully consider the diverse opinions prevalent in the target population; otherwise, there is no trustworthiness.

Our results suggest that vaccine hesitancy is a fluid and contextual phenomenon. The dynamics of changing attitudes towards vaccination [23,55,56,59] suggest that vaccine hesitancy is not static; it can be altered [40,60]. Strategies that encourage vaccine uptake among healthcare professionals are crucial for protecting both healthcare providers and the communities they serve. Communication about prevention, as the foundation of any treatment, should be a key strategic focus for any Risk

Communication and Community Engagement (RCCE) initiative aimed at promoting vaccine acceptance. Governments should also continue to prioritize public acceptance of COVID-19's existence by fostering community dialogue and information sharing [58]. Community involvement is crucial for improving vaccination uptake. Collaboration among traditional practitioners, community leaders, health ministries, and the WHO is necessary to secure community commitment in the fight against COVID-19 and future global health challenges. Last but not least, effective communication should provide accurate and relevant information, fostering respect and trust through collaborative dialogue among policymakers, scientists, and communities, utilising positive and inclusive approaches.

Strengths and limitations

The strength of this qualitative study lies in its multidisciplinary nature. It was developed by professionals from diverse disciplines working at the WHO AFRO office, who were deeply involved in the community-based COVID-19 response. Including three SSA countries—i.e., two neighbours, French-speaking the Congo and the DRC, and one far-away Portuguese-speaking country—is a strength. It includes a diverse group of participants in each country, with approximately equal participation of males and females. It employed IDIs and FG discussions, involving a total of 752 participants. It exposed similar themes across the different research sites, as revealed by applying the same study design in all three countries. However, the approach used does not allow quantifying the findings, because the sample is purposive, too small in each country, divided into different categories (Table 2) and not randomised. Also, the study was conducted in line with strict research protocols, approved by the WHO AFRO office and each participating country. Further, it was implemented at each research site by well-trained professionals. Yet, the study has limitations. We have limited data on the socio-demographic background of the participants, aiming to diminish the burden of implementation at each research site. Furthermore, although exposing similar determinants for vaccine hesitancy across the three countries, the results cannot be generalised to other SSA countries.

5. Conclusions

In summary, multiple factors impede vaccine uptake and contribute to the spread of COVID-19 in SSA, including denial of the disease's existence among healthcare professionals in Congo, DRC, and Guinea-Bissau. Inconsistencies between global and local government guidance exacerbate these challenges. Traditional medicine continues to be much trusted and, in some contexts, more so than Western medicine in many African communities, and the role of alternative therapies remains significant. Addressing these barriers requires a multisectoral, collaborative approach to counter vaccine refusal and distrust, particularly where public misunderstanding of science prevails. Enhanced education strategies and extensive community sensitization are critical to improving vaccination rates. Without genuinely listening to and respecting people's concerns, vaccine hesitancy cannot be overcome.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org.

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and confidentiality were ensured by assigning a unique identifier, consisting of numbers and letters, to every respondent (in IDIs and FGs).

Data Availability Statement: The data used in the three countries are available as a Word document from the first author upon request.

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Abbreviations

COVID-19: coronavirus disease 2019; **CHW:** community health worker; **FG:** focus group; **GPF:** general female population; **GPM:** general male population; **HP:** healthcare professional; **RL:** religious leader; **TEA:** teacher; **TP:** traditional practitioner; **DR:** driver of vehicles for transport of people; **RCCE:** Risk Communication and Community Engagement; **WHO:** World Health Organization; **WL:** women's leader; **YL:** youth leader.

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