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Using black knowledges to recognise and address barriers to COVID-19 vaccination in Malawi

Chúk Odenigbo¹, Paul Mkandawire², Sonia Wesche^{1*} and Eric Crighton¹

Abstract

Background A Black Geographies framework offers a perspective through which the rich and complex histories and knowledges of African nations, and the people themselves, can be explored to reveal barriers to vaccination and solutions to achieving global vaccine access and equity. This research centres Malawi as a case study and seeks to (1) identify barriers to COVID-19 vaccination; (2) situate these barriers within geographic scales, ranging from the local to the global; and, (3) identify the role of the (Black) individual in creating, perpetuating, navigating and overcoming these barriers.

Methods The study employed a qualitative approach, using in-depth semi-structured interviews with 41 key informants in Malawi between September and December 2021 to explore barriers to vaccination. Recruitment focused on ensuring diverse perspectives based on occupation, location, gender, and ethnicity. Among the informants, 26 were men and 15 were women; 31 lived in rural areas and 10 in urban areas; 21 had completed secondary school, while 20 had not. Twenty interviews were conducted in English, while 21 were in either Chitumbuka or Chichewa. Interview transcripts were analysed using the framework method.

Results Results reveal that the fear of COVID-19 in Malawi was largely tied to disruptions in cultural practices like burials, creating anxiety about “meaningless deaths” without proper rites. This fear, rooted in the community’s *lifeworlds*, contributed to vaccine hesitancy, compounded by a history of colonial exploitation and racial mistrust, with some believing that the vaccine was designed to harm them (Black peoples and/or Africans). Structural barriers such as vaccine nationalism and logistics posed challenges in Malawi, further hindering access. In response, Malawi’s government developed culturally specific public health strategies, leveraging traditional and social media, community leaders, and a dual approach that combined Western and traditional medicine to promote vaccination. This Malawian approach emphasises the importance of acknowledging local knowledges, cultural practices, and Black spatial agency in navigating and addressing vaccine uptake.

Conclusions This study underscores the critical importance of integrating Black knowledges and voices into vaccine rollout and distribution policies. Through the lens provided by the Black Geographies framework, we highlight the analytical strength of *Blackness* and Black knowledges. The study identifies barriers to vaccination in Black communities and proposes solutions rooted in these perspectives. Furthermore, it emphasises the need to

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acknowledge present-day global power dynamics in vaccine messaging and distribution to ensure equitable access and benefits for populations worldwide.

Keywords COVID-19, Vaccine, Pandemic, Malawi, Black geographies, Black knowledges, Medical geography

Background

This research centres the COVID-19 pandemic in Malawi as a case study, using Black Geographies as an analytical lens to explore barriers to vaccination and strategies for overcoming them.

Vaccines are critical in the global fight against COVID-19. As a disease that mutates and re-infects, creating a strong immunity-base is a necessary element in transitioning away from a pandemic. It is thus important to identify barriers to vaccination to enable the crafting of solutions to support vaccine uptake [1]. Current COVID-19 vaccination literature focuses heavily on vaccine hesitancy, defined as the spectrum of people who hold opinions that lie in between those who are resolute in their support for and belief in vaccines, and those who have strong anti-vaccination convictions [2]. Gust et al. divide the population into five categories based on attitudes towards vaccination: the “immunisation advocates,” the “go alongs to get al.ongs,” the “health advocates,” the “fence-sitters” and the “worrieds” [3]; Keane et al. use four profiles: the “vaccine believer,” the “cautious,” the “relaxed” and the “unconvinced” [4]; and Benin et al. also suggest four categories: the “accepters,” the “vaccine-hesitant,” the “late vaccinators” and the “rejecters” [5].

As can be seen by the various ways that each study categorized the population through a vaccine hesitancy lens, there is a general understanding that (not) being vaccinated does not necessarily place one at one end of these scales (pro/anti-vaccine). Rather, it is recognised that many people who are vaccine hesitant will nonetheless get vaccinated despite their concerns and many who are willing to get vaccinated cannot do so due to factors outside of their control [2]. Despite similarities across each study, the authors outline the difficulties of building a shared understanding of vaccine hesitancy because of all the complex interactions of environmental, structural, social, cultural and political elements that factor into how people see their own individual health, view disease and conceptualise the larger notion of public (or community) health [5–8].

The continent of Africa provides an interesting backdrop from which to add to COVID-19 vaccine knowledge. Despite being the second largest and the second most populous continent in the world, countries in Africa are amongst those with the lowest vaccination rates [6]. By the end of 2021, about 50% of the world had been vaccinated against COVID-19 [7], however, the distribution of vaccinated people was uneven, with most continents oscillating between a 50–65% vaccination rate

while Africa sat at 8% [8]. In an early study on COVID-19 vaccine uptake in South Africa, Cooper et al. set out to look at vaccine hesitancy, as had already been done in European and American settings. Their results highlighted challenges related to supply-chain issues, vaccine nationalism, and vaccine diplomacy resulting in “inequitable vaccine access both within and across countries” [9]. More recently, a comparative international study of geographic accessibility to COVID-19 vaccinations that included several neighbouring countries to Malawi highlighted the very low population coverage and density of vaccination sites in this region [10].

Analytical lens: Black Geographies

The Black geographies framework used for this research, adapted and graphically represented in Fig. 1, emerged as a response to the colonial Eurocentric forms of geography that shaped the discipline and dominated academic discourse. It provides an apt tool through which the current Eurocentric dominance of COVID-19 knowledge may be challenged and supplemented [11, 12]. McKittrick highlights the importance of Black Geographies by using the framework to describe Black sense of place, where place is understood and analysed through the complexity of what it means to be a Black person in the modern world [13]. McKittrick specifies that the Black sense of place is not synonymous with Black suffering or even racism, but rather emerges from the collective histories of “colonialism, transatlantic slavery, contemporary practices of racism, and resistances to white supremacy” [13]. By centring Black histories and Black communities, Black Geographies reconceptualises space and place as Black, rather than pursuing Black through a lens of “other” or “different from.” In this instance, Blackness is not a tool of comparison, but of analysis. This is supported by Lewis who describes Blackness as analytic, and therefore Black Geographies as demanding interdisciplinary modes of study that stretch “Western” modes of analysis beyond their current limitations. This elevates Black knowledge from beyond secondary and complementary to being primary and independently relevant [14].

The Black Geographies relies heavily on Black spatial knowledge which, according to Hawthorne, negotiates resistance and domination, addressing issues of colonialism, slavery and imperialism as part of the analysis of contemporary issues that impact Black and non-Black peoples [11]. The initial framework was developed by Black scholars in “Western” nations, primarily in the United States, the United Kingdom, and Canada. More

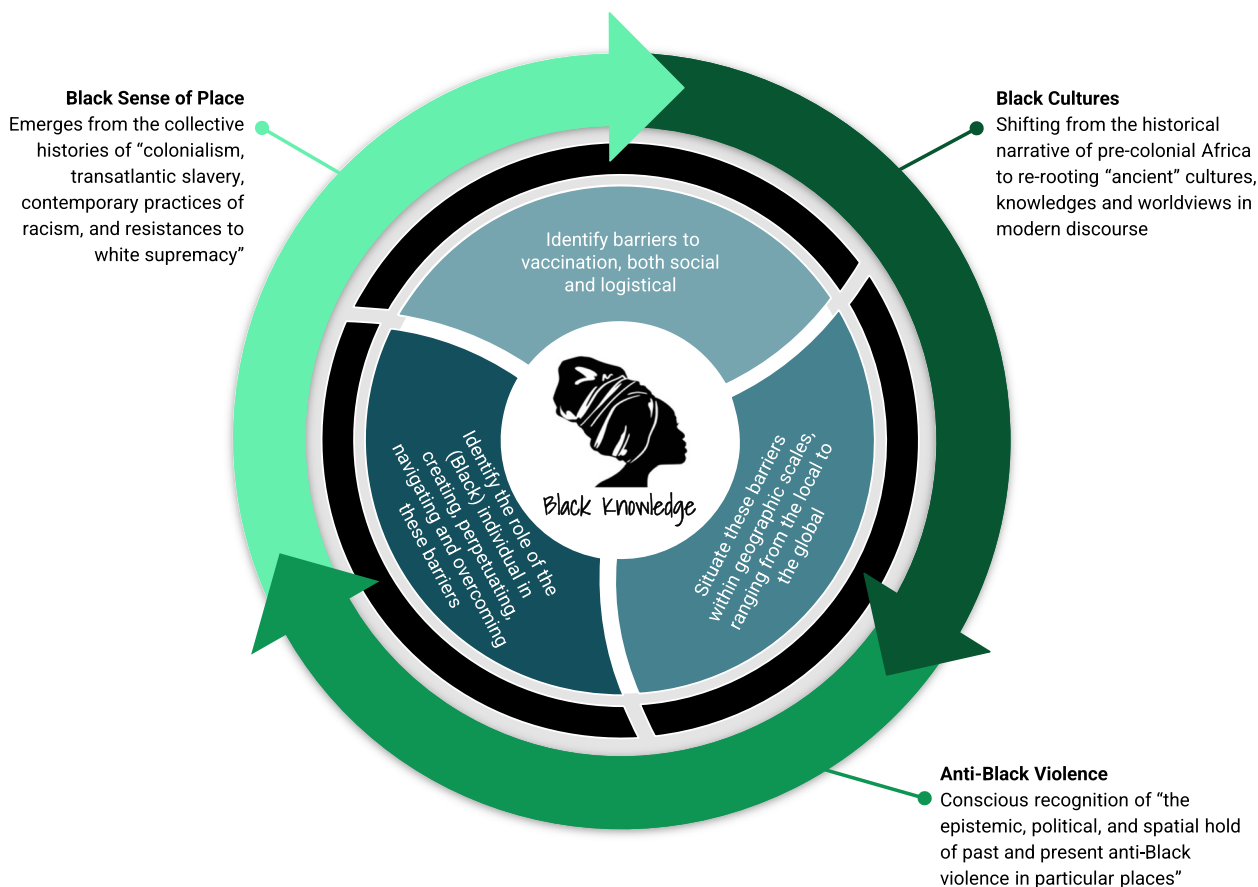


Fig. 1 A graphic representation of the Black Geographies framework prepared for this study adapted from McKittrick [13]

recently, however, Noxolo (2020) described the potential of Black Geographies in an African context as a means of shifting from the historical narrative of pre-colonial Africa to recognising Black bodies as places that act as tangible intersections between the inherited past and present-day adaptations, thereby re-rooting “ancient” cultures, knowledges and worldviews in modern discourse [15]. As a framework designed to validate and elevate knowledge produced in Black places in “Western” countries, Black Geographies works as an apt tool to bring knowledge produced in an (Black) African context to Eurocentric-dominated global public health discourse.

Although the Black Geographies framework is normally used in political and social sciences to evaluate societies, critique policies and craft solutions that are by Black people using Black knowledge(s) [16–20], Hirsch (2019) successfully expanded the use of the framework to a public health context [21]. Through her study analysing the 2014–2016 international Ebola response in Sierra Leone, Hirsch (2019) postulated that exploring anti-Black violence is critical within the context of health and healthcare as it is constitutive in the development of care in colonised and postcolonial societies [21]. Hirsch (2019) thus concluded that to study disease

and healthcare in colonised and postcolonial societies, a Black Geographies framework is actually essential as it renders the scholar conscious of “the epistemic, political, and spatial hold of past and present anti-Black violence in particular places” [21]. In her words: “if care is to be divorced from violence, emergency medical interventions and the scholarly projects that attend to them must work to centre Black life and recognise the pervasive reality of antiblackness” [21].

Research objectives

In the context of the COVID-19 pandemic Malawi, this research sought to (1) identify the complex and overlapping barriers to vaccination, both social and logistical; (2) situate the barriers to vaccination within interconnected geographic scales, ranging from local to global; and, (3) identify the role of the (Black) individual in creating, perpetuating, navigating and overcoming these barriers.

We used the adapted Black Geographies theoretical framework to guide the articulation of the specific research objectives, the selection of appropriate research methods, and the data analysis process. By framing the relationships among variables and providing a perspective for interpreting the findings, this framework not only

strengthens the coherence of our approach but also facilitates a robust understanding of the current knowledge gaps related to COVID-19 and both access to and uptake of vaccination in Malawi.

Methods

Study design

A case study design was used, allowing for in-depth exploration of a phenomenon, while contributing to theory development and practical insights [22]. When closely examining a case and understanding its intricacies, researchers can build hypotheses to offer specific guidance for addressing similar situations or challenges, both present and future [22]. Malawi stood out as having one of the least vaccinated populations on the African continent (5% in December 2021, compared to the African average of 8%), despite having comparatively lower COVID-19 incidence rates relative to neighbouring countries with higher vaccination rates like Tanzania, Mozambique and South Africa.

This research used a hermeneutic phenomenological approach to qualitative research, which centres the relationship between individuals and their lifeworlds, a term that Heidegger defines as “the idea that individuals’ realities are invariably influenced by the world in which they live” [51]. A hermeneutic phenomenological approach within a case study focuses on understanding the experiences of individuals or groups within a larger case. This integration allows for a deep exploration of the meaning and interpretation of specific aspects of the case, in this instance, how the COVID-19 pandemic and subsequent vaccine roll-out took place in Malawi. Precedent in using hermeneutic phenomenology in health research has been established by authors such as Bynum et al. who demonstrate both the success and the necessity of such an approach in addressing culturally sensitive health issues [52].

Study location

Malawi is an autonomous self-governing republic located south of Tanzania, east of Mozambique and west of Zambia. It is ranked by the World Bank as one of the twenty least wealthy countries based on gross development product (GDP) [23]. The country has a three-tier public healthcare system alongside a series of private hospitals and clinics, and many traditional and faith healers who are active in maintaining the health of residents [24]. While the public sector is set up to offer free healthcare to citizens, it suffers greatly from a lack of human resources (doctors, nurses, midwives, specialists, etc.), insufficient equipment and medicines, a shortage of beds, and limited funding [25]. These shortcomings often lead to hidden user costs that present significant barriers to access [25].

COVID-19 joins an existing active disease landscape in Malawi where malaria, cholera, cervical cancer and HIV/AIDS remain quite prevalent, with epidemics taking place on an annual basis [26]. Since the colonial era, trust in the healthcare system remains low and cultural perceptions of health continue to inform how disease is perceived and reacted to [27]. That is to say, in Malawi, disease and sickness are not seen as just reflections of the body alone, but of the spirit, family and community [27]. Pre-colonial health practices often centre a holistic appreciation of the person as a means of identifying the remedy for the sickness, where sickness can also be symptomatic of a dispute within the family or a disagreement with community [27]. While science is widely accepted, it has been adopted into cultural beliefs, more so than having replaced them [27]. This means that traditional and social medicine still play an important role in public health and well-being [27].

Interviews

A total of 41 h-long individual semi-structured interviews were conducted with key informants between September and December 2021. The interview guide was developed in English by the lead researcher with input from co-authors Crighton and Mkandawire, one of whom is from Malawi and is familiar with the local social, cultural, economic, health and healthcare contexts. The interview guide posed questions about COVID-19 and vaccination, focusing on participants’ personal experiences and perceptions as well as opinions about related government actions. The interview guide was reviewed and translated into two local languages by the Malawi-based research assistants and field tested for cultural compatibility and relevance by the lead researcher via two online interviews using Zoom conferencing software (due to COVID-19 travel restrictions). The remaining interviews were conducted in-person by four locally-situated Malawian research assistants (three male, one female) within their communities.

Recruitment

Cultural protocol in Malawi emphasises the importance of building trust with community leaders to engage participants. Nyirenda et al. recommend ongoing engagement with local community representatives when conducting health research, but acknowledge that low scientific literacy among the general populous can be a challenge; this can be circumvented by working with trained local researchers or advisory boards. To recruit key informants for this study, we partnered with Soils, Food and Healthy Communities (SFHC), a research-centred non-profit organisation based in Ekwendeni, Malawi. SFHC acted as a liaison with communities across the country where they identified and recruited

Table 1 Demographic characteristics of key informants

Gender	26 men: 15 women
Rural-Urban Divide	31 rural: 10 urban
Education Levels	21 had completed secondary school: 20 had not completed secondary school
Interview Language	20 in English: 21 in Chitumbuka or Chichewa
Ethnicity	Tumbuka (n = 22), Ngoni (n = 6), Tonga (n = 4), Chewa (n = 1), Ndali (n = 1), Nkonde (n = 1), Sena (n = 1), ethnically mixed (n = 2), preferred not to disclose (n = 3)

participants, paying careful attention to ensure a diversity of perspectives based on occupation, location, gender and ethnicity (see Table 1). Recruitment took place between September and December 2021, concurrently with the interviews. Maximum variation sampling was used to capture the widest range of possible perspectives.

Key informants

The demographic characteristics of participants are shown in Table 1. Among the informants, 26 were men and 15 were women; 31 lived in rural areas and 10 in urban areas; and 21 had completed secondary school, while 20 had not. Twenty interviews were conducted in English, while 21 were conducted in a local language, either Chitumbuka or Chichewa. The principle of saturation was used to determine the optimal number of interviews by identifying the point at which no new insights or themes were emerging from the interviews, suggesting that the topic had been adequately explored [28].

Prospective informants were read a consent form that described the objectives of the study. Those who could read signed the consent form, whereas others gave verbal consent. With permission, interviews were audio-recorded and later transcribed, and when applicable, translated into English. Pseudonyms were used for all key informants.

Data analysis

Data analysis was conducted using the *framework method* [29] with the help of ATLAS.ti software, where the interview transcripts were systematically analysed to identify recurring themes. The lead researcher employed an open coding approach, assigning descriptive labels to each transcript segment to capture the perceived significance. Following an inductive methodology, the coding process was subjective, relying on the lead researcher’s impressions and understanding. The highlighted codes were then compared and contrasted across the various interviewees, with subsequent recoding as new themes surfaced. Finally, the codes were thematically organised to establish a framework for evaluation. We worked closely with SHFC to provide cultural verification of results at regular intervals. The final results were reproduced in

Table 2 Strategies for establishing qualitative rigour in geographic work, adapted from Baxter and Eyles (1997) [30]

Practice	Completed (Y/N)	Additional Comments
Rationale for methodology	Y	See Methods
Multiple Methods	N	Limited due to infrastructure in Malawi (including access to internet) and budget constraints
Description of Respondents	Y	See Methods and Results
Interview Quotations	Y	See Results
Interview Practices	Y	See Methods
Procedures for Analysis	Y	See Methods
Immersion/Lengthy Fieldwork	Y	Fieldwork was conducted by Research Assistants. Immersion of lead researcher took place when travel restrictions were lifted in June 2022
Revisits	N	Limited due to budget constraints
Verification by Respondents	N	Limited due to budget constraints; however, verification by community partner took place
Appeals to Interpretive Community	Y	See Discussion
Rationale for Verification	Y	See Background

graphic format and sent to SHFC to share with community members. Data was stored on a secure cloud server that only the research team had access to.

Derived from a study by Baxter and Eyles (1997), Table 2 charts the most prevalent strategies used to ensure rigour in qualitative studies [30], including aspects of research design, data collection, data analysis, and data verification. Table 2 also indicates the procedures we employed to improve this study’s integrity. Throughout the data collection process, COVID-19 preventative measures were implemented based on the guidelines offered by the World Health Organisation, the Malawi Ministry of Health and Health Canada [31–33].

Results

In recognition that Black knowledge is often shared through stories passed from elder to child, this results section uses a storytelling format to present the study results. During interview analysis, multiple interconnected themes emerged where respondents spoke to a series of individual, societal and global factors that converged to create the existing vaccination rate seen in Malawi. This section divides the results into key themes and expands on the links observed between various scales of existence (individual, societal and global).

The vaccine as a symbol of hope

In order to understand the motivation (or lack thereof) of Malawians to vaccinate themselves against COVID-19, we first sought to understand how people perceived the new disease. Across the 41 interviews, participants unanimously associated COVID-19 with feelings of fear and anxiety. Abu, for example, talks about fear arising out of changing burial procedures where the dead were gone so quickly that they were not able to receive the full cultural rites that were owed to them.

It[COVID-19] sounded so scary, you know, so it brought a lot of anxiety, a lot of fear, a lot of discrimination, just because of the way those who have died have been treated or buried, you know buried so fast, and you don't touch the body (Abu).

In the midst of all this fear, the COVID-19 vaccine came to symbolise hope. Unlike in many other countries, the vaccine did not represent a hope that things would go “back to normal” [34–36], but more so a hope that people, in the words of Abu, would feel some sense of relief.

But one relief is that immediately a few months into the pandemic, a vaccine is discovered. (Abu)

In addition to the promise of relief from the adverse impacts of COVID-19, Nafé, a laboratory technician, continues along the same lines, hoping that the vaccine would reduce the number of people who die from COVID-19 and stop the spread of the virus completely. Although his tone implies some potential scepticism, this does not negate the hope he expresses.

Personally, I think the vaccine is good for us. Maybe it can give us a chance to stop the spread of the virus and also maybe, MAYBE, decrease the mortality rate. (Nafé)

Unequal access to vaccines

Despite the feelings of hope and connectedness, many key informants expressed concern as to whether their country would be able to access enough vaccines for everyone. Respondents were generally aware of the global supply chain problems and the privileged status of people in rich and powerful countries. Abu, who works in accounting, was quick to point out how the cost of the vaccines is unaffordable for many African nations, including his own.

[There were] monopolistic and propaganda issues in the marketing of these vaccines and that brought a lot of other inequalities in trying to distribute these vaccines at the same time as the funding for them.

Like us and Africa, third world countries, we can't afford to buy [vaccines] in such big quantities [...] So yeah, I think it hasn't been easy for developing countries to really access the vaccine in good time. (Abu)

Furthermore, thanks to international news, the interviewees were aware of just how abundant vaccines are in high-income nations. The unbalanced distribution had many of the key informants advocating for their communities, asking that high income countries share their vaccines with Malawi.

I think they[high-income nations] should give us more vaccines because we are receiving few vaccines, which is not enough. (Ira)

We're just hearing that in these countries, they're trying their best to have the vaccination, and the vaccination resources are always available. Okay, so they have to share with us. (Rani)

Eventually, Malawi did start receiving vaccine donations from many high-income countries, but there was frustration at the delay. For example, Mili, a university professor, expressed her frustration with the international community for waiting so long before providing the much-needed vaccines. According to her, their negligence played a role in the unnecessary deaths of so many.

So you find that the aid was coming at a time maybe when we didn't need it much. So the international community did help, but I think maybe the timing was not very good. It[the aid] came after many people have died. (Mili)

The spread of misinformation

Beyond vaccine inequity, another barrier to becoming vaccinated was the (mis)information circulating on social media. Phit, a dental therapist, explains how one's openness to being vaccinated was dependent on the social media content one was exposed to.

Because, for instance, if I would say the vaccine that has come in, some people have got a negative attitude towards vaccines, because of social media, some people have got a positive attitude towards vaccines because of their social media. (Phit)

In addition to social media is the influence that religion has on the way Malawians perceive health and health-care. Peace, a biomedical engineering student, talks about how certain churches deterred members of their congregation from being vaccinated at all, giving them a negative view of the vaccine and potentially stigmatising those who have been vaccinated.

I can say for the issues concerning religion, there are some religions that don't allow this[vaccination]. [...] And you find out that in a certain church, there are only a few people who have been vaccinated, just because they have a negative attitude towards the vaccine. (Peace)

Related to vaccine inequity, race remains a key component that cannot be ignored in people's understanding of both COVID-19 and the vaccine. Ira is a nurse who believes that skin colour is a factor in the spread of COVID-19, whereas Ric, a theology student, speaks to rumours circulating about white people using black people (Africans especially) as test subjects for the COVID-19 vaccine.

I think the azungu¹ are affected [by COVID-19]. I'm not sure [why], maybe because of the skin colour, I don't know. (Ira)

Others say, when you take that kind of vaccination, [that] maybe it's a trick of certain people to wipe out a certain group of people. (Ric)

All of this culminated in people feeling a strong sense of mistrust with vaccines coming in from former colonial powers. In speaking with Flora (traditional healer), she believes that people in her community were resistant to getting vaccinated against COVID-19 because they were concerned that they were being tricked.

In my opinion, I saw that the [vaccine] donations they were giving were helping people. So, we ourselves were failing to understand. We were looking at it as if they [global powers] were duping us, [and so] while we were thinking like that, we failed to follow[get vaccinated]. (Flora)

Recognising and overcoming issues with local vaccine distribution

Despite the many barriers to vaccination (including the inequitable distribution of vaccines at an international level, the racialisation of COVID-19 and the vaccine, and the spread of misinformation through social media and certain religious groups), Malawi did ultimately receive COVID-19 vaccines from different organisations and countries, and many Malawians were willing, ready and able to be vaccinated. Son, a reverend, comments positively on the government's efforts and success in securing vaccinations for their people.

[With regards to the] procurement of the vaccine and some other things... I would say they[the government] have tried. (Son)

It was commonly reported by healthcare workers, however, that there were logistical hurdles to contend with as the government made mistakes in coordinating the vaccine rollout across the country. Moy, who works in healthcare, describes the difficulties that people faced in becoming fully vaccinated against COVID-19 (i.e., two doses for most vaccine types).

Like, they[the government] will be like "the other vaccine, you need to receive in the eight weeks to come". And in eight weeks, the vaccine is not available at the hospital. They just were not following the dose. (Moy)

Rather than reroute any vaccine doses unused from missed appointments, vaccines were often allowed to expire. Ric mentions the government burning these expired vaccines, thereby wasting an already limited resource.

That's why at a certain time, during the first dose, you heard of ministries burning the vaccines, dumping them, because most of them[people with appointments] did not turn up. (Ric)

It appears that the Government of Malawi did eventually learn from their early mistakes, as all the key informants unanimously commented on how the government tried their best in the fight against COVID-19. Miko and Rus, who both work in healthcare, commented on the more recent availability (in 2021) of the vaccine across the country, explaining how everyone now has access.

Yeah, I feel like the government is trying, because in most facilities, we have the vaccine [...]. They also worked very hard in making sure that the vaccine is available for everyone. (Miko)

[Rollout] has been satisfactory. I think almost every region has had the COVID and I'm not sure [if] there are places where vaccines have not been distributed. (Rus)

Moana, a farmer, brings the urban-rural dimension into her commentary. She explains that the government made significant efforts to reach rural households and push for vaccine access for them as well. She shared how the vaccine was soon to arrive in her home community and that it would be free for all to access.

¹ Technically this word just means "foreigner," but it has come to specifically identify white or lighter-skinned foreigners.

The government has tried, even in the villages, the vaccine is available. As I am speaking now, tomorrow in Chisangano we will have the vaccine and it is free, this shows the government has tried. (Moana)

Phit summarises a common sentiment that was echoed throughout the interviews regarding the government's efforts in rolling out the vaccine.

Yeah. This time around, I would say yes, they[the government] have done really a lot on the rollout of the vaccine. (Phit)

Uniquely Malawian vaccine messaging

Careful, consistent and uniform public health messaging was used to counter misinformation, allowing for increasing numbers of people to get vaccinated against COVID-19 in Malawi. Addy, a radiographer, mentions how people have started seeking out the vaccine after having stayed away during the first efforts at a rollout.

This is why you find that when the vaccination came in the first place, people were staying away, but this time around each and everybody wants to be vaccinated. (Addy)

Ama, a village chief, offers more detail, explaining that due to misinformation, people had initially believed that the vaccine would kill them. In response to government messaging that pushed for higher levels of vaccination, there emerged a general shift in attitude that saw more people getting vaccinated. Ama's comment also reflects an increasing societal pressure to be vaccinated as people were trying to catch up and be like their peers.

[...] in the first phase many people refused to take the vaccine because they thought that they would die but as time went by, they saw that the government was still insisting and when the first phase of vaccination was almost over and they decided to go on with the second phase, many got vaccinated saying they were behind others. (Ama)

As with every country, there are many people who do not trust their government or any of the messaging that comes from it. To counter this, Ip, a traditional healer, shared a response he commonly gives to people who think the vaccine will kill them.

[...] when one is saying 'no' to getting vaccinated, I tell them that the President says we should go get vaccinated. He can't tell us to get something that can kill us, because without us there will be no one to

vote for him so he can't win again, so the vaccine is good. (Ip)

The government was even able to recruit traditional healers, community leaders and chiefs to reinforce the consistency of pro-vaccine messaging. Not only was this successful in offering another source of information that people trusted, but it also allowed for the vaccine to be adopted into various forms of knowledge production and healing, which meant aligning the vaccine with Malawian worldviews.

When someone comes to me, I give them my medicine and tell them that this is just a starter pack, they should go to the hospital and get vaccinated. (Qum - traditional healer)

And even here in the village we ask each other, 'did you go for vaccinations?' As a chief I encourage people: 'You should also go and be vaccinated, we have been vaccinated.' (Geo - chief).

Missuz contrasts her government's actions with those of surrounding African countries, especially Tanzania where their previous President openly decried the efficacy and use of vaccines. She expresses appreciation regarding the way Malawi handled the pandemic and vaccine distribution.

The way Malawi has handled it, somehow, somehow it has been standing on her ground like herself, because you find out that some African countries, they were denying to say we can't have the vaccine, but she[Malawi] was open and said that people should go and get the vaccine. (Missuz)

Gratitude

Appreciation and gratitude towards countries and organisations that donated vaccines and provided aid/support in other ways were recurring emotions consistently expressed in most of the interviews.

[A]s Malawians, we have failed them[high-income nations] because we don't go in good numbers to be vaccinated because of the fears. (Rue)

They[high-income nations] have given us vaccines, meaning that they mean well for us, they want us to be alive. (Ole)

Discussion

As a means of identifying the barriers to COVID-19 vaccination in Malawi (Objective 1), we sought to contextualise COVID-19 itself within the *lifeworlds* of the key informants, who then informed us that they associated

COVID-19 with fear. While fear is an expected and often universal response to the addition of a new disease to the landscape [37], situating fear within the *lifeworlds* of the key informants and recognising this lived experience of fear as a form of (Black) knowledge allowed us to question what the fear signifies. Key informants spoke of COVID-19 impacting meaningful cultural practices like burials, where communities come together to mourn and celebrate, thereby creating a fear of a meaningless death if one cannot have full burial rites. This is especially critical to the fabric of Malawi because it is the extended family and reciprocal social relationships that characterise population health and wellbeing in Malawi [27]. Traditionally, Malawians have relied on these social ties for support in times of distress and in death, including serving as social safety nets during times of famine and natural disasters [27]. In other words, the value of individual health and wellbeing are tied to that of the wider community, and COVID-19 created fear by striking at the ability of communities to come together.

Despite all this fear, however, vaccine hesitancy has remained prevalent in Malawi. In interrogating the misinformation spread about the COVID-19 vaccines, we notice a distinctly racial element that taps into the legacy of colonialism, with some believing that the vaccine was designed to wipe out certain (African/Black) peoples. Black Geographies invites a look at the histories of Black places to understand their present-day realities. Historically, vaccines were commonly tested in Africa without the fully-informed consent of the test subjects, or made their way to Africa without regulatory approval, causing significant harm [38]. The concerns stemming from this history were further reinforced when, in April 2020, two (white) French doctors spoke callously about conducting COVID-19 vaccine trials in Africa [38]. Similarly, studies conducted in other countries have found race to be a factor in vaccine hesitancy, with Black people or peoples of African ancestry tending towards perceiving vaccines in a negative light [39]. The fear that Malawians thus hold about COVID-19 and related vaccines is impacted by this history; as such, any policies and measures to counter the spread of misinformation in Malawi must acknowledge and build upon this history.

Furthermore, Black spatial agency is a major component of the Black Geographies framework, requiring the identification and naming of limitations placed on Blackness and on Black peoples through colonial power structures. Black spatial agency stems primarily from a Black sense of place, but is strongly influenced by intersecting factors including anti-Black violence and both the emerging and existing Black cultures in said space (see Fig. 1). Within the context of the COVID-19 vaccine, Black Geographies allow us to come to terms with intersecting barriers to vaccination that converge to create obstacles

unique to certain (Black) places (Objective 2). Similar to Cooper et al., beyond vaccine hesitancy, we found that we could not ignore the structural barriers to accessing vaccines in Malawi for those who were willing [9]. As a low-income country, Malawi was unable to compete with higher-income nations that engaged in vaccine nationalism, hoarding vaccines and restricting global supply chains. Nkengasong et al. warned of this, explaining that historically Africa has been one of the last continents to receive necessary medical interventions that the world was competing for [40]. This presented barriers to access where Malawi did not receive enough vaccines for its populace. Historical and systemic factors have led to wealth disparities where Black populations are disproportionately more likely to experience poverty, limited financial resources, and reduced access to opportunities for upward mobility, ultimately perpetuating the connection between money and race. Black spatial agency (see Fig. 1) therefore highlights the importance of vaccination strategies and policies that successfully recognise and navigate the relational roles between (Black) places, their governments, and the international community in ensuring the health of the (Black) individual and the (Black) collectivity in a given location. In other words, Black spatial agency asks that *Blackness* (referring in this instance to the realities of being Black in the world today) is named, acknowledged and factored into decisions and strategy-making.

Using Malawi as an example, once distribution was figured out, the Government of Malawi took an approach to public health communication and combatting vaccine hesitancy that was very much built around knowledges and experiences produced in Malawi. They sent out messages through (1) traditional media, with a particular focus on the radio, recognising that 80% of Malawi's population lives in rural areas where many rely on radio as the sole means of communication [41]; (2) social media, where WhatsApp was privileged since it is the preferred social media platform used country-wide and more importantly in the urban areas [42]; and (3) community leaders, including village chiefs, religious leaders and traditional healers, who wield enormous social power by virtue of being custodians of certain forms of knowledge, and who were recruited to spread the word about the vaccine, receive some of the first doses, and de-stigmatise vaccination. We thus see a uniquely Malawian and context-specific approach to raising awareness about the COVID-19 vaccine and galvanising people into being vaccinated (Objective 3), one that recognises the dual medical culture of "western" medicine and traditional social medicine and builds on the complementary strengths of both.

Ekwebelem (2021), in reflecting on the vaccine rollout across Africa, stresses the importance of understanding

how each population's concerns and sociocultural traits influence vaccine uptake [43]. He strongly recommends "evidence-informed sensitisation strategies" produced in consultation with social influencers and religious, traditional, and political leaders as a starting point to build the framework necessary to achieving high levels of vaccination in any African country [43]. It is only by understanding the combined impact of all the limitations to vaccination (including vaccine hesitancy, national health-care infrastructure, and global sociopolitical dynamics) that appropriate avenues of action can be conceived and undertaken to recognise and address the root problem and ensure increased vaccination rates, and hence protection from disease, in a (Black) place.

Conclusion

Using Malawi as a case study, this research identified some of the complex and overlapping social and logistical barriers to vaccination; named certain global power imbalances that influenced local access to and understanding of the COVID-19 vaccine; and explored some of the ways in which individuals on the ground in Malawi navigated, perpetuated or overcame these barriers. As stated by Noxolo (2022), "[b]y centring Black spatial thought, rather than just noting its erasure," a Black Geographies framework provides the radical effect of recognizing the agential capacity of Black communities and restructuring conversations to respectfully include race in global vaccination efforts, thereby innovating approaches and changing global narratives [15]. With a focus on one of the least vaccinated countries in the world for COVID-19, our results confirm the importance of learning from Black/African worldviews to understand and address barriers to vaccination and building nuanced solutions to increase vaccine uptake in Malawi and other similar contexts. Our results also bring to light the importance of recognising present-day global power dynamics and building countermeasures into vaccine messaging, distribution and policy.

The findings underscore the urgent need for global health leaders and policymakers to intentionally design vaccine messaging, distribution, and policy frameworks that recognise and counteract present-day global power dynamics. By amplifying the voices of Black communities, co-creating locally informed solutions, and embedding these perspectives into vaccine strategies, we can dismantle barriers, increase vaccine uptake, and foster equitable access for all.

Study limitations

There were several limitations to this study. Interviews were conducted between September and December 2021; as such, our analysis does not capture subsequent changes in Malawi's COVID-19 response. As a study that

privileges qualitative data collection, we were able to provide an in-depth look at thoughts, feelings and perceptions regarding the COVID-19 vaccine; however, the nature of the work limits generalisation of results to the entire population. Further quantitative work is needed to explore the commonality of experience regarding the sentiments brought up. During the study, a general feeling of appreciation and gratitude for the availability of the vaccine were noted, but not explored in depth, thus limiting the potential to determine whether these feelings were/could be a factor in swaying people towards vaccination. Further research is recommended to understand the role of gratitude in attitudes toward vaccination.

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Authors' contributions

C.O., P.M. and E.C. contributed to the study conception and design. Material preparation, data collection and analysis were performed by C.O., and the first draft of the manuscript was written by C.O. All authors commented on previous versions of the manuscript and all authors read and approved the final manuscript.

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Data availability

Due to ethical reasons and the promise of anonymity to the participants, we cannot share the dataset; however, we can share tools used for data collection. Please contact the lead author.

Declarations

Ethics approval and consent to participate

This study was performed in line with the "Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans" by Canada's Interagency Advisory Panel on Research Ethics, and the "Framework of Guidelines for Research in the Social Sciences and Humanities in Malawi" by the National Commission for Science and Technology in Malawi. Approval was granted by the Office of Research Ethics and Integrity at the University of Ottawa (S-03-21-6554) and the National Committee for Research Ethics in the Social Sciences and the Humanities in Malawi (NCST/RTT/2/6). Informed consent was obtained from all individual participants included in the study.

Consent for publication

This manuscript does not contain any individual person's data in any form (including names, defining characteristics, images or videos).

Competing interests

The authors declare no competing interests.

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