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Cultural determinants of COVID-19 vaccines misinformation in Malawi

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This study investigates how global misinformation and local cultural factors shape public perceptions of COVID-19 in Malawi. While misinformation about the pandemic often originates from global sources like the Internet and social media, its impact is influenced by religious and cultural narratives that resonate differently across various demographics, including gender. These 'cultural determinants' amplify the influence of misinformation, leading to widespread vaccine hesitancy. The paper draws on findings from a study conducted in the Malawian districts of Zomba, Dowa, and Nkhata Bay. The study reveals how religious prophecies and apocalyptic symbols, such as the '666' mentioned in the biblical Book of Revelation, are used to frame vaccines as malevolent, distorting public understanding and fuelling fears about COVID-19. The role of social media in spreading misinformation is particularly significant, given its ability to quickly disseminate content and engage users as both consumers and creators of information. Despite limited internet access in Malawi, misinformation spreads effectively through offline spaces, where cultural beliefs and mistrust in political leaders further propagate it. This study highlights the need for culturally sensitive public health communication strategies to address the fears and beliefs that drive misinformation and vaccine hesitancy in Malawi and similar contexts. Although misinformation and vaccine hesitancy are global challenges, the study highlights that misinformation in Malawi is culturally specific, localised, and appeals to fears, with distinct resonance across the male-female gender divide.

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Introduction

The Government of Malawi began distributing COVID-19 vaccines in March 2020, with the president and vice president publicly receiving their vaccinations. This event was broadcast live on national media and social media platforms to counter widespread misinformation about the vaccines' safety, both within Malawi and beyond. Despite these efforts, by September 2021, health experts in Malawi expressed concerns that 1.2 million COVID-19 vaccine doses were at risk of expiring due to low uptake. This fear was validated when, 4 months earlier, nearly 2000 doses of AstraZeneca vaccines were destroyed after they expired, underscoring the low demand (Odhiambo, 2021). As of May 12, 2022, the Reuters COVID-19 Tracker (2022) reported that only 2,054,585 Malawians had been vaccinated, representing just 5.5% of the country's 17.5 million population.

These figures suggest that the presidential campaign to promote vaccine safety did not convince the majority of Malawians. In addition to cultural and religious beliefs, fears and suspicions about vaccines have been exacerbated by misinformation and information overload, complicating access to accurate information and impeding informed decision-making. Misinformation has significantly fostered widespread misperceptions about COVID-19 vaccines in Malawi, contributing to vaccine hesitancy (Masina, 2021).

Resistance to vaccines is not new; it has existed since its introduction. Wolfe, Sharpe (2002) note that vaccine opposition dates back to the 1853 vaccination law in the United Kingdom, which mandated smallpox vaccinations. The rise of global digital communication has further amplified the anti-vaccine movement. McKee, Bohannon (2026) identify religious beliefs, personal or philosophical reasons, safety concerns, and a desire for more information as the main drivers of vaccine resistance, with motivations varying based on individual backgrounds.

Recognising the importance of accurate information in combating COVID-19, the World Health Organization (WHO) raised concerns early in the pandemic about spreading disinformation and misinformation, especially on social media. According to UNESCO (2018), disinformation is deliberately created to achieve specific objectives, whereas misinformation involves unintentionally sharing false information, often rooted in disinformation. A BBC study on fake news in Africa (2018) found that misinformation spreads partly because sharing information online is socially validating; it gives users a sense of gratification from being the first to share a story, demonstrating knowledge and sparking discussion.

Mtewa et al. (2024) observed that both traditional and new media platforms have varying impacts on vaccine hesitancy across Africa. For instance, a study in Zimbabwe and South Africa found that media platforms, rather than health experts, were the primary sources of COVID-19 information. Social media was particularly influential, with 88% of respondents relying on it, compared to traditional media formats like television (67%), radio (53%), newspapers (38%), Ministry of Health outlets (31%) and community leaders (8%). The key difference between social and traditional media is content regulation: traditional media undergoes editorial processes, including verification and fact-checking, whereas social media operates in a decentralised manner with minimal gatekeeping. Mtewa et al. (2024, p.7) found that "content on social media has led some people to confusion and panic and contributed to vaccine hesitancy."

The global reach of social media has allowed misinformation to increase, but it is also culturally tailored to resonate with local sentiments and beliefs, making it a "glocal" phenomenon. This cultural resonance targets social, cultural, and religious views that shape identity, including gender and ethnicity. For example, Judson (2021) found that misinformation can be gendered and targeted, particularly against women, often exploiting stereotypes and emotional triggers to gain credibility and mobilise support.

This analytical paper draws on empirical data from a study on debunking COVID-19 misinformation and vaccine hesitancy, conducted under the My Vaccine, Our Protection project at the University of Malawi and funded by the Open Society Initiative for Southern Africa (OSISA). Data was collected from three districts in Malawi: Zomba in the south, Dowa in the central region, and Nkhata Bay in the north. While many studies have examined COVID-19 misinformation and vaccines, this study uniquely emphasises the dual nature of misinformation as both a global and local phenomenon, deeply intertwined with cultural beliefs that shape its acceptance. By focusing on the cultural dimension, the paper illustrates how the same misinformation can appeal differently to people with diverse cultural and religious backgrounds worldwide.

Methodology

The study used qualitative methods, utilising key informant interviews (KIIs), in-depth interviews and focus group discussions (FGDs) to qualitatively capture the gendered and cultural determinants of knowledge and attitudes towards COVID-19 and its vaccines. The study interviewed the general population and traditional and religious leaders from the three districts in Malawi's administrative regions: Zomba in the southern region, Dowa in the central region and Nkhata Bay in the northern region. The districts were sampled to represent individuals from urban (Zomba), peri-urban (Dowa) and rural (Nkhata Bay) areas.

A total of five (5) in-depth interviews were conducted, three (3) in Dowa, comprising two (2) females and one (1) male, and two (2) females in Zomba. A total of 5 FGDs were conducted: two (2) (one heterogenous and one homogenous-female) in Nkhata Bay, two (2) in Dowa (both homogenous-female) and one (1) in Zomba (homogenous-male). The study conducted eleven (11) KIIs: four (4) in Zomba, four (4) in Nkhata Bay and three (3) in Dowa). FGDs were conducted with six (6) participants to comply with Covid-19 preventative measures. KIIs were conducted with community leaders, community influencers, youth leaders, women group leaders and religious leaders. The interview guide was in Chichewa, one of the country's widely spoken local languages, which the participants were comfortable using.

Data analysis. The data collection was done in one of the widely spoken local languages, *Chichewa*, and it was transcribed, translated into English, and analysed using thematic analysis. The thematic analysis was chosen for its suitability as it identifies patterns or themes within qualitative data (Maguire & Delahunt, 2017). Theme identification is one of the most fundamental tasks in qualitative research (Ryan & Bernard, 2003). According to Maguire and Delahunt (2017), the goal of thematic analysis is to identify themes, that is, patterns in the data that are important or interesting, and use these themes to address the research or say something about an issue. "This is much more than simply summarising the data; a good thematic analysis interprets and makes sense of it" (Maguire & Delahunt, 2017, p. 3353). In the view of Braun and Clarke (2006), there are two levels of thematic analyses: semantic and latent. In semantic analysis, the analyst looks beyond the surface or what the respondent has said at the semantic level. At the latent level, the researcher identifies or examines the underlying ideas, assumptions and conceptualisations—and ideologies—theorised as shaping or informing the semantic content (Braun & Clarke 2006: 84). This study employed the latent analytical approach as the aim was to unearth

the underlying meanings and deconstruct and reconstruct responses from the interviewees regarding COVID-19 as a disease and its related vaccines.

Ethics statement. The study was conducted with complete adherence to ethical standards expressed in the Declaration of Helsinki. Before the commencement of the study, relevant authorisation was sought from the University of Malawi Research Ethics Committee (No: P.11/21/101), district commissioners and appropriate community leaders. Participation in the survey was voluntary. The study obtained written informed consent from participants 18 years old and above. Participants who could not sign consent forms for one reason or another were requested to use their fingerprints. Responses from participants were kept in strict confidence. Each participant was assigned a participation number, and only the participant number appeared with their responses. No physical or psychological risks were anticipated from taking part in this study. Nevertheless, participants were notified that they could skip questions or withdraw from the study if they felt uncomfortable responding to the questions—the study strictly observed all COVID-19 measures as advised by the Government of Malawi.

Results

Knowledge of COVID-19. Overall, the results show that there was good knowledge about the COVID-19 pandemic. Participants could explain what COVID-19 is, how it is contracted and its preventive measures. Acknowledging the existence of the pandemic is critical because it means that people can seek more information about COVID-19, including its remedies. Although this is positive, as it is an opportunity for the government and health authorities to provide correct information, the results of this study show that information-seeking was negatively impacted by the spread of misinformation, particularly where the disease emanated from and what caused it. For instance, in response to a question on the origins of coronavirus, a respondent showed some cynicism about COVID-19 and insinuated that the disease was caused by human contact with unclean animals. He said:

In our understanding, the coronavirus [COVID-19] is a disease manufactured in China that spreads to humans through animals like pigs, as most Chinese people like to eat pork.

Perhaps not surprisingly, religious leaders mostly understood COVID-19 from a religious and spiritual point of view, ignoring scientific explanations. There are also divergent perspectives between Christians and Muslims, perhaps in line with the teachings of the respective beliefs. On the one hand, for Muslims, COVID-19 is like any other disease sent by the creator, and therefore, humans cannot question the creator's decision. On the other hand, the Christian perspective is that COVID-19 is the devil's work beyond earthly explanations. On the one hand, a church leader in Zomba district said:

Being a believer and a pastor, we do believe that diseases are the work of demons from the fall of the first man, Adam and that many problems, diseases and pandemics came into the world because of the fall of Adam. However, these things were initially not part of God's plan. We believe that this is the work of the devil and that the Covid pandemic is a disease just like any other.

Nonetheless, the religious leaders indicated that COVID-19 vaccinations should be acceptable if medical experts guarantee the vaccine's safety. One spiritual leader in the Nkhata Bay district said that although he is against vaccinations, he has no problems with his congregation seeking medical help when they are unwell, whether it is COVID-19 or any ailment or disease.

Unlike religious leaders, traditional chiefs had a limited understanding of COVID-19 and its vaccines. The results show that most community leaders avoided responding directly to questions that would reveal their knowledge and attitudes toward COVID-19. This reluctance stemmed from their lack of clear information and understanding about COVID-19 and its vaccines, despite feeling obligated to appear knowledgeable due to their leadership roles. Second, their avoidance of direct responses might have been politically motivated, reflecting their conflicting position. As leaders, the chiefs were expected to support and help implement the government's vaccination efforts, avoiding any appearance of opposing the official stance. At the same time, the chiefs, who are tied to religious beliefs and cultural practices, found themselves navigating the tension between these influences, some of which discouraged COVID-19 vaccinations.

COVID-19 misinformation. The results reveal significant misinformation about COVID-19 and its vaccines in the country, which hampers the efforts of the government and health experts to vaccinate Malawians and to adhere to COVID-19 preventive measures. Much misinformation originates from the Internet, mainly social media platforms, before permeating everyday conversations in offline communities. As the Internet and social media transcend local cultures, much of the misinformation mirrors that which is spread globally. However, particular misinformation resonates more strongly due to religious beliefs and cultural norms, which vary in importance across cultures. Additionally, the cultural dimension of misinformation is gendered, with some misinformation resonating differently between men and women. In other cases, misinformation has a personal impact.

From a religious perspective, the findings highlight that a prevalent piece of misinformation is the association of COVID-19 vaccines with the "mark of the beast" and the number 666, as described in the biblical Book of Revelation, which speaks about the end of the world (Revelation 13:12, 19:20, 20:4). This is particularly significant in Malawi, a profoundly religious nation. In Zomba district, a youth leader said:

Okay, because of what people are saying and from what some churches are preaching, these are end times, and those people who do not get vaccinated will not get a sign like what they are doing in South Africa. So other religious leaders are telling people that if they get the vaccine, then they have joined 666 cults, but what they should do as believers is trust in God.

The study also found that misinformation operates on people's fears. Most people are afraid of getting vaccinated because of the misinformation that COVID-19 vaccines are for birth control, produced by Westerners to control population growth in Africa, as African countries heavily rely on Western aid and donations for the welfare of their people. Likewise, the study also established that men are particularly worried by false information that those vaccinated will die within five years of the vaccination and vaccinated women will not be able to give birth. These fears are culturally rooted—having children holds cultural significance in Malawi, which makes this misinformation particularly resonant. As one women's group leader in Zomba explained:

We mostly fear whether school-going children can have children. These days, we have messages like there is population growth; let's control our birth, but it is not working. Isn't this vaccine meant for our children not to produce? We do have such thoughts. But I cannot say that the vaccine is good or bad. I will have problems with that.

While men and women share concerns about how COVID-19 vaccines might affect their ability to have children, the youth worry about dying if they get vaccinated, as expressed by a youth leader in Nkhatabay:

The fear is coming from people hearing things such as if you get vaccinated, there is a possibility that you will die, and many people are in rural areas where it is difficult for them to get tangible information. The challenge we have with the vaccine is that many people don't understand or know whether the vaccine is potent because most of them are misinformed that they will die.

To get vaccinated or not? Most respondents who chose not to receive the COVID-19 vaccine acknowledged that it was available in their communities but decided against getting vaccinated. A few respondents cited difficulties in accessing the vaccine as the reason for not being vaccinated. Most of those who had the opportunity but declined were concerned about the vaccine's safety, particularly given the short time it took to develop it, especially when diseases like malaria still lack vaccines. As a result, many participants believed the rumours they had heard that the COVID-19 vaccine was not safe for them. Some respondents preferred to observe the experiences of others before deciding, while others questioned the vaccine's efficacy. Additionally, some participants were hesitant due to their existing health conditions.

Discussion

A significant amount of research has explored the impact of misinformation on adherence to COVID-19 preventive measures, vaccine uptake, and the understanding of the disease's origins. This study on Malawi offers a fresh perspective, revealing that while COVID-19 misinformation is often disseminated through global platforms like the Internet and social media, its influence is predominantly driven by religious and local cultural factors, which vary according to demographics and gender. In this study, we have referred to these factors as 'cultural determinants' of COVID-19 misinformation. The association of the pandemic and vaccines with religious prophecies or malevolent intentions highlights the impact of cultural narratives. For instance, the linking of vaccines to apocalyptic symbols such as 666, as mentioned in the biblical Book of Revelation, reflects how deeply ingrained cultural and religious interpretations can distort public understanding of COVID-19 and its vaccines.

The local resonance of global information is further amplified by the evolution of communication technologies, particularly social media platforms, which facilitate rapid information sharing worldwide. Unlike traditional media, social media—fuelled by the interactivity of Web 2.0—enables two-way communication, where users are not just passive recipients but active content creators. Mutsvairo and Ragnedda (2017) describe social media as a platform for exchanging user-generated content, referring to it as 'conversational media' or 'online word of mouth'. Web 2.0 allows users to share videos, photos, text, news, insights, humour, gossip, and more. Popular social media platforms include Facebook, WhatsApp, YouTube, and Instagram. Gondwe et al. (2024) observed that social media can positively maintain connections with loved ones, especially when COVID-19 preventive measures require social distancing and restricted travel. Studies by Gondwe et al. (2024) and Islam et al. (2020) have found that social media has been crucial in the real-time sharing of COVID-19 information, personal experiences, and viewpoints with family, friends, and colleagues, which can help mitigate anxiety and mental health issues.

However, the sharing of information by non-experts on social media exposes people to misinformation, undermining adherence to recommended public health measures or leading to harmful behaviours (Gondwe et al. (2024)). A BBC News (2018) found that trust on online platforms often fosters misinformation because people tend to trust the individual sharing the information without questioning its validity—people may believe the information is accurate simply because it comes from a loved one or someone they trust or respect. Many individuals do not critically evaluate the information they encounter and may share it based on a headline or image without much thought. In Nigeria, Uwalaka et al. (2021) found that the impact of extensive exposure to misinformation about the pandemic created a negative attitude towards COVID-19 and its vaccines. The study also found that recalling and believing misinformation headlines and using social media as the primary news source significantly decreases the likelihood of believing credible and accurate news stories. In Malawi, Juwayeyi and Ntaba (2024) found that people were unlikely to get the COVID-19 vaccine because of information they got from social media rather than from traditional media, which means information from social media-induced vaccine hesitancy.

The threat of online misinformation is significant and pervasive. However, this study's findings show that COVID-19 misinformation operates at global and local (glocal) levels. Misinformation is often localised to resonate with specific cultural, social, and religious beliefs, making it particularly persuasive. This type of misinformation appeals to emotions like fear and guilt. For instance, the conspiracy theory that COVID-19 vaccines are associated with '666', the mark of the beast mentioned in the biblical Book of Revelation, resonates strongly with many Malawians, given Malawi's deeply ingrained religious beliefs, encapsulated in the slogan 'Malawi is a God-fearing nation'. The country's strong religious identity is also reflected in its national anthem, a hymn that asks God to bless Malawi and keep it a land of peace. Misinformation often taps into cultural cognition, which is the tendency of individuals to form opinions about societal risks that align with their commitments to particular visions of an ideal society (Kahan, 2008).

Cultural cognition also explains why many women in Malawi are hesitant to vaccinate against COVID-19, influenced by the misinformation that vaccinated women will become infertile. This belief stems from the conspiracy theory that COVID-19 vaccines were developed in the West to control population growth in Africa. This suspicion contrasts with the high vaccination rates in Western countries compared to Africa. Dyer et al. (2002) found that in many African societies, women who are unable to have children often face negative consequences, including marital instability, stigma, and abuse. In African cultures, marriage is generally synonymous with childbearing, and the pressure to have children is particularly intense on women. The belief that COVID-19 vaccines could cause infertility resonates more with women than men, as infertility has profound implications for women's psychological well-being and social status in African countries.

The misinformation that COVID-19 vaccines were created in the West to control population growth in Africa also raises doubts about the vaccines' efficacy and safety, a fear emanating from the West but has a global resonance among populations already resisting the vaccines and looking for reasons to justify their positions. This is a matter of trust. In Malawi, there is less trust in political leaders, who often lead public health awareness campaigns, including the COVID-19 vaccination drive spearheaded by the country's president and deputy. Consequently, it was a poor communication strategy for the Malawian government to have political leaders lead the vaccination campaign. A 2020 Afrobarometer study found that most Malawians trust religious leaders, who are also perceived as less corrupt than other public figures (Howard, 2020).

Similarly, Okereke et al. (2021) observed that people hold religious leaders in high regard globally. They argue that "if a religious leader misconstrues scientific facts, which is a common

occurrence, there is a risk that the congregation would violate health-promoting behaviours" (Okereke et al., 2021, p.422). Ndasauka and Kainja (2024) argue that ineffective government engagement with communities allowed vaccine scepticism to grow, enabling religious and political figures to dominate COVID-19 narratives at the expense of scientific information. This left people vulnerable to myths and misinformation about the pandemic and vaccines.

Unlike scientific information, unscientific narratives are often fragmented and contradictory. This was evident in the conflicting messages from African leaders regarding COVID-19, its treatments, and vaccines, which further eroded public trust. For instance, Tanzania's late President John Pombe Magufuli dismissed COVID-19 preventive measures in May 2020, claiming the disease had been eradicated through traditional medicine and prayer (Macdonald et al., 2023). Similarly, in April 2020, Madagascar's President Andry Rajoelina announced a cure for COVID-19 called COVID-Organics, even as the country's hospitals struggled with rising cases (BBC News, 2018). Such instances created what Ncube and Mare (2022) term "multiple regimes of truth" during the pandemic.

Although internet access in Malawi is only 14.6%, according to the National Statistical Office (2020), online information often spreads to offline spaces. In their study in southern Ghana, Gadjanova et al. (2022) found that social media engagement helps shape offline views, activities, strategies, and outcomes. They refer to offline spaces as "pavement media," where discussions about current affairs in marketplaces, places of worship, bars, and other social spaces, as well as through songs, sermons, and graffiti, play a crucial role in Africa's media ecosystem. These findings demonstrate the synergy between online and offline platforms in shaping societal realities. This indicates that while most misinformation originates on social media, it is also shared offline, where information consumers often lack the means to fact-check what they hear, as they may not have access to the internet where the misinformation initially circulated.

While this study has not explicitly identified those spreading misinformation or their motives, it is evident that the types of COVID-19 misinformation in Malawi are not locally generated—they originate from the Internet and social media platforms, underscoring the global nature of the pandemic. However, the impact of this misinformation is heavily influenced by local factors such as cultural beliefs, religious interpretations, and social dynamics. Okereke et al. (2021) argue that COVID-19 misinformation is locally shaped because many Africans, particularly in rural areas, are disconnected from or out of sync with accurate information on the pandemic. As a result, these communities are more susceptible to misinformation, often fuelled by widespread misconceptions and unscientific conclusions.

Conclusion

In conclusion, while COVID-19 misinformation in Malawi largely stems from global sources like the Internet and social media, its influence is profoundly shaped by local cultural, religious, and social factors. This study underscores the importance of understanding these "cultural determinants" of misinformation, as they significantly impact public perceptions and responses to the pandemic. The strong religious and cultural narratives that shape how people view COVID-19 and its vaccines highlight the need for culturally sensitive public health communication strategies. Additionally, the study emphasises the interplay between online and offline platforms in spreading misinformation, particularly in communities with limited access to accurate information. Effectively countering misinformation requires engaging with these local cultural contexts and addressing the specific fears and beliefs that fuel vaccine hesitancy and resistance to public health measures. Although this study focuses on the cultural determinants of COVID-19 misinformation, the findings offer valuable insights for addressing misinformation in future pandemics.

Data availability

The authors do not have permission to share the data.

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Author contributions

Jimmy Kainja conceived and designed the experiments, performed them, analysed and interpreted the data, contributed reagents, materials, analysis tools, or data and wrote the paper. Catherine Makhumula conceived and designed the experiments, performed them, analysed and interpreted the data, and contributed reagents, materials, analysis tools or data. Halima Twabi conceived and designed the experiments, performed them, analysed and interpreted the data, and contributed reagents, materials, analysis tools or data. Anthony Gunde conceived and designed the experiments, performed them, analysed and interpreted the data, and contributed reagents, materials, analysis tools or data. Yamikani Ndasauka conceived and designed the experiments, performed them, analysed and interpreted the data, contributed reagents, materials, analysis tools, or data and wrote the paper.

Competing interests

The authors declare no competing interests.

Ethical approval

The study was conducted with complete adherence to ethical standards expressed in the Declaration of Helsinki. Before the commencement of the study, ethical approval was obtained from the University of Malawi Research Ethics Committee (No: P.11/21/101), district commissioners in the four districts where data was collected, and community leaders in the respective areas.

Informed consent

Participation in the study was voluntary. Participants were informed of this and could withdraw at any time of the study. The study obtained written informed consent from participants 18 years old and above. Due to various challenges, participants unable to sign their consent forms were asked to use their fingerprints to give consent. Verbal consent was not allowed. Participants were also informed that there is no monetary reward for their participation in the study. Responses from participants were treated with strict confidence. Each participant was assigned a participation number; only the participant number appeared with their responses. Participants were notified that they could skip it or withdraw from the study if they felt uncomfortable with a question.

Additional information

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