Chapter 12
COVID-19 Vaccination Hesitancy: Interrogating the Trends, Dynamics and Implications for the Health Delivery System in Zimbabwe

Lazarus Chapungu and David Chikodzi

Abstract The proliferation of the COVID-19 pandemic has seen a cocktail of measures being implemented across the globe in an effort to stop its spread as well as its impacts. Vaccination has been considered one of the most effective public health strategies to protect against the infectious disease. However, its effectiveness has been largely compromised by vaccine hesitancy across the globe. The government driven COVID-19 vaccination programme in Zimbabwe has seen variable responses from the citizens, with some indicating unwillingness to be vaccinated. As of 6 June 2022, only 31% of the eligible population had been fully vaccinated despite the ready availability of different types of vaccines. The reasons for vaccine hesitancy remains veiled in obscurity yet vaccination is key to stopping the spread of the pandemic. The question is, why is the rate of vaccination still low when the vaccines are available? This study explores the vaccination trends since the onset of the COVID-19 pandemic and assesses the factors influencing the specific trends and implications on the country's health delivery system. It interrogates the possible causes and consequences of COVID-19 vaccination apathy, hesitancy and neutrality. A mix of methodological approaches is employed, including empirical data collection using a pre-designed data collection tool, systematic literature review following the PRISMA model and use of secondary data sources from interactive science websites. Results indicate low vaccine uptake. Lack of information about the vaccines, the government strategy, misinformation, religious and cultural orientation, medical conditions, and lived experiences were the key factors influencing vaccination apathy, hesitancy and neutrality. The study concludes that the appropriate use of all available information platforms to inform and educate citizens is key in implementing government programmes in addressing global pandemics.

L. Chapungu (✉) · D. Chikodzi
Exxaro Chair in Climate and Sustainability Transitions, Institute for Corporate Citizenship, University of South Africa, Pretoria, South Africa

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12.1 Introduction

The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has wreaked havoc across the world, causing the corona virus disease 2019 (COVID-19) which has affected about 534 million people and killed approximately 6.3 million as of 9 June 2022 (Ritchie et al., 2020). Several other direct and indirect effects of the pandemic were felt by virtually every sector of the world economy, including tourism, agriculture, environment and manufacturing, among others (Adelodun et al., 2021; Jiang et al., 2021). In Southern Africa, the pandemic further constrained the already struggling health sector riddled by deprived medical infrastructure and poor health outcomes with consequences of high mortality rates driven by HIV and AIDS, tuberculosis and non-communicable disease burden (Vearey et al., 2021).

To address the effects of COVID-19, both direct and indirect, the World Health Organization (WHO) drafted a cocktail of measures, which included social and physical distancing, frequent handwashing, face mask wearing, disinfection of public places, covering coughs and sneezes and quarantining the infected persons (Studdert and Hall, 2020; Von Tigerstrom and Wilson, 2020). In addition to the various methods approved to contain the proliferation of the pandemic, COVID-19 vaccines were developed to provide immunity to the masses against the virus (King et al., 2021; Dzinamarira et al., 2021). This was considered a colossal step towards the complete eradication of the global disease and revert back to normalcy (Haque and Pant, 2022). Since 1900s, vaccination has been recognised as the best method to address global health challenges associated with pandemics and epidemics (Cascini et al., 2021). It has significantly contributed to the obliteration of smallpox and slow down the onslaught of tetanus, measles, poliomyelitis, diphtheria and a plethora of other infectious diseases (Dzinamarira et al., 2021). For the COVID-19 pandemic, various vaccines were developed and administered to populations across the world, including Johnson and Johnson, Moderna, Oxford AstraZeneca, Pfizer, Sinopharm, Sinovac, Sputnik V, Covaxin, Sputnik light, Medigen, and Soberana2, among others (WHO, 2022).

Initially, the vaccines were scarce and only accessible to the wealthy countries and individuals who could afford to travel for a vaccine (Biru, 2021). However, the entry of several players into the development and distribution of COVID 19 vaccines saw an increased availability across the world. For example, the COVAX facility was focused on promoting equitable distribution of vaccines in low and middle income countries (Nhamo et al., 2021). By 15 January 2022, the facility had distributed 1 billion doses, assisting a significant fraction of the global population (WHO, 2022). However, despite these efforts, a number of countries in the developing regions still face logistical challenges related to the distribution and administration

of COVID-19 vaccines. Most of the challenges are related to internal factors and the general perceptions on the vaccines (Cordina et al., 2021).

In fact, most countries have received more doses than they have administered. WHO (2022) reports that more than 1 billion eligible people in low-income countries were still not vaccinated as of 22 May 2022. Globally, merely 57 countries had inoculated 70% of their population. All of these countries are high-income. In Africa, as of 13 June 2022, only 23.7% of the population had received at least one dose and 18% had been fully vaccinated (WHO, 2022). This slow progress in vaccination is indicative of the fact that despite the global successes in eradicating infectious diseases through administering vaccines, a significant fraction of the global populace remains either oblivious or concerned about the efficacy, safety and the need for vaccines. This has bred the phenomenon of vaccine hesitancy among a large number of the global population.

In view of the global health significance of vaccination programs at the backdrop of a vaccine apathetic, neutral and hesitant populace, the need to unpack the trends, dynamics and factors of vaccine hesitancy cannot be overemphasised. In Zimbabwe, as of 13 June 2022, enough doses (22,397,800 (108%)) of COVID-19 vaccines had been received but only 48% (10,796,053) of the vaccines had been administered and only 30% of the population had been fully inoculated. This presents a clear case of slow vaccination progress which might have been precipitated by vaccine hesitancy. The evidence of vaccine hesitancy has already been highlighted in a number of studies (Dzinamarira et al., 2021; Murewanhema et al., 2022; Mundagowa et al., 2021). Mundagowa et al. (2021) pointed out some of the factors contributing to vaccine hesitancy. However, the study did not reflect on the implications on the health delivery system within the country. More so, only a few factors were determined. Dzinamarira et al. (2021) explored the threat of vaccine hesitancy in Zimbabwe and underscore the need for information provision to enable clear understanding of the vaccines and encourage participation in the vaccination program. However, the trends, dynamics and implications of vaccine hesitancy on health delivery system still remains veiled in obscurity. In addition, Murewanhema et al. (2022) did a narrative review of the strengths, weaknesses, opportunities and threats of the vaccination programme and pointed the need for the government to address vaccine hesitancy. However, the study did not provide the practical steps towards dealing with the problem of vaccine hesitancy.

Given this background, and the existence of information gaps, it remains difficult to design an effective framework for addressing the problem of vaccine hesitancy. This chapter interrogates the trends, dynamics and implications on the health delivery system of vaccine hesitancy, apathy and neutrality with a view to contribute to the knowledge for designing an effective framework for improving participation in vaccination programs that aim to address global pandemics such as COVID-19.

12.2 Literature Review

12.2.1 Vaccine Development and Distribution

Vaccine development is not a new concept, it dates back to the seventeenth century (Greenwood 2014). Several vaccines have been developed to deal with infectious diseases, especially among the infants. In a bid to slow down and obliterate the proliferation of the COVID-19 pandemic, the World Health Organisation (WHO) authorised vaccines for emergency use in December 2020 (Murewanhema et al., 2022). The vaccines were developed in the developed countries and by March 2021, more than 1 billion doses were developed. Nhamo et al. (2021) report that by 15 July 2020, 24 COVID-19 candidate vaccines were already on clinical evaluation while 140 were at pre-clinical evaluation stage. Most of these developments were taking place in high income countries whist Africa and other developing regions were lagging behind in terms of vaccine development (Otu et al., 2021). Inoculation also began in the developed countries and the vaccines were initially not easily accessible to countries in Africa and other developing regions (Nhamo et al., 2021; Hlongwa et al., 2022; Mutombo et al., 2022).

Developed countries adopted a number of strategies to ensure that their populations were vaccinated ahead of other regions, with massive ordering of pre-developed millions of doses of COVID-19 vaccines (Otu et al., 2021). By April 2021, more than 87% of the COVID-19 vaccines global stocks were amassed by high-income countries (Otu et al., 2021) However, the WHO-led COVAX facility was put in place to ensure that other vaccine non-producing countries also receive the vaccines. More so, other developed countries later on embarked on a programme to support developing countries through bilateral and multi-lateral agreements. For example, Asia secured the commitment of India, Australia, Japan and the USA to receive more than a billion doses by the end of 2022 (Otu et al., 2021). Africa has now embarked on a massive vaccination drive through the COVAX facility as well as bilateral agreements with vaccine producing countries. For example, Zimbabwe secured most of its COVID-19 vaccines from China (Kouamou et al., 2021; Murewanhema et al., 2022), while 18% of the total doses received were received through the COVAX facility (WHO, 2022).

Not only were the vaccines inaccessible, but also information about the vaccines was very limited among the developing countries. In the absence of well communicated scientific information, infodemic took centre stage with the dominance of the social media in the dissemination of information related to the COVID-19 pandemic. In some cases, anti-vaccine movements dominated the social media sending wrong negative messages concerning the COVID-19 vaccines and reducing vaccination willingness among the global citizens (Lu and Sun, 2022). In Zimbabwe, the first delivery of vaccine doses arrived from China on 15 February 2021 as a donation (Dzinamarira et al., 2021). Receiving a donation in times when there was a global scramble for vaccine doses raised a lot of social media questions which

exacerbated negative perceptions about the vaccines, and this could have contributed to the increase in vaccine hesitancy.

12.2.2 Vaccine Hesitancy: An Overview

The concept of vaccination as the panacea for dealing with global health challenges dates back to 1796 during the days of Edward Jenner who contributed significantly to the pioneering of the approach to address the challenge of smallpox (Greenwood, 2014). Vaccination has generally been regarded as the most effective way to deal with deadly pandemics worldwide (King et al., 2021; Sina-Odunsi, 2021). Diseases that have been commonly found in countries across the globe have been eliminated due to vaccination. For example globally, a significant number of children suffered from illnesses due to diseases but after vaccination, the infectious diseases have been completely eradicated (Marzo et al., 2022; Cordina et al., 2021). There are specific success stories in Canada and other developed countries where cases of measles, smallpox, diphtheria, polio, and pertussis among children were completely eradicated as a result of vaccination (Heywood et al., 2016). In the context of a pandemic like COVID-19, an adequate number of individuals must be vaccinated to achieve herd immunity (Morales et al., 2022; Corcoran et al., 2021; Hlongwa et al., 2022). This would prevent transmission of the virus among individuals. However, if herd immunity is not achieved, infection and reinfection will take place resulting in failure to eradicate the pandemic. One of the key factors that has potential to influence failure to achieve herd immunity is vaccine hesitancy (Morales et al., 2022; Hlongwa et al., 2022). The recent outbreaks of rubella, pertussis, and mumps, among other infectious diseases have been associated with under-vaccinated communities (Dzinamarira et al., 2021), influenced by vaccine hesitancy, among other factors. Vaccine hesitancy is defined as the delay in recognition of the authenticity and acceptability of a vaccine in spite of its availability (Burger et al., 2022; Lu and Sun, 2022; Morales et al., 2022).

The management of routine infant vaccines is now very high among developing countries as well as the developed world (Greenwood, 2014). The vaccines have become acceptable in most communities around the world except in those communities where religious beliefs dominate all other practices. However, the story is different with the proliferation of the COVID 19 pandemic, which requires vaccination of adults who can make a choice not to be vaccinated. Signs of vaccine hesitancy in Africa are reflected in the statistics on the received versus the administered doses. Most countries have now received more doses than they have administered, with others having received enough doses to inoculate more than 70% of the population but they are still way below 50% (WHO, 2022). In Zimbabwe, for example, about 30% of the population has been fully vaccinated as of 14 June 2022 yet the country has received enough doses to vaccinate more than 70% of the population (WHO, 2022). A survey by CompariSure in South Africa shows that 52% of South Africans indicated unwillingness to take the COVID-19 vaccines citing fear of

needles, religion and the government's approach as impediments to vaccination (Dzinamarira et al., 2021).

12.2.3 The Drivers of Vaccine Hesitancy in Zimbabwe

Mutombo et al. (2022) argue that the underlying cause of vaccine hesitancy in Africa is the lack of knowledge on the effectiveness of vaccination as a strategy to address public health concerns. In Zimbabwe, this proved to be true as the greater part of the population seemed hesitant to take the COVID-19 vaccines in the early stages of the vaccination programme. As of June 2022, more than a year after the roll-out of the vaccination programme, only about 31% of the population was fully vaccinated (WHO, 2022). This is despite the fact that the country has received enough doses for all people to be vaccinated. The key drivers of vaccine hesitancy in Zimbabwe are related mainly to the lack of scientific information on the effectiveness and safety of the COVID-19 vaccines (Mundagowa et al., 2022). The information provided by the Ministry of health and Child Care (MoHCC) as well as the WHO was distorted by social media platform information supplied by the anti-vaccine movement. A lot of conspiracy theories and mythical stories were put across, instilling fear and doubt among the greater part of the population. Otherwise, initial studies had observed greater willingness by the populace to receive the vaccine (Dzinamarira et al., 2021; Mundagowa et al., 2021) but this trend might have been affected by misinformation and infodemic through social media.

Some of the stories make reference to the 'historical, structural and other systemic dynamics that underpin vaccine matters in Africa in general (Mundagowa et al., 2022:320). There are historical, colonial research distortions in the medical field that might be contributing to vaccine hesitancy. In addition, from the onset of the vaccination programme, there was lack of trust in the government's ability to ensure the effectiveness of the vaccines (Dzinamarira et al., 2021; McAbee et al., 2021). The lack of trust partly emanates from weak regulation and quality control of the imported vaccines.

Conspiracy theories that were propagated at the beginning of the vaccination programme have had a long term impact on decision making by individuals (Dzinamarira et al., 2021). Even at the time of writing, there are still some religious sects who hold that vaccination against COVID-19 is unacceptable. McAbee et al. (2021) in a study conducted in the Eastern Highlands of Zimbabwe reported that the level of education contributes to the intention to vaccinate against COVID-19. In their study, respondents with at least secondary level education had higher chances of getting vaccinated compared to those without formal education.

There is an observation that, although various factors are working together to influence vaccine apathy, neutrality and hesitancy in Zimbabwe, the vaccine landscape remains dynamic and the trends are likely to shift with time (McAbee et al., 2021). For example, as people gain more knowledge about COVID-19 vaccines, their willingness to be vaccinated can be enhanced. Government policies and

strategies also play a pivotal role in determining the trends and dynamics of vaccine hesitancy, for example, imposed restrictions on unvaccinated individuals have been a driving force behind voluntary vaccination (Kouamou et al., 2021; Murewanhema et al., 2022).

12.3 Materials and Methods

12.3.1 Study Area

The study was conducted in Zimbabwe, a landlocked southern African country lying in the tropics. The country is located on a plateau whose elevation drops northwards in the Zambezi valley. The country recorded its first case of COVID-19 on 20 March 2020 (Makurumidze 2020). Since then, the number of daily cases has been fluctuating across the country. While the study covered all the provinces using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework for analysis, empirical data was collected from three randomly selected provinces, namely Mashonaland Central, Matabeleland North and Masvingo (Fig. 12.1).

12.3.2 Research Design and Data Collection

The mixed methods research design was adopted for data collection and analysis. In this design, a combination of the literature analysis following the PRISMA guidelines (Fig. 12.2) and questionnaire surveys was used. The PRISMA approach was selected based on its wider applicability and comprehensiveness (Janjua et al., 2021). The word schemes used included 'Vaccine hesitancy AND Zimbabwe' or 'COVID-19 vaccination and Zimbabwe'. Four major e-databases (Scopus, Web of Science, PubMed, and ScienceDirect) were considered to achieve a multidisciplinary scope of the literature.

As shown in Fig. 12.2, the qualitative synthesis included 28 studies while 11 research articles that were explicitly referring to COVID-19 vaccine hesitancy in Zimbabwe were included in the quantitative synthesis.

In addition to literature analysis, a questionnaire was administered through a blended data acquisition approach which involved online as well as face-to-face surveys. The online survey on google forms was distributed to individuals known to the researchers, most (approximately 65%) of whom were university students and staff members. The recipients of the survey were asked to share the survey with their contacts and their contacts will do the same until contact saturation was achieved. Self-administered face-to-face surveys were conducted in four conveniently selected provinces, namely Harare, Mashonaland Central, Masvingo, and Matabeleland

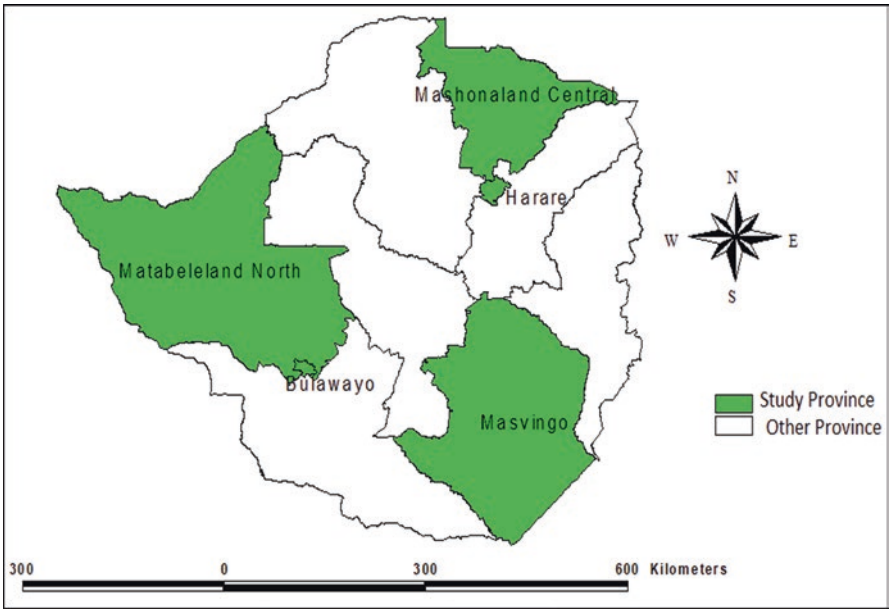

Fig. 12.1 Map of study area. (Source: Authors)

North. Most of the face-to-face surveys were conducted in residential suburbs by research assistants who were familiar with the areas. The survey comprised questions focused on understanding the demographic profile, historical vaccination behaviour, COVID-19 vaccination status, the factors influencing the status and the general perceptions on COVID-19 vaccines. A total of 361 online and 102 face-to-face (Masvingo- 49, Harare- 35, Matabeleland North- 7 and Mashonaland Central-11) surveys were completed.

Included in the survey were distinct choice tasks predetermined to examine vaccine acceptance or refusal based on vaccine characteristics such as efficacy, location of vaccine developer (USA, the EU or China), place of vaccine administration and risk of serious side effects. Analysis of the responses was designed in a way that disentangles absolute vaccine refusal from vaccine hesitancy.

12.4 Results and Discussion

12.4.1 Evidence of Vaccine Hesitancy

The results show that about 54% of the sampled population was partially vaccinated while 33% was not vaccinated. About 13% was fully vaccinated (Fig. 12.3).

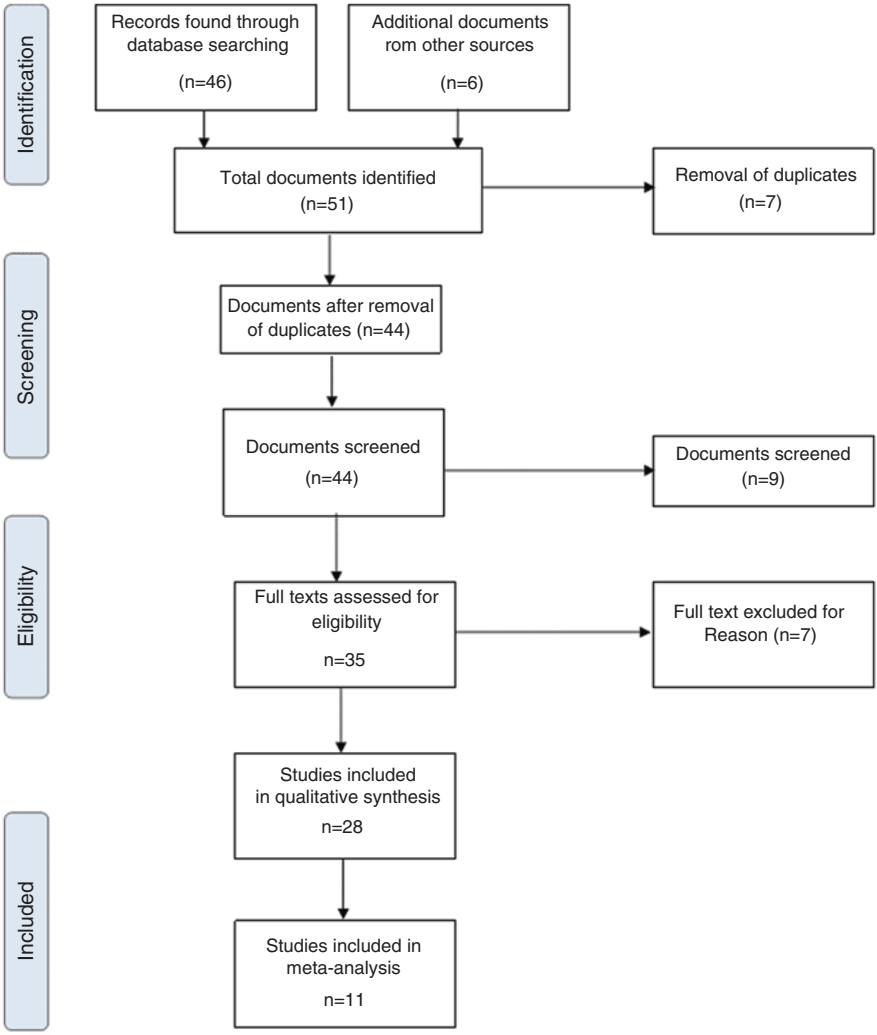

Fig. 12.2 The PRISMA approach used in the study. (Source: Authors)

As shown in Fig. 12.3, the rate of vaccination is slow, with only 13% of the sampled population fully vaccinated. Most of the 33% unvaccinated respondents indicated lack of willingness to be vaccinated now and in the foreseen future. They cited a plethora of reasons, including, lack of trust in the source of the vaccines, lack of trust in the national government and policymakers, general fear of the resultant effects of the vaccine and religious commitments, among other influencing conditions. The greatest percentage (54%) of the respondents were partially vaccinated with 83.78% of them indicating unwillingness to get the second dose of the vaccine. The reasons for unwillingness to get the second dose included medical conditions,

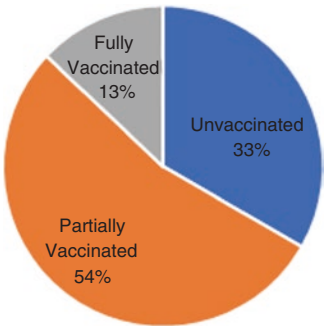

Fig. 12.3 Vaccination rate of the sampled population. (Source: Authors, field data)

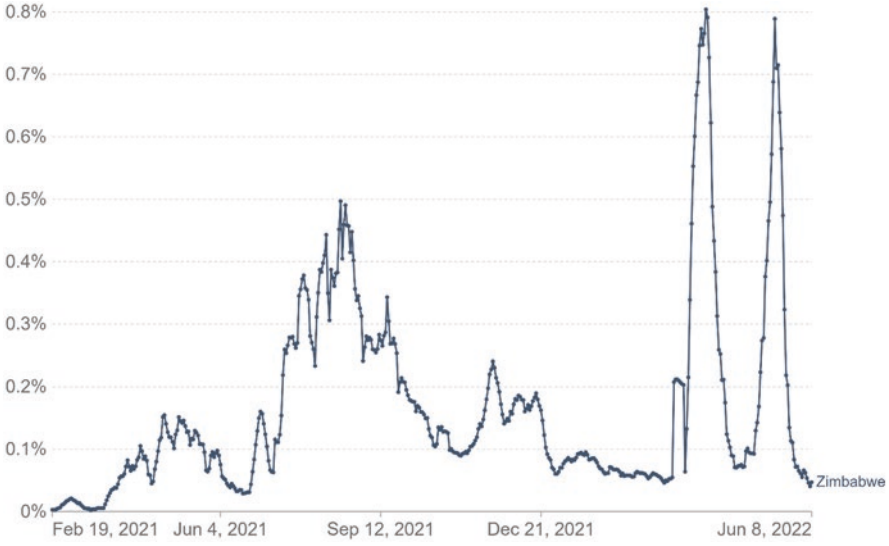

Fig. 12.4 Zimbabwe share of population with at least one dose of COVID-19 vaccine. (Source: Our World in Data, 2022)

experiences from the first dose, fear induced by misinformation, and lack of access to the second dose, among other factors. The remaining 16.22% of the partially vaccinated respondents indicated that they may get vaccinated if certain conditions change, for example, completion of the breastfeeding phase, improvement of medical condition and access to the vaccine, among others.

The vaccination trends and dynamics portrayed by the results of this survey seem to depict the situation at the national level where the rate of vaccination has plummeted to very low levels despite the fact that the doses are now readily available for the whole population to be vaccinated. At national level, vaccination has been fluctuating from time to time and appears to follow the trend of COVID-19 waves. An increase in the number of COVID-19 cases was associated with an increase in the rate of vaccination. Figure 12.4 shows the vaccination trend in Zimbabwe.

Figure 12.4 displays the share of total population with a minimum of a dose of the vaccine. As shown, the vaccination rate for Zimbabwe has not been consistent, progressing in a fluctuating trend. Several factors explain the lack of consistency, including, availability of the vaccines, awareness campaigns, and infodemic, among other factors. However, key informant interviews and document analysis revealed that vaccine hesitancy also contributed to the waves in acceptance, mainly regulated by the transfer of information among the population. The dominance of social media in the information supply and distribution matrix distorted the scientific information about COVID-19 vaccines and promoted conspiracy theories generated through anti-vaccine crusades by individuals and leaders from a diversity of belief, professional and ideological orientations.

The results also show gender disparities on vaccine hesitancy. Vaccine hesitancy is significantly high in male respondents compared to their female counterparts. Figure 12.5 shows gender based categories for the vaccinated, partially vaccinated as well as fully vaccinated individuals from the study's sampled population. As shown in Fig. 12.5, about 55.5% of the unvaccinated eligible individuals were males while only 27.7% were females. The remaining 16.7% preferred not to identify with a specific gender. Also shown in Fig. 12.5 is that more females (about 62.1%) were partially vaccinated whereas only 27.9% of their male counterparts were partially vaccinated. The remaining unidentified gender had only 10.3% indicating that they are partially vaccinated. In addition, male respondents proved to be more vaccine hesitant as they had the least number of the fully vaccinated individuals while females had close to 30% of the sampled population vaccinated. Of interest is the

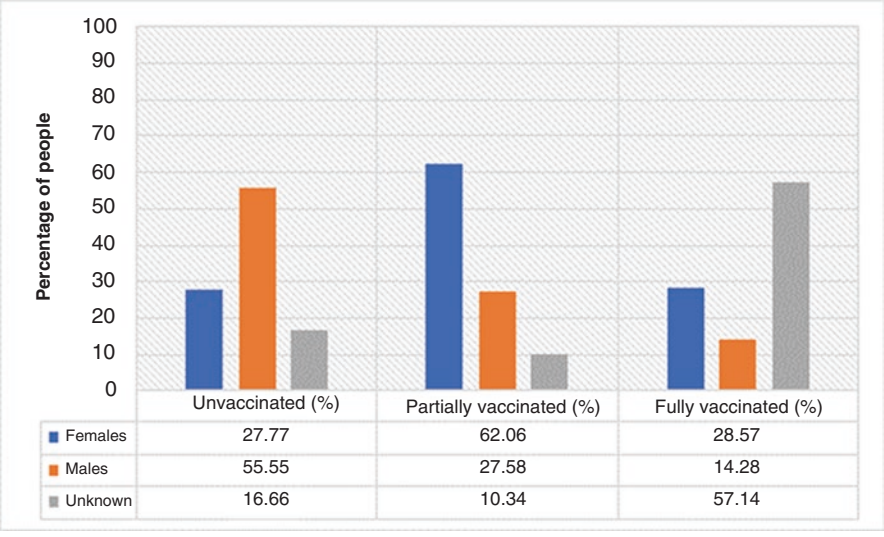

Fig. 12.5 Vaccination hesitancy depicted by vaccination rate according to gender categories. (Source: Authors, field data)

fact that the unidentified gender category had the highest percentage (57.14%) of people who were fully vaccinated.

The picture depicted by the overall results is that males were more hesitant to take COVID-19 vaccines than females.

12.4.2 Likelihood of Vaccination

Results from the questionnaire survey indicate that most of the respondents have little likelihood of getting vaccinated now and in the foreseen future. The low vaccination appetite was highest among male respondents compared to the female respondents as shown in Fig. 12.6.

As shown in Fig. 12.6, only 1.8% of the unvaccinated male participants indicated willingness to be vaccinated while only 3% of the unvaccinated female respondents indicated willingness to be vaccinated. Those whose gender remained anonymous had 1% probability of getting vaccinated now or in the foreseen future. Overall, the study shows that there is 1.93% probability of an unvaccinated individual to get a COVID-19 vaccine. Thus, these results presence a picture showing very low COVID-19 vaccine appetite, an indication of vaccine apathy, and hesitancy. In addition, the probability of those who have received the first dose, going for the second dose is very low. The results show that, of the respondents who participated in this study, about 3.6% of the partially vaccinated population is still willing to take a second dose while for females, about 8% are still willing to receive the COVID-19

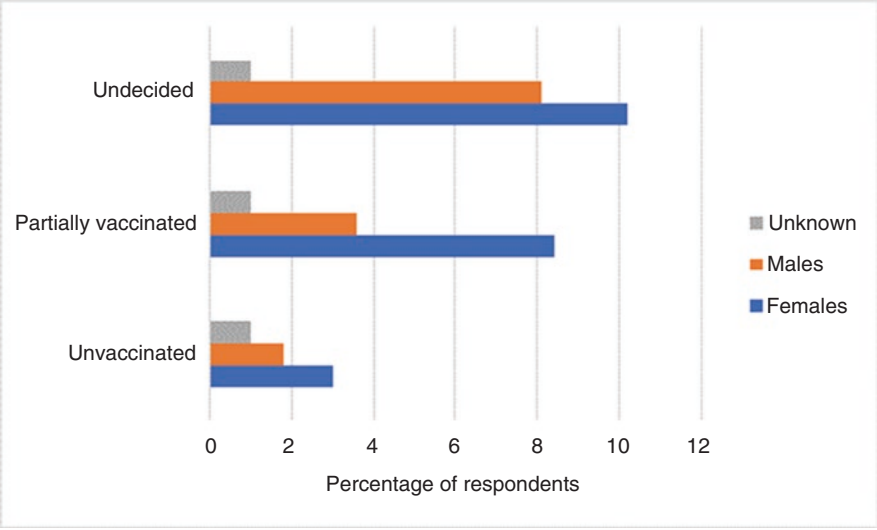

Fig. 12.6 Likelihood of vaccination among the unvaccinated and partially vaccinated respondents. (Source: Authors, field data)

second dose. Only 1% of the unidentified gender have indicated willingness to get the second dose. Overall, about 4.2% of the sampled population indicated willingness to be vaccinated for the second time.

This study observed that 'vaccine neutrality' exists among the population. This is a concept adopted by this study to refer to people who have 'mixed feelings' about the COVID-19 vaccines. They are neither willing nor unwilling to take the vaccine. In other words, vaccine neutrality describes those individuals with no ideological, professional or religious position on COVID-19 vaccines or those who take a long time to make a decision concerning vaccination. In this study, females are dominating vaccine neutrality, with 10.2% indicating that they have not yet decided whether to take the vaccine or not. About 8.1% of the male respondents who were unvaccinated indicated that they are not yet decided while only 1% of those who did not indicate their gender reported that they are not decided yet.

12.4.3 Determinants of Vaccine Hesitancy

The results point to the existence of a superfluity of intrapersonal, interpersonal, and institutional dynamics that contribute to COVID-19 vaccine apathy, hesitancy and neutrality. Table 12.1 shows the factors that influence COVID-19 vaccine hesitancy.

As shown in Table 12.1, lack of confidence in the source of vaccines was cited by 32.7% of the females who participated in the study as one of the causes of vaccine hesitancy. About 76.8% of males indicated that they also do not have confidence in the source of the vaccines while other 8.3% who did not indicate their gender feel the same. The study inquired whether the respondents know the source of the vaccines. All the participants indicated that they know where the vaccines came from, and they do not have confidence in the source country. Some respondents indicated that they do not have trust in the government since there were no mechanisms to check the authenticity and quality of the vaccines being given to the people. About 43.2% of the male respondents cited their lack of trust in the government's COVID-19 vaccination programme whist 21.4 female respondents and 4.1% of the

Table 12.1 Factors influencing vaccine hesitancy

	Percentage of respondents		
Factor	Females	Males	Unknown
Lack of confidence in the source	32.7	76.8	8.3
Lack of trust in the government	21.4	43.2	4.1
Medical condition	63.4	18.1	0
Religious beliefs	11.5	16.9	0
Just feel unsafe	21.3	46.5	0
Pregnancy	6.5	0	0
Still undecided	10.2	8.1	1

Source: Authors

uncategorised participants share the same sentiments. Most of the women (63%) who were not vaccinated reported that they had medical conditions they think would worsen or result in health deterioration after taking the vaccine. Only 18% of the male respondents claimed that their health condition was the major impediment to COVID-19 vaccination. Religious beliefs, pregnancy and breast feeding, and indecision were some of the factors that were cited as contributing to the problem of COVID-19 vaccine hesitancy in Zimbabwe.

This study observed that lack of information about the COVID-19 vaccines contributed significant high levels of vaccine hesitancy. This is indicated by the huge number of respondents indicating that they are not sure about specific pharmaceutical aspects of the vaccines. Table 12.2 shows the responses that were given to specific aspects related to the COVID-19 vaccines.

As shown in Table 12.2, about 44% of the respondents indicated that they are not sure about the safety of COVID-19 vaccines. However, about 26% confirmed that they agree that the vaccines are safe, 6% strongly agree while 12% disagree. Lack of knowledge about the vaccines is also reflected in the responses provided when they were asked whether the vaccines are effective in building immunity against the virus. About 56% indicated that they are not sure while 18.8% completely disagree that the vaccines are effective. Only 22% agree while 2.1% strongly agree. Furthermore, the high percentage of people indicating lack of knowledge on other aspects of the COVID-19 is indicative of the fact that people still lack information and there is need for the dissemination of pharmaceutical information and related information among the people to address the problem of vaccine hesitancy. However, the study noted that there are some people who were not sure but still went on to get vaccinated. Thus there is an interplay of several factors in determining the final decision of individuals to get vaccinated or not.

It emerged from this study that information sources played a pivotal role in determining the perceptions of respondents on COVID-19 vaccines. Various information channels, both formal and informal, disseminated information related the COVID-19 vaccines. Some of the information is related to the effectiveness of the vaccines, the authenticity of the manufacturers, the trends in vaccine production, the acquisition of the vaccines by the national government, experiences with the vaccines, reported cases of side effects, theories by the anti-vaccine movement, alternative remedies besides the conventional pharmaceutical measures, and several other religious interpretations of the vaccination programme. Such information determined how people perceived the vaccines. Informal information channels such as the social media,

Table 12.2 Perceptions about specific aspects related to COVID-19

Statement	Agree	Disagree	Not sure	Strongly agree
COVID-19 vaccines are safe	26.0	12.0	44.0	6.0
COVID-19 vaccines are effective	22.9	18.8	56.3	2.1
COVID-19 vaccines have dangerous health effects	29.2	20.8	39.6	10.4
All people must vaccinate	20.8	31.3	31.3	16.7

Source: Authors

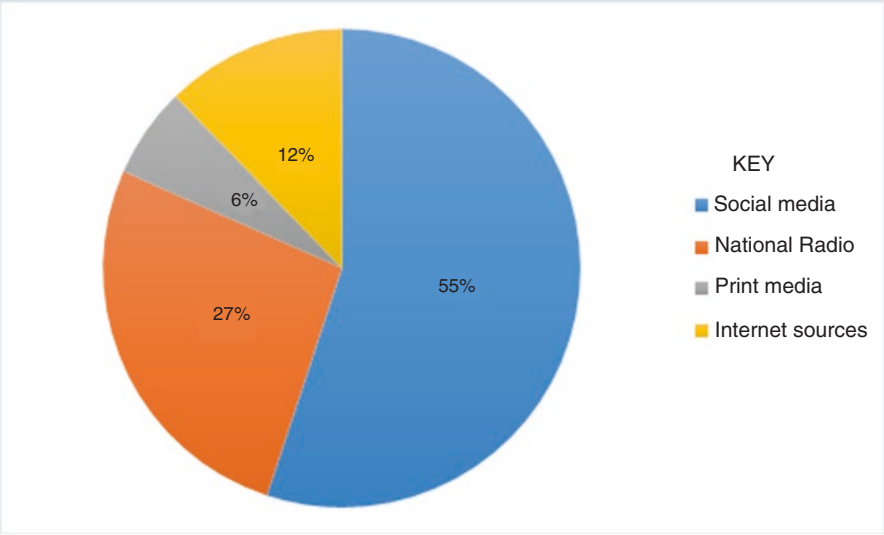

Fig. 12.7 Sources of vaccine information among respondents. (Source: Authors, field data)

specifically WhatsApp and Facebook platforms, perpetuated infodemic which has precipitated lack of trust in the vaccines and exacerbated vaccination apathy, neutrality and hesitancy. The dominance of social media platforms in information dissemination implies that anti-vaccine information is reaching out to the people more than regulated pro-vaccines information. Figure 12.7 shows the information channels through which respondents receive information on COVID-19 vaccines.

As shown in Fig. 12.7, most (55%) of the respondents have access to social media platforms and that is their main source of COVID-19 information, including vaccines and vaccination dynamics updates. Social media information in not properly regulated and has facilitated the propagation of anti-vaccine information which has misinformed several people, leading to decisions against vaccination. The national radio stations are the second most important source of information, but only 27% of the respondents indicated that they obtain COVID-19 related information from this channel. Internet sources and print media are accessed by 12% and 6% of the people, respectively.

12.5 Discussion

This study sought to understand the trends and dynamics of COVID-19 vaccine hesitancy in Zimbabwe and its implications for the country's health delivery system. Results indicate that COVID-19 vaccination hesitancy is a reality and a challenge to the government initiated vaccination drive. The findings confirm earlier observations by Kouamou et al. (2021) and Murewanhema et al. (2022) that vaccine

hesitancy exists in Zimbabwe and may pose a challenge in the processes of fighting the COVID-19 pandemic. However, a study conducted by Dzinamarira et al. (2021) at the beginning of the vaccination process was optimistic that vaccine hesitancy was not going to be a major challenge to as the respondents in the study for both South Africa and Zimbabwe indicated high intentions of being vaccinated. However, considering the COVID-19 vaccination rate of 31%, as of June 2022, more than a year after the rolling out of the vaccination programme, vaccination hesitancy could be significantly high and contributing to low vaccine uptake. Thus, although several factors contribute to the low vaccination uptake in Zimbabwe, this study has shown that vaccine hesitancy contributes quite significantly.

The vaccine hesitancy trajectory has implications on the health delivery system of the country as it precipitates failure to achieve herd immunity. The implication of failure to achieve herd immunity is that the greater part of the population remains susceptible to SARS-CoV-2 infection, which imposes a burden on health provision value chains. Lack of immunity against the pandemic will likely increase hospitalisations. This is against the backdrop of a struggling health delivery system which has been experiencing bed shortages. In addition to bed shortages, the health system in Zimbabwe has several other challenges including disgruntled workforce which is on strike from time to time, shortages of medicines and other medical facilities have also been reported. Thus vaccine hesitancy will only exacerbate the tribulations of an already weak health delivery system.

This study has shown that there is a plethora of factors influencing vaccine hesitancy such as lack of trust at various levels including the source of the vaccines, the processes involved and the government itself. McAbee et al. (2021) also asserted that vaccine hesitancy is addressed by improved confidence in the safety and effectiveness of the health delivery system and trust in policymakers and all systems including the sources of vaccines and approval processes. Lack of trust will jeopardise the vaccination programme and consequently the health delivery system. In this study, most of the unvaccinated people indicated that they doubted the safety of the vaccines and they are not very confident about their sources and approval processes. If there is hope to address this challenge, the need to restore confidence in the whole vaccine supply and administration value chain cannot be overemphasised. Mutombo et al. (2022) argue that the lack of trust is compounded by the historical, colonial therapeutic and vaccine research manipulation in Africa.

This study has also shown that there is a plethora of other factors contributing to vaccine hesitancy, including lack of information, medical conditions, and religiosity. Conspiracy theories and religious myths shared on social media platforms by the anti-vaccine movement ‘kingpins’ have exacerbated unwillingness to get a vaccine dose among people. This has already been observed by other studies (Pullan and Dey, 2021; Mundagowa et al., 2021; Ransing et al., 2022). Thus, to date, there are still religious sects and philosophies that stand against COVID-19 vaccination although they cannot publicly claim so because of the government’s stand to reprimand the anti-vaccine regime.

It has been noted that a significant number of individuals who received the first dose indicated unwillingness to get the second one citing safety issues. This could

be explained by the fact that some of the people who received the first dose experienced some side effects and others are reported to have died as their medical conditions further deteriorated after taking the vaccine. Such cases instil fear among the population and exacerbate the problem of vaccine hesitancy.

The major implication of all the challenges associated with vaccine hesitancy is the failure by the health delivery system, now and in the future, to deal with health effects associated with lack of immunity of the greater population to known viral infections. There is need to devise strategies to improve uptake of recommend vaccines and other pharmaceutical therapies in the aftermath of a global disease outbreak.

12.6 Conclusions and Recommendations

This study explored the trends and dynamics of vaccine hesitancy in Zimbabwe and deduced the implications for the health delivery system. It emerged that the rate of COVID-19 vaccination in Zimbabwe has been fluctuating over time but generally, it has been slow. While a plethora of factors could be working together the slow down the vaccination process, this study established that vaccine hesitancy is significantly contributing. The study revealed that COVID-19 vaccine hesitancy has been high among males compared to their female counterparts. The driving forces behind vaccine hesitancy include lack of trust at various levels along the supply and administration value chains of the vaccines, fear for safety, medical conditions, and procrastinated decision making at individual level, among other factors. Information dissemination channels have been observed to be key in determining vaccination hesitancy as they conveyed messages that either encourage or discourage participation in the vaccination programme. The dominance of the social media as a source of vaccination information has largely created negativity among the populace, resulting in diminished vaccine appetite. The proliferation of vaccine hesitancy in Zimbabwe has negative implications for the health delivery system. Failure to achieve herd immunity due to lack of vaccination renders the entire population susceptible to viral infection. This creates further challenges for the health delivery systems, which is already incapacitated, in terms of its dexterity to contain possible outbursts of viral infections of pandemic proportions now and in the future.

The study recommends a massive community engagement and education approach to vaccination, involving local leadership and all key stakeholders. There is need to first demystify COVID-19 vaccines and clarify on the short and long term consequences of not achieving herd immunity. The frequent use of social media to disseminate positive information about vaccination can be adopted as a strategy to counteract the negative information it spews.

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