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COVID-19 VACCINE HESITANCY AMONGST NON-GOVERNMENTAL ORGANIZATION EMPLOYEES IN HARARE, ZIMBABWE

BY

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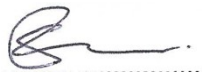
Abstract

Vaccine hesitancy is one of the top ten threats of any public health vaccination program. Zimbabwe is grappling in reaching its vaccination targets because of increasing vaccine hesitancy due to conspiracies associated with the vaccine and need support from civil society. Thus, this study aimed at determining factors associated with vaccine hesitancy amongst NGO employees in Harare. An analytical cross-sectional study was conducted on 224 participants using a standard questionnaire. Of the 224 participants, 33% were hesitant whilst 11% were not sure. Those hesitant opted for steaming (32%) and traditional herbs (12%). The ones willing to vaccinate were mostly driven by valuing their health (48%), important in saving dependents health (52%) and to control COVI-19 (45%). History of vaccination (AOR 5.08 95%CI 2.44-10.9), medical profession (AOR 1.17, 95%CI 1.04 – 1.37) and exposure to COVID-19 (AOR 14,7) were socio-demographic factors associated with vaccine hesitancy. Sub-optimal uptake of the vaccine maybe driven by lack of confidence in vaccines safety (91%), effectiveness (87%), side effects (91%), lack of trust on service providers (86%) and lack of confidence on facilities capacity to manage side effects (45%). (85%) prefer a single shot and they are six times more likely to vaccinate compared to those who opt for two or more injections (AOR 6.26; 95%CI 2.44 – 18.92). Choice of vaccine was found to be statistically significant with more respondents opting for Pfizer ($p<0.001$), Johnson and Johnson ($p<0.001$) compared to Sinovac (13%; $p= 0.098$). Fifty-seven (57%) believe that the vaccine will affect menstrual cycle for women, whilst 55% believe it may cause infertility. Majority of respondents not willing to take up the vaccine rely heavily on social media (49%) as a source of COVID-19 vaccine information. Vaccine hesitancy is relatively high amongst NGO professionals. Based on this study, government of Zimbabwe need to work with civil society in designing a robust vaccination program.

Keywords: Vaccine Hesitancy, safety, effectiveness, vaccination, COVID-19

Declaration

I, Simon Takawira, student number 182582, do hereby declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.



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Dedications

This study is dedicated to my wife, Nesisa Moyo-Takawira and my son, Liam Nqobizitha Takawira. Your support throughout this journey was unconditional. I also dedicate this to my mother, Sarah Takawira, you always believed in me.

List of Acronyms and abbreviations

AIDS	Acquired Immuno-Deficiency Syndrome
AUREC	Africa University Research Ethics Committee
BeSD	Behaviour Social Drivers
COVID-19	Corona Virus Disease 2019
CSO	Civil Society Organization
DRC	Democratic Republic of Congo
EVD	Ebola Virus Disease
HIV	Human Immuno-Virus
KMO	Kaiser-Meyer-Olkin
MOHCC	Ministry of Health & Child Care
NANGO	National Association of Non-Governmental Organizations
NGO	Non-Governmental Organizations
RDS	Response Driven Sampling
SAGE	Strategic Advisory Group of Experts
SARS-CoV-2	Severe Acute Respirator Syndrome Corona Virus 2
WHO	World Health organization

Definition of key terms

COVID-19 is a respiratory disease caused by SARS-CoV-2; a new corona virus discovered in 2019 (World Health Organization (WHO), 2020.).

Vaccine efficacy: is the proportionate reduction in disease among the vaccinated group within a clinical trial (WHO,2020).

Vaccine Hesitancy: a delay in acceptance or refusal of vaccination despite availability of vaccination services (WHO, 2015).

Vaccine: is a biological preparation that provides active acquired immunity to a particular infectious disease (WHO, 2015).

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CHAPTER 1 INTRODUCTION

1.1. Introduction

Vaccine hesitancy has been classified as one of the top ten risk factors to any public health program by World Health Organization (WHO). Due to its origins, hastiness in development of the vaccines and parties involved in development of the vaccine, hesitancy has been on the rise globally. Numerous studies have been done targeting different population groups, but few has targeted Non-Governmental Organisation (NGO) employees. In countries like Zimbabwe, role of civil society in financing and implementation of health programs has been immense hence plays a critical role in driving Coronavirus disease (COVID-19) mobilization and prevention programs as they have done with Human Immuno-Deficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) programs. Understanding prevalence and determinants of vaccine hesitancy amongst NGO employees is critical for the success of the broader health promotion of the pandemic.

1.2. Background to the Study

According to World Health Organization (WHO) (2020), Coronavirus disease popularly known as COVID-19 is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus. Coronavirus Disease 2019 (SARS-CoV-2) is believed to spread from person to person through droplets released when an infected person sneezes, coughs, or talks or by touching a contaminated surface, but this is less common (WHO, 2020). It was first witnessed in Wuhan, China in December 2019 (WHO, 2020). WHO declared it a public health emergency on 30 January 2020 when China had 81,058 of confirmed cases and 7,905 confirmed deaths, WHO then declared Covid-19 a pandemic on March 11, 2020. At the time of declaration, there were 197,168 confirmed cases globally, whilst Africa was not

hugely infiltrated at that point. The government of Zimbabwe went on to declare Covid-19 a national disaster on 17 March 2020 (MOHCC, 2020). As of the 5th of April 2021, globally, 131,514,296 cases had been reported with 2,855,894 deaths (2 percent Case fatality ratio) (WHO, 2021).

In Zimbabwe, the first case was reported on the 20th of March 2020 and since then 36,923 cases had been reported with 1,525 fatalities (4 percent Case fatality ratio) (MOHCC, 2021). In Zimbabwe just like anywhere in the world, various public health measures had been put in place to control spread of the virus. Handwashing hygiene either by using soap and water for at least 20 seconds or a hand sanitizer (60+ percent alcohol), physical distancing (six feet apart) from others that one does not live with as well as cleaning and disinfecting frequently touched objects and surfaces daily (WHO, 2020). Development of vaccines was seen as the next step in the control of COVID-19. Vaccination programs were identified as one of the breakthroughs in public health in terms of control of outbreaks.

1.2.1. Vaccine Development Processes

Since the onset of the COVID-19 pandemic, there was a global race to develop vaccines against this disease. WHO (2021) reported that 85 vaccines were on clinical development while 184 are in pre-clinical development. As of the end of April 2020, five vaccine products were reported to be in Phase IV of development (BioNTech Pfizer, Moderna, University of Oxford AstraZeneca (United Kingdom), Beijing Institute of Biological Products Sino Pharm (China) and Sinovac. Most African countries were expecting to obtain the COVID-19 vaccine through the COVAX facility (WHO, 2021).

In April 2020, WHO and European Union launched the COVAX facility as a global response strategy to the COVID-19 pandemic to ensure access to COVID-19 vaccine

by developing nations (WHO, 2021). On the other hand, the African Vaccine Acquisition Task Team of the African Union in collaboration with the WHO-led COVAX consortium are trying to secure 720 million doses of COVID-19 vaccines for Africa to achieve 60% coverage by June 2022 (Nachega et al., 2020).

On 1 February 2021, South Africa became one of the first African countries to receive a COVID-19 vaccine (Daily Maverick, 2021). The country received a million doses of the AstraZeneca/Oxford COVID-19 vaccine. The roll-out of the AstraZeneca/Oxford COVID-19 vaccine was suspended on the 8th of February 2021 following the release of results that showed the vaccine has low efficacy against the 501Y.V2 variant which is common in the South African population (Heywood, 2021). South Africa begun rolling out of the Johnson and Johnson COVID-19 vaccine on the 17th of February 2021 (Heywood, 2021).

Zimbabwe received its first delivery of the COVID-19 vaccine on the 15th of February 2021 with the roll-out of the vaccination program beginning on the 18th of February 2021 (Mavhunga, 2021). Zimbabwe received a donation of 200,000 doses from the Chinese government and purchased an additional 600,000 doses in March 2021 (Dzinamarira, Nachipo, Phiri & Musuka, 2021).

The country launched its national COVID-19 vaccination program using the BBIBP-CorV/Sino Pharm COVID-19 vaccine on the 22nd of February 2021 (Mavhunga, 2021). Zimbabwe aims to vaccinate at least 10 millions of its citizens to achieve herd immunity (Dzinamarira et al., 2021). As of the 1st of April 2021, they had administered 125,000 doses which translates to 20,938 total vaccinated people (to which the first and second dose of vaccine were administered) (MOHCC, 2021). The BBIBP-CorV/Sino Pharm COVID-19 vaccine has been to date approved in 28 countries including Zimbabwe but at the time when it was introduced in Zimbabwe,

it was not yet on the WHO Emergency Use Listing Procedure/Prequalification (WHO EUL/PQ) authorization, which made more people skeptical of its safety and efficacy. At the same time, The BBIBP-CorV/Sino Pharm COVID-19 vaccine was reported to have an efficacy of 79%. While mRNA vaccines like the Pfizer–BioNTech COVID-19 vaccine and mRNA-1273 showed higher efficacy of over 90%.

1.2.2. Vaccine hesitancy

There is however a growing body of individuals hesitant to take up vaccines due to lack of confidence in some of the vaccines (Dube et al., 2013). According to WHO, (2015) the Strategic Advisory Group of Experts (SAGE) on Immunization Working Group on Vaccine Hesitancy defined vaccine hesitance as a delay in acceptance or refusal of vaccination despite availability of vaccination services. MacDonald, (2015) also notes that vaccine hesitancy is multifaceted and situation specific, changing across time, place, and vaccines. It is sometimes affected by elements such as complacency, convenience, and confidence (MacDonald, 2015). In Zimbabwe, cases of vaccine hesitancy have been evident within the child immunization programs especially amongst religious objector groups (Machekanyanga et al., 2017).

The roll-out of the Sino pharm vaccine in Zimbabwe may face poor acceptance due to the lack of publicly available evidence on its effectiveness against the South African (501Y.V2) variant. In Zimbabwe, a preliminary survey report on COVID-19 vaccine hesitancy shown that 50% would accept the vaccine while 30% were unsure and 20% would reject, respectively (Mundagowa, Tozivepi, Chiyaka, Mukora-Mutseyekwa & Makurumidze, 2021). Moreover, little had been done by the Zimbabwean government to demystify conspiracy theories on social and traditional

media that the African continent was “immune” to COVID-19 due to the climatic conditions present therein. Furthermore, there was paucity of evidence on vaccine hesitancy amongst NGO employees hence making this study significant.

1.3. Statement of the Problem

As of the 5th of April 2021, a total of 36,923 COVID-19 cases were reported with 1,525 fatalities in Zimbabwe alone (WHO, 2021). At the same time 13 010 cases and 598 deaths were recorded for Harare. While vaccination is frequently cited as one of the most effective ways in preventing and controlling infectious disease (Mavhunga,2021), Government of Zimbabwe was grappling to reach its frontline workers vaccination targets. As at end of March 2021, the Government of Zimbabwe had managed to vaccinate 20,938 (single dose) out of a target of 50 000 health workers (MOHCC, 2021).

Extant literature demonstrates existence of complex beliefs and influences that cause populations to be hesitant, and even resistant to vaccination (Dzinamarira et al., 2021). Mundagowa et al. (2021) report that about 19% of the population are hesitant and 31% are highly likely not take the vaccine. Also, low uptake by health workers has ripple effects to roll-out of the vaccine to the public. Dzinamarira et al. (2021) in their study recommend that the Government of Zimbabwe should collaborate with Civil Society Organizations (CSO) given their pivotal role in mobilizing general population even in hard-to-reach areas. They argue that CSOs are pivotal in establishing trust at community, household, family and individual level and they have the capacity to complement government efforts to ensure the preparation of local communities’ awareness and ultimately acceptance of the COVID-19 vaccine. The role of NGOs over the past years was to complement efforts of the government by supporting with financial, technical, technological, and human resources. NGOs

for instance, plays a critical role in the success of the HIV treatment program despite its rocky start.

NGOs act as an information centre within the communities of Zimbabwe hence influence health seeking behaviours of communities thus critical to understand standpoint of NGO employees on the COVID-19 vaccine. Given Zimbabwe's history of political violence, inconsistent policies, poor service provision and state-controlled media, there is a lot of distrust in as far as health information disseminated on state media on COVID-19 thus more people are reliant on NGOs for information. It is therefore against this background that the researcher proposed to conduct a study exploring COVID-19 vaccine hesitancy among NGO employees in Harare, Zimbabwe given their intermediate position within the continuum of health promotion.

1.4. Research Objectives

1.4.1. Main Objective

The purpose of this study was to assess the COVID-19 vaccine hesitance amongst Non-Governmental Organization workers in Harare, Zimbabwe in 2021

1.4.2. Specific Objectives

The study specifically sought to:

- determine the socio-demographic characteristics associated with COVID-19 Vaccination hesitancy amongst NGO workers in Harare in 2021.
- assess attitudes and perceptions towards the uptake, effectiveness, and safety of the COVID-19 vaccine by NGO workers in Harare in 2021.
- assess the myths and beliefs around the COVID-19 vaccine amongst NGO workers in Harare, Zimbabwe in 2021.

1.5. Research Questions

- What is the socio-demographic characteristics associated with COVID-19 Vaccination hesitancy amongst NGO workers in Harare, Zimbabwe?
- What are the attitudes and perceptions that exist towards the uptake, effectiveness, and safety of COVID-19 vaccine by the NGO workers in Harare, Zimbabwe?
- What are the dominant myths and beliefs around COVID-19 vaccine amongst NGO workers in Harare, Zimbabwe?

1.6. Assumptions/ Hypotheses

While the generic assumption was based upon NGO employees being able to complete the survey, the study was also premised on the following hypotheses.

- Hypothesis 1: Individuals ever exposed or had someone exposed to COVID-19 are less hesitant than those without prior exposure. Exposure is defined as someone who had contracted COVID-19 or knows someone (relative) who has contracted the virus.
- Hypothesis 2: Individuals with pre-existing health conditions which increases susceptibility to severe COVID 19 are less hesitant to take up vaccine than those without. Pre-existing conditions in this study are defined as any disease or condition which heightened the chances of developing severe COVID-19 for example hypertension, diabetes, HIV/AIDS.
- Hypothesis 3: There is a significant relationship between vaccine hesitancy and age (vaccine hesitancy is less amongst elderly workers (45 years or older)).

- Hypothesis 4: There is a significant relationship between vaccine hesitancy and gender. Females are more likely to accept the vaccine than their male counterparts.

1.7. Significance of the Study

Vaccine hesitance studies that have been conducted globally and locally and have been focusing on other sub-populations other than the NGO employees. Sub populations such as frontline workers, students, parents, have been studied at length. It is however necessary to understand determinants of vaccine hesitance amongst NGO employees whose role in the delivery of health service in Zimbabwe is fundamental. Undertaking this study would benefit in ascertaining types of effective communication and awareness campaigns that might successfully convince people to accept vaccination services. It would also add to the body of literature on vaccine hesitancy but this time focusing on NGO professionals.

1.8. Delimitation of the Study

The study was conducted amongst NGO employees in Harare, the capital city of Zimbabwe (Figure 1). The city has an area of 960.6 km^2 (371 mi^2) and a total population of 2,123,132, and an estimated 3,120,917 in 2019 (Zimstat, 2012). The city is situated in the northern part of Zimbabwe, bordering with Mashonaland West, East and Central. Harare as a metropolitan province incorporates municipalities such as Chitungwiza and Epworth.

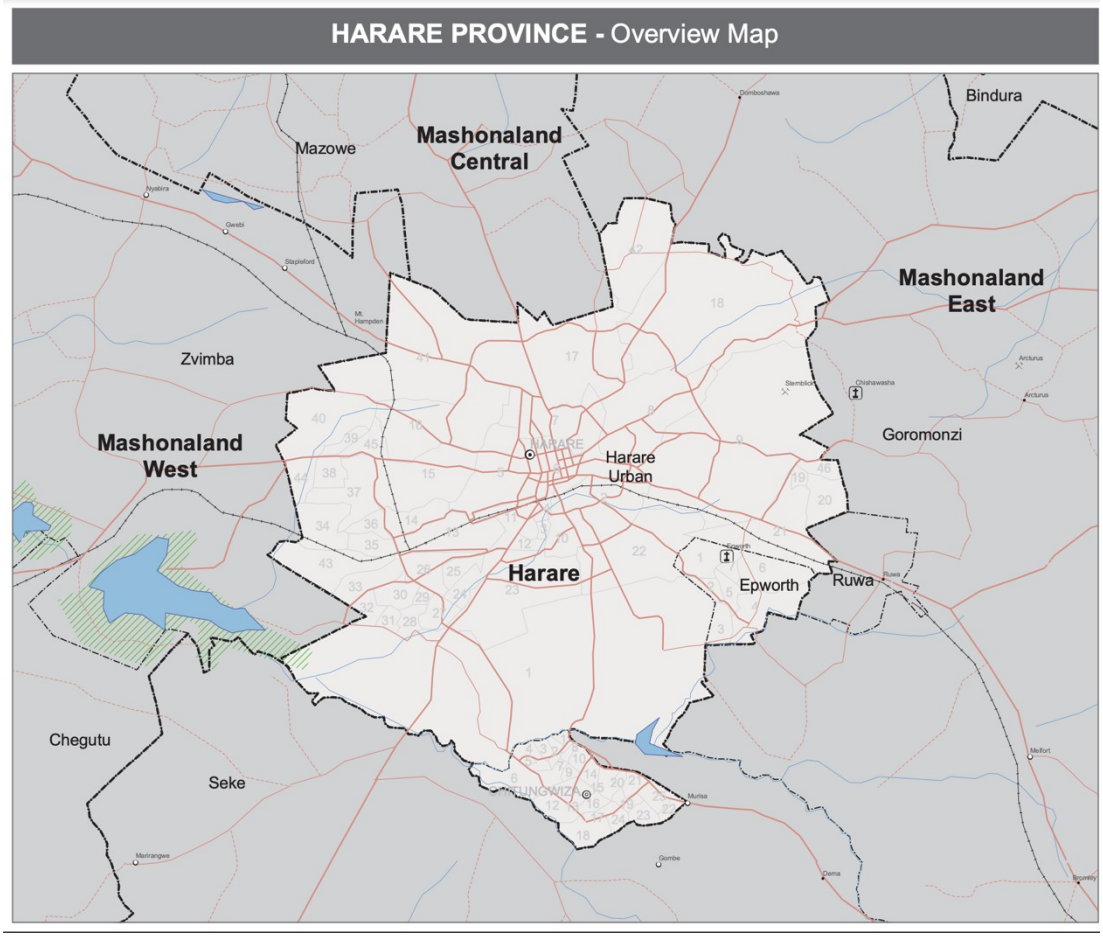

Figure 1: Harare Metropolitan Province

Harare is the leading administrative, financial, communication and commercial centre for Zimbabwe hence attracts majority of organizations to establish their head offices in Harare. Majority of Non-Governmental Organizations have their head offices in Harare for example, Population Services International, Family Health International 360, AFRICAID Zvandiri, Catholic Relief Services, GOAL amongst others

1.9. Limitation of the Study

The study was conducted amongst NGO employees in Harare only thus cannot be generalised across all NGO employees nationwide. Also, the use of response driven sampling offered no equal chance to all NGO employees, those outside the network of identified seeds.

1.10. Summary

This chapter has introduced what the study entails, clearly highlighting the problem under investigations and the research area, showing the group of people under investigation. The next chapter will involve an in-depth focus on the review of related literature and theoretical models whose tenets guide this study.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2.1. Introduction

This chapter showed a review of related literature. Reviewing related literature gave a broader understanding of what has been done in line with the problem under investigation. Reviewing related literature was in-line with the objectives of the study. Findings from similar studies were reviewed with the aim of noting similarities and differences in these studies to come up with evidence-based conclusions to inform this study. This section also indicated the theoretical framework which shapes this study.

2.2. Theoretical Framework

Theoretical framework is defined as a set of interrelated concepts that can be used to guide research with the purpose of predicting and explaining the results of the research (LeCompte & Preissle, 1993). Similarly, Miller (2007) states that it guides the researcher toward appropriate data collection methods. Abend (2013) defines a theoretical framework as the structure that holds a theory of a research study by introducing and describing the theory on why the research problem understudy exists.

This study utilized a hybrid of two vaccine hesitancy models. The Behavioral and Social Drivers of Vaccination (BeSD) Increasing Vaccination Model (Figure 2) was built on earlier work by Brewer, Chapman, Rothman, Leask, and Kempe (2017) and the WHO Three C's model (Figure 3). While the Behavioural and Social Drivers of Vaccination (BeSD) Increasing Vaccination Model, provides the continuum of factors affecting vaccine uptake, 3 C's Model groups them into three inter-related categories. The researcher presented data in line with how low or high confidence for instance affects decision on vaccine uptake.

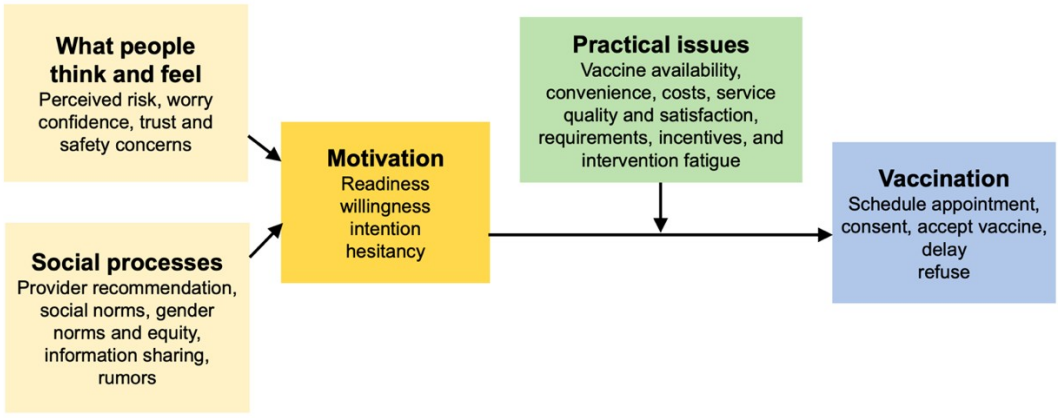

Figure 2: Behavioural and Social Drivers of Vaccination (BeSD) Increasing Vaccination Model, (WHO,2020)

At the centre of the Behavioural and Social Drivers of Vaccination (BeSD) Increasing Vaccination Model is motivation to be vaccinated. WHO (2020) stipulates that motivation in this case will be measured by questions such as "How likely are you to get COVID-19 vaccine given its availability?" The model indicates that motivation to vaccinate is determined by individual and group perception on the perceived risk, confidence, trust, and safety concerns on the vaccine. Social processes are also critical for instance provider recommendations, religion, and rumours on vaccine.

The BeSD model accepts role of social and individual perceptions as influencers of vaccine uptake. It is therefore apparent on how pertinent this model is in exploring COVID-19 vaccine hesitancy amongst NGO employees, understanding what motivates or stops them from getting vaccinated. The model also highlights the importance of practical issues such as service quality, vaccine availability and requirements in influencing hesitancy.

To further unpack the Behavioural and Social Drivers of Vaccination (BeSD) model, the Three "3C's" model on vaccine hesitancy was used. The "3 Cs" model highlights

three inter-related categories namely complacency, convenience, and confidence (MacDonald, 2015). The "3 Cs" model emphasize importance of vaccine confidence which is defined as belief in the effectiveness and safety of vaccines and the system that delivers them (MacDonald, 2015). Whilst vaccine complacency is believed to exists where perceived risks of vaccine-preventable diseases are low, and vaccination is not deemed a necessary preventive action (MacDonald, 2015). Therefore, complacency maybe because of vaccine success, self-efficacy, and health responsibilities. Vaccine convenience has been defined in terms of accessibility of the vaccine (MacDonald, 2015).

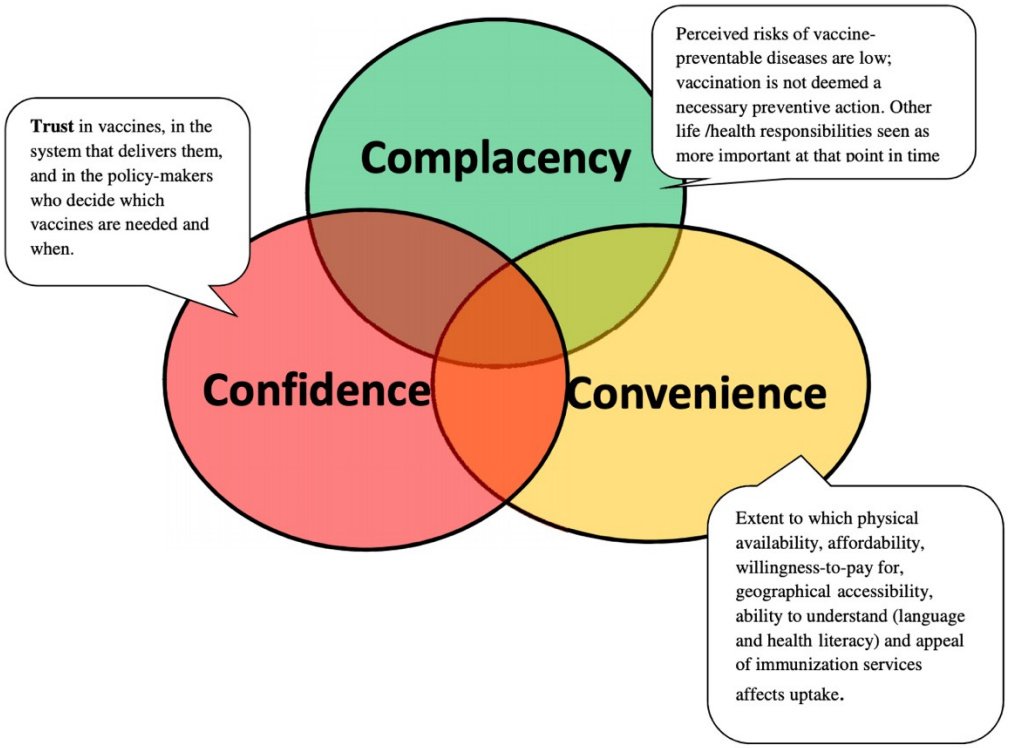

Figure 3 The "3 Cs" Model of Vaccine Confidence (Adopted from SAGE Working Group on Vaccine Hesitancy (MacDonald, 2015).

Wiysonge et al. (2021) rather expands the three C's model and uses a Five C's models of drivers of vaccine hesitancy namely confidence, complacency, convenience (or constraints), risk calculation, and collective responsibility. In this

model, components of risk calculation and collective responsibility were added. Cooper, Betsch, Sambala, Mchiza and Wiysonge (2018) state that generalizability of either the Three or Five C's model in Africa is still limited. Both models are centered around factor which influences health seeking behaviour although they differ in presentation, they both agree on importance on motivators for uptake of services such as vaccine safety data and social pressure.

2.3. Relevance of the Theoretical Frame to the Study

The Behavioural and Social Drivers of Vaccination (BeSD) Increasing Vaccination Model was critical for this study because it provided a theoretical base on what influenced behaviour toward hesitancy or acceptancy. BeSD offered a wider horizon in explaining factors affecting vaccine hesitancy whilst the 3Cs model offered an interrelated perspective on determinants of hesitancy. The researcher was guided in tools development, data collection and analysis, interpretation, and discussion by these two models.

2.4. Socio-demographic characteristics associated with COVID-19 Vaccination hesitancy

Extant literature shows greater associations between various socio-demographic characteristics and vaccine hesitancy, however, there still exist a gap in literature on such associations amongst NGO employees. Marti, de Cola, MacDonald, Dumolard, and Duclos (2017) indicates that, vaccine hesitancy has been associated globally with the perceived risk or benefit of vaccines, religious, cultural, gender or socio-economic factors, knowledge, and awareness issues. Furthermore, they indicate that vaccine uptake is dependent upon various factors which ranges from demographics to vaccine safety.

With the narrative that older people are at a high risk of getting COVID-19 and worse off, becoming severely ill, younger age groups have become complacent and disassociated themselves from the risk of getting COVID-19.

Schwarzinger, Watson, Arwidson, Alla, and Luchini (2021) in their study in France revealed that high hesitancy has been noted amongst younger age groups due to low perceived risk of getting COVID-19. Similar findings were observed in other earlier studies (Dinga, Sinda, and Titanji (2021); Deml et al. (2019); Klein and Pekosz (2014); Larson et al. (2018); MacDonald (2015); Yaqub, Castle-Clarke, Sevdalis, and Chataway (2014). A similar setting for these studies was that they focused on general population compared to this study focusing on professionals within NGO sector.

Females as compared to males are always known for their improved health seeking behaviour. This was confirmed in studies by (Schwarzinger, et al., 2021); (Ditekemena et al., 2021) where females were less hesitant compared to males. Similar findings were also noted by Dinga et al. (2021) and attributed this to repeated visits to health facilities by females in their lifetime through prevention of mother to child visits and child immunization programs compared to men. Contrary to this were findings amongst general population in the middle east where men were found to be less hesitant to the vaccine than females (Sallam et al.,2021). Other studies found no association between gender and vaccine hesitancy, rather they indicated higher association on contextual rather than demographic factors (Thanapluetiwong, Chansirikarnjana, Sriwannopas, Assavapokee & Ittasakul., 2021).

Married people have been documented as having less hesitant behavior toward COVID-19. Such behavior has been attributed to protective effect of the family members thus a collective rather than individual decision. Robinson, Jones, Lesser,

and Daly (2021) in their study observed an association between marital status and vaccine hesitancy with the unmarried having high hesitancy levels. Similarly, Ditekemena et al. (2021) observed high hesitancy amongst unmarried, low income and less educated young adults. In contrast, Thanapluetiwong et al. (2021) found no relationship between marital status and vaccine hesitancy.

Those within the lower income quantile have been documented as being more hesitant compared to the high-income quantile. This has been attributed to access to quality services and information, with high income earners having access to specialist, family doctors who advise them on health decisions. In Europe, (Schwarzinger et al., 2021) state that high income earners were more likely to get the vaccine compared to low-income earners. Analogous findings were observed by Ditekemena et al. (2021) in their study in the DRC.

In some studies, lower levels of education have been significantly associated with high vaccine hesitancy and significant predictor in some. A study on parents by (Talev, 2020) in the United States observed that education is a significant predictor of vaccination intentions among parents [$F\ (5,\ 533) = 9.93, p < .05$] and for their children [$F\ (5,\ 533) = 10.278, p < .05$]. Findings of this study pointed out that more educated parents were more likely to vaccinate themselves and their children compared to their less educated compatriots. Similar findings were observed by Guzman-Holst, DeAntonio, Prado-Cohrs, Juliao, (2020) in their vaccine hesitancy study in Latin America and the Caribbean and by Schwarzinger et al. (2021) in France in their study on young working adults. It however can be argued that general education may not be associated but rather health education is critical thus imperative to explore.

COVID-19 vaccine came at time when the world has seen a lot of epidemics and technological and medical breakthroughs whose aftermaths have been both positive and equally negative. In a study in the US, blacks were found to be more hesitant than other races because of inherent injustices embedded in some public health breakthroughs such as the Tuskegee Syphilis study (Eshun-Wilson et al., 2021a). Schwarzinger et al. (2021) also highlight poor adherence with recommended vaccinations in the past as factors associated with outright vaccine refusal. Machekanyanga et al. (2017) note poor vaccine uptake history amongst the apostolic sect as a threat to vaccine programs in Zimbabwe. Thanapluetiwong et al. (2021), observe contrasting findings in Thailand with association between vaccine hesitancy and history of uptake of influenza virus vaccine found too insignificant.

Those who had contracted COVID-19 before were more likely to take up the vaccine compared to those who had not. Ditekemena et al. (2021) observe that those who have had COVID-19 were more likely to be willing to receive a COVID-19 vaccination. This may also be associated with higher exposure to high quality information and/or a better awareness about the disease and the risks of being infected.

Religion has been predominantly identified as barrier or motivator to any public health program based on coherence of the program with the groups religious principles, norms, and values. In a study amongst apostolic religious groups in Zimbabwe, Machekanyanga et al. (2017) note that religious doctrines within these sects were a great barrier to immunization programs. Guzman et al. (2020) also observe similar findings and added aspect of culture within the Latino communities as an impediment to public health program success. In northern Nigeria, polio eradication program has been under constant threat due to low-risk perception and

religiously motivated myths (Taylor et al., 2017). In South Africa a religious pastor has publicly denounced uptake of COVID-19 vaccine. In another study in South Africa by the Comparisure organization indicates 52% hesitancy because of religious beliefs (Dzinamarira et al., 2021).

2.5. Determinants of COVID-19 Vaccine safety, effectiveness, and uptake.

Vaccine safety is considered a key factor in determining uptake and success in controlling the preventable disease (WHO, 2021). While safety and effectiveness of a vaccine clutches the ultimate promise for resolving the COVID-19 pandemic, hesitancy to accept vaccines remains common (Kaplan & Milstein, 2021). A study of 67 countries found that Eastern Europe reported the lowest scores for vaccine confidence of any sub-region around the globe, accounting for 7 of the 10 least confident countries studied (Larson et al., 2016). In the same study, 41% of respondents in France and 36% of respondents in Bosnia and Herzegovina disagree with the statement that "vaccines are overall safe," compared to a global average of only 13%.

Obregon, Mosquera, Tomsa, and Chitnis (2020) in their literature review found that vaccine/vaccination-specific issues are cited most frequently as determinants in vaccine hesitancy and barriers to immunization, accounting for 40% of all references in the literature. They also reviewed that vaccine processes such as origins, procurement, and management (19%), socio-economic factors, religion, and gender issues (12%); trust issues (11%); and the knowledge of caregivers (10.5%) plays a critical role in defining uptake.

Perceived safety and lack of confidence have been attributed as key concerns driving vaccine hesitancy globally. The most frequently mentioned reason for not taking the COVID-19 vaccine was lack of confidence in the safety of the vaccines, followed by

lack of confidence in the effectiveness of the vaccine, complacency regarding the individual risk of getting infected with COVID-19, and lack of time to go and get a vaccine (Wilson & Wiysonge, 2020).

In a study conducted in DRC by Ditekemena et al. (2021), about 60% of the respondents who were not willing to be vaccinated mentioned that they did not trust the vaccine. In DRC, Congolese COVID-19 task force announced that COVID-19 vaccine clinical trials were planned in the DRC, and this led to discontent and fear. Fear of being used as guinea pigs led to an uproar (Ditekemena et al., 2021).

Dinga et al. (2021) in their vaccine hesitancy assessment study found out that hesitant individuals were skeptical on the authenticity of the drugs, intentions of the pharmaceuticals towards Africans. In the same study, they also observe quotes such as, "vaccine companies will send suboptimal vaccines to Africa" which shows lack of trust in giant pharmaceuticals. Ditekemena et al. (2021) in their study in DRC also note that hesitancy is largely because of lack of trust on organizations and countries involved in development of the COVID-19 vaccine.

Sometimes lack of trust based on safety issues has been as result of how the pharmaceutical organizations contradict or misrepresent their safety and effectiveness data. AstraZeneca according to Vogel and Kupferschmidt (2021), claimed a 79% vaccine efficacy which was disputed as outdated by an independent board overseeing the trial. AstraZeneca went on and revised the efficacy down to 76%. This led to a lot of doubt worldwide in terms of integrity of the institution and reliability of the vaccine. Schoub (2021) points out that such omissions led to a decline in confidence on AstraZeneca. Several countries in Europe suspended use of AstraZeneca citing a possible association with blood clots (Petersen Jørgensen, Bor & Lindholt., 2021). Suspension of AstraZeneca vaccine in some European nations

has led to a decline in vaccine acceptance. Petersen et al. (2021) found out from pooling across the countries in the sample that decided to suspend the AstraZeneca-vaccine later, that acceptance after March 10 (b= -.08, p = .007) declined.

Emerging new COVID-19 variants have also contributed to casting doubt about effectiveness of current crop of vaccine. In South Africa, reports of a highly infectious variant B.1.351 (501Y.V2) surfaced and needed a more effective vaccine and there was no conclusive evidence that AstraZeneca will effectively tackle the mutating variant (Schoub, 2021). Trial data in the United Kingdom (UK), the United States of America (USA) and South Africa (SA) indicated a sharp drop in the clinical efficacy endpoint, mild to moderate disease, from 70% and 79% in the UK and USA, down to 22% in South Africa and even lower to 10.4% in a subset enriched with B.1.351 (Schoub, 2021). Other scholars such as Abdool and de Oliveira (2021) also observe that AstraZeneca induced antibodies had little or no neutralising activity against B.1.351 using various neutralisation assay.

Global politics also played a role in driving vaccine hesitancy. Global politics of East vs West came into force on August 11, 2020, when Russia became the first nation to roll-out COVID-19 vaccine (Sputnik). Scholars such as Burki (2020) argue that the vaccine was rolled out without tangible trial evidence and may had not started phase 3 of the trials. In a qualitative study in the United States, Berry et al. (2021) observe that vaccine hesitancy has been driven by concerns over how rapidly the vaccine was developed and side effects, including infertility and pregnancy related concerns, were among the most frequent. In the same study, vaccine hesitant frontline workers point towards fear of long-term side effects whilst those who once contracted Covid feared having similar signs and symptoms.

In a vaccine hesitancy study amongst health care workers (HCW) in the Arab speaking countries, Qunaibi, Basheti, Soudy and Sultan (2021) highlighted that most cited reasons for hesitancy are concerns about side effects (58%), vaccine safety (57%) and distrust in vaccine expedited production (43,9%) and healthcare policies (37,4%). In the same study, hesitancy for health care workers was deemed fatal on success of vaccine uptake given the trust placed on health care workers by the generic public. Thus, vaccine hesitancy among HCWs can hinder the wide coverage of vaccination and reverse the efforts for circumventing the ongoing COVID-19 pandemic. A similar study in Egypt on health care workers (n=496), shows low vaccine acceptability of 13.5% (Mohamed-Hussein et al., 2021).

Preliminary findings on a Zimbabwean vaccine hesitancy study by Mundagowa et al. (2021) found out that fears of safety around time taken to develop the vaccine, as well as lack of scientific data for the Sino pharm vaccine. Other key findings from the general population findings point to fear of side effects. However, the study did not collect data specific to the NGO population for it to have conclusive results on this subgroup.

2.6. Myths and beliefs around the COVID-19 vaccine

COVID-19 like any other epidemics before has been fraught with lot of conspiracies. Global politics on how COVID-19 started increased levels of vaccine hesitancy. Social media served two fronts in spreading correct and incorrect information. Dinga et al. (2021), in a COVID-19 study amongst young adults reveal that major issues noted as driving the low acceptance rate includes misinformation and anti-vaccine campaigns against COVID-19 vaccines on social media.

Risks of misinformation and dis-information during any outbreak are high and sometimes difficult to contain. Wiyeh, Cooper, Nnaji and Wiysonge (2018) state that

during every outbreak, information spreads in excess, some correct and some not, making it difficult for people to access reliable information when they need it. They coined it infodemic since it takes shape of epidemics and pandemics. Proliferation of infodemics, misinformation and myths has led to growing body of hesitant individuals. Campaigns and the politicization of the pandemic have instead assisted in fostering a new climate of vaccine hesitancy.

Conspiracies fuelling vaccine hesitancy may take different forms and shape, some emanates from political grounds. However, scholars such as Oliver and Wood, (2014) hint that belief in conspiracy theories destabilizes engagement in pro-health behaviours and support for public health policies, including within the contexts of previous disease outbreaks, such as Ebola. WHO has recommended governments to curb spreading of false information on COVID 19 vaccine (WHO, 2021)? Evanega, Lynas, Adams, Smolenyak and Insights (2020) state that in context of COVID-19, a plethora of media channels have been disseminating both true and false information about SARS-CoV-2 and the pandemic thus making it difficult for the public to delineate between true or false information.

In some instances, social media has led to improved uptake of vaccine. In a study by Chen and Stoecker (2020) social media coverage was positively associated with increased influenza vaccine uptake and positive prospective relationship with favourable vaccine attitudes as well (Chan, Jamieson, & Albarracin., 2020). However, Freimuth, Jamison, Hancock, and Quinn (2017) in their study on trust of flu vaccine based on source of information found out that African Americans trust reputable information sources such as Centres for Disease Control and Prevention (CDC) and are more hesitant and lack trust in other sources.

In a study conducted amongst general population in Australia, Pickles et al. (2020) conclude that stronger endorsement of misinformation was associated with male gender, younger age, and lower education level. Whilst Quinn et al. (2018) observe that misconceptions and beliefs maybe grounded in historical medical exploitations of the Black American population for example, access to Tuskegee Syphilis study has had a positive association with belief in statements such as vaccines are meant to destroy rather than save.

In traditional or mainstream media coverage (broadcast news television, print, and radio), health information is more likely to be verified by editors (Chou et al., 2018). Conversely, social media and other internet-based channels are often not subject to such content regulations, leaving users more susceptible to exposure to false information (Broniatowski et al., 2018). Stecula, Kuru and Jamieson (2020) assert that likelihood for certain media sources to contain misinformation, tend to mislead users thereby affect their health choices.

Berry et al., (2021) observed fears of being microchipped or having cancer because of taking the vaccine as some of the misinformation leading to vaccine hesitancy. They also found out dominant beliefs that the vaccine causes COVID-19. In a study conducted among healthcare workers in the DRC, Ditekemena et al., (2020), found that only 28% of them would accept to be vaccinated with a COVID vaccine. The authors of this study suggest that this low willingness to be vaccinated by health care workers is the consequence of the spread of misinformation through social networks.

The recent Ebola vaccination experience in some African countries pointed out that the introduction of new vaccines as a crucial public health intervention strategy can be met with political, religious, and socio-cultural resistance (Masumbuko, Underschultz, & Hawkes, 2019). During the 2014–16 Ebola outbreak in Liberia,

those who distrusted government were less compliant with Ebola Virus Disease (EVD) control policies. Low level of care in EVD treatment centres (ETCs), in ability to have a traditional burial for the deceased, and a distrust of government and its partners for profiting from the outbreak, were identified as some of the determinants of vaccine hesitancy. In extant literature review, Wilkinson and Fairhead (2017), found out that misinformation, fear, rumours, mistrust, and lack of confidence in authorities, denial of bio-medical discourse and desire to remain autonomous and avoid possible contamination.

Perceptions of COVID-19 as a strategy for political corruption has been noted as one of the drivers for distrust in Africa (Ilesanmi & Afolabi, 2020). In their study, they highlight myths such as COVID-19 Vaccine as the mark of the beast amongst religious groups. In the same study, political decisions such as boarder (timeliness) closure were also identified as critical determinants of vaccine hesitancy in Nigeria. In some countries, boarders were reported to be closed after repatriation of political moguls' relatives from COVID-19 high-risk countries such as China, Germany, and the United States of America to Africa.

Vaccine hesitancy amongst Africans has also been heightened by beliefs in use of herbs and traditional medicines (Dandara, Dzobo, and Chirikure, (2020). Madagascar steered a lot of debate through its claims on effectiveness of *Artemisia afra*, which is regularly used throughout Africa to alleviate respiratory disease symptoms (Eichengreen, 2020). This however led to excessive use of "zumbani plant" for steaming in Zimbabwe (Moyo, 2021). Use of herbs has led to lack of trust and beliefs in modern medicines amongst Zimbabweans.

2.7. Summary

This review of related literature showed that there is a gap on vaccine hesitancy amongst non-governmental employees globally. Understanding vaccine hesitancy amongst NGO employees will aid the government of Zimbabwe in developing comprehensive communication and awareness strategies which can be used to reach out to the general population. Related literature also indicated a strong link between vaccine hesitancy and government policies on tackling COVID-19. Studies that have been done in Zimbabwe pointed out to factors such as lack of trust on government, health delivery systems and safety issues. However, little is known about determinants of vaccine hesitancy amongst NGO employees.

CHAPTER 3 METHODOLOGY

3.1. Introduction

This chapter gave details of the methods employed in the study. The chapter highlighted the type of the study design used, study setting, study population, sampling method and how the research data will be collected and analysed. The ethical considerations were also stated in this chapter.

3.2. The Research Design

An analytic cross-sectional design was adopted for this study. An analytical cross-sectional study is a type of quantitative, non-experimental research design. It seeks to "gather data from a group of subjects at only one point in time" (Grove & Gray, 2018). The purpose is to measure the association between an exposure and an outcome within a defined population. Cross-sectional studies often utilize surveys or questionnaires to gather data from participants (Grove & Gray, 2018). The researcher did not make any causal inference, rather associations were analysed.

3.3. Population and Sampling

The study targeted adult NGO employees (18 years or above) based in Harare.

3.3.1. Inclusion criteria

The study included participants who are 18 years or above, employed by any of the NGOs in Harare. Targeted participants were expected to meet the following criteria

- 18 years or older,
- NGO employee be based in Harare.
- NGO focusing on health programs

3.3.2. Exclusion criteria

Excluded participants were those below age of 18. Also, NGO employees based outside of Harare or not implementing health programs were excluded as well. Non-NGO employees in and outside of Harare were also excluded.

3.4. Sample Size and Sampling Procedure

The study sample size was estimated using the Dobson formula whose parameters are informed by similar studies conducted in Zimbabwe. Recent study by Mundagowa et al. (2021) indicated prevalence of 19% for vaccine hesitancy amongst general population. Using the Dobson formula, 19% vaccine hesitancy rate was selected and the following assumptions: $Z_{1-\alpha}$ =1.96, and Delta (Δ) =0.05, the minimum sample required for the study was 207 and maximum sample size was 258 based on 80% response rate.

$$n = Z^2\left(\frac{pq}{e^2}\right)$$

Where:

n is the sample size,

$\mathbf{Z^2}$ is the abscissa of the normal curve that cuts off an area α (alpha) at the tails (1 minus α equals the desired confidence level, e.g., 95%)

p is the estimated proportion of an attribute that is present in the population, and

q is 1 minus p, and

$\mathbf{e^2}$ is the desired level of precision or margin of error

3.4.1. Sampling Procedure

A response driven sampling (RDS) was used for this study. The researcher utilized the respondent's network size and composition to estimate selection probabilities for each sampled unit. This promotes generation of acceptable estimates for the study population (Gile et al., 2018; Heckathorn & Cameron, 2017). Use of RDS in public health has been dominantly for hidden populations (key populations) such as drug addicts, sex workers, men who have sex with men, among others. RDS was chosen for this research mainly because of 1) unknown population size of NGO workers in Harare, 2) challenges in doing probabilistic sampling on unknown population size and 3) challenges posed by COVID-19 on movement and physical data collection. Therefore, utilization of network-based referrals proved to be a probable option. RDS offered rigor over other chain referral methods in recruitment and analysis, and it is useful when traditional sampling methods are not possible like during COVID-19 control and prevention times. Other sampling procedures, such as snowballing and other network-based methods, run into the problem of biasing survey participation and hence do not allow researchers to make statistically sound inferences about the target population.

The researcher adopted the following formula for estimating number of seeds and coupons required for the study (Heckathorn & Cameron 2017).

$$\eta_{W} = \sum ps(cr)^{w-1}$$

with

p = proportion of recruited seeds that participate,

s = number of seeds recruited,

c = number of coupons every respondent receives,

r= response rate of the recruits

w= recruiting waves.

Using the formular above, the research got a minimum of four seeds, five waves and two coupons per seed, reaching about 267 participants which were within range of the estimated sample size for the study. Initial four seeds were conveniently selected from a list of NGOs obtained from National Association of NGOs (NANGO). On number of seeds, various RDS studies vary widely between 2 and 32 seeds, with an average of 10 (WHO, 2013). Unlike in many use-cases of RDS, this study did not use monetary incentives as secondary incentives, rather monetary incentives were used for primary recruitment only for the 5 enumerators. Each seed was given a referral code which they used in recruiting other respondents.

3.5. Variable definition and data sources

3.5.1. Independent Variables

Socio-demographic variables (age, gender, education, religion, marital status) vaccination status, vaccination history.

3.5.2. Dependent Variables

Respondent's choice to Accept or decline vaccination, being confident/not confident on the vaccine or health system.

3.6. Data Collection Instruments

The researcher used one standard questionnaire whose structure and questions were guided by the WHO Working Group Determinants of Vaccine Hesitancy Matrix. The matrix has questions that addresses contextual influences, Individual and group influences as well as vaccine specific issues. Contextual factors such as health systems, socio-cultural, religious, political and environment factors were assessed in this study. Individual and group factors such as perceived risk, personal experience of COVID-19, beliefs and attitudes were also assessed. Vaccine safety issues such as

vaccine development, safety and efficacy data, mode of administration and source of vaccine were assessed to determine vaccine hesitancy amongst NGO employees.

The questionnaire used is divided into four sections. First section is eligibility/ screening section. Second section collects data on socio-demographics which include historical data on vaccination status, status on pre-existing health conditions such as diabetes. Third section is on COVID-19 Vaccine access and safety coupled with practice questions. Last section is on attitudes wherein respondents are asked to respond to trending COVID 19 vaccine statements on a scale from strongly disagree to strongly agree.

3.7. Reliability and Validity

Internal reliability in this questionnaire was ensured by back-to-back translation to both Shona and then translated back into English. Comparisons of back-to-back translations was utilized to check any meaning loss and notable gaps were addressed accordingly. Face validity for the tool was done by conducting a mini pilot study using an identified local NGO in Harare. Response collected were analysed using principal component analysis method. Internal consistency of questions loading into the same factor were assessed and revisions to the tool were done accordingly.

3.8. Pilot Study

A mini pilot was done with a few selected individuals within a local NGO in Harare. Tools were checked on logical flow, internal consistency, relevance of the questions in line with targeted population as well as appropriateness of the questions. Pilot was done on 10% of the final sample size (26) and in a day. Revisions were done on the study tools.

3.9. Data Collection Procedure

A mobile data collection application (KOBO Collect) was utilized. This was in line with COVID-19 regulations which provides for minimal face to face interactions. Mobile data collection minimized face to face contact between enumerators and respondents. Given the use of response driven sampling technique, data was collected in a layered approach based on number of waves. First four (4) seeds received the initial link which allowed them to complete the questionnaire. After first layer submission, a referral question was added to the questionnaire to allow for the seeds to refer the next layer of respondents. To reinforce the exclusion criteria, the tool was constrained with validation rules on age (18 or older) anything less was taken to the end of the questionnaire, NGO Employee = Yes, resident and works in Harare = Yes (anything less than a yes on both questions was taken to the end of the questionnaire).

3.10. Data management

Data collection was conducted in 4 weeks from the 2nd week of June to 2nd week of July 2021. Basic data collection and research ethics training was done to five enumerators involved in the pre-testing of tools as well administering the online tool. All collected responses were stored in a cloud database hosted by Enketo (KOBO Toolbox). Access to the server was restricted to the researcher only and was password protected and with two factor authentications. To minimize duplicates, the shared link was set to allow one submission from an identified browser and access point. Data collected did not include names of respondents and unique identifiers were automatically created by the system during data collection. Data capturing and cleaning were done using Microsoft Excel. All information collected was password protected. Data was backed up using a flash drive, cloud server and an external hard

drive that can only be accessed by the researcher. Analysis outputs were also saved and can be shared with the department upon request.

3.11. Analysis and Organization of Data

Data analysis was being performed using IBM SPSS v26.0 and R version 4.0.5 (2021-03-31) statistical packages. A database was created in Microsoft Excel using the data extracted from the Enketo (KOBO Toolbox) server and preliminary data cleaning was done in Excel before exporting it to SPSS and R. Since the researcher opted for RDS, evaluation of homophily, that is, tendency for in-group recruitment was done to check for non-independence. Descriptive statistics for categorical variables were presented as frequencies, proportions in the form of tables, graphs, and charts. For continuous variables such as age, the mean and standard deviation (SD) was calculated, and analysis with an outcome (accepting or rejecting the vaccine; concerned or not concerned) were conducted using nonparametric tests such as the Mann–Whitney U test and Kruskal–Wallis (K-W). The statistical significance was set at $p< 0.05$.

The Chi-squared test were used to analyze associations between categorical variables with concerned or not concerned, accepting, or rejecting the vaccine. Fishers exact test were used rather than Chi-square, where expected frequencies in a combination are less than 10. Bivariate analysis was conducted to obtain crude odds ratios associated with outcomes of accepting or rejecting the vaccine. Confidence intervals for crude odds ratios were used to determine statistical significance in differences by demographics (gender, age, residence etc.). Multivariate analysis in this case logistic regression was used to analyse and identify independent factors associated with vaccine confidence or acceptance and rejection was conducted.

Reliability analysis was done for the last section of the tool, on COVID-19 statement with Likert scale responses. Cronbach alpha (α) reliability coefficients were calculated to assess internal consistency of the Likert scale tool. Kaiser-Meyer-Olkin (KMO) Test was also computed to measure sampling adequacy. Sampling adequacy is a measure of how suited the data is for Factor Analysis. Exploratory Factor analysis was also done to assess number of components that were extracted from the items.

3.12. Ethical Consideration

The study was submitted to Africa University Research Ethics Committee (AUREC) for ethical clearance. The researcher sought informed consent from participants for their voluntary participation in the study. The informed consent included but not limited to voluntary participation, privacy and confidentiality, and no harm to participants. No personal identification information was collected for instance names.

3.13. Summary

This chapter highlighted the research design that was followed, population, sample size, data collection techniques and methods. It also highlighted ethical considerations for this study as well as how validity and reliability was ensured for this study.

CHAPTER 4 DATA PRESENTATION, ANALYSIS & INTERPRETATION

4.1. Introduction

This chapter presented results of factors associated with COVID-19 vaccine hesitancy amongst NGO employees within the HIV programs domain. This was an analytic cross-sectional study, which recruited 267 participants within NGOs implementing HIV/AIDS programs based in Harare, only 224 were eligible based on the inclusion/exclusion criteria. Demographics which include gender, education, medical profession, religion, marital status, and age were presented as frequencies in table format. Data on myths and misconceptions based on exploratory factor analysis was presented in the form of tables indicating reliability statistics. Data presentation for further analysis was based on multivariate analysis where logistic regression was used to predict factors associated with vaccine hesitancy.

4.2. Demographics

A total of 267 participants were reached and 43 participants were excluded from the study (48% - non-health sector, 28% reside and work outside Harare and 23% not NGO employees). About one in every three respondents reached were males (58%). Majority of the respondents (72% N=224) were married (Table 1). Twenty-three percent of the participants have had COVID-19 before, whilst (11% N=224) have had someone close to them exposed to COVID-19. Respondents ages ranged from 18 to 57 years with a mean age of 34 (SD± 6.5). Mean age for males was 34.8 (SD±5.7) while females have 33.6 (SD±7.4).

Table 1: Demographics Characteristics of participants

Demographic Characteristic		Total (N-224) n (%)
Gender	Female	94 (42)
	Male	130 (58)
Education	Secondary	5 (2)
	Tertiary	219 (98)
Medical Professional	Non-Medical	187 (84)
	Medical	37 (17)
Religion	Apostolic	16 (7)
	Catholic	43 (19)
	Islamic	2 (0,9)
	None	10 (4)
	Pentecostal	83 (37)
	Protestant	54 (24)
	Traditional	16 (7)
Marital Status	Married	162 (72)
	Separated/Divorced	8 (4)
	Single	54 (54)
Has Medical Condition	No	172 (77)
	Yes	52 (23)
Exposure to COVID- Someone else	No	199 (89)
	Yes	25 (11)
Exposure to COVID- Self	No	27 (13)
	Yes	180 (87)
Age	<40 Years	185 (83)
	40 + Years	39 (17)
Age_Grp	18 - 24	11 (5)
	25-29	38 (17)
	30-34	68 (30)
	35-39	68 (30)
	40-44	23 (10)
	45-49	11 (5)
	50-54	3 (1)
	55+	2 (0,9)

4.3. Vaccination hesitancy amongst NGO workers in Harare

At least one in every three respondents would opt not to take the vaccine (33%) whilst 33% said they would, 23% already vaccinated and 11% were still indecisive (Figure 4). Males (56% [n=42]) were more hesitant than females. Majority of those without existing medical conditions (72% [54/75]) were hesitant compared to their compatriots with medical conditions such as hypertension, diabetes, and others. Vaccine hesitancy was noted as high amongst respondents below age 40 (79%) compared to those older than 40 years.

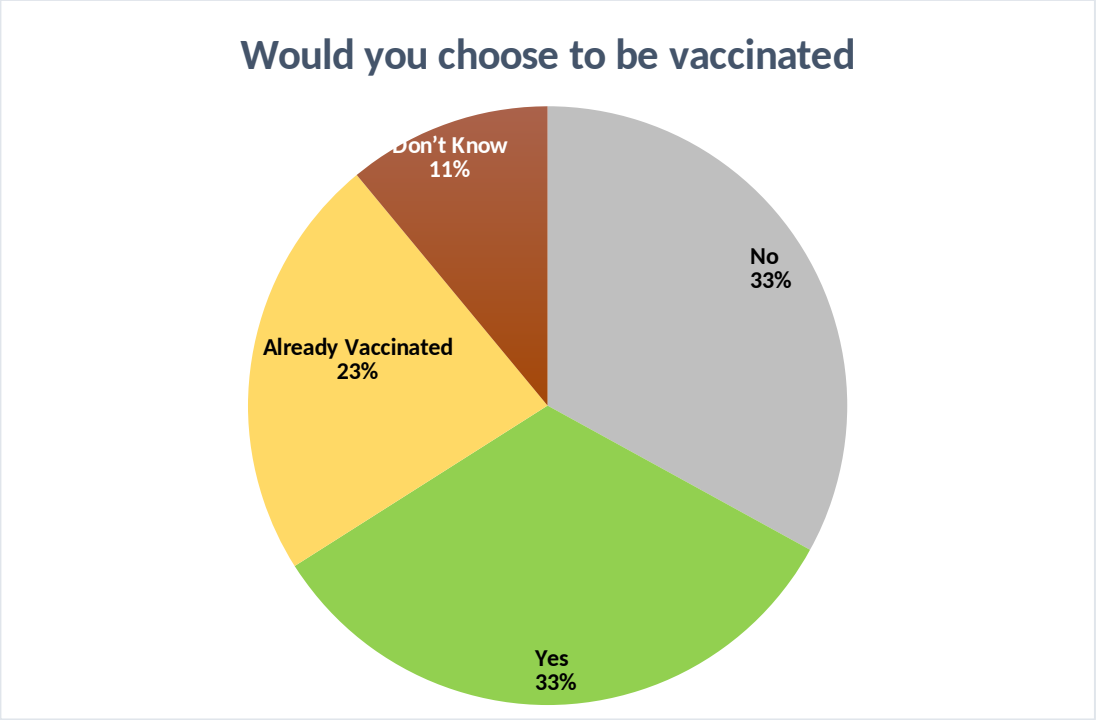

Figure 4: Vaccine Hesitancy amongst NGO employees in Harare

Those who stated that they would not take the vaccine (n=75) where asked on what they would do instead (Figure 5). One third (32%) preferred steaming, whilst 20% preferred continuing with mask wearing and 7% were still undecided. More men (75%) than women preferred steaming whilst more women (67%) preferred continuing with wearing of mask.

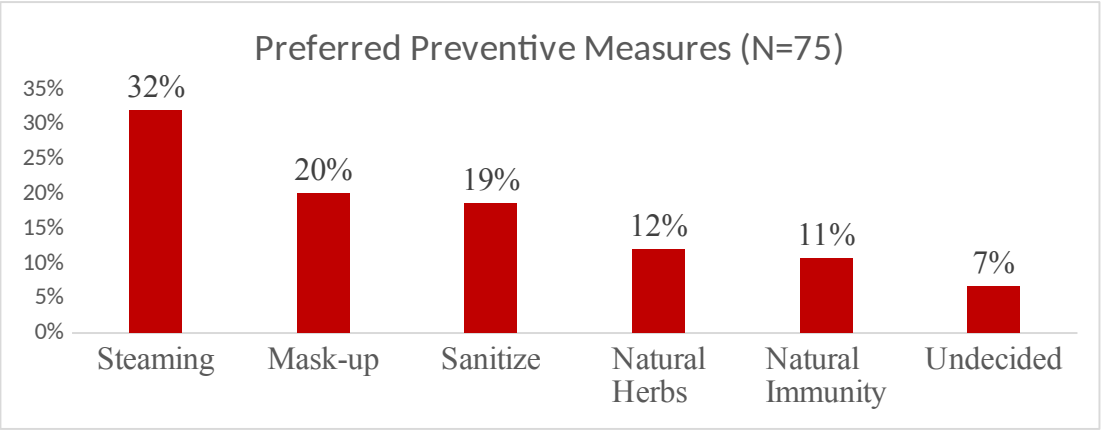

Figure 5: Preferred preventive measures other than vaccine.

4.3.1. Facilitators and Barriers to Vaccine Uptake

The majority of those who were willing to vaccinate (58%) indicated that it is important for their health, health of their children/ dependents (52%) and important for the community (45%) (Figure 6). Uptake of the vaccine could be hindered by safety concerns (76%), fear of side effects (40%) and lack of adequate information (30%).

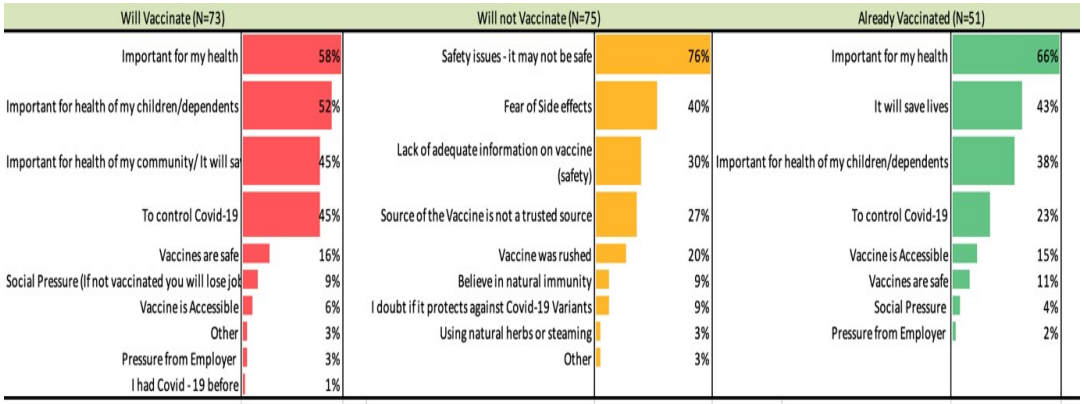

Figure 6: Facilitators and Barriers to COVID-19 Vaccine.

4.3.2. Knowledge on how the COVID-19 Vaccine work

Sixty-five percent of the respondents did not have comprehensive knowledge on how the COVID-19 vaccine work (70% males and 59% females $p>0.05$). The differences in knowledge levels by age were also not statistically different ($p>0.05$).

4.4. Socio-demographic factors associated with COVID-19 vaccine hesitancy

In testing **hypothesis 1**, that Individuals ever exposed or had someone exposed to COVID-19 would be less hesitant than those without prior exposure. Exposure is defined as someone who had contracted COVID-19 or knows someone (relative) who has contracted the virus. Those ever self-exposed to COVID-19 were 14 times more likely to be take the vaccine than those with second-hand exposure and were statistically significant (p=. 0,0001) (Table 2).

In testing **hypothesis 2**, that individuals with pre-existing conditions which increases susceptibility to severe COVID 19 would be less hesitant to take up vaccine than those without. Pre-existing conditions are defined as any disease or condition which heightened the chances of developing severe COVID-19 for example hypertension, diabetes, and HIV/AIDS. There was no statistical difference between those with or without pre-existing conditions (p=0.573).

In testing **hypothesis 3**, that there is a significant relationship between vaccine hesitancy and age (vaccine hesitancy is less amongst elderly workers (40 years or older)). This study revealed no significant relationship between age and vaccine hesitancy (p=0.447).

In testing **hypothesis 4**, that there is a significant relationship between vaccine hesitancy and gender. Females are more likely to accept the vaccine than their male counterparts. As shown in the table below, females were 1.4 times likely to get vaccinated than their male counterparts (AOR 1.39, p=.08). However, the relationship was not statistically significant (p=.0.088).

Socio-demographic factors such as gender(p=0.088), education (p=0.428), religion (p=0.130), marital status (p=0.479), underlying medical condition (p=0.573) and age (p=0.447) were not statistically significant thus no association observed (Table 2).

Table 2: Socio-demographic factors associated with COVID-19 Vaccine hesitancy.

Demographic Characteristic		Given that Covid-19 vaccine is now available, would you choose to be vaccinated?						
		No (N-75)	Don't Know (N-25)	Yes (N-73)	Already Vaccinated (N-51)	Total (N-224)	Sig. (p-value)	AOR (95% CI)
		n (%)	n (%)	n (%)	n (%)	n (%)		
Gender	Female	33 (44)	13 (52)	25 (34)	23 (45)	94 (42)		Ref
	Male	42 (56)	12 (48)	48 (66)	28 (55)	130 (58)	0.088	1.39 (0.94 – 2.06)
Education	Secondary	2 (3)	0 (0)	2 (3)	1 (2)	5 (2)	0.428	Ref
	Tertiary	73 (97)	25 (100)	71 (97)	50 (98)	219 (98)		1.01 (0.97 – 1.07)
Medical Professional	Non-Medical	71 (95)	24 (96)	62 (85)	30 (59)	187 (84)	0,004***	Ref
	Medical	4 (5)	1 (4)	11 (15)	21 (41)	37 (17)		1.17 (1.04 – 1.37)
Religion	Apostolic	6 (8)	2 (8)	4 (5)	4 (8)	16 (7)	0.091	2.76 (0.43 - 16,811)
	Catholic	9 (12)	10 (40)	13 (18)	11 (22)	43 (19)	0.793	1.02(0.32-3.24)
	Islamic	0 (0)	0 (0)	2 (3)	0 (0)	2 (0,9)	-	-
	None	2 (3)	2 (8)	4 (5)	2 (4)	10 (4)	-	-
	Pentecostal	39 (52)	3 (12)	27 (37)	14 (28)	83 (37)	0.353	1.192(0.40-3.56)
	Protestant	14 (19)	6 (24)	19 (26)	15 (29)	54 (24)	0.183	0.88(0.22-3.51)
	Traditional	5 (7)	2 (8)	4 (5)	5 (10)	16 (7)		Ref
Marital Status	Married	57 (76)	14 (56)	54 (74)	37 (72)	162 (72)	0.479	1,14 (0,70 - 1,85)
	Separated/ Divorced	3 (4)	2 (8)	1 (1)	2 (4)	8 (4)	-	-
	Single	15 (20)	9 (36)	18 (25)	12 (24)	54 (54)		Ref
Has Medical Condition	No	54 (72)	20 (80)	56 (77)	42 (82)	172 (77)		Ref
	Yes	21 (28)	5 (20)	17 (23)	9 (18)	52 (23)	0.573	1.19 (0.70 - 2.04)
Exposure to COVID-Someone else	No	64 (85)	21 (84)	67 (92)	47 (92)	199 (89)		Ref
	Yes	11 (15)	4 (16)	6 (8)	4 (8)	25 (11)	0.218	0.52(0.18- 1,49)
Exposure to COVID-Self	No	20 (30)	2 (10)	2 (3)	3 (6)	27 (13)		Ref
	Yes	47 (70)	19 (90)	69 (97)	45 (94)	180 (87)	0,0001***	14,69(3,28 - 65,80)
Age_	<40 Years	59 (79)	20 (80)	61 (84)	45 (88)	185 (83)		Ref
	40 + Years	16 (21)	5 (20)	12 (16)	6 (12)	39 (17)	0.447	1,38 (0,60 - 3,16)
Vaccinated before (Excluding child immunizations)	Don't Remember	2 (3)	4(16)	7(10)	4(8)	17(8)	-	-
	No	57(76)	13(52)	27(37)	18(35)	127(57)	0.001***	5.08(2.44-10.89)
	Yes	16(21)	8(32)	39(53)	29(57)	80(36)		Ref

** Significant at p<.05; ***Significant at p<.001.

Multi-variate logistic regression was conducted to determine which socio-demographic factors predicts the likelihood of getting vaccinated. As shown in the logistic regression table 3 below indicates being a medical profession increases the likelihood of getting vaccinated (p = 0.001). Also having self-exposure to COVID-19 increases the chances of taking up the vaccine (p=0.001).

Table 3: Logistic regression on background characteristics and vaccine hesitancy

	B	S.E.	Wald	df	Sig.	Exp(B)
Gender	0.10	0.32	0.09	1	0.763	1.1
Medical Professional	2.21	0.64	11.83	1	0.001	9.12
Has Medical Condition	-0.45	0.37	1.46	1	0.227	0.64
Exposure to COVID- Self	1.80	0.53	11.34	1	0.001**	6.04
Exposure to COVID- Someone else	-0.46	0.94	0.24	1	0.626	0.63
Age	-0.03	0.03	1.50	1	0.221	0.97
Constant	-0.51	1.05	0.23	1	0.628	0.60

**Significant at p<.001.

4.5. Attitudes and perceptions towards the uptake, effectiveness, and safety of the COVID-19 vaccine by NGO workers in Harare.

4.5.1. Safety and effectiveness of COVID-19 vaccine

Respondents were assessed on whether they have confidence and trust in the health system to provide all necessary information, manage side effects and capacity to manage adverse events from the vaccine. Half of hesitant respondents (50%) n=75) lacked trust in health care providers capacity to provide adequate and accurate information. Whereas 26% of those willing to take up the vaccine do not trust in the health care provider. Those willing to take up the vaccine were 2 times more likely to trust the service provider than those not willing to vaccinate (p = 0.0425; OR 2,124 (1,018 - 4,4299).

Almost half of the respondents (49%) were also very concerned that the vaccine might not be safe. Those who felt that the vaccine maybe safe (51%) were 1.7times more likely to vaccinate compared to those who felt it's not safe (AOR 1.75; (95% CI 1.44 – 2.12) p = 0.001). Eighty-seven (87%) of the respondents felt the vaccine might not prevent the Corona virus disease (figure 7). Those who felt it may prevent the disease (13%) were 1.5 times more likely to vaccinate than those who felt otherwise (AOR 1.45; (95CI 1.14 – 1.85), p = 0.017). Overall, 91% were concerned about safety of the vaccine, 91% concerned with serious side effects whilst 87% feared it might not prevent the disease.

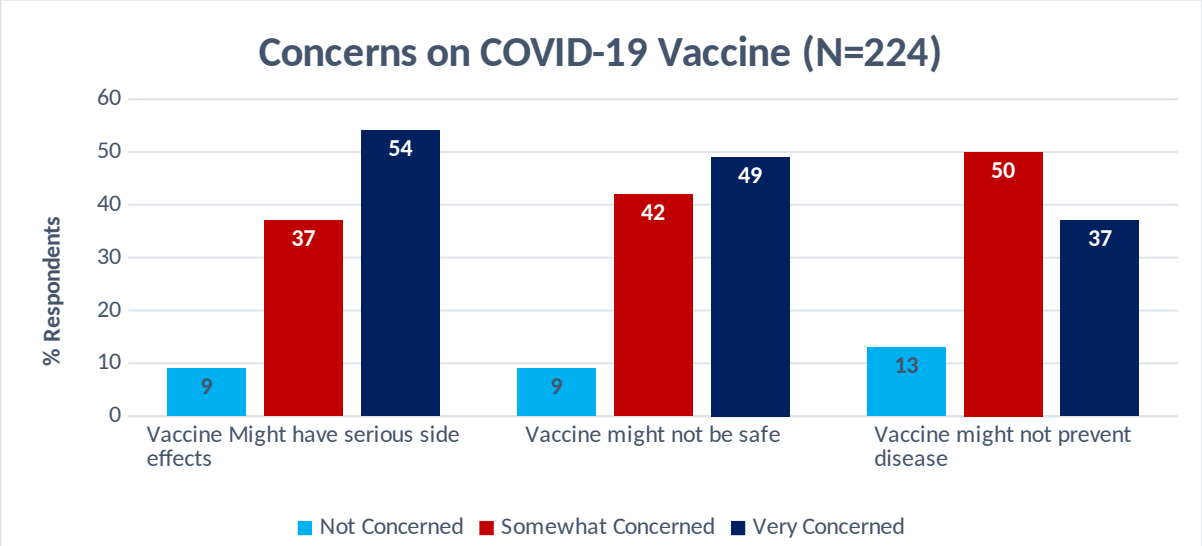

Figure 7: Concerns on COVID-19 Vaccine

4.5.2. Trust in health service providers

More males 32% (n=41) lacked trust in health care service providers compared to 26% (n=24) of the female respondents. Females were also 1.3 times more likely to trust healthcare providers compared to their male compatriots (AOR 1.34; (95% CI 0.74 – 2.43), p > 0.05). There was no significant difference on trust of health care service providers by age <40 year (29%) and those 40 years or older (28%) (p > 0.05).

4.5.3. Management of side-effects and adverse events

Respondents were also assessed on confidence levels toward health facility capability to manage side effects. About 62.5% (n=224) of the respondents did not feel confident that health facilities will be able to manage side effects because of the vaccine. There was also no significant difference between females (39% n=37) and males (38% n=50) $p > 0.05$) as well between those below age 40 (40% n=74) and those 40 years or older (33% n=13) on their levels of confidence.

About 1 in every 6 respondents did not believe the current healthcare system would be capable of tracking adverse events because of taking the vaccine. More males (68% n =64) than females (39% n=37) did not feel confident in health facilities capacity on tracking and reporting adverse events of the vaccine.

A multi-variate logistic regression analysis was done to determine concerns factors that may predict vaccine uptake. As shown in Table 4 below, pricing the vaccine could hinder uptake ($B = -1.47$, $p = 0.003$). Lack of confidence on health facilities capability of managing side effects also influenced the likelihood of getting vaccinated ($p=0.008$).

Table 4: Logistic regression -Access, safety, and capacity of healthcare system

	B	S.E.	Wald	df	Sig.	Exp(B)
Trust in Health Care Providers	-0.27	0.35	0.61	1	0.433	0.76
Social Pressure	0.43	0.32	1.81	1	0.179	1.54
Compulsory Vaccination	-1.47	0.50	8.57	1	0.003**	0.23
Tracking Adverse Events	0.07	0.32	0.05	1	0.826	1.07
Managing Side Effects	0.98	0.37	7.09	1	0.008**	2.67
Constant	-0.19	0.80	0.06	1	0.81	0.83

Half of the respondents (54%) (Figure 7) were very concerned that the vaccine could have serious side effects. There was no significant difference on side effects concerns by gender (p=0.746). There was a significant difference by age (p= 0.005) with more young people (56% n=103) very concerned than the older age groups (46%). Henceforth, respondents older than 40 who were less concerned about side effects of the vaccine were 2.5 times likely to vaccinate compared to those younger than 40years (AOR 2.63; (95% CI 1.40 – 4.92) p = 0.005).

4.5.4. Access to COVID-19 vaccine

Overall, 7 out of 10 respondents were not willing to pay for the vaccine should it be administered for a fee. Those willing to pay (29%) were 1.8 times more likely to get the vaccine than those not willing to pay (OR 1.81; 95% CI [0.97 – 3.45]; p=0.070). There was no significant difference in preference to pay by gender (p=0.213) and age (p=0.213).

Respondents were also asked if the vaccine should be made compulsory. Ninety-five percent (95%) of respondents who were hesitant (n=75) to take up the vaccine believed that the vaccine should not be compulsory whilst 71% of those willing to take up the vaccine also believed that it must not be compulsory (p=0.0002).

There is a significant relationship on vaccine hesitancy and time to take up the vaccine with 45% of respondents preferred waiting for side effects report for them to consider taking the vaccine whilst 11% (Figure 8) remained adamant that they would not take the vaccine at all (p <0.001). Those waiting for others first were 80% less likely to take up the vaccine (AOR 0.23; (95% CI 0.10 – 0.48)) compared to those who considered to be the first recipient. Those waiting for side effects report were 1.1 times more likely to take the vaccine compared to those who vowed not to take the vaccine at all.

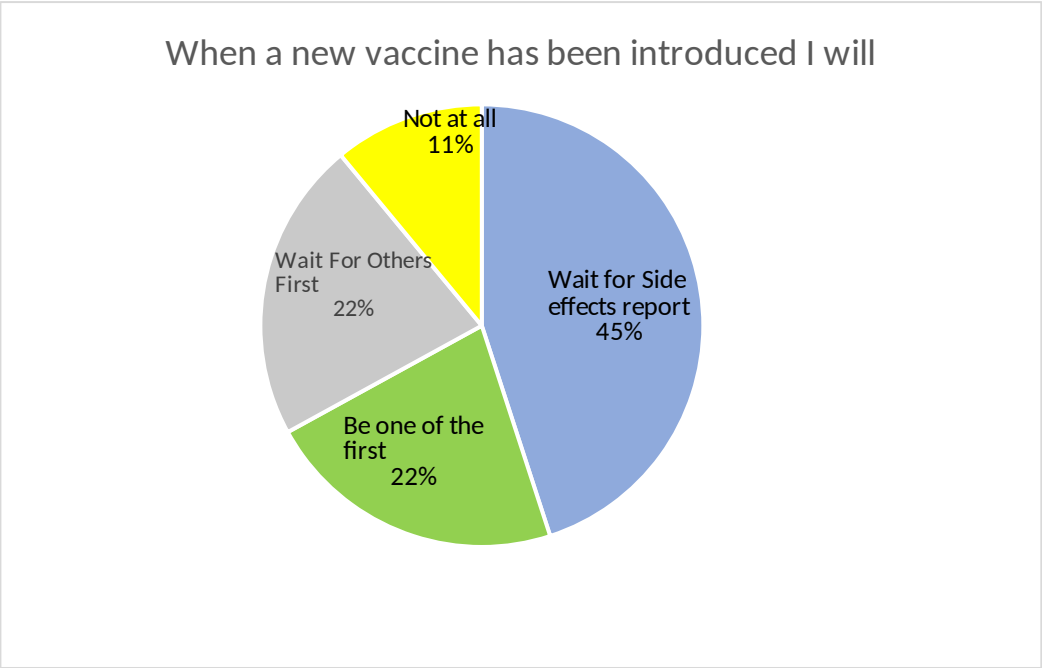

Figure 8: Waiting time to decide on vaccine uptake

4.5.6. Social Pressure to vaccinate

One third (33%, n=75) of those not willing to take up the vaccine indicated that they felt social pressure to vaccinate compared to 24% of their compatriots willing to vaccinate. Those feeling pressure were 1.4 times likely to take the vaccine compared to those without social pressure (AOR 1,38; (95%CI 0,82 - 2,32); p= 0.212). By gender, 69% (n=65) females and 69% (n=90) felt no social pressure to take up the vaccine. While older age groups (74%) felt more pressure than younger ones (48%).

4.5.7. Number of vaccine injections to be administered

Majority of the respondents (85%) preferred a single shot, and they were six times more likely to vaccinate compared to those who opted for two or more injections (AOR 6.26; (95%CI 2.44 – 18.92); p= 0.0001). Having a single shot increased the likelihood of being vaccinated. There was a significant relation between number of shots and gender (X^2 28.23; Df 2; p=0.0001) with females 5 times more likely to vaccinate with a single shot compared to their male counterparts. Age also had a significant relation (X^2 28.23; Df 2;

p=0.0001) with number of injections, with young age group below 40 years less likely to choose more than 1 shot.

4.5.8. Confidence on the type of vaccine

Respondents were also assessed on their choice on type of vaccines if given (figure 9). Thirty-seven percent (37%) opted for Pfizer whilst only 12.9% opted for the Sino Pharm vaccine which happen to be the only vaccine administered in Zimbabwe.

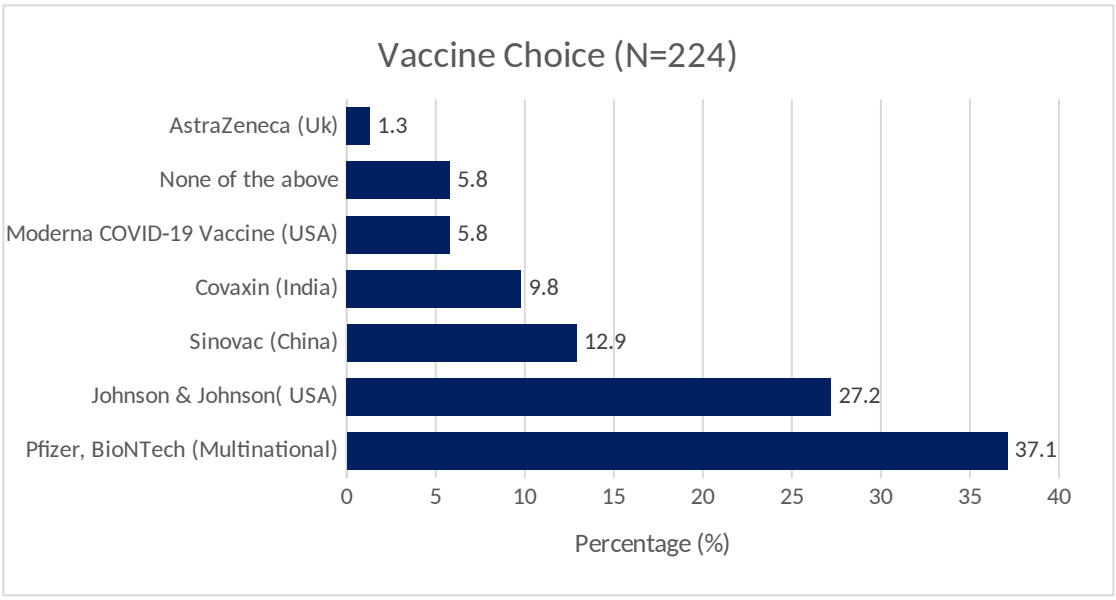

Figure 9: Vaccine Choice (If available).

Choice of vaccine was found to be statistically significant with increased hesitancy with more respondents opting for Pfizer (p=0.0001), Johnson and Johnson (p= 0.0001) compared to Sinovac (13% p= 0.098) which is the only available vaccine in Zimbabwe. Logistic regression in Table 5 indicate that vaccine choice increases or decreases the likelihood of taking the vaccine and in this case Pfizer and Johnson and Johnson have a likelihood of having higher uptake than Sinovac.

Table 5: Multivariate logistic regression for vaccine choice on vaccine hesitancy.

	B	S.E.	Wald	df	Sig.	Exp(B)
Sinovac (China)	1.792	1.082	2.742	1	0.098	6
Pfizer	-2.325	0.437	28.322	1	0.000**	0.098
Johnson & Johnson	-1.705	0.448	14.463	1	0.000**	0.182
Constant	1.54	0.367	17.588	1	0.000**	4.667

***Significant at p<.001.

4.5.9. Complacency toward COVID-19

Complacency was assessed using questions on risk perception and 62 percent of respondents believed they are not at risk of getting COVID-19 because they do not have underlying health conditions and 80% of them were younger than 40 years. Also 16% believe that they did not need the vaccine because they had fewer cases in the country with a significant relationship with age (p=0.002) and gender (p=0.001). In terms of mask wearing, 17% stated that once vaccinated they will not need to wear a mask in public places

4.6. Myths and beliefs surrounding the COVID-19 vaccine amongst NGO workers in Harare, Zimbabwe.

An 18-item rating scale was used to gauge myths and beliefs around COVID-19 vaccine. It had a reliability (Cronbach's Alpha) score of 0.85 and a Kaiser-Meyer-Olkin Measure of Sampling Adequacy value for factor analysis (KMO 0.777, p < 000).

Seventy-seven percent (Table 6) of the respondents agreed on not knowing the long-term side effects of the COVID-19 vaccine (80% of the females and 74% of the Males; p>0.05). Males were 1.3 times more likely to believe in not taking up a vaccine once they have been infected (OR 1.29; (95%CI 0.51 – 3.24); p>0.05). One in every four respondents were unsure if the vaccine works well for those without

chronic conditions as it would for those with chronic conditions and 68% believed that the Vaccine was rushed so it would not be safe. Fifty-seven (57%) believed that the vaccine would affect the menstrual cycle for women, whilst 55% believe it may cause infertility.

Table 6: Myths, Misconceptions and Beliefs towards COvID-19 Vaccine.

Myths, Misconceptions & Beliefs (N=224)	Frequency (%)				
	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
It will Affect women's menstural cycle	29.0	28.0	22.0	8.0	13.0
Vaccine causes infertility amongst women	26.3	29.5	14.7	21.4	8.0
COVID_19 Vaccine will alter my DNA	44.2	29.5	16.5	4.9	4.9
Vaccine will give me COVID-19	29.5	30.8	16.5	11.6	11.6
I am not at risk for severe complications of COVID-19 so I do not need the vaccine	37.5	24.1	12.1	12.5	13.8
If I receive the COVID-19 Vaccine, I am at risk of becoming sick from other illnesses.	28.6	23.2	17.4	15.6	15.2
COVID-19 Vaccine is a mark of a beast.	16.5	22.8	19.2	25.9	15.6
COVID-19 Vaccine includes a tracking device.	1.8	7.6	21.0	25.0	44.6
The vaccine is meant to reduce and control black population	2.2	3.6	31.3	25.0	37.9
Unvaccinated people must not be allowed to go to school or use pulic transport	17.4	31.3	11.2	17.4	22.8
We have few cases we do not need the vacccine in our country	4.9	11.2	14.7	35.7	33.5
The vaccine was rushed so it is probably not safe.	44.6	23.2	12.1	5.8	14.3
We don't know the long-term side effects of the vaccine	40.6	37.1	7.6	8.0	6.7
If I once contracted COVID-19 before, I do not need to be vaccinated	6.7	9.4	21.9	35.3	26.8
I wont need to wear a mask once vaccinate.	15.2	14.3	9.4	20.5	40.6
Vaccine works well for the old given they are the most at risk.	7.1	11.2	14.3	31.3	36.2
COVID-19 vaccine will end pandemic	6.7	17.4	30.8	21.9	23.2
Vaccine will work well for those with chronic condtions (HBp,diabetes)	4.9	18.3	43.8	15.6	17.4

4.6.1. Main Source of COVID-19 vaccine Information

Myths and misconceptions were accessed through different mainstream media sources. One third of interviewed respondents relied on social media as the main source of COVID-19 vaccine information. Majority of respondents who were not willing to take up the vaccine relied heavily on social media (49%) as a source of COVID-19 vaccine information whilst those who were willing or were already vaccinated relied mostly on family doctors (33%) (Figure 10). Differences in preferences of sources of information were found to be statistically significant between those who opted not to or were unsure to vaccinate against those were already or were willing to vaccinate (p=0.0001). Eighty

percent of respondents who believed that COVID-19 vaccine may alter their DNA relied on social media as the main source of COVID-19 vaccine information.

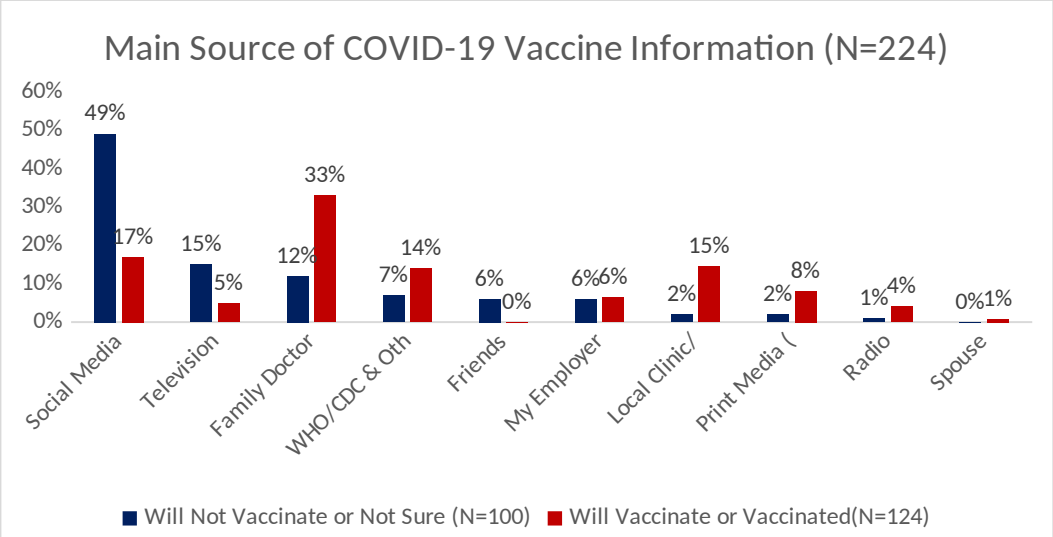

Figure 10: Main Source of COVID-19 vaccine information.

4.7. Discussion and interpretation

4.7.1. Socio-demographic factors associated with COVID-19 vaccine hesitancy

Those with self-exposure to COVID-19 were 14 times more likely to be vaccinate than those with second-hand exposure and were statistically significant (p=. 0,0001). Thus, those who had COVID-19 before were less likely to be hesitant because of their first-hand experience of the disease compared to those who did not have first-hand experience.

Results also showed that there was no statistical difference between those with or without pre-existing conditions (p=0.573) in determining vaccine hesitancy. Similar findings were noted on age (p=0.447) and gender (p=0.088). However, females were 1.4 times likely to get vaccinated than their male counterparts (AOR 1.39; p=0.08). Henceforth, vaccine hesitancy is slightly higher amongst males when compared to females.

Results also shows that being a medical professional within the NGO sector increased the likelihood of getting vaccinated 1.17 times (p = 0.004). Therefore, medical professionals were likely to be less hesitant given their medical background.

4.7.2. Attitudes and perceptions towards the uptake, effectiveness, and safety of the COVID-19 vaccine.

4.7.2.a. Safety and effectiveness of COVID-19 vaccine

Those willing to take up the vaccine were 2 times more likely to trust the service provider than those not willing to vaccinate (p = 0.04; OR 2.12; (95%CI 1.02 – 4.43). Females were also 1.3 times more likely to trust healthcare providers compared to their male compatriots (AOR 1.34 (95% CI 0.74 – 2.43) p > .05). Increased trust was noted to reduce vaccine hesitancy. Thus, lack of trust by males toward healthcare service providers has been noted as a threat to vaccination in this study.

Lack of confidence on health facilities capability of managing side effects also influence the likelihood of getting vaccinated (p=0.008). There was a significant difference by age (p= 0.005) with more young people (56% n=103) very concerned than the older age groups (46%). Thus, if confidence on health facility capacity is low, the likely that hesitancy would increase amongst young people. Therefore, due to less confidence levels on health facilities capacity, the more likely they were to be hesitant in taking up the vaccine.

Almost half of the respondents (49%) were also very concerned that the vaccine might not be safe. Those who felt that the vaccine maybe safe (51%) were 1.7 times more likely to vaccinate compared to those who felt it was not safe (AOR 1.75; (95% CI 1.44 – 2.12); p = 0.001). Henceforth those with reduced fear of safety, had increased chances of taking up the vaccine compared to those who had high fears on safety issues.

4.7.2.b. Access to COVID-19 vaccine

Results also revealed that those waiting for others to vaccinate first were 80% less likely to take up the vaccine (AOR 0.231 95% CI 0.10 – 0.48) compared to those who considered to be the first recipient. This meant that without seeing or having side effect reports, uptake of the vaccine would remain low thus high hesitancy. Those feeling pressure were 1.4 times likely to take the vaccine compared to those without social pressure (AOR 1,38 (95% CI 0,82 - 2,32); p= 0.212). Thus, social pressure could increase vaccine uptake and with likelihood of vaccine mandates, hesitancy was likely to be less.

Results also showed that choice of which vaccine to take was found to be statistically significant with more respondents opting for Pfizer (p=0.0001), Johnson and Johnson (p= 0.0001) compared to Sinovac (13% p= 0.098) which is the only available vaccine in Zimbabwe. Majority of the respondents (85%) preferred a single shot, and they were six times more likely to vaccinate compared to those who opted for two or more injections (AOR 6.26; (95%CI 2.44 – 18.92); p= 0.0001. It meant that if choices of vaccine were to be expanded by having more than one from a different source, vaccine hesitancy may likely to be less. Similarly, choice of vaccine means number of vaccine injections and most people opted for a single shot which may be due to fear of injections.

4.8. Myths and beliefs surrounding the COVID-19 vaccine amongst NGO workers in Harare, Zimbabwe

The 18-item scale had a reliability coefficient of 0,85 which is considered good in terms of internal consistency of items in the scale. Findings from the study has shown that regardless of study participants being professionals in the health field, myths, and beliefs such as vaccine would alter my DNA (74%), vaccine is not safe

because it was rushed (67%), vaccine would give them COVID-19 (61%) and vaccine could affect their menstrual cycle (57%) and infertility (55%) were relatively high. This means that there is a growing body of conspiracy theories which may need to be explored future. The results also showed that majority of respondents not willing to take up the vaccine relied heavily on social media (49%) as a source of COVID-19 vaccine information whilst those willing or already vaccinated relied mostly on family doctors (33%). Thus, social media could be utilised to disseminate reliable information given its wider reach.

4.9. Summary

The study results showed that 33% of NGO employees in Harare are hesitant to uptake COVID-19 vaccine. It also revealed sub-optimal uptake of the vaccine maybe driven by lack of confidence in vaccines safety (91%) and effectiveness (87%), side effects (91%), lack of trust on service providers (86%) and lack of confidence on facilities' capacity to manage side effects (45%). 70% of respondents felt that the vaccine should be at no-cost to the public and not compulsory (95%). Also, dominant myths and beliefs identified by this study were, vaccine would alter DNA (74%), vaccine was not safe because it was rushed (67%), vaccine would give them COVID-19 (61%) and that vaccine could affect their menstrual cycle (57%) and infertility (55%).

CHAPTER 5 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

The main purpose of this analytical cross-sectional study was to explore determinants of COVID-19 vaccine hesitancy amongst NGO employees in Harare. This chapter provided a discussion of findings in relation to existing literature on determinants of COVID-19 vaccine hesitancy amongst NGO employees or other researched population groups. Study limitations, conclusions and recommendations were also be presented in this chapter.

5.2. Discussions of Findings

5.2.1. Vaccine hesitancy prevalence amongst NGO employees

In a study on vaccine hesitancy amongst general population conducted in South Africa by Lazarus et al. (2021) hesitancy was as low as 18.4% whilst in a similar study by Mundagowa et al. (2021) in Zimbabwe, vaccine hesitancy was reported at 20% amongst general population. In another study on vaccine hesitancy amongst health care workers in DRC, vaccine hesitancy was as high as 72.3%. However, there is a gap in literature on COVID-19 vaccine hesitancy amongst NGO employees in which this study revealed that at least one in every three respondents would opt not to take the vaccine (33%) whilst 33% said they would, 23% already vaccinated and 11% still indecisive.

The study also revealed that those hesitant to COVID-19 vaccine preferred alternatives such as steaming (32%), whilst 20% preferred continuing with mask

wearing and 7% were still undecided. More men (75%) than women preferred steaming whilst more women (67%) preferred continuing with wearing of mask than men. Similar findings were observed in India, due to fear of unknown side effects participants preferred natural herbs rather than vaccines as a mitigation measure (Danabal, Magesh, Saravanan & Gopichandran, 2021). It can be noted that in Zimbabwe, multitudes of people whether hesitant or not went on overdrive of steaming using natural herbs such as Zumbani.

5.2.2. Socio-demographic factors associated with COVID-19 Vaccine hesitancy

This study is one of the few that explored vaccine hesitancy amongst NGO employees in Zimbabwe. This study found that socio demographic factors associated with vaccine hesitancy amongst NGO employees were type of profession (medical or not), history of vaccinations and self-exposure to COVID-19. However, factors that influenced vaccine hesitancy in other studies were gender (Schwarzinger et al., 2021), marital status (Robinson et al., 2021), age (Edwards et al., 2021), education (Talev, 2020; Guzman et al.,2020), religion (Marti et al.,2017; Machekanyanga et al., 2017) and having existing medical condition (Ditekemena et al., (2020). In this study being a non-medical profession was strongly associated with high vaccine hesitancy compared to those with a medical profession such as doctors, laboratory scientist, nurses, and phlebotomists. This finding was consistent with previous studies by Qunaibi et al., (2021) in Arab speaking countries. However, this was a contrasting finding to what Ditekemena et al., (2020) observed in DRC where vaccine hesitancy amongst health care workers was reportedly higher than 70%.

Some previous studies by Schwarzinger, et al. (2021) and Dinga et al. (2021) suggest strong association between gender and vaccine hesitancy with females more likely to vaccinate than males. However, in this study although it was observed that males

were 1,4 times more likely to be hesitant than females, the study did not find a statistically significant association between gender and vaccine hesitancy, which is contrary to findings by Sallam et al. (2020); Sallam et al. (2021) where men were more likely to be vaccinated compared to females. It can be argued that as these studies were done in the middle east, due to religious beliefs behind the Quran and man being in the forefront, such results were expected. Henceforth, women empowerment and autonomy in Zimbabwe may represent a different picture from these studies.

Although in a study by Guzman et al. (2020), low education levels such as secondary and primary were found to be associated with vaccine hesitancy, however, the same result could not be replicated in this study as education was not associated with vaccine hesitancy ($p = 0.428$). This can be attributed to variability within the sampled population in terms of education. NGOs in Zimbabwe demand qualified personnel with at least a tertiary certificate; thus, results cannot be compared with a study whose target were general population.

Self-exposure to COVID-19 was found to have positive association with increased likelihood to vaccinate compared to those who had exposure through relatives or friends. Similar findings were noted in a study by Ditekemena et al. (2020). It however can be stated that having had experience of COVID-19 at first hand was found to be a driver for vaccination in this study thus those who lacked this experience could not find a reason on why they must vaccinate. First-hand exposure could have led to contact with accurate information from health workers during treatment thus maybe well informed of consequences of not getting vaccinated.

This study has revealed that adults aged 40 years or older were less hesitant when compared to those below 40 years. However in contrast, higher vaccine hesitancy

was noted in a study by (Thanapluetiwong et al., 2021) with 44.3% of adults aged 60 and above, however, unlike in this study, the study by (Thanapluetiwong et al., 2021) in Thailand merely focused on those 60 years or older with a mean age of 73years thus could not have a comparison of a younger age group as compared to this study in which had a mean age of 34 years, minimum of 18 years and maximum of 57 years.

In addition, there were no links found between having an underlying medical condition and vaccine hesitancy (p=0.573) in this study. Similar findings were also observed in a study by (Thanapluetiwong et al., 2021), where underlying conditions such as diabetes, high blood pressure and HIV were strongly associated and were found to be drivers of vaccine uptake rather than hesitancy. This can be attributed to earlier messaging by WHO on how susceptible people with underlying chronic conditions are to sever COVID-19 when compared to those without. This led to a push for those with underlying conditions to opt for taking the vaccine regardless of safety issues.

Being a medical professional increases the odds of getting vaccinated when compared to non-medical professionals. This can be attributed to exposure to all necessary information and in-depth understanding of how the vaccine work. In a study by Ditekemena et al.(2020), vaccine hesitancy by health care workers was extremely high compared to other studies by (Toth-Manikowski et al., 2021) and (Paris et al., 2021). In all these studies, it was noted that health care workers decision on vaccination was independent of their profession or social media but influenced by their colleagues and politicians. Toth-Manikowski, Swirsky, Gandhi, and Piscitello (2021) found out that decision to vaccinate amongst health care workers was divided

by being republican or democrat. Similarly in the context of Zimbabwe, political decisions tend to affect how health care workers makes their decisions.

Sixty-five percent of the respondents did not have comprehensive knowledge on how the COVID-19 vaccine work (70% males and 59% females p>.05). The levels of knowledge can be attributed to access to information by these professionals through their organisations as well as through reliable sources. Similar findings were observed by (Sallam et al., 2020) and also attributed such high levels of knowledge to increased interest by the public on the pandemic. In this study, level of knowledge on how these vaccines work was high given the profile of some of the respondents are in the medical field and some into health promotion (health care workers).

5.2.3. Safety and effectiveness of COVID-19 vaccine

Half of hesitant respondents (50%) n=75) lacked trust and confidence in health care providers' capacity to provide adequate and accurate information. A similar finding was observed in a study in Thailand with those who lacked confidence in the health delivery system were more likely to have vaccine hesitancy than those who were confident (OR 6.41; (95% CI: 1.28–32.10); p=0.024) (Thanapluetiwong et al., 2021). In a similar study in Zimbabwe, they observed that almost half of participants lacked trust in the government's ability to ensure the availability of an effective vaccine thus driving COVID-19 vaccine hesitancy (Mundagowa et al., 2021). This however was compounded by lack of efficacy data for the Sino Pharm Vaccine at the time it was first administered in Zimbabwe.

This current study also revealed that hesitant respondents (54%) were very concerned that the vaccine might have serious side effects. This finding was in accordance with what Cerda and García, (2021) who found out, that individuals preferred less risky vaccines in terms of fewer side effects, rather than effectiveness hence hesitancy is

driven by fear of side effects. Mundagowa et al., (2021) in their study also noted that hesitancy was driven by safety concerns over the vaccine. Similarly, in their study across low and middle income countries, Bono et al., (2021), note that fear of side effects (41.2%) and lack of confidence in vaccine effectiveness (15.1%) were the key drivers of vaccine hesitancy.

Almost half of the respondents (49%) were very concerned that the vaccine might not be safe, and they did not trust it. Petersen et al. (2021) found out that withdrawal of AstraZeneca in some of the European nations led to a steep decline in terms of trust levels hence an increase in vaccine hesitance world-wide. Similar findings were found in a European study by Larson et al. 2016 wherein France (41%), Bosnia and Herzegovina (36%) believed that the vaccines were not overall safe. In another study in DRC, 41% of those hesitant cited safety issues around the vaccine development process. It can be argued that lack of trust on safety issues emanates from inconsistent efficacy data by AstraZeneca for instance shifts from initial 79% to a revised 76% seeded doubt on actual efficacy and safety.

Lack of trust on the government (67%) and source of the vaccine (72%) were also identified as sources of vaccine hesitance in this study. These findings are in line with what was noted by Afolabi and Ilesanmi (2021) that distrust on pharmaceutical organizations has turned the whole COVID-19 vaccination program political. In the same study, delayed reaction by African governments also led to mistrust with Tanzania being a unique case. The same can be said about COVID-19 response in Zimbabwe, how it started and who were elected as coordinating committee, how the situational report were censored before sharing with the public. All these heightened hesitancy by the public. Professionals within the NGO sector unlike public have the means to get all data, analyse it and understand it better thus did not have trust in the

government how the data was handled. Another reason for heightened distrust amongst NGO employees was that by the time Sino Pharm was launched in Zimbabwe, there were no publicly known efficacy data from clinical trials, and it was not yet on the WHO Emergency Use Listing Procedure/Prequalification authorization. This also led to widespread conspiracy theories of Zimbabweans being used as Guinea pigs for the Chinese vaccine.

This study also noted that about 87% of the respondents who were hesitant felt the vaccine might not prevent them from severe Corona virus disease given its lower efficacy value in relation to other vaccines such as Pfizer and Mordena. UNICEF, (2021) in their study in Guyana highlighted that 13.2% of respondents from general population, 11% adolescents and 6% health workers believed the vaccine will not work in preventing severe illness. Both studies have provided evidence of hesitance emanating from different information on efficacy of these vaccines. To compound to this, was the decision taken by South Africa to first ban Astra Zeneca, later Johnson, and Johnson due to their lack of efficacy toward the recently identified South African variant B.1.351 (501Y.V2) (Schoub, 2021).

5.2.4. Complacency toward COVID-19

Risk perception is critical in determining uptake of services, majority of those without existing medical conditions (72% [54/75]) hesitant compared to their compatriots with medical conditions such as hypertension, diabetes, and others. In this study, 62 percent of respondents believed they are not at risk of getting COVID-19 mainly because they are below age 40 and they did not have underlying conditions. Similar findings were also noted by Machingaidze and Wiysonge (2021) in their study. Thanapluetiwong et al. (2021) observed a different trend of vaccine complacency amongst older people because they had accepted that they are already

vulnerable to numerous ageing chronic conditions, so COVID-19 is nothing new. In this study, it was observed that 16% believed that they did not need the vaccine because of having fewer cases in the country. This was derived from comparison with countries like USA, India and Brazil who had huge numbers. A similar finding was also noted by Thanapluetiwong et al. (2021) in Thailand.

5.2.5. Access to COVID-19 vaccine

Overall, 7 out of 10 respondents were not willing to pay for the vaccine should it be administered for a fee. Those willing to pay (29%) were 1.8 times more likely to get the vaccine than those not willing to pay (OR 1.81; 95%CI [0.97 – 3.45]; p>0.05). Similar findings were noted in a regional study across low and middle income countries where participants indicated lack of interest in paying up for the vaccine that they are not sure of in terms of effectiveness and side effects (Bono et al., 2021). It can be noted that cost of health services in Zimbabwe has led to access inequalities thus may drive hesitancy if not handled well.

In this study there is a significant relationship on vaccine hesitancy and time to take up the vaccine with 45% of respondents preferring to wait for side effects report for them to consider taking the vaccine whilst 11% remained adamant that they would not take the vaccine at all (p< 0.001). Ditekemena et al. (2020), in their study in DRC found that majority of health care workers wanted to see the side effects reports first before deciding to take up the vaccine. Similarly, (Machingaidze & Wiysonge, 2021) note that hesitancy maybe driven by lack of front runners thus, need trusted entities to convince the public. Thus, in this study, ninety-five percent (95%) of respondents hesitant (n=75) to take up the vaccine believe the vaccine should not be compulsory whilst 71% of those willing to take up the vaccine also believe that it must not be compulsory (p=0.0002).

5.2.6. Choice of Vaccine and number of injections administered

Choice of vaccine was found to be statistically significant with more respondents opting for Pfizer (p=0.0001), Johnson and Johnson (p= 0.0001) compared to Sinovac (13% p= 0.098) which is the only available vaccine in Zimbabwe. Choice can promote autonomy and intrinsic motivation, and this can be critical in Zimbabwean context where the group norm is individualism rather than collectivism. These findings were similar to that of (Eshun-Wilson et al., 2021) who found out that providing people with choices leads to improved uptake of the vaccine rather than restricting them to a single vaccine. This fits well in the context of Zimbabwe where choice is limited given availability of only Sino pharm doses. Both studies revealed that lack of choice may only work in strengthening hesitancy amongst those most hesitant.

Majority of the respondents (85%) preferred a single vaccine shot. Those who preferred a single shot were six times more likely to vaccinate compared to those who opted for two or more injections (AOR 6.26; (95%CI 2.44 – 18.92); p= 0.0001). Eshun-Wilson et al.(2021) obseverd similar findings with more people opting for Pfizer and Johnson and Johnson because they have a single shot compared to AstraZenecca. In Zimbabwe, due to fears associated with injections, a single dose may improve vaccine uptake.

5.2.7. COVID-19 Vaccine Myths and Beliefs

The study found that fifty-seven (57%) of females believed that the vaccine would affect menstrual cycle for women, whilst 55% believe it could cause infertility. This was however dispelled in a study by Li et al. (2021) who observed a change in about 28% of research participants. They pointed out that the changes were because of hormonal imbalances paused by stress and bodily changes from infection not from

vaccine. However scholars such as (Danesh et al., 2021) pointed out that it is a subject worthy looking at in a bigger study given the conclusions drawn from Li et al. (2021) study.

About 25% of respondents believed vaccine works well for those with chronic conditions. A bit higher proportion was observed in a study by (Wilson & Wiysonge, 2020); (Sallam et al., 2020). In both studies, it was noted that misinformation spread via social media had detrimental effects on vaccine coverage. It can also be noted that there is need for strong health education that can also be disseminated via social media, to counter some of this misinformation.

Afolabi and Ilesanmi (2021) in their study note that hesitancy is also driven by beliefs such as, that the vaccine is a mark of the beast. Similar findings but at a low scale (39%) were also observed in this study. These were mostly driven by anti-vaccine and religious objectors across the globe. This is also related to a belief noted in this study that the vaccine includes a tracking device or aimed at controlling black population. It can be noted that due to issues around geo-politics, COVID-19 vaccine has been viewed with skeptical thoughts.

5.2.8. Source of vaccine information

Majority of respondents not willing to take up the vaccine rely heavily on social media (49%) as a source of COVID-19 vaccine information whilst those willing or already vaccinated rely mostly on family doctors (33%). Similar findings were noted by Reno et al. (2021) and they conclude that social media had a critical role in increasing or decreasing vaccine hesitancy. In the same study it was also noted that those of high income status were highly likely to use institutional websites thus gather adequate and accurate information, therefore more likely to vaccinate. Bhagianadh and Arora (2021) found that those willing to take up the vaccine rely on

health care workers for vaccine related information. This study managed to replicate similar findings where about 33% of those willing to take up the vaccine relied on family doctors as their main source of information.

5.3. Limitations to the study

- The study was conducted when Zimbabwe had just started its vaccination program thus some of the documented findings may have changed due to changes in the environment, policy, and pandemic.
- The study only included NGO employee's resident in Harare. This may have a different outcome if it had included other areas. Residents in Harare have better access to information, that is, social media due to availability of network. Thus, results cannot be generalized to the entire NGO population in Zimbabwe
- Use of response driven sampling may have led to selection of respondents with almost similar characteristics.
- As a cross sectional study, the researcher could not do causal inferences. Rather it focused on associations which can be suggestive.
- Use and dichotomizing the Likert scale has limitations in capturing in depth reasons for vaccine hesitancy.

5.4. Study conclusions

Vaccine hesitancy amongst NGO employees in Harare was moderate (33%) but likely to change because of 11% who were unsure. Those hesitant rather prefer traditional and natural immunity measures such as steaming (32%), natural herbs (12%) and natural immunity (11%). Knowledge levels on how COVID-19 vaccine work were sub-optimal (65%). First-hand exposure to COVID-19 increased chances of taking up the vaccine by 14 times whilst having pre-existing conditions showed no association with vaccine hesitancy. Although adults older than 40 showed less hesitancy compared to those below 40, there was no association between age and vaccine hesitancy and similar findings

were noted with gender, although females were more likely to vaccinate than males (AOR 1.39, p=0.08). Being a medical professional had a strong association with less hesitancy (p<0.001) as well as history of vaccination (p<0.001).

Sub-optimal uptake of the vaccine maybe driven by lack of confidence in vaccines safety (91%) and effectiveness (87%), side effects (91%), lack of trust on service providers (86%) and lack of confidence on facilities' capacity to manage side effects (45%). 70% of respondents felt the vaccine should be at no-cost to the public and not compulsory (95%). However, vaccine uptake maybe boosted if people were given choice on which vaccine to take as 37% (p<0.001) had confidence in Pfizer, Johnson & Johnson (27%, p=0.0001) while Sino Pharm had 13% (p=0.09). Respondents preferred a single shot (85%, p=0.001). Dominant myths and beliefs identified in this study were, vaccine would alter DNA (74%), vaccine was not safe because it was rushed (67%), vaccine would give them COVID-19 (61%) and vaccine could affect their menstrual cycle (57%) and infertility (55%).

More needs to be done to address vaccine hesitance by all key stakeholders. There is need for development of context specific information materials, to decipher what social media has already clamped. The Ministry of health needs these NGO professionals in mobilization and service provision thus critical to have a layered approach in tackling hesitance. In conclusion, rather than utilizing traditional information dissemination sources such as the television and radio, there is need for more investment on social media health promotion. There is need for targeted messaging for professionals within key organizations working with communities who have shunned away from traditional sources due to political influenced reporting.

5.5. Implications of findings to practice

With a significant number of these professionals hesitant, implications are huge since NGO personnel are considered resource persons on health information in communities.

The extent of lack of trust in the health system is an indication of how poor service provision in the country is thus need for regaining confidence of the public. Findings also point to a possible increase in hesitancy due to lack of choice on the vaccine being provided. Thus, need for government to at least provide more than one type of vaccine.

5.6. Recommendations

Based on the findings of this study, the following key recommendations were extracted for Ministry of Health, Civil Society, and other key stakeholders in the drive for COVID-19 vaccine uptake in Zimbabwe.

Table 7: Key Recommendations

Specific Finding	**Recommendations**
Relatively high vaccine hesitancy amongst NGO employees	MOHC COVID-19 health promotion team need to work with various hey stakeholders in development of targeted messaging on COVID-19 vaccines. A blanket approach may not yield positive results given different levels of appreciation of the pandemic
Lack of trust on the health care system thus moderately high beliefs in traditional and natural mitigation measures to COVID-19	MOHC Epidemiological unit need to track and share side effects and adverse events using weekly situational reports. This may provide some of the necessary triggers and address some of the fears that people may have on the vaccine.
Due to lack of choice on type of vaccine, hesitancy is likely to be high. Participants opted for other	Minister of Health need to Liase with other international donors such as USAID and get Johnson and Johnson or Pfizer vaccines which has been distributed in South Africa and Eswatini

Specific Finding	Recommendations
vaccines (Pfizer, J&J and AZ)	respectively to widen the choice based on different sources
High proportions with beliefs that the vaccine may alter their DNA, affect women fertility,	Multisectoral collaboration on developing vaccination strategy with robust community mobilization activities aimed at educating people on myths, misconceptions, and facts. This can be context specific Government health promotion team need to have a strong social media strategy in place whose core aim is on debunking myth and misconceptions circulating on social media. Institutions such as The Johns Hopkins University have such social media platforms.
High proportion of participants waiting for publication of side effects report to make decisions on whether to vaccinate or not	MOHC need to include side effect update on the COVID-19 Situational report. This may provide some of the necessary triggers and address some of the fears that people may have on the vaccine.

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APPENDICIES

Appendix 1: English Data Collection Tool

Qstn #	Question	Response	Skip Rule
	Are you an NGO employee?	1. Yes 2. No	If No Skip to End of Interview
	Is your NGO implementing Health programs	1. Yes 2. No	If No Skip to End of Interview
	Do you work in Harare	1. Yes 2. No	If No Skip to End of Interview
	Enter referral number that you received from the person who referred you		

SECTION A: DEMOGRAPHICS			
Qstn #	**Question**	**Responses**	**Skip Rule**
1.	What is your gender	1. Male 2. Female 3. Other	If Male Skip to Q3

2.	Are you currently pregnant? (For females only)	1. Yes 2. No	
3.	How old are you?		
4.	What is your highest level of Education that you had completed?	1. None 2. Primary 3. Secondary 4. Tertiary	
5.	Are you a medical or non-medical professional?	1. Medical 2. Non-Medical	If (2) skip to Q7
6.	Specify Profession if Medical		
7.	What is your church or religion?	1. Catholic 2. Apostolic 3. Protestant 4. Pentecostal 5. Traditional 6. Islamic 7. None 8. Other (Specify)	
8.	What is your current marital status?	1. Single 2. Married 3. Separated/ Divorced 4. Widowed	
9.	Do you have any of these medical conditions?	1. Asthma 2. Cancer 3. Chronic lung disease 4. Diabetes 5. Heart disease 6. HIV	

		7. Obesity 8. Other Medical condition 9. None	
10.	Have you ever heard about Covid-19 vaccine?	1. Yes 2. No	
11.	Have you been vaccinated for COVID-19 already?	1. Yes 2. No	

SECTION B: COVID-19 VACCINE ACCESS & SAFETY			
12.	Have you or anyone known to you ever tested positive for Covid-19 (Multiple response)	A. Yes, Me B. Yes, Someone else C. No -one D. Don't know	
13.	Do you understand how the Covid-19 vaccine work?	1. Yes 2. No	
14.	Given that Covid-19 vaccine is now available, would you choose to be vaccinated?	1. Yes 2. No 3. Don't Know	If (Q11 was = 1 skip to Q18) If no skip to Q16
15.	If yes…what would have motivated or pushed, you (Multiple Response)	A. Important for my health B. Important for health of my children/dependents C. Important for health of my community/ It will save lives D. I had Covid - 19 before E. Vaccines are safe F. Pressure from Employer (employer requirements) G. Social Pressure (If not vaccinated you	

		will lose jobs or not allowed in some places.etc) H. To control Covid-19 I. Vaccine is Accessible J. Other (Specify)	
16.	If no…. what will be your reasons for not taking the vaccine? (Multiple Response)	A. Safety issues - it may not be safe B. Costs - it may be expensive C. Lack of adequate information on vaccine (safety) D. Vaccine was rushed E. Fear of Side effects F. Religion Does not permit G. Believe in natural immunity H. Using natural herbs or steaming I. Source of the Vaccine is not a trusted source J. I doubt if it protects against Covid-19 Variants K. Other (Specify)	Skip if yes on Q14
17.	If no, what will you do instead, as a preventive measure		Skip to Q19
18.	If vaccinated already, what motivated or pushed you		
19.	Does your religion or church allow its members to be vaccinated?	1. Yes - all vaccines 2. Yes - all vaccines except this new one 3. No	
20.	Which of these Vaccines would you prefer if given a choice to choose?	1. Moderna COVID-19 Vaccine (USA) 2. Pfizer, BioNTech (Multinational) 3. AstraZeneca (Uk) 4. Sputnik V (Russia) 5. Johnson & Johnson (USA) 6. Sinovac (China) 7. Covaxin (India) 8. None of the above	
21.	When a new vaccine is	1. Yes	

	introduced, do you want to be the first to get it?	2. No will wait for others first 3. No will wait for side effects reports first 4. No, I will not get it at all	
22.	How many numbers of times would you want to be injected with the covid -19 Vaccine?	1. Once 2. Twice 3. More than twice	
23.	Are you willing to pay to get vaccinated for Covid-19?	1. Yes 2. No 3. Don't Know	
24.	Apart from childhood immunisations, have you been vaccinated or immunised before?	1. Yes 2. No 3. Don't Remember	
25.	If yes, which disease(s) where you immunised against?		
26.	Would you have your children/dependents vaccinated against Covid-19?	1. Yes 2. No 3.	
27.	Would you have your relative or someone you know vaccinated against Covid-19?	1. Yes 2. No	
28.	What is the most common information source you turn to for information about Covid-19 vaccines?	1. Family Doctor 2. Local Clinic/Nurse 3. Village Health Worker 4. My Employer 5. Friends 6. School Teacher 7. Television 8. Radio 9. Print Media (Newspapers etc) 10. Social Media (Facebook, Twitter etc) 11. Other (Specify)	
29.	When you hear a rumour related to Covid-19 vaccine(s), whom would you ask on what they think? (Multiple response)	1. Ask a friend 2. Ask a health worker 3. Go on the internet 4. My Church leader 5. Other?	

30.	Do you trust your health care provider to tell you all about the risks and benefits of Covid-19 vaccines?	1. Yes 2. No	
31.	Do you feel social pressure to get the Covid-19 vaccine?	1. Yes 2. No	
32.	Do you think Covid-19 vaccine should be compulsory?	1. Yes 2. No	
33.	How confident are you in the system for tracking adverse reactions or side effects to Covid-19 vaccination in your country?	1. Not at all 2. Somewhat Confident 3. Very Confident	
34.	How confident are you that a coronavirus vaccine was adequately tested for safety and effectiveness?	1. Not at all 2. Somewhat Confident 3. Very Confident	
35.	How effective do you think a vaccine will be in preventing people from catching the coronavirus	1. Very Effective 2. Not Effective at all 3. Somewhat Effective	
36.	Do you feel confident that the public health facilities will be able to treat side effects should you develop some?	1. Not at all 2. Somewhat Confident 3. Very Confident	
37.	How concerned are you that yourself or your child might have a serious side effect from a vaccine shot?	1. Not Concerned 2. Somewhat Concerned 3. Very Concerned	
38.	How concerned are you that the vaccine might not be safe?	1. Not Concerned 2. Somewhat Concerned 3. Very Concerned	
39.	How concerned are you that the vaccine might not prevent the disease?	1. Not Concerned 2. Somewhat Concerned 3. Very Concerned	
SECTION C: COVID-19 Statements			
Qst	Please read and respond to the following statements on a scale from		Skip

n #	Strongly disagree to Strongly Agree.		Rule
40.	Covid-19 vaccines are used to microchip or put a tracker on people.	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
41.	The vaccine is meant to reduce and control the black population	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
42.	Unvaccinated people must not be allowed to go to schools, shops or use public transport.	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
43.	We have few cases we don't need the vaccine in our country	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
44.	The vaccine was rushed, so it's probably not safe	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
45.	We don't know long term side effects of the covid-19 vaccine.	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
46.	If I had COVID-19 already, I don't need the vaccine	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
47.	I won't need to wear a mask	1. Strongly Disagree	

	after i get vaccinated for COVID-19.	2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
48.	Vaccine will work for the old since they are the ones most affected.	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
49.	Covid-19 vaccine will end the pandemic	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
50.	Vaccine will work well for those without chronic conditions such as heart disease, diabetes, Bp etc	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
51.	Vaccine will cause infertility amongst women	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
52.	It will affect my menstrual cycle	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
53.	COVID-19 vaccine will alter my DNA	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
54.	Vaccine will give me COVID	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree	

		4. Agree 5. Strongly Agree	
55.	Covid-19 Vaccine is a mark of beast	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
56.	I am not at risk of severe complications of COVID-19, so I do not need the vaccine	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree	
Thank you for taking time to reflect on your personal thoughts and expirience on Covid-19 vaccination.			

Appendix 2: Shona Data Collection Tool.

Qstn #	Mibvunzo	Mhinduro	Skip Rule
A1	Unoshanda kuma NGO here?	1. Hongu 2. Kwete	If No Skip to End of Interview
A2	NGO yenyu inoita nezveutano here?	1. Hongu 2. Kwete	If No Skip to End of Interview
A3	Munoshandira muHarare here?	1. Hongu 2. Kwete	If No Skip to End of Interview
	Isa number ywapihwa nemunhu akutumirai kuno		

SECTION A: DEMOGRAPHICS

Qstn #	Mibvunzo	Mhinduro	Skip Rule
1.	Muri munhui	1. Murume 2. Mukadzi 3. Umwewo	If Male Skip to Q3
2.	Parizvino mune pamuviri here? (Vanhukadzi chete)	1. Hongu 2. Kwete	
3.	Mune makore mangani ekuberekwa akazara? (Akazara).	-------	
4.	Makafunda kusvika papi?	1- None 2- Primary 3- Secondary 4- Tertiary	
5.	Munoshanda basa rezvehutano here kana kuti bodo?	1- Zvehutano 2- Zvisiri zvehutao	If (2) skip to Q7
6.	Munoita basa rechii?		
7.	Murivechitendero chipi?	1- MaRoma 2- Mapostori 3- Protestant 4- Chechi dzemweya 5- Zvechivanhu 6- Machawa 7- Hatina chitendero 8- Zvimwewo (Specify)	
8.	Parizvino makawanikwa here?	1- Ndichirindoga 2- Ndakawanikwa 3- Takaparadzana 4- Ndakafirwa	
9.	Mungave muine chimwe chezvirwere izvi here	1- CheAsthma 2- Chegomarara 3- Chemapapu	

		4- Chesugar 5- Chirwere chemoyo 6- Mukondombera 7- CheObesity 8- Zvimwewo zvirwere 9- Handina	
10.	Makambonzwa nezve Covid-19?	1. Hongu 2- Kwete	
11.	Makambonzwa nezve mushonga wekudzivirira covid-19?	1. Hongu 2- Kwete	

SECTION B: COVID-19 VACCINE ACCESS & SAFETY			
12.	Mungave makamboita denda reCovid-19 here kana umwewo wamunoziva (Sarudzai chero zvinodarika chimwe chete)	A. Hongu inini B. Hongu umwewo wandinoziva C. Kwete D. Hongu inini	
13.	Munozwisisa mashindire emushonga wekudzivirira covid-19 here?	1. Hongu 2. Kwete 3. Handizivi	
14.	Sezvo mushonga wekudzivirira Covid-19 wavepo mungave makasununguka kuutora here?	1. Hongu 2. Kwete 3. Handizivi	If (Q11 was = 1 skip to Q18) If no skip

			to Q16
15.	Chii chingadaro chakakukurudzirai (Sarudzai chero zvinodarika chimwe chete)	A. Zvakakoshera hutano hwangu B. Zvakakoshera hutano hwevana vangu nehama dzangu C. Zvakakoshera hutano hwevanhu vemunharaunda mangu D. Ndakambobatwa ne COVID E. Mushonga wakarurama F. Kumbunyikidzwa nevatinoshandira G. Kutya kuzoshaiwa Mabasa nezvimwewo H. Kudzivirira COVID-19 I. Mishonga yacho irikuwanikwa nyore J. Zvimweo (tsanangudzai)	
16.	Chii chingadaro chakakudzivisai (Multiple Response)	A. Mishonga inogona kunge isina kururama B. Mishonga irikudhura C. Hatina Ruzivo rwakakwana maererano nemishonga iyi D. Yakati kasikei kugadzirwa E. Kutya kukanganoswa nemishonga F. Chitendero change hachindibvumidzi G. Tinorarama tisina mishonga H. Tinorarama nemidzi I. Kurikubva mishonga hakutembeke J. Ndinoona seisinganyatsoshande kudzivirira COVID-19 K. Zvimweo (tsanangudzai)	Skip if yes on Q14
17.	Chii chamungaite kuti muve makadzivirirwa sezvo mati hamutore mushonga		Skip to Q19
18.	Kana makabaiwa kare, chii chingadero chakakutumai?		
19.	Chitenderano chenyu chinobvuma kuti mupiwe mishonga here?	1. Hongu – Yose mishonga 2. Yes - Yose mishonga kunze kweuyu 3. Kwete	
20.	Kurikunzi manzi sarudzai	1. Moderna	

	mishonga yamunoda, ndeupi wamungasarudze	COVID-19 Vaccine (USA) 2. Pfizer, BioNTech (Multinational) 3. AstraZeneca (Uk) 4. Sputnik V (Russia) 5. Johnson & Johnson (USA) 6. Sinovac (China) 7. Covaxin (India) 8. Hapana paneyose iyi	
21.	Panobuditswa mushonga mutsva, mungave muchid a kutanga kuuwana here	1 Hongu 2 Ndinomirira vamwe vatange 3 Handitotore zvachose 4 Hongu	
22.	Mungade kunge muchibaiwa kangani mukudzivirira COVID-19.	1= Kamwe chete 2= Kaviri 3= Kanodarika kaviri	
23.	Mungave makatarisira kubhadhara kuti mubaiwe jekiseni rekudzivirira covid 19 here	1= Hongu 2= Kwete 3= Handizivi	
24.	Kunze kwemishonga yamakapiwa muchiri mwana mudiki, Makambobaiwa kana kupihwa mushonga wekudziviria kubatira chirwere here?	1= Hongu 2= Kwete 3= Handizivi	
25.	Kana iri hongu, ndezvipi zverwere zvakadzivirira		
26.	Mungaite kuti vana venyu vabaiwe mushonga wekdzivirira covid 19	1= Hongu 2= Kwete 3= Handizivi	
27.	Mungaite kuti hama yenyu kana umwewo munhu abaiwe mushonga wekdzivirira covid 19	1= Hongu 2= Kwete 3= Handizivi	
28.	Maererano nezveruzivo, ndiyani wamunovimba	1. Chiremba wemhuri 2. Mukoti	

	zvakanyanya	3. Mbuya hutsanana 4. Mukuru webasa 5. Shamwari 6. Kuzvikoro 7. Terevhizheni 8. Dzimudzangara 9. Pepanhau 10. Fesibhuku 11. Zvimwewo (Specify)	
29.	(Sarudzai mhinduro dzose dzamunoda) Mukanzwa makuhwa maererano nemushonga wekudzivirira covid 19 ndiani wamunobvunza	1. Ndinobvunza Shamwari 2. Ndinobvunza vezveutano 3. Ndinotsvaka painternet 4. Ndinobvunza mufundisi 5. Ndinobvunza vawewo zvavo	
30.	Munechivimbo nevashandi vehutano kuti vachakuudzai zvese zvamunod kuziva maererano nemushonga wekudzivirira covid 19	1. Hongu 2. Kwete	
31.	Mungave muchinzwa kumbunyikidzwa nevamwe venyu kuti mutore mushonga wekudzivirira covid 19	1. Hongu 2. Kwete	
32.	Sekuona kwenyu mushonga wekudzivirira Covid 19 unofanirwa kumanikidzirwa munhu wese?	1. Hongu 2. Kwete	
33.	Mungave muine chivimbo chakadii kuti vezvipatara vachange vachinyatsoteera mhedzisiro dzemishonga yekudzivirira covid-19	1. Handina chivimbo zvachese 2. mbichana 3. Chakanyaya	
34.	Mungave muine chivimbo chakadii kuti mushonga uyu wakanyatsovhenekwa uye unonystoshanda.	1. Handina chivimbo zvachese 2. mbichana 3. Chakanyaya	
35.	Mungave muine chivimbo	1. Handina chivimbo	

	chakadii kuti mushonga uyu uchadzivirira vanhu ukubatira COVID-19	zvachese 2. mbichana 3. Chakanyaya	
36.	Mungave muine chivimbo chakadii kuti vezvipatara vachange vaine mishonga yekudzivirira covid-19 pamunenge makuuda.	1. Handina chivimbo zvachese 2. mbichana 3. Chakanyaya	
37.	Mungave muine chivimbo chakadii kuti imi kana mwana wenyu munogona kurwara kana kukuvara mushure mekutora mushonga wekudzivirira Covid.	1. Handina chivimbo zvachese 2. Mbichana 3. Chakanyaya	
38.	Mungave muine chivimbo chakadii kuti mushonga uyu unogona usina kunakira hutano.	1. Handina chivimbo zvachese 2. Mbichana 3. Chakanyaya	
39.	Mungave muine chivimbo chakadii kuti mushonga uyu unogona kutadza kudzivirira chirwere cheCovid.	1. Handina chivimbo zvachese 2. Mbichana 3. Chakanyaya	
SECTION C: COVID-19 Statements			
Qstn #	Please read and respond to the following statements on a scale from Strongly disagree to Strongly Agree.		Skip Rule
40.	Mushonga we COVID-19 urikushandiswa kuronda vanhu	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
41.	Mushonga we COVID-19 urikushandiswa kuderedza huwandu hwevanhu vatema	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	

42.	Vanhu vasina kutora mushonga we COVID-19 havafanirwi kubvumidzwa kuenda kuchikoro kana kushandisa nzvimbo dzeveruzhinji.	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
43.	Tine vashoma vane COVID-19 saka mushonga hatiudi	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
44.	Mushonga wakagadzirwa zvechimbichimbi unogona usinakunyatsoita zvakanaka.	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
45.	Hatizivi zvinogona kukonzereswa nemushonga uyu munguva inoteera.	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
46.	Kana ndakambobatira COVID-19 handifanirwi kubayiwa mushonga wekudzivirira.	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
47	Kana ndapihwa mushonga	1. Handitenderane nazvo	

.	wekudzivirira, handichatarisirwa kupfeka mask.	zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
48.	Mushonga unoshanda kunevakwegura sezvo variiivo varikunyanyo batwa nechirwere ichi.	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
49.	Mushonga uyu unopedza chirwere che COVID-19	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
50.	Mushonga uyu unoshanda kune avo vanezvirwere zvendambiri se shuga, moyo etc	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
51	Mushonga uyu unokonzera kusaberaka vana kuvanhu kadzi	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
52	Zvinokanganisa kuteera kwangu	1. Handitenderane nazvo zvakanyanya	

		2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
53	Mushonga weCOVID-19 unochinja DNA yangu	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
54	Mushonga unondipa COVID-19	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
55	Mushonga uyu mucherechedzo wechivi	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
56	Handisi panjodzi yekurwara zvakanyanya kana ndikaita COVID-19 saka handinei nekutora mushonga uyu.	1. Handitenderane nazvo zvakanyanya 2. Handitenderane nazvo 3. Handitenderane kana kutenderana nazvo 4. Ndinotenderana nazvo 5. Ndinotenderana nazvo zvakanyanya	
Tinokutendai nekutora nguva yenyu mukutipa mafungiro uye mawonero enyu pamusoro pe mushonga wekudzivirira COVID-19.			

Appendix 3: English Consent Form

INFORMATION SHEET AND INFORMED CONSENT FORM – STUDY PARTICIPANTS

TITLE OF THE STUDY:

Exploring determinants of COVID-19 vaccine hesitancy amongst non-governmental organizations employees in Harare, Zimbabwe

PRINCIPAL INVESTIGATOR: Mr Simon Takawira

PHONE NUMBERS: +268 76 135 196, +263 772615813

Vaccine Hesitancy in this case refers to a delay in acceptance or refusal of vaccination despite availability of vaccination services

WHAT YOU SHOULD KNOW ABOUT THE RESEARCH STUDY:

- We give you the Informed Consent form so that you may read about the purpose, risks, and benefits of this research study
- You have the right to refuse to take part or agree to take part now and change your mind later.

- Whatever you decide, it will not affect your usual access to any services.
- Please review this consent form carefully. Ask any questions before you decide.
- Your participation is voluntary.

This is an information sheet and informed consent form. It will give you information about the study and will be used to document your willingness to take part should you choose to do so. You will be given a copy of this document to keep.

PURPOSE OF THE STUDY

You are being asked to participate in a research study that seeks to explore vaccine hesitancy amongst NGO employees in Harare.

IMPORTANCE OF THE STUDY

Previous studies on COVID-19 vaccine hesitancy have been focusing on general population hence not specific to sub-populations such as professional within the NGO sector. NGO employees are crucial determining success or failure of any health program given their comparative advantage in having contact with communities. This study will help in determining perceptions of these professionals in line with COVID-19. Findings from this study will be useful in designing of health promotion programs targeting different subgroups.

STUDY PROCEDURES AND DURATION

All adult NGO employees in Harare (18years or older) are eligible for this study. Those who are eligible to participate must be willing and able to give written informed consent to take part in this study.

You have been asked to take part in the study because you meet the conditions above. If you are willing to participate, you will be asked various questions about yourself, including your thoughts on COVID-19 vaccine. A minimum of 207 people will be asked to answer questions asked from a questionnaire, which is self-administered. The questionnaire will take about 5 to 10 minutes to complete. The study will be conducted from May to August 2021. Information may be given to regulatory authorities should they wish to see it for their regulatory duties. The body regulating this study is Africa University Research Ethics Committee (AUREC).

CONFIDENTIALITY

The information collected for the purposes of this study has been described in this consent form. This study will not record your name or name of your organization. Data collected will remain de-individualized and will be analyze as a group. Thus, maintaining anonymity.

POSSIBLE RISKS AND DISCOMFORT INVOLVED BEING IN THIS STUDY

There are no foreseeable physical or psychological risks and discomfort in this study.

BENEFITS OF BEING IN THIS STUDY

There is no direct medical or other advantage to you as a person taking part in this study. This is not a treatment study for COVID-19. However, the information learned in this study will be useful for the government in designing communication programmes aimed at promoting current and future vaccination programmes.

COMPENSATION FOR BEING IN THIS STUDY

There is no compensation for participating in this study.

VOLUNTARY PARTICIPATION

We hope that you will agree to take part in this study. However, you do not have to take part in this study if you don't want to. If you decide that you do not want to participate in this study, that decision will not affect your daily life, your relationship with the researcher or regular health care in any way. If you decide that you want to take part now but then change your mind later, you may withdraw from the study at any time without having to give a reason.

OFFER TO ANSWER QUESTIONS

Before you agree to participate in this study, please ask any questions on any aspect of this study that may be unclear to you. You may take as much time as necessary to think it over.

For any other questions that you may have about this study now or in future, please contact the study Principal Investigator Mr Simon Takawira +268 76 135 196, +263 772 615 813.

Do you want to participate in this study? **Yes () No ()**

If yes, proceed to e-sign the Informed consent form. If not interested in participating in the study, thank you very much for showing interest please do not sign the Informed Consent Form

Appendix 4: Shona Consent Form

BEPA RINOKUPAI RUZIVO RWAMUNGADA KUZIVA MAERERANO NETSVAKURUDZO INO NEFOMU RE INFORMED CONSENT – KUNE VACHABATSIRA MUTSVAKURUDZO IYI

ZITA YETSVAKURUDZO

Kuongorara zvikonzero zvekuverengera kutora mishonga yeCOVID-19 pakati pevashandi vemaNGO vemuHarare, Zimbabwe

MUTSVAKURUDZI: Simon Takawira

NHAMBA DZERUNHARE: +268 76 135 196, +263 772615813

ZVAMUNOFANIRA KUZIVA MAERERANO NETSVAKURUDZO INO:

- Tinokupai fomu reInformed Consent, kuti muverenge nezve donzvo retsvakurudzo ino, nezvimhinga mipinyi zvamunogona kusangano nazvo pamwechete nezvinogona kukubatsira kuburikidza netsvakurudzo ino
- Zviitiko zvekuti munhu pachake ave anogona kuchengetedza hutano hwake, zvinotsigirwa nenzira dzakaongororwa kuti ndidzo dzinoshanda zvakanaka uye donzvo yezvitiko izvi nderekuyamura varwere. Donzvo yetsvakurudzo ino ndeyekuwana ruzivo ruzere rwunogona kuzoyamura varwere mune ramangwana.

- Munekodzero yekusarudza kusapinda mutsvakurudzo ino, kana kubvuma kupinda mutsvakurudzo ino panguva ino, kunyangwe mukazoshandura pfungwa dzenyu munguva inotevera
- Chero zvamunenge masarudza kuita, hazvikukanganisei kurapwa kwamagara muchingoitwa pamwe nekupiwa mishonga yenyu yamagara muchingopiwa
- Tapota, nyatsotorai nguva yenyu muchiverenga fomu rino reInformed consent. Bvunzai mibvunzo pane zvamusiri kunzwisisa musati maita sarudzo yenyu.
- Hamusi kumanikidzwa kutora danho mutsvakurudzo ino.

Bepa rino nderekukupai ruzivo maererano netsvakurudzo irikuitwa, pamwe nefomu reInformed consent. Bepa rino richashandiswa kuratidza kuti mazvipira makasununguka pachenyu kutora danho mutsvakurudzo ino, ndokunge masarudza saizvozvo. Muchapiwa bepa rakafanana nerino kuti muchengetewo pachenyu.

DONZVO RETSVAKURUDZO INO

Murikukumbirwa kuti mutore danho mutsvakurudzo irikuda kunzwisisa zvikonzero zvinoita vanhu vasade kutora mushonga wekudzivirira COVID-19 pakati pevashandi vema NGO muguta reharare.

KUKOSHA KWETSVAKURUDZO INO

Tsvakurudzo dzakaitwa maererano nekusada kutora mishonga yeCOVID-19 dzinynyonangana neveruzhinji. Vashandi vema NGO vakakoshera pakuti vanesimba rekuita kuti maprogram ezvehutano abudirire kana kutadza kubudirira nekuti vanogaroshand neveruzhinji mumabasa avo. Tsvakurudzo ino ichabatsira kuziva mafungiro uye mawonero evashandi ava maererano ne zvemishonga yeCOVID-19. Zvichabuda mutsvakurudzo ino zvichashandisiwa kugadzira mapurogiramu ayo anenge akanangana nebabazi akasiyana siyana evanhu.

STUDY PROCEDURES AND DURATION

Tsvakurudzo ino yakanangana nevanhu vanemakore gumi nemasere vanoshandira mango muguta reHarare. Vanenge vakakodzera kupinda mutsvakurudzo ino, vanotarisirwa kuti vange vachipa mvumo kuburikidza nekupa siginecha. Makumbirwa kuti mutore danho mutsvakurudzo ino nekuti munokwana muchikamu chataurwa kumusoro uko. Kana makasungunuka kutora danho mutsvakurudzo ino, munokumbirwa kupindura mibvunzo yose iri pabepa, apo muchabvunzwa mibvinzo yakasiyana siyana pamusoro pemawonero enyu maerererano nemishonga yeCOVID-19. Vanhu vanosvika mazana maviri nenomwe zvichipfuura, vanotarisirwa kupindura mibvunzo yakanyorwa pabepa, inova yavachabvunzwa nemutsvakurudzi. Muchange muchizvindurira moga pasina anenge achikubvunzai. Mibvunzo yose haitore nguva inodarika maminitsi gumi. Tsvakurudzo iyi irikuitwa kubva muna chivabvu kushika muna chikumi mugore ra2021. Zviwanikwa zvetsvakurudzo ino zvinogona kuratidzwa kuvakuru vemitemo kana vasarudza kuda kuona kuti tsvakurudzo ino iri kufamba zvakanaka here, sebasa ravo. Vakuru vemutemo varikuongorora tsvakurudzo ino ndeve Africa University Research Ethics Committee (AUREC).

ZVAKAVANZIKA

Ruzivo ruchawanikwa mutsvakurudzo ino rwatsanangurwa mu fomu rino. Tsvakurudzo ino haitori zita renyu kana rekambani yamunoshandira. Chose chinoratidza zita renyu chichavanzwa sezvinotaurwa nemutemo, uye hapana kana ani nani zvake acharwatidzwa ruzivo urwu. Zvamuchatipa zvichabatanidzwa nezvevamwewo zvekuti hapatozozivikanzwi kuti zvenyu ndezvipi.

ZVIMHINGA MIPINYI ZVINOGONA KUSANGANIKWA NAZVO MUTSVAKURUDZO INO

Hapana zvimhinga mipinyi zvingatarisirwe kusanganikwe nazvo mutsvakurudzo ino.

ZVINOBATSIRA ZVINOWANIKWA KUBURIKIDZA NETSVAKURUDZO INO Hapana zviwanikwa zvinobatsira zviripachena zvichapiwa kwamuri pachenyu kuburikidza netsvakurudzo ino. Ino haisi tsvakurudzo yekurapwa kwe COVID-19. Zvisinei hazvo, zvichabuda mutsvakurudzo ino zvichashandiswa nevehurumende uye vamwe vakasiyana siyana kugadzira mapurogiramu ekuti vanhu vatore mishonga yekudzivirira zvirwere zvakaita seCOVID-19 kana zvimwewo.

MURIPO WEKUTORA DANHO MUTSVAKURUDZO INO

Hapana muripo wamunopihwa kuburikidza nekutora danho mutsvakurudzo ino.

KUSARUDZIRA KUTORA DANHO MUTSVAKURUDZO

Tinovimba kuti muchasarudza kutora danho mutsvakurudzo ino. Zvisinei, musatora danho iri kana musina kusungunuka. Kana masarudza kusatora danho mutsvakurudzo ino, sarudzo yenyu haikanganise kurarama kwenyu kwamazuva ose, kurapwa kwenyu kana hukama hwenyu nevatsvakurudzi. Kana masarudza kutora danho mutsvakurudzo ino panguva ino, mukazofunga kushandura pfungwa pamberi apo, munotenderwa henyu kubuda mutsvakurudzo ino pamunenge madira kunyangwe musina kupa chikonzero.

KUPINDURWA KWEMIBVUNZO

Musati masarudza kutora danho mutsvakurudzo ino, munokurudzirwa kubvunza kana paine zvamusiri kunzwisisa maererano netsvakurudzo ino. Zvekare, munokomekedzwa kuti mutore nguva yamunoda kufunga nezvekutora danho mutsvakurudzo ino. Kana mukazoita mimwe mibvunzo panguva ino kana inotevera

pamusoro petsvakurudzo ino, batai mutsvakurudzi anonzi mukoma Simon Takawira +268 76 135 196, +263 772 615 813.

Munoda here kutora danho mutsvakurudzo ino? **Yes () No ()**

Kana mati hongu endai mberi neku saina fomu rino reInformed consent. Kana musirikukwanisa kutora danho mutsvakurudzo ino, maita basa zvikuru nekuratidza chido, musasaina fomu rino

_____

_____

Zita renyu (nyatsonyorai zvinoonekwa). Zuva Ranhasi

_____

Siginicha yenyu

Zita remutsvakurudzi Siginicha Zuva ranhasi

Kana muine mimwe mibvunzo maererano netsvakurudzo ino kana fomu reconsent, iri pamberi peyapindurwa nemutsvakurudzi, inosanganisira mibvunzo pamusoro petsvakurudzo ino, ikodzero yenhu semubatsiri wetsvakurudzo kubvunza. Kana maona semusina kubatwa zvakanaka, uye muchida kutaura nemumwe munhu asiri mutsvakururudzi, ivai makasungunuka kubata Africa University Research Ethics Committee pakero inoti (020) 60075 kana 60026 extension 1156, kana pa email inoti aurec@africau.edu

Appendix 5. AUREC Approval Letter

AFRICA UNIVERSITY
A United Methodist-Related Institution
Investing in Africa's future

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2105/21 2 June, 2021

Simon Takawira
C/O CHANS
Africa University
Box 1320
Mutare

RE: EXPLORING DETERMINANTS OF COVID-19 VACCINE HESITANCY AMONGST NGO EMPLOYEES IN HARARE, ZIMBABWE

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC 2105/21
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** June 2, 2021
- **EXPIRATION DATE** June 2, 2022
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU – A/AUREC ADMINISTRATORFOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE