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CHARACTERISING COVID-19 VACCINE HESITANCY IN HARARE CENTRAL, ZIMBABWE

BY

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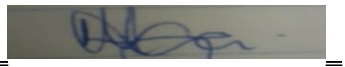
Abstract

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 characterizing vaccine hesitancy and determining factors associated with vaccine hesitancy amongst the general populace in Harare central district. An analytical cross- sectional study was conducted on 398 participants using a standard questionnaire. Of the 398 participants, 53.% were hesitant whilst 47% were not sure. Those hesitant opted for steaming (72%) and traditional herbs (42%). The ones willing to vaccinate were mostly driven by valuing their health (48%), important in saving dependents health (52%) and to control COVID-19 (45%). Bivariate analysis was performed on demographic variables Gender at (p=0.223) was not statistically associated with vaccine hesitancy. Educational level being attained at tertiary level was associated with reduced likelihood of Covid 19 vaccine hesitancy [COR:0.26(95%CI: 0.19-0.37)p<0.001.Being married was a protective factor as it was associated with reduced likelihood of vaccine hesitancy at (27%, p=0.012).Being formally employed was statistically significant at [COR:0.59(95% CI:0.42-0.83)p=0.003]. 224 of them were males whilst 174 were women which literally translates to a cumulative percentage of 56.% for males and 44.% for females. The percentage gap was 13% in favour of males. Multi-variate logistic regression was conducted to determine the socio-demographic factors associated with vaccine hesitancy. Level of education at tertiary level was associated with reduced likelihood of vaccine hesitancy (p=0.001). Marital status of being married was associated with reduced likelihood of not being vaccinated by 26% (p=0.040). Employment status and being self-employed had a protective effect of 34%**.** Half of hesitant respondents (70%) n=279) lacked trust in health care provider capacity to provide adequate and accurate information whereas 37% of those willing to take up the vaccine did not trust in the health care providers. Those willing to take up the vaccine were 2 times more likely to trust the service provider than those not willing to vaccinate (OR 2.12 (95% CI 1.02 – 4.41) p = 0.043).Study findings indicated that 205(52%) of the study participants believed that Covid -19 is a demon that need spiritual interventions not a vaccine whilst 197(49%) people revealed that the vaccine is not safe and 167(42%) said the vaccine might not be even preventing the diseases ,they would rather prefer natural remedies to alleviate the diseases.155 (39%) of the participants thought that the vaccine alters their DNA at the same time leading to them to premature deaths whilst 148(37%) thought that the vaccine was a placebo. 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). Many of the participants relied on WhatsApp (77.8%) and internet (60.3%) for covid 19 information. Vaccine hesitancy is relatively high (29.1%) amongst the general populace in Harare Central district. Based on this study the government through ministry of health and health promotion department must work closely with various stakeholders in designing an intense and effective vaccination campaign and at the same time doing door to vaccination.

Keywords: Vaccination, Vaccine Hesitancy, COVID-19, Harare Central District, Multivariate Logistic Regression

Declaration

I, Lenciana Moyo, student number 192016, 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 Masters' degree.

LENCIANA MOYO 

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Dedications

This study is dedicated to my daughters, Achsah, Charity and Victorious Moyo. Your support throughout this journey was unconditional. I also dedicate this to my father Linus Murimoga and my late mother Fungai Shonhiwa , you always believed in me.

List of Acronyms and abbreviations

AUREC	Africa University Research Ethics Committee
BeSD	Behaviour Social Drivers
BRT	Behavioural Reasoning Theory
COVID-19	Corona Virus Disease 2019
CSO	Civil Society Organization
CDC	Center for Disease Control and Prevention
HCD	Harare central district
HCW	Health care worker
IEC	Information, Education and Communication
MOHCC	Ministry of Health & Child Care
NGO	Non-Governmental Organizations
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.).

Herd immunity: is the indirect protection from an infectious disease that happens when a population is immune either through vaccination or immunity that would have developed through previous infections (WHO,2020).

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

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).

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Globally, there is growing concern over vaccine hesitancy in the Covid-19 pandemic era (WHO,2021). Vaccinations are regarded as one of the most successful measure of public health promotion and management (Dubé, Laberge, Guay, Bramadat, Roy, & Bettinger, 2013). There is consensus in literature that vaccine hesitancy is mostly promoted by negative public opinions or perceptions of the vaccine, therefore, resulting in decreasing the vaccine coverage and increasing the spread of the pandemic (Dubé et al, 2013). According to the (CDC ,2021) a vaccine is a product that stimulates a person's immune system to produce immunity to a specific disease. They are usually administered through needle injections, but can also be administered by mouth or sprayed into the nose (CDC, 2021).

This was further supported by (Afolabi & Ilesanmi,2021) which states that vaccination refers to an injection of a killed microbe into an individual in order to stimulate the immune system against the microbe, thereby preventing disease (Afolabi & Ilesanmi,2021). It can be noted that vaccination is a process in which someone receives a vaccine to prevent them from contracting a disease or its adverse effects on one's health. The World Health Organization defines it as a simple, safe and effective way of protecting people against harmful diseases before they come into contact with them. It uses your body's natural defence to build resistance to specific infections and make your immune system stronger (World Health Organization, 2020).

Covid-19 disease is defined as an infectious respiratory disease, which is highly contagious and that is spread primarily through droplets of saliva or discharge from nose when an infected person coughs or sneezes (World Health Organization, 2020). When one contracts the disease, he/she will have flu-like symptoms as well as trouble in breathing. The Coronavirus disease

which started in Wuhan, China in December 2019 has been and continues to claim millions of lives worldwide (WHO,2019). It created uncertainties and confusion even in the medical field with its mutations which created new variants which proved to be more dangerous than the original one in some parts of the world leading it to be more fatal in the second wave (CDC, 2021).

The effects of the new variant termed South African COVID-19 variant claimed to have mutated in South Africa, seriously spiked COVID-19 cases in Zimbabwe in the beginning of 2021 claiming many lives (MOHCC,2021). However, in order to minimise the devastating effects of COVID-19 pandemic, scientists hastily developed vaccines that are being used and distributed across the globe.

1.2 Background to the study

Zimbabwe, in an effort to curb the spread of the disease the government has been implementing a vaccination program which was launched on 22 February 2021, using sinovac and sinopharm. As of April 2022, Zimbabwe had procured 10 000000 million doses of sinopharm and has received a donation of 2 500 000 doses of the vaccine Sinopharm from China, another 6 000 000 of the sinovac vaccine ,1 000 000 doses of sputnik vaccine from Russia, and 1 000 000 Johnson and Johnson vaccine and more doses from China are expected (MOHCC,2021). The Covid 19 vaccines roll out was done in phases beginning with the frontline workers and chronically ill

people, and then vaccination was opened to everyone eligible for vaccination.

Despite these efforts being made by the government to curb the pandemic within its parameters, the inoculation of the vaccine was received with mixed feelings especially from the Zimbabwean general population. To date over 5460 deaths have been recorded in Zimbabwe as of April 2022 only 5,730,327 having vaccinated with the first dose and 3 597602 having been fully vaccinated country wide (MOHCC,daily sitrep,2022). This is a small figure considering or comparing to the total eligible population of 12115478 (MOHCC,2022). According to MOHCC (2022) that only 32% of the total eligible population in Zimbabwe which is 12 years and above has been fully vaccinated, thus justifying the need to conduct a research on vaccination hesitancy and the challenges faced the vaccination program.

In this new era of the Covid-19 global pandemic, various researches are being conducted across the globe to explore various issues that surround the Covid19 phenomena. Recently, a national level study was conducted in Zimbabwe to assess the likelihood of COVID-19 vaccine hesitancy, covering all the 10 provinces of Zimbabwe. Findings from the research showed that half of the participants (50%) were willing to take the Covid-19 vaccine while the other half were either unsure or would reject taking the vaccine. Interestingly, findings from this research are consistent with similar studies that have been conducted in other African studies such as the Democratic Republic of Congo (DRC), 56% were willing to be vaccinated (Ditekemena, Nkamba, and Mutwadi et al.,2019), and 50% ~~in Nigeria~~in Nigeria (Tobin, Okonofua, Adeke, & Obi, 2021).

The similarities in these findings were attributed to resemblances in the methodology used, as well as socio economic and political settings in DRC, Nigeria and Zimbabwe (Midzi, 2021).Therefore, the statistical evidence on hesitance towards vaccination is of a major concern. According to WHO,(2019) vaccine hesitancy has been recognized as a major threat to the control of vaccine preventable diseases. It can be noted that negative information about the vaccine which circulated on internet and social media, has devastating side effects of some vaccines which were inoculated some people in the past in a bid to prevent some diseases and negative influence from significant other (Chigevenga, 2021).

Other factors on hesitance include lack of trust amongst the government and its citizens. Findings from the national study research further revealed that, the majority of the participants were uncertain about the effectiveness of the vaccine and lacked confidence on the safety of the vaccine (Mangoro et a.,2021). The majority lacked trust in the government and were uncertain about vaccine effectiveness and safety (Mangoro et a.,2021).These findings alone pose questions on the effectiveness of information dissemination employed by the vaccination program to promote vaccine intake to reach 60% target which is herd immunity which is known to significantly reduce Covid 19 burden in the country (Chigevenga,2021).

1.3 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~~). 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 million 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%.

1.3.2 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.

1.4 Problem Statement

Zimbabwe has reported 226460 cases of Covid 19 and 5258 fatalities of Covid 19 since the outbreak began in 2020 (MOHCC,2022).) At the same time 130 010 cases and 3598 deaths were recorded for Harare and in 46% (59805) of the cases and 27% (971) fatalities are from Harare central district. While vaccination is frequently cited as one of the most effective ways in preventing and controlling infectious disease (Mavhunga,2021), Government of Zimbabwe has been struggling to reach its vaccination set targets with Harare province being one of the provinces struggling to reach its target and specifically Harare central district being one of the affected districts. As at 19 January 2022, Government of Zimbabwe had managed to fully vaccinate 3236083 out of a target of 900000 people (MOHCC, 2022).

In Harare Central District with a total eligible population of 876549 (Zimstat, 2021) only 24% (210372) have been fully vaccinated. ~~In~~ Extant literature demonstrates existence of complex beliefs and influences that cause populations to be hesitant, and even resistant to vaccination (Dzinamarira, et al, 2021). Despite the availability of Covid 19 vaccines (7 500000 doses available) (MOHCC,2021). ~~O~~nly 24%of the

total eligible population have been fully vaccinated against the set target of 60% which is herd immunity(MOHCC,2021).In Harare central district 22% of the eligible population is fully vaccinated against the set target 60%(MOHCC,2021). Despite extending Covid 19 vaccination to the private sector, vaccination policies in place, a wide range of vaccines, and all other vaccine modalities needed for vaccination being available, there was still significantly low uptake of the Covid 19 vaccine in Harare central district city since the roll out began.

Tozivepi, et al, 2021 reported that about 50% of the population are hesitant and 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 recommended that Government of Zimbabwe should upscale its multi-sectoral approach in order to increase Covid 19 vaccine uptake and this can be achieved by the collaborating with Civil Society Organizations given their pivotal role in mobilizing general population even in hard-to-reach areas. They argued that CSOs and NGOs 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.

In order to increase vaccine uptake, the government of Zimbabwe must intensify its communication about Covid 19 vaccines through information centers within the communities of Zimbabwe. 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. It is therefore against this background that the researcher is proposing to conduct a study to explore COVID-19 vaccine hesitancy among the general populace in Harare

central district in Harare, Zimbabwe given the districts' intermediate position and close proximity to vaccination centers but has a very significantly low uptake of the Covid 19 vaccine. Therefore, this study seeks to address the challenge of Covid 19 vaccine hesitance as it has been seen to pose risk on general populace of Zimbabweans.

1.4.1Main objective

The purpose of this study was to characterize Covid-19 vaccine hesitance in Harare Central, Zimbabwe in 2022.

1.4.1.2Specific research objectives

The study specifically sought to:

- Determine the socio-demographic characteristics associated with COVID-19 Vaccination hesitancy amongst the general population in Harare Central District in Harare, Zimbabwe 2022.
- Determine the attitudes and perceptions towards the uptake, effectiveness, and safety of the COVID-19 vaccine in Harare Central District in Harare, Zimbabwe 2022.
- Establish the myths and beliefs around the COVID-19 vaccine amongst the general population in Harare Central District in Harare, Zimbabwe 2022.

1.4.2 Research questions

1.4.2.1 Main question

What factors characterizes Covid 19 vaccine hesitance in Harare Central district Harare province, Zimbabwe in 2022?

1.4.2.1.1 Specific questions

- What are the socio-demographic characteristics associated with COVID-19 Vaccination hesitancy amongst the general populace in Harare central district in Harare, Zimbabwe in 2022?
- What are the attitudes and perceptions that exist towards the uptake, effectiveness and safety of COVID-19 vaccine by the general populace in Harare Central District in Harare, Zimbabwe in 2022?
- What are the dominant myths and beliefs around COVID-19 vaccine amongst the general populace in Harare Central District in Harare, Zimbabwe in 2022?

1.5 Hypothesis

While the generic assumption was based upon the general population 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 underlying health conditions which increases susceptibility to severe COVID 19 are less hesitant to take up vaccine than those without. Underlying conditions in this study are defined as any disease or condition which heightened the chances of developing severe COVID-19 for example hypertension, diabetes, Asthma.
- Hypothesis 3: There is a significant relationship between vaccine hesitancy and marital status. Single people are more likely to accept the vaccine than their married counterparts.

1.6 Significance of the study

Vaccine hesitancy studies that were done globally and locally focused on other sub-populations other than the general population. Sub populations like religious groups, Health workers and NGOs have been studied at length. It is however critical to understand determinants of vaccine hesitance amongst the general population whose role is of paramount utility in attaining herd immunity of any given country. Undertaking this study benefits the Ministry of health and the government at large in coming up with types of effective communication, public health messaging and awareness campaigns that might successfully convince people to accept vaccination services. It would also add to the body of literature on vaccine hesitancy in Zimbabwe.

1.7 Delimitation of the study

The study was conducted in the general populace in Harare central district in Harare, the capital city of Zimbabwe (Figure 1). Harare Central district has an area of 57.6 km^2 (19.2 mi^2) and a total population of 675894, and an estimated 750000 in 2022 (Zimstat, 2019). Harare Central District is situated in the center of Harare and only has 5 suburbs compared to other districts in the province which have more than 9 suburbs within them.

Harare central district is the leading district with efficient and reliable health facilities and vaccination centers with many the biggest government health facility in the country and numerous upmarket health facilities hence attracts majority of the general population to come and their vaccination and other health services. Harare central district is a hub where different classes of people are found and it is a central place where people engage themselves in various economic activities, hence making it easily to engage them without the need for mobilization.

1.8 Limitations

The limitations of this study are that the study was done in Harare central district only and might not be a very true reflection of vaccine hesitance in the Zimbabwean urban populace. Also, the use of the lottery method in selecting participants denied the participants who were eligible but did not qualify for the study to give their opinion on vaccine hesitancy.

1.9 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

Vaccine hesitance is a global phenomenon that is not new to the Covid 19 era. With its prevalence caused by various factors ranging from political, demographic, social, cultural, economic and religious**,** this section deals with the conceptual and theoretical issues that underpin vaccination hesitance. 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 shaped this study. Using empirical evidence the researcher begins by elaborating the theoretical framework and its relevance to the study.

2.2 Theoretical Framework

Theoretical framework refers to a set of interrelated concepts that can be used to guide research with the purpose of predicting and elaborating 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 tripartite alliance of three 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),the WHO Three C's model (Figure 3) and the Behavioral

reasoning theory (BRT). 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 (WHO,2020). The researcher presented data in line with how low or high confidence for instance contribute to decision on vaccine uptake.

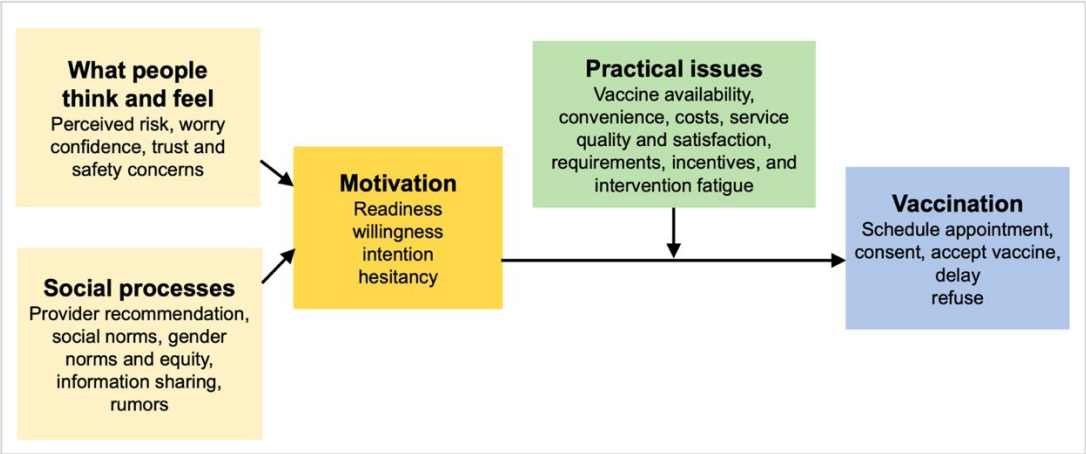


Figure 1: Behavioural and Social Drivers of Vaccination (BeSD) Increasing Vaccination Model, (WHO,2020)

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 (Brewer et al.,2017). Social processes are also critical for instance provider recommendations, religion, and rumours on vaccine (Brewer et al.,2017).

According to Brewer et al.,(2017) 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,

understanding what motivates or stops people from getting vaccinated, (Brewer et al.,2017). The model also highlights the importance of practical issues such as service quality, vaccine availability and requirements in influencing hesitancy (Brewer et al.,2017).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).

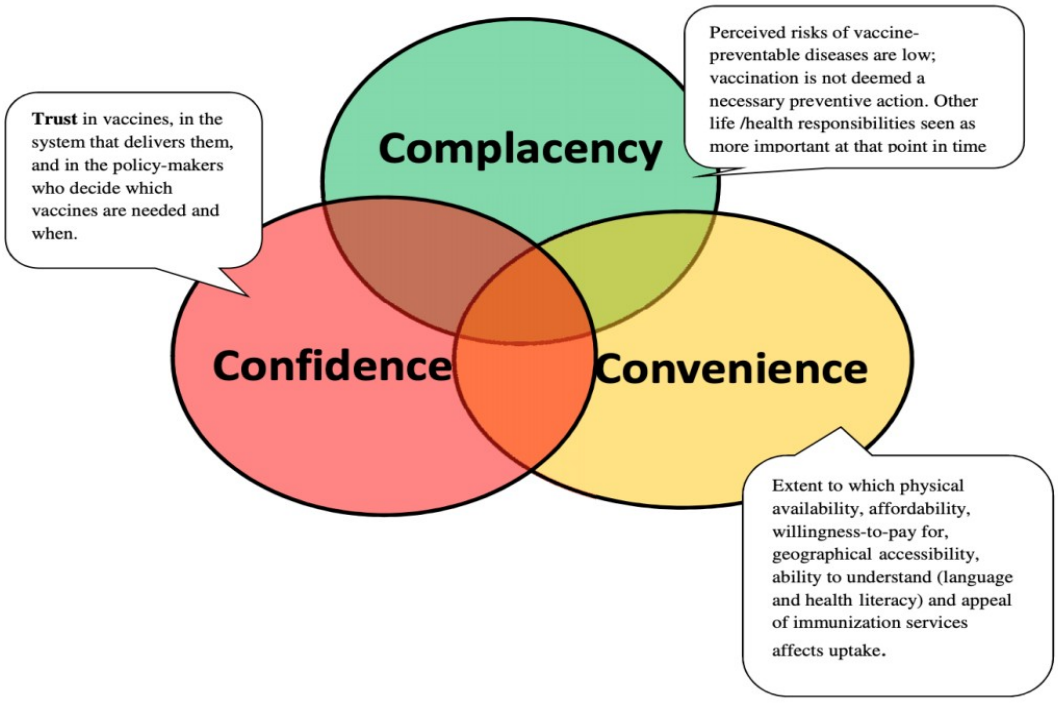


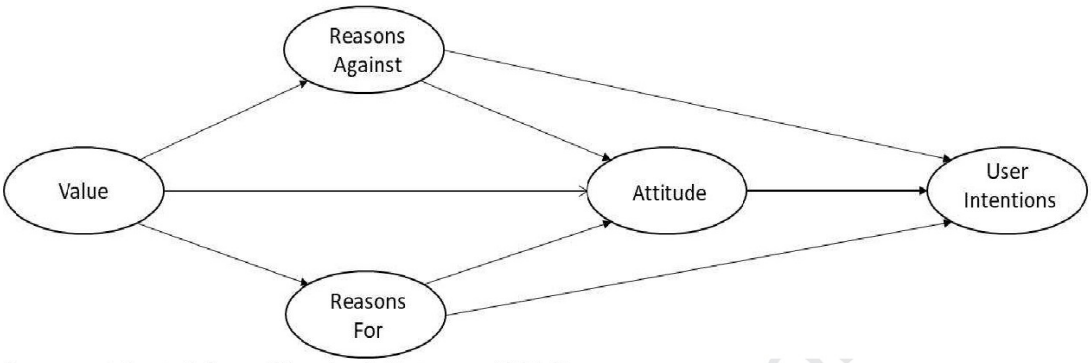
Figure 2 The "3 Cs" Model of Vaccine Confidence (MacDonald, 2015).

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.

According to Brewer et.,al,(2017) the 5cs explains broadly the Behavioral reasoning theory which describes in detail how behavior influences decision vaccination hence it plays a pivotal role in vaccine hesitancy.

2.2.1Behavioural reasoning theory

Figure 1. Graphical representation of Behavioural Reasoning Theory



Source: Adapted from Claudy & Peterson (2014)

Figure 3. Graphical Representation of Behavioural Reasoning Theory

2.2.1.2Behavioral reasoning theory

Behavioral Reasoning Theory (BRT) is an emerging human behavior theory that provides a holistic overview of different behavioral aspects concerning vaccine

hesitancy (Sahu, Padhy, & Dhir, 2020). The BRT suggest that there is a combination of factors that causes vaccine hesitance behavior namely, reason, values, attitudes and intentions (Dhir et al., 2021). Vaccination drives or programs for the Covid-19 pandemic particularly in Africa has suffered a high rate of hesitancy and resistance because of lack of focus in understanding the myriad reason behind their hesitance or hindrances to acceptance of vaccines (Dhir, Koshta, Goyal, Sakashita & Almotairi, 2021).

The BRT argues that there is need to examine the relative influence of both the reasons for accepting and reasons for not accepting the Covid-19 vaccines in order to determine hesitancy (Dhir et al., 2021). Covid-19 vaccine hesitance is a major challenge in Zimbabwe that requires urgent scientific attention particularly its characterization. Consequently, in Zimbabwe knowledge of Covid-19 vaccine hesitancy is scarce, making it a growing concern for public health professionals who are making efforts to curb the pandemic infection effects upon the Zimbabwean populace to be investigated as soon as possible.

In this regard, BRT not only allows scholars to distinguish between the 'reasons for' and the 'reasons against,' but it also helps in evaluating the influence of these factors on the consumers' intentions and behavior by using a single decision-making framework .

2.3 Relevance of the theoretical framework

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 BRT illustrated how behaviour influences decision making in vaccination either to accept or refusal of vaccines. The researcher was guided in tools development, data collection and analysis, interpretation, and discussion by three two models.

2.4 History of Covid -19

Coronavirus disease 2019 or COVID-19 is caused by a newly discovered coronavirus, SARS- CoV-2. This new infection was believed to have emerged from Wuhan City, Hubei Province, China in December 2019 (WHO,2020). On March 11 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic (WHO,2020). According to CDC report published in September 2021, this emergent disease has infected more than 200 million people around the world and caused more than 5 million deaths and in Africa Covid 19 has claimed more than 500000 lives, and in Zimbabwe Covid 19 has more than 4900 fatalities recorded (MoHCC,2021).

To date the known variants of Covid 19 are 7 and the virus keeps mutating into different strains that are highly infectious and deadly and this evident with the delta variant which originated from India which has accounted for 70 % of the Covid 19 deaths globally,(CDC,2021) and omicron variant which originated from South Africa which twice more transmissible than the delta variant (CDC,2021) . The rate of infection had not seemed to slow down in the majority of the affected countries, and varying measures to curb the disease have been put in place (WHO, 2020).

The world over there has been many efforts to curb the spread of Covid 19 through measures like enforcing national lockdowns, curfews, reducing workforce at workplaces as well vaccinations (Assava,Alfani,,Gandolfi, and LeMongile,2021.), and these were similar measures that were experienced during the Spanish flue like in the 17th century (Assava et al,2021). Internationally there has been an effort by

different governments to reduce the adverse effects of the Covid 19 pandemic on economy and society and the general public health (WHO, 2021).

The Zimbabwean populace was greatly affected by Covid 19 as it brought about negative effects economically and have been associated with loss of GDP, economic products, perpetuation of hunger and poverty, poor nutrition, mental health issues, enhanced gender based violence and drug abuse, overburdening an already ailing health system and disrupted the norm of social life among others(MOHCC,2020) .

2.5 Covid 19 vaccination program

Vaccination has been reported as one of the top notable public health achievements to have occurred during the 1900s. Vaccination has resulted in the eradication of smallpox and control of poliomyelitis, measles, rubella, tetanus, diphtheria, and other infectious diseases (WH0,2020). The availability of COVID-19 vaccines has presented countries with a unique opportunity in the COVID-19 response. In addition to the primary effect of reducing disease burden, widespread vaccination will allow countries to lift restrictions previously imposed to control the spread of the virus and revive ailing economies, whilst enabling people to regain their “normal” lives through Herd immunity.

Herd immunity, which is also known as 'population immunity', is the indirect protection from an infectious disease that happens when a population is immune either through vaccination or immunity developed through previous infection (WHO, 2020). (WHO ,2021) supports achieving 'herd immunity' through vaccination. Herd immunity against COVID-19 should be achieved by protecting people through vaccination, not by exposing them to the pathogen that causes the disease. One major setback about Covid 19 vaccination is that the proportion of the population that must be vaccinated against Covid-19 to begin inducing herd immunity is not known and

this has been a major setback of Covid 19 vaccine roll out in many African countries including Zimbabwe (Magvanier, 2021).

Globally there has been a roll out of Covid 19 vaccination program and developed countries like the UK, Isreal, France, Canada, Russia, China, America, and Australia have managed to successfully vaccinate more than 80% of their population using the different type of vaccines that are available as according to (WHO,2021),whilst vaccination program in Africa is lagging behind with many countries in Africa having only managed to vaccinate at most 20% population (Assava et.al,2021).in Africa ,South Africa became one of the first African countries to receive the COVID-19 vaccine and as the rest of Africa prepares to receive COVID-19 vaccines, most countries in Africa have set up national-level coordination committees for developing national vaccination deployment plans.

Zimbabwe also embarked on a massive vaccination drive roll out which began on 18 February 2021 (MoHCC,2021) in order to reach its herd immunity thereby reducing Covid 19 related deaths. Zimbabwe is administering sinopharm, sinovac, covax, sputnik and Johnson and Johnson.as of September 2021, Zimbabwe has received 12 million doses of the Covid 19 vaccine but has only managed to utilize 200000 of the doses, (MoHCC,2021). The country aims to inoculate at least 10 million of its 16 million citizens to achieve herd immunity and In order to achieve herd immunity, the vaccine hesitancy issue should be addressed in Zimbabwe.

Despite all the public health successes in reducing the spread of infectious diseases through vaccines, a large portion of the global population still expresses concerns about the safety, efficacy, and need for vaccines, a phenomenon known as vaccine hesitancy. With this viewpoint, we unpack of COVID-19 vaccine hesitancy in Zimbabwe.

2.6 Conceptualizing vaccine hesitancy- A global perspective

Understanding the concept of vaccine hesitancy is challenging but is generally argued to be a situation of believing the vaccine and its agenda but having concerns over its efficacy that leads to no or delayed participation (Dubé et al, 2013). Dror et al., (2020) argues that vaccine hesitance is the next challenge in the effort to fight the Coving-19 pandemic. The authors found out that in Israel the concern of the phenomenon was mainly caused by misinformation about the safety and efficacy of the vaccines, social, cultural, religious and political factors Dror et al., (2020). According to Sarvoy (2021), the personnel in the medical fraternity in particular were concerned about the safety of the rapidly developed vaccines but generally the cause of hesitance was attributed to personal risk-benefit perception. Thus, advocacy was recommended at global and country level to promote educational campaigns to alleviate negative perceptions about the safety and efficacy of the vaccines to various influential groups of society (Dror *et al*., 2020).

Vaccine hesitant medical professionals in Israel are likely going to influence the general population negatively at both personal and professional level if the two categories meet (Dror *et al*., 2020).This is evident in Africa ,Zimbabwe included (Dube,2021).Vaccine hesitancy is, however, neither new nor unique to COVID-19 vaccines (Mangoro. Shumba., and Stephen, 2021). Nearly two years prior to the first approval of COVID-19 vaccines, the WHO identified vaccine hesitancy as one of the main threats to global health. There are a number of factors that contribute to Covid 19 vaccine hesitance and these are political, social, political and religious (Mangoro et al.,2021).

2.7 Theoretical framework outlook

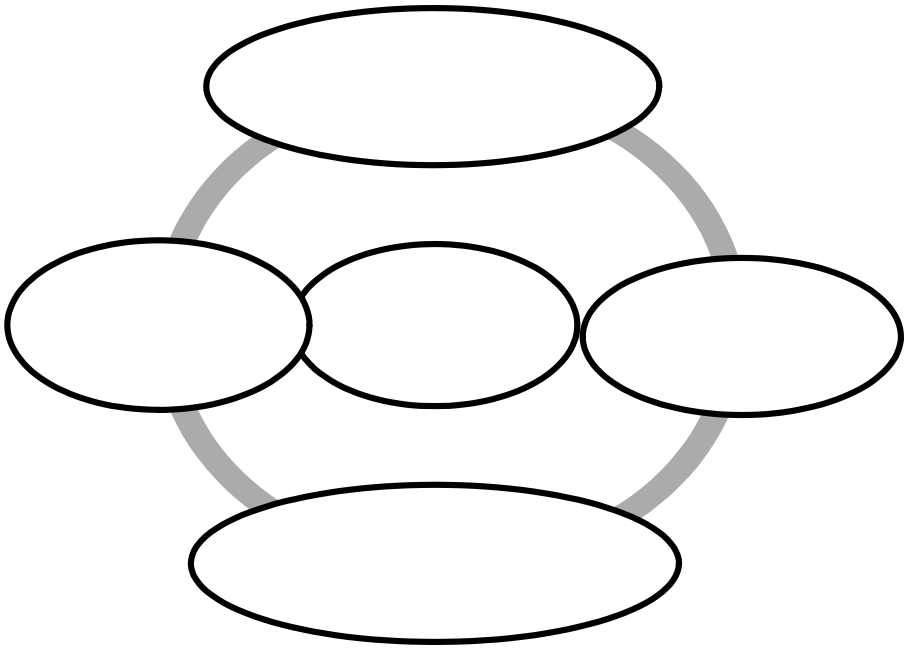


Figure 4: Theoretical framework outlook

2.7.1 Political

Politics has been found to be one of the major players in influencing COVID-19 vaccine hesitance. Democracy and CMS studies found political factors to play a significant role in shaping attitudes toward COVID-19 vaccination. More specifically, the COVID-19 Democracy survey suggested that political discontent or disillusionment may play a key role (Sarvoy, 2021). According to Dhir (2021) people who had positive attitudes toward the government generally and its handling of COVID-19 in particular were more likely to accept COVID-19 vaccination and this is evident in developed countries like China Russia UK Canada Australia to name a few where more than 80%of the total population have been vaccinated .

A study done by Mangoro in 2021 indicated that in Africa relatedly, not trusting the government's capability in ensuring that the vaccine is safe and effective, and believing that politics played too much of a role in the vaccine development process,

accounted for 62% and 27% of the total reasons for not wanting to get COVID-19 vaccination respectively. This is evident in many developing countries like Mozambique, Zambia and South Africa (Mangoro,2021).

Trust in one's government influences vaccination uptake. In West Africa, Afro barometer reported high levels of mistrust in governments' ability to provide a safe vaccine (Suri,2021). Those who did not trust their government were five to 10 times less likely to want to be vaccinated. In Ghana, 40% of those who are unwilling to be vaccinated cited mistrust of the government while in South Africa, those who believed the president was doing a good job were more likely to be vaccinated (Roseline,Gerald,Kerry and Samal,2021).

2.7.2 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); Larson et al. (2018); MacDonald (2015); Klein and Pekosz (2014); 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), they 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).

Gender and age also proves significant in the characterization of vaccine hesitancy. Geographical location is also another factor that led to vaccine hesitance.in an study done by Marcus (2021) in Zambia, people who were located far away health centers exhibited higher chances of vaccine hesitance compared with people who were located closer to health facility. According to (Dube 2019),Marital status have a significant role to play in vaccination.

2.7.3 Health related variables

The sources of health- and vaccination-related information play vital roles in the choices people make about vaccinations, with current research pointing to information overload (WHO,2021), misinformation, and myths on the internet and social media platforms as potential threats to vaccine uptake (Magrathera,Cornilius,Selah and Joseph,2021). COVID-19 is the first pandemic in history in which technology and social media are being used on a massive scale to keep people safe, informed, productive, and connected (Magrathera et.,al 2021). At the same time, the technology we rely on to keep connected and informed is enabling and amplifying an infodemic that continues to undermine the global response and jeopardizes measures to control the Covid 19 pandemic (Pravesha and Karrtahrum 2021).

Sarvoy (2021) noted that concerns about safety, side effects, and effectiveness are widespread and observed among health workers in Zimbabwe, Ghana, South Africa, Kenya, Sudan, and Ethiopia. The Africa CDC survey noted that respondents viewed COVID-19 vaccines as less safe and effective than other vaccines; similar findings have been observed in Uganda, Sierra Leone, Rwanda, Mozambique, Burkina Faso, Cameroon and South Africa (CDC,2021). The suspension of

AstraZeneca's roll out in some European countries, the South African data on its effectiveness and the temporary suspension of the Johnson & Johnson vaccine in the United States to evaluate reports of blood clotting, affected confidence in COVID-19 vaccination(WHO,2021). Ultimately, AstraZeneca's vaccine was refused by several African countries (WHO,2021).

Similarly, 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, and Hawkes, 2019). During the 2014–16 outbreak in Liberia, citizens who distrusted their 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 mis-information, fear, rumours, mistrust, and lack of confidence in authorities, denial of bio-medical discourse and desire to remain autonomous and avoid possible contamination. Ilesanmi and Afolabi, 2020 report that hesitancy on uptake of the vaccine maybe as a result of perceptions such as, that COVID-19 is strategy for political corruption despite the public health campaign by the West. In their study, they highlighted 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 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.

2.7.4 Myths and beliefs surrounding Covid 19

Mistrust of vaccines developed in Western countries is not new in Africa (Francis, 2021) . It is rooted in the history of unethical Western medical practices on the continent where early efforts to address disease diminished trust in Western medicine and led to underutilization of health services (CDC,2021) Approximately 43% of those surveyed by the Africa CDC 15-country study believed that Africans were being used as guinea pigs in vaccine trials. Similar findings were noted in DRC; and, a 2021 survey in Addis Ababa hesitancy was associated with the belief that the vaccine was a biological weapon from developed countries to control population growth (Craig, Hannah and Simeon, 2021).

2.8 Summary

But, perceptions of COVID-19 vaccines are not static, therefore, repeated data collection using both qualitative and quantitative methodologies is necessary to monitor changes over time. Between November 2020 and April 2021, the GeoPoll survey recorded increases in hesitancy in Nigeria, Kenya, South Africa, Côte d'Ivoire, and DRC. In Mozambique, hesitancy decreased in late 2020, only to

increase in early 2021. While in Ghana hesitancy decreased from 38% in August 2020, before vaccines were approved, to 17% in April 2021 after the first batch of vaccines was delivered (WHO,2021).

As vaccine supply increases and communication campaigns expand, changes in hesitancy are being observed. This needs to be constantly monitored to develop consistent and effective communication strategies that address the challenges posed by new variants and more divergent views on COVID-19 and vaccines continue to flood social media.

This review of related literature showed that there is a gap on vaccine hesitancy amongst the general population. Understanding vaccine hesitancy amongst the general population 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 in the general population.

CHAPTER 3 METHODOLOGY

3.0 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 was collected and analysed. The ethical considerations that were considered are also stated in this chapter.

3.1The 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.

3.2 Study site

The study site was Harare Central district (HCD) in Harare province. HCD has a total population of 860567 (ZIMSTAT,2021) .Harare central district is made up of the 16 suburbs including the central business district (CBD).The suburbs are Alexandra park, Avenues Avondale ,Milton park, Belgravia, Belvedere, Civic centre, Coronation park, Gunhill, Kensington, Mona vale, Lincoln park, Ridgeview,

Strathaven, Eastlea and Workington. HCD has a total of 32 vaccination sites comprised of 10 public sites and 22 private sites.

The map of Harare central district indicating some of its suburbs is illustrated in Figure 5 below.

Figure 5 Harare Central District Map (Map data @2022

3.3 Population and sampling

The study targeted individuals aged 18 and above who live in Harare central district.

3.4 Inclusion criteria

The study included participants who are 18 years and above.

3.4.1 Exclusion criteria

Excluded participants were those below age of 18.

3.5 Sample size and Sampling procedure

The study sample size was estimated using the Dobson formula whose parameters are informed by similar studies conducted in Sourthern Africa. Recent study by Dube et. al., (2021) indicated prevalence of 62% for vaccine hesitancy amongst general population. Using the Dobson formula, 62% 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 358 and maximum sample size was 398 based on 90% responsive rate.

($Z_{1-a/2}^2$) is the normal variant at 5% type 1 error

(P<0.05)=1.96

P =Expected proportion based on previous study

D is absolute error

$$n = \frac{Z^2 p(1-p)}{d^2}$$

Where Z = 1.96

p= 62% = 0.62.

1-p = 0.38

d= 0.05

$$=\frac{\{(1.96x1.96)x0,62\}x(0.38)}{0.05}$$

$$=\frac{3.8416x2.3817}{0.0025}$$

$$=\frac{0.905046}{0.0025}$$

=362.018

=362

N=362

Adding non responsive rate of 10% sample size becomes 398.

3.6 Sampling procedure

Simple random sampling without incentives was used for this study. The researcher utilized the respondent's network size and composition to estimate selection probabilities for each sampled unit. This promoted generation of acceptable estimates for the study population (Gile et al. 2018; Heckathorn and Cameron 2017). Use of simple random sampling has been widely used in public health researches that cover a large population. Simple random sampling has been chosen for this research mainly because of 1) The findings are highly generalizable for the whole target population, 2) It is easily understood and the results are highly projectable. In contrast to other sampling methods, this method doesn't require additional steps such as breaking down the population into sub-populations, 3) It has low bias. It fully eliminates human bias as samples are selected using random selection and 4) The data collected through simple random sampling tends to be well informed and holistic.

The researcher used the lottery method to select participants from the 32 vaccination sites which are in turn health facilities. To get the number of people to participate per

vaccination site the researcher used simple proportion and used the following formula

Sample size (n)/ Number of vaccination site

Where n =398

Number of vaccination site =32

398/32=12.4

=12

So the researcher interviewed 12 people per vaccination site. The researcher made participants to pick papers from a container with 24 pieces of papers and 12 out of the 24 pieces were written YES and 12 were written NO. So the participant that picked a paper written yes is the one that participated in the study. This study did not use monetary incentives as secondary incentives, rather monetary incentives were used for primary recruitment only for the 5 enumerators.

3.7 Variable definition and data sources

Independent Variables: Socio-demographic variables (age, gender, education, religion, marital status) vaccination status, vaccination history. Likert/Rating scale response was treated as independent variables.

Dependent Variables: Accept or decline vaccination, confident/not confident on the vaccine or health system.

3.8 Data Collection Instruments

The researcher used one standard survey questionnaire whose structure and questions were guided by the WHO Working Group Determinants of Vaccine Hesitancy Matrix. The matrix had questions that address 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 the general population.

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

3.9 Reliability and Validity

Internal reliability in this questionnaire was ensured by back-to-back translation to both Shona and then translated back into English. A comparison of back-to-back translations was utilized to check any meaning loss and was addressed accordingly. Face validity for the tool was done by conducting a mini pilot study. Responses collected were analyzed using principal component analysis method. Internal consistency of questions loading into the same factor was assessed and a revision to the tool was done accordingly.

3.10 Pretesting /pilot study

Prior to commencement of data collection, the researcher carried out pre-testing of tools in one of the project sites which was not targeted by the study namely St Marys in Chitungwiza. Data collected during pilot testing was constituted into the final research data. Pre-testing of tools allowed for in-cooperation of emerging input and

adjustments to the data collection tools**.**

3.10.1 Data collection procedure

Survey Questionnaire-, the researcher administered a standard survey questionnaire guided by the WHO determinants of vaccine hesitancy matrix amongst the sampled targeted participants. The survey questionnaire covered a range of topics including demographics, vaccination status and the reasons for not getting vaccinated. The survey questionnaire consisted of closed ended questions to allow for quantitative analysis. The survey questionnaire was answered within a period of 10 to 15 minutes with the help of the enumerator. Quantitative data collection was done in order to collect statistical evidence on the uptake of vaccines by the general eligible populace in Harare central district.

3.10.1.1 Data management

Data collection was conducted in 4 weeks from the 4th week of January 2022 to 2nd week of February 2022. Basic data collection and research ethics training was done to five enumerators involved in the pre-testing of tools as well administering the tool physically. All collected responses were stored in a safe in a cupboard in the storeroom. Data was then entered on excel and fed into 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.

3.10.2 Analysis and organization of data

Data was analysed using STATA version 13 and SPSS version 23. The findings were then presented in the form of frequency tables and graphs. 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 STATA version 13 and SPSS version 23.

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 $p< 0.05$. 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 (➔) 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.

3.11 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.

3.12 Summary

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

CHAPTER 4 DATA PRESENTATION AND ANALYSIS OF RESEARCH FINDINGS

4.1Introduction

This chapter presented results of Covid 19 vaccine hesitancy among the communities in Harare central district. The chapter presents findings that have been generated from views of 398 participants that were randomly selected from the district. The study was an analytical- cross sectional study. Frequency table was used to present Demographic characteristics of the study population where gender, education, employment status, marital status and age were presented. Bivariate analysis was conducted testing for association between demographic characteristics and the outcome depended variable which was vaccinated or unvaccinated.

Multivariate logistic regression was used to predict independent risk factors associated with vaccine hesitancy. Data was analysed using STATA version 13 and SPSS version 23 and demographic data was manipulated using excel to give graphical presentation.

4.2 Sociodemographic characteristics of respondents

A total of 398 respondents were recruited into this study and the majority were males 224(60%) and 174(40%) were females. On the level of education the majority 225(63%) were at tertiary level. 130 which is 33% had attained secondary level education, whilst 8 respondents which is 2% had attained primary level education and 2% were uneducated. Harare has more respondents as compared to other provinces of 131(33%). Only 47% were vaccinated. Eleven percent (n=44) were having a medical condition. The mean age of the respondents was 40(SD±18).This is indicated in table 1 below.

Table 1: Socio-Demographic Characteristic of Respondents

Demographic Characteristics	Classification	Number (%)
Population	Total Population	398(100%)
Gender	Female	174(39.5)
	Male	224(60.5)
Educational Level	None	8(2)
	Primary	8(2)
	Secondary	130(32.7)
	Tertiary	252(63.3)
Ethnic Group	Nyanja	10(2.5)
	Shona	274(68.8)
	Ndebele	50(12.6)
	Ndau	24(6)
	Manyika	16(4)
	Tonga	8(2)
	Muslim	16(4)
Province of Origin	Bulawayo	44(11)
	Masvingo	58(15)
	Midlands	4(1)
	Matebeleland South	12(3)
	Mashonaland East	25(6)
	Mashonaland West	33(8)
	Manicaland	46(12)
	Matebeleland North	40(10)
	Mashonaland Central	5(1)
	Harare	131(33)
Employment Status	Self employed	17(4.3)
	Formally employed	285(71.6)
	Not employed	96(24.1)
Marital Status	Married	215(55)
	Separated/Divorced	91(23)
	Single	82(21)
Level of Income	Below Average	21(5)
	Average	332(85)
	Above Average	35(9)
Underlying Condition	No	354(89)
	Yes	44(11)
Vaccination Status	No	205(53)
	Yes	184(47)
Age Group Range (Years)	18-24	24(9)
	25-29	60(24)
	30-34	53(21)
	35-39	28(11)
	40-44	25(10)
	45-49	39(15)
	50-54+	26(10)

This study indicated that the Shona constituted the greatest number at 274 which is 68.8% followed by Ndebele's at 12.6 %. On the other hand the Tonga ethnic group had the least percentage with a percentage at 2%. Only 4.3% of the respondents indicated that they were self-employed whilst 71.6% pointed out that they were formally employed and 24.1% were

not employed at all with those above 65 years of age indicating that they had retired. Bivariate analysis was performed on demographic variables as shown in Table 2 .Gender at (p=0.223) was not statistically associated with vaccine hesitancy.

Educational level being attained at tertiary level was associated with reduced likelihood of Covid 19 vaccine hesitancy [COR:0.26(95%CI: 0.19-0.37)p<0.001.Being married was a protective factor as it was associated with reduced likelihood of vaccine hesitancy at (27%, p=0.012).Being formally employed was statistically significant at [COR:0.59(95% CI:0.42-0.83)p=0.003]. 224 of them were males whilst 174 were women which literally translates to a cumulative percentage of 56.% for males and 44.% for females. The percentage gap was 13% in favour of males.

Whilst in previous studies it is a norm for females to visit health facilities more frequently as compared to man the change in the case of COVID-19 vaccination could be attributed to the fact that man constitute a great percentage of those formally employed as a result the mandatory vaccination by the government could be the main reason behind. It can also be argued that health seeking behavior for men improved during the Covid era as more men died of the diseases compared to women.

		No(N-398)	Yes(N-182)	No(N-216)	Total(N=398)	Sig(p-Value)	COR(95%CI)
		n(%)	n(%)	n(%)	n(%)		
Gender	Female	149(37)	74(35)	75(35)	216(54)	0.223	0.77(0.517-1.166)
	Male	249(63)	108(59)	141(65)	182(46)		ref
Level of education	None	9(2)	3(2)	6(3)	9(2)		ref
	Primary	45(11)	43(24)	2(1)	45(11)		
	Secondary	127(32)	82(45)	45(21)	127(32)		
	Tertiary	217(55)	54(30)	163(75)	217(55)	<0.001*	0.26(0.19-0.37)
Marital Status	Married	225(57)	116(64)	109(51)	225(57)	0.012*	0.73(0.57-0.93)
	Single	82(21)	32(18)	50(23)	82(21)		ref
	Divorced/widowed	91(23)	34(19)	57(26)	91(23)	-	-
Employment	Self employed	105(26)	50(27)	55(25)	105(26)	-	-
	Formally employed	247(62)	127(70)	120(56)	247(62)	0.003*	0.59(0.42-0.83)
	Not Employed	46(12)	5(3)	41(19)	46(12)		ref

Table 2:Bivariate analysis on demographic variables

*Significant at p<0.001, Ref=Reference Group, COR-Crude Odds Ratio

4.2.1 Multi-Variate logistic regression of demographic characteristics and vaccine hesitancy

Multi-variate logistic regression was conducted to determine the socio-demographic factors associated with vaccine hesitancy. Level of education at tertiary level was associated with reduced likelihood of vaccine hesitancy (p=0.001). Marital status of being married was associated with reduced likelihood of not being vaccinated by 26% (p=0.040). Employment status and being self-employed had a protective effect of 34% [AOR 0.66 ;(95%CI:0.44-0.99)p=0.049].

Table 2:Multi-Variate Logistic regression model of Vaccine Hesitancy

	Adjusted Odds Ratio	Std.Err	Z	p>|z|	(95% CI) for (AOR)
Gender	0.75	0.75	-1.21	0.230	(0.47-1.19)
Level of Education	0,27	0.05	-7.39	0.001*	(0.19-0.39)
Marital status	0.74	0.10	-2.06	0.040*	(0.56-0.98)
Employment status	0.66	0.13	-1.97	0.049*	(0.44-0.99)
Constant	99.28	75.04	6.08	0.001	(22.57-436.74)

*Significant at p<.001

4.3 Myths surrounding Covid-19 vaccination

Participants 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. Their beliefs and myths were also determined in this study and are indicated in Figure 4.1. Half of hesitant respondents (70%) n=279) lacked trust in health care provider capacity to provide adequate and accurate information whereas 37% of those willing to take up the vaccine did not trust in the health care providers.

Those willing to take up the vaccine were 2 times more likely to trust the service provider than those not willing to vaccinate (OR 2,124 (95% CI 1,018 - 4,429) p = 0.043). The study indicated that 205(52%) of the study participants indicated that Covid -19 is a demon that need spiritual interventions not a vaccine whilst 197(49%) people revealed that the

vaccine is not safe and 167(42%) said the vaccine might not be even preventing the diseases ,they would rather prefer natural remedies to alleviate the diseases.155 (39%) of the participants thought that the vaccine alters their DNA at the same time leading to them to premature deaths whilst 148(37%) thought that the vaccine was a placebo as shown in Figure 6.

131 (33%) feared that the vaccine has a negative impact on their fertility whereas 104(26%) were of the view that the vaccine is a weakened strain of HIV and the vaccine compromised their immune system. Overally, 81% were concerned about safety of the vaccine, 91% concerned with serious side effects whilst 87% feared it might not prevent the disease. 28(7%) of the respondents believed that there are better ways to prevent covid-19 other than being vaccinated and 93% were trusting vaccines as means of preventing the disease. The influence of political leaders on the uptake of vaccine this research found that only 3.2% were influenced by community leaders and majority were influenced by others (96.8%). The results indicated that religious leaders influenced only (2.2%)

The Pearson correlation between age and those who had been vaccinated is -.178 with a significant value of 0.01. Since it is in the negative it means that age and being vaccinated are negatively associated. 17. 8% of the vaccine uptake can be accounted to age whilst, 82.2% can be attributed to other factors. This means that there is a strong negative association between ones' age and the uptake of vaccine. R squared = -.178 x-.178 =0.0317 = 3.1% showing that the relationship between age and being vaccinated is 3.1% strong.

This then means that there is a strong negative correlation between age and vaccine uptake. The significant score of 0.02 if tested on the standard P-Value of 0.05 shows that the statistic is significant. Again this significance has been proven at 99% confidence test. The results therefore confirm that the negative relationship between age and the uptake of Covid-19 vaccines is significant.

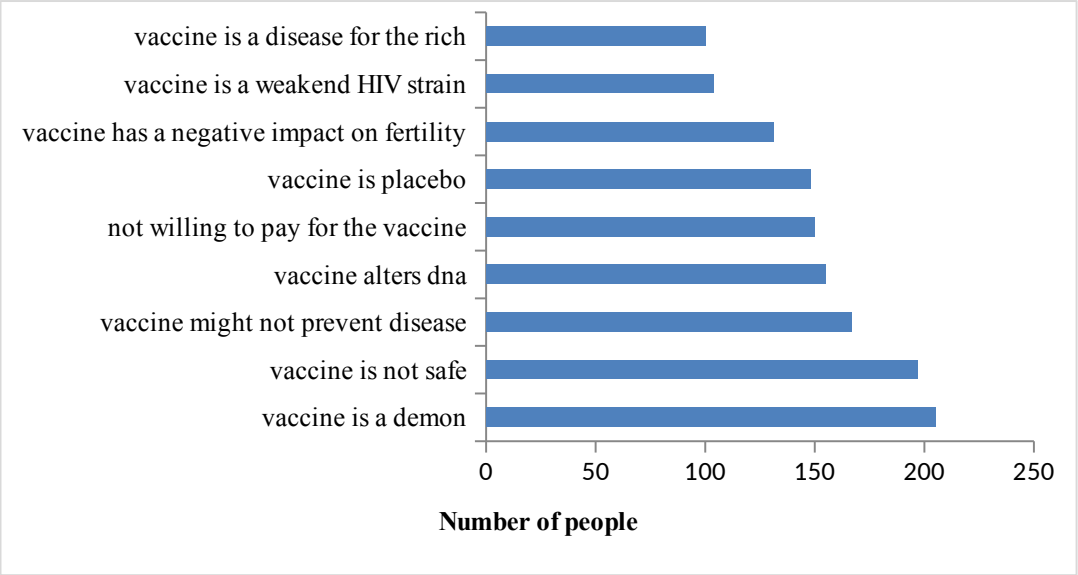


Figure 6: Myths surrounding Covid-19 vaccination

4.4 Finding relationship between hesitancy and education qualification

The educational level of the sample varied significantly. Of the 398 respondents 252 which translates to 63% had reached tertiary level, 130 which is 33% had attained secondary level education, whilst 8 respondents which is 2% had attained primary level education and 2% were uneducated. The Pearson Correlation coefficient between the level of education and Covid-19 vaccination uptake is -.054 with a significant level of 0.279. With the value being on the negative, it means that the level of education does not influence one into making a decision on the uptake of Covid-19 vaccine.

5.4% of Covid-19 vaccine uptake cannot be attributed to one's level of education whilst 94.6% can be attributed to other factors. R squared= -.054 x -054 = 0.00292 =0.29% meaning that the relationship between ones' educational level and the decision to be vaccinated is 0.29% strong. This shows that there is a strong negative association between one's level of education and the uptake of Covid-19 vaccines. The significant score of .279 if tested on the standard P-Value of 0.05 means that there is no enough evidence to show that there is a relationship between the educational level attained by individuals and the uptake of Covi-19 vaccination.

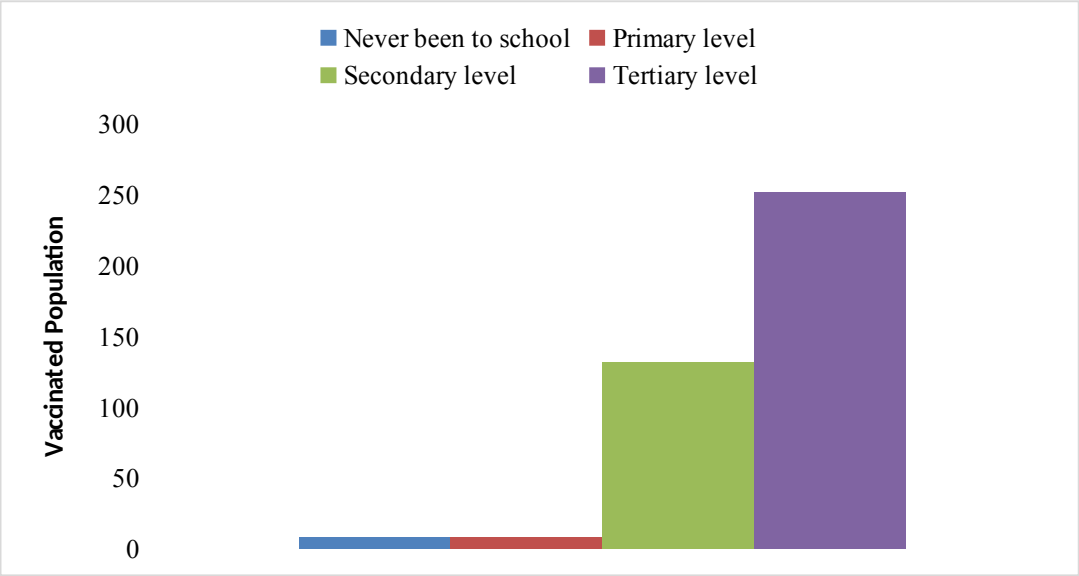


Figure 7 Finding relationship between hesitancy and education qualification

4.5 Relating family income and vaccine hesitancy

The Pearson Correlation is significant at the 0.01 level (2-tailed). The coefficient between family income and Covid-19 vaccine uptake is -.213 with the correlation significant value at 0.01. Since the value is negative this means that there is a negative relationship between Covid-19 vaccine uptake and one's level of family income. This means that 21% of those who have been vaccinated have not been influenced by the level of family income whilst 79% of those who have been vaccinated have been influenced by the level of the family's income. R squared = -.213 x -.213 = 0.0454 = 5%.

This means the strength of negative correlation is at 5% strong. The significant score applied at 0.01 if tested on the standard value of 0.05 shows that the statistic is significant. It is significant because it is below 0.05. The results therefore confirm that the negative relationship between the family's level of income and Covid-19 vaccination uptake is significant. In other words, there is enough evidence to support the assertion that the family's level of income does not in any way affect one's decision on being vaccinated.

The Pearson Correlation coefficient between one's employment status and Covid-19 Vaccine uptake is -. 111.Accoding to this study Only 11% of vaccine uptakes cannot be attributed to one's employment status whilst 89% of those who have been vaccinated have done so

because of their employment status. With the value being negative, it means that there is a negative relationship between one's employment status and the uptake of the vaccine. R-squared = -.111 x -.111 =0.0123 this means that the strength of negative correlation is at 1.23% which is very weak. The significant score applied on the standard value of 0.05 means that the statistic is significant. The results confirmed that there was a relationship between one's employment status and covid-19 vaccine uptake in this particular study.

4.6 Ethnic grouping and its significance on the Covid -19 vaccine

With Correlation being significant at the 0.01 level (2-tailed). The Pearson correlation coefficient between one's ethnic groups and vaccine uptake is at -.199 and since it is on the negative at it indicates that one's ethic group and vaccination uptake are negatively correlated. In other words no relationship exist between ones ethnic group and their choice on being vaccinated. It shows that 19.9% (20%) of those who have been vaccinated is accounted to age whilst 79.1% (80%) is accounted for by other factors. R- Squared = -.199 x -.199 =0.0396 =3.9%.

This means that the strength of the relationship between one's ethnic group and their choice on being vaccinated is 4%. In essence there is a weak association between one's ethnic group and one's choice on being vaccinated.

4.7 Associating Province of Origin to Vaccine hesitancy

Despite the respondents being residents in Harare, the province of origin was also sought for in understanding the background of the respondents. Fig 8 below shows that Of the 398 respondents Harare was represented by 118 respondents, Mashonaland East 58, Manicaland 67, Mashonaland Central 15, Mashonaland West, 8, Midlands, 25, Matebeleland North 9, Matebeleland South 33, Masvingo 55 whilst Bulawayo Metropolitan province had 10. Pearson correlation coefficient is between the province of origin and vaccine uptake is at -. 052.Since this is negative correlation it means one's province of origin and one's choice on being vaccinated

are negatively associated. This means that only 5% of those who have been vaccinated can be accounted for by ones' province of vaccine whilst 95% can be attributed to other factors. R-Squared = -.052 x -.052=0.0027=0.27=27%. With a significant score of .301 it means that there is no enough evidence to show that one's province of origin has nothing to do with the choice of vaccine therefore the statistic is insignificant

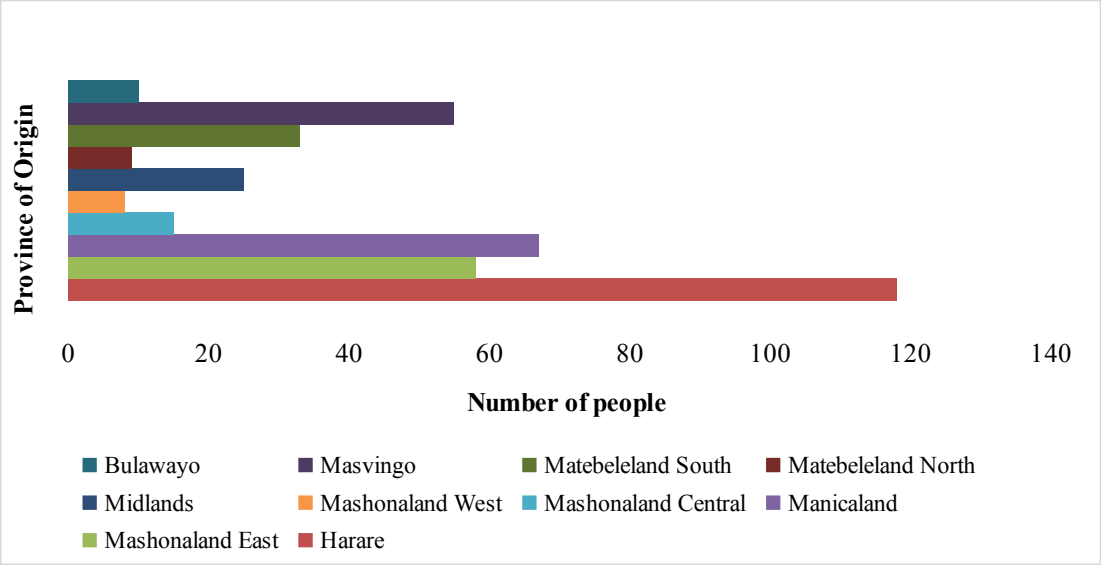


Figure 8: Associating Province of Origin to Vaccine hesitancy

4.8 Influence of community leadership on Covid 19 –vaccination

The Pearson correlation coefficient between those who had been vaccinated and community leaders support is negative at-.032 which means that there is a negative association between community leaders support for the vaccine uptake and those who had been vaccinated. In other words, community leaders played a minimal role in influencing individual's choices on whether they should be vaccinated or not. The table shows that only 3.2% had been influenced by community leaders in terms of their decision making of being vaccinated whilst 96.8% of those who were vaccinated were influenced by other factors. R-Squared -.032 x-.032 =0.0010 =0.10%.

With a significant value of .521 the conclusion reached is that there isn't enough evidence to claim that community leaders have an influence in terms of influencing one's decision on being vaccinated. In short the statistic is insignificant.

4.9 Religion and vaccine hesitancy

With the Pearson correlation at -.022 the results show that there is a negative association between religious leaders who are against covid-19 vaccination and the uptake of the vaccine. The table shows that on 2.2% had been influenced by their religious leaders who were against the vaccination whilst 97.8% of them were influenced by other factors beyond religious leaders influence. R-Squared= -.022 x -.022=0.0005=0.0484. This means that there is a strong negative association between the uptake of covid-19 vaccines and the influence of religious leaders who are against the vaccine? With a significant value of .882 the statistic is not significant.

4.10 Which group should be given priority for Covid 19 vaccination

Divergent views were proffered in terms of those who are supposed to be prioritized in terms of receiving the vaccine. Fig 9 indicated that whilst 45.2% (180) of the respondents were of the view that the youths should be given first priority on receiving the Covid-19 vaccine because they are the most economically active and highly mobile, 40.5% (161) were of the view that the elderly should be highly prioritized since they were the most vulnerable when attacked by the disease. On the other hand 14.3 (57) were of the view that both of them the elderly and the youth should be highly prioritized since they are all human beings and their lives should be valued.

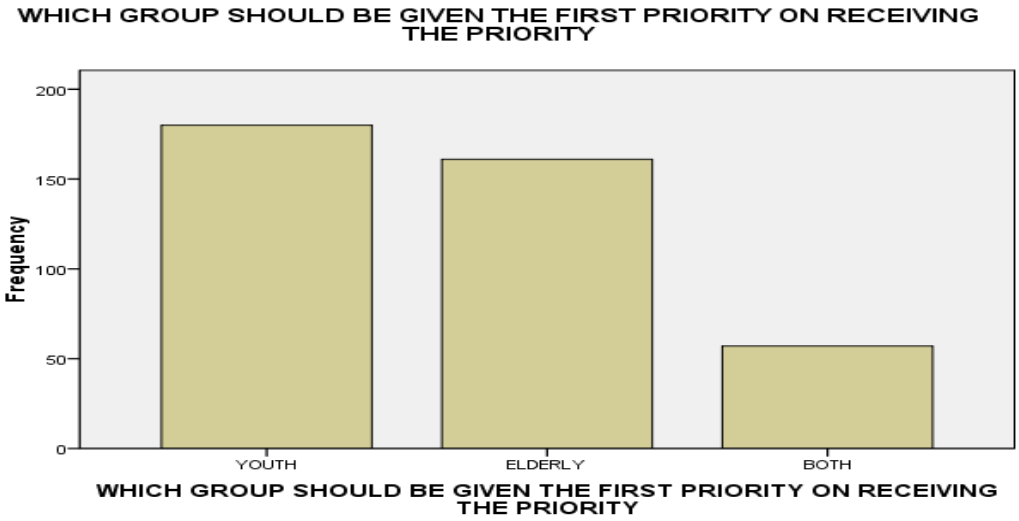


Figure 9: Which group should be given priority for Covid 19 vaccination

4.11 Vaccination status

Out of a sample of 398 a total of 187 (47%) respondents were not vaccinated whilst 211(53%) were vaccinated with a percentage difference of 6% as shown in Fig 10. Of the vaccinated the generated data revealed that 58 percent had underlying medical conditions whereas of the unvaccinated 63 percent highlighted they were making use of other preventive measures like steaming and using herbs.

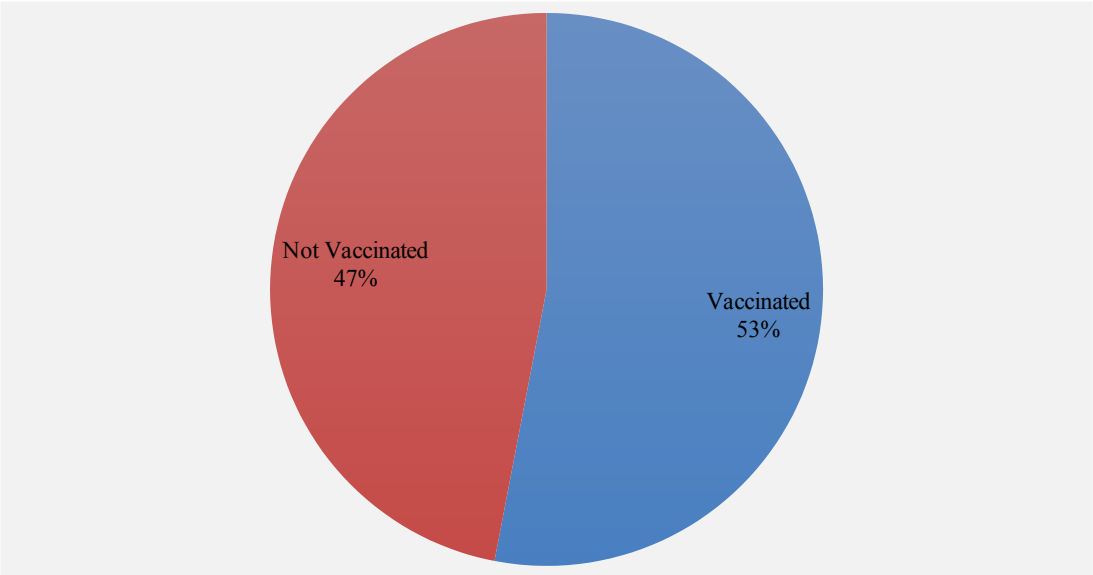


Figure 10: Vaccination Status

4.12 Do you trust your government in making decisions in your best interest?

On the level of trust for the government 41% (163) expressed their level of distrust on the government's choice of vaccine whilst 59% (235) showed that they trust the government on the choice of vaccine which had been chosen by the government. The percentage gape between those who do not trust the government choice on the type of vaccine and those who trust the government is 10%. Whilst the gap might appear to be smaller, there is a huge impact in affecting the targeted goal in terms of receiving the vaccine.

4.13 Do you have any concerns on vaccine safety and effectiveness?

Results from the responses show that the greatest percentage had concerns about the safety and effectiveness of the vaccine. Some of the valid reasons which were raised were emanating from the fact that the time which had been taken to develop and test the vaccine for side effects was too short as compared to the vaccines which had been developed in history which would take a minimum of five years before being administered to the human population. Out of a sample of 398, 259 which constitutes 65.% raised concerns about the safety and effectiveness of the vaccine whilst 35% highlighted that they were not concerned at all.

4.14 Did you ever feel pushed to by health professionals, government or local authorities to receive the vaccine?

The results show that 65.6% felt coerced into being vaccinated, whilst 14.3 % and 20.1% did not feel pushed at all, 25.1% pointed out that they had been vaccinated out of choice as indicated by Fig 11. On further analysis those who felt that they had been pushed highlighted that the no vaccine no work principle had been applied on them and as such they had no other choice other than comply with their employers directive. The respondents regarded the level of trust for the vaccine being lack of trust in the safety of the vaccine, 81% side effects, 63%, lack of trust on the capacity of the health care to manage side effects 37%.

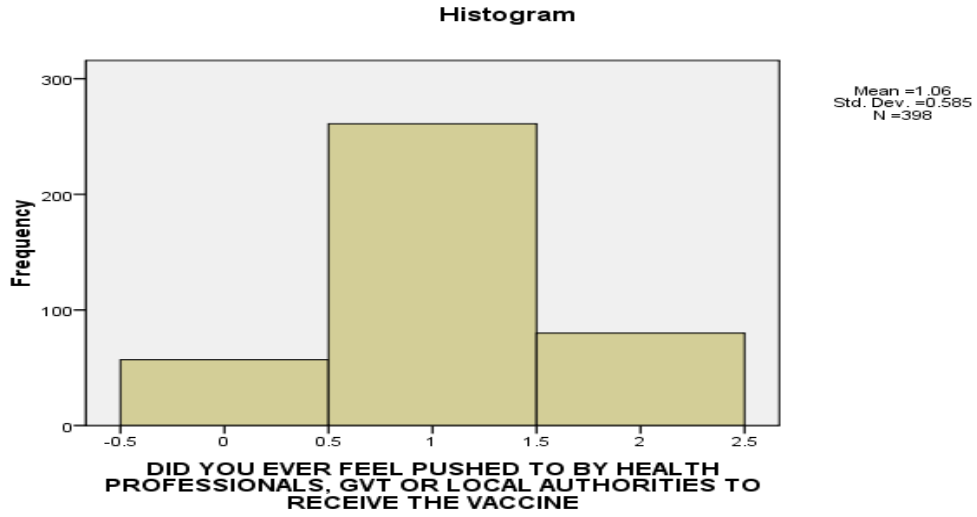


Figure 11: Did you ever feel pushed to by health professionals or government

4.15 Type of vaccine received

From the results analysis it was evident that Sinovac (34.4%) was the most administered vaccine followed by Sinopham (9.1%), Sputnik (6.3%) and Covaxin (5.9%) whilst the least number had received Johnson and Johnson (4.1%). The least percentage of the Johnson and Johnson vaccine could be attributed to availability as well as affordability. The two vaccines that is Sinovac and Sinopharm, Sputnik and Covaxin were administered in public health institutions whilst Johnson and Johnson was administered in private health institutions which are expensive therefore not many could afford them.

However, vaccine uptake maybe boosted if people were given choice on which vaccine to take as 41% ($p<0.001$) had confidence in sinovac, sinopharm 39 % , $p=0.0001$)and in Johnson and Johnson (20%, $p=0.0001$).

4.16 Sources of information

From the responses which were given, it was evident that social media platforms such as WhatsApp and the internet through its various media sites were the most trusted sources of information with 205(51.5%) and 197(49.5%) respectively. It is key to not that the national

broadcaster ZBC TV news had 150(37.6%), medical doctors 164(41.2%) and health personnel 155(38.9% were not trusted on disseminating information on covid-19 as compared to WhatApp and the internet. Whilst one should appreciate the use of social media sites in terms of information dissemination, it is key to note that the level of authenticity on the information circulating on social media is highly questionable.

The influence of religious leaders should not be underestimated since122 (30.6%) of the respondents highlighted that they relied more on the information which was provided to them by their religious leaders. In essence religious leaders were also contributing significantly to the hesitancy of vaccine uptake. On another trend whilst Whatsapp topped the list in terms of the least relied source of information whilst on the other hand information disseminated by medical Drs and Health professionals did not fare well at 342(86%).

In terms of information dissemination and the level of trust on health professionals the researcher gathered that there was high level of distrust by ordinary citizens on medical practitioners. This in the end is contributing immensely to people's hesitancy in covid-19 vaccine uptake.

4.17 Chapter summary

The study shows results showed that 29.6 % of people in the study in Harare are hesitant to be vaccinated. The hesitancy to vaccine cannot be directly related to a single socio-demographic reason although majority of the recruited respondents were not fully vaccinated, they had only received one jab of the vaccine.53 % percent of the respondents were vaccinated. Vaccine uptake was optimal despite the presence of knowledge across various platforms with respondents attributing the hesitancy to culturally grounded myths and belief systems, lack of trust, doubting of the efficacy of the drugs.

CHAPTER 5 DISCUSSIONS, CONCLUSION, SUMMARY AND RECOMMENDATIONS

5.1 Introduction

Based on the analytical cross sectional study conducted in Harare central district the chapter is a summative analysis of what the whole research covered and the conclusions that have been reached upon based on the findings from research participants recruited in Harare on hesitancy to Covid 19 vaccine.

5.2 Discussion and Interpretation of findings

The findings of the study revealed that those who have been infected and affected directly by Covid-19 were 13 times more likely to accept vaccination at first glance as compared to those with secondary exposure and who have not had been affected by Covid-19 related illness. The statistical significance of this analysis was (p=0.0001). Whereas a significance of no difference was observed on difference between those with underlying conditions and those with no pre-existing conditions. However a significance difference was highlighted on the concept of gender in which hesitancy for males were more pronounced as compared to women.

Using the 18-scale model in measuring internal consistency the reliability coefficient of 0.85 percent was affirmed on the scale. The data showed that amongst the research participant 67 percent of the respondents felt that the Covid-19 vaccines were a hoax meant to transform their DNA, 58 percent felt it was meant to wipe the black population, whilst 67 feared on the timelines taken to develop the vaccines. The interpretation from the findings points out to hesitancy being grounded in the conspiracy theories which needs a deeper analysis as stand alone research.

5.2.1 Relationship between vaccine uptake and demographic data

From the results presented demographic data such as gender, level of income, age,

province of origin and one's ethnic group did not in any way influence the individual's decisions in terms of taking the vaccine. However it is key to note that one's employment status contributed immensely to one's decision on being vaccinated with those who were formally employed constituting a greater percentage of those who had been vaccinated. This trend could be attributed to the no vaccine no work policy which was introduced by the government. The government which is the largest employer in the country introduced the no vaccine no work policy issuing deadlines in the process.

These findings were different to those found by Edwards (2021) who discovered that socio demographics greatly play an important role in vaccine uptake or refusal.

5.2.2 Trust issues and hesitancy on vaccine

The study findings are that the low uptake of the vaccine can also be contributed to the issue of mistrust on the part of the vaccine developers as well as myths surrounding the origin of the disease and its spread across the globe. Social media platforms helped in fueling misconceptions around the disease with religious leaders playing a critical role in the low uptake of the vaccine. Of key note is the fact that those who were too religious were of the view that it was against God's will to be vaccinated and instead of being vaccinated they opted for natural remedies.

Thus natural remedies ranged from the use of concoctions and locally available herbs such as zumbani tea, makoni tea and others fruit tree mixtures. The uptake of home remedies gained momentum through the use of social media platforms which were critical in information dissemination. Whilst information circulating on social media should be taken with a pinch of salt, the researcher noted that the level of trust on information delivered by health personnel and medical Doctors was tentatively ignored as compared to that which was circulating on social media.

This study concurred with a study done by Dube et.,al.(2013) which indicated that the general population in south Africa heavily relied on traditional medicines for alleviating symptoms of Covid 19 rather than the vaccine.

5.2.3 Vaccine type and individual choice

Even though there are a variety of vaccines on the market the researcher noted that only 5 emerged from the respondents. These were Sinovac, Sinopham and Johnson and Johnson. Of the three types the researcher noted that the majority of those people who had been vaccinated had received Sinovac jab, followed by Sinopham and Johnson and Johnson had the least number of those who had been vaccinated. The study noted that it is key to note most people had limited choice as far as the type of vaccine was concerned.

The majority of those who had been vaccinated had received the vaccine which was available at the vaccination centre which they had visited whilst, the few who had received the Johnson and Johnson vaccine had personally asked for the vaccine a privilege which was only availed to a few elite individuals. The study was in total agreement with the study done in Nigeria by Lazarus et.al., (2021) who argued that Covid 19 vaccine hesitancy in Nigeria was largely contributed by limited choice of vaccine. Had there been a wide range of choice of vaccine hesitancy would have been minimal in Nigeria.

5.2.4 Vaccine Prioritisation

Whilst there were mixed feelings in terms of who should be given the first priority the majority of the people were of the view that youths should be prioritised since they are the most economically active group. Other than that, some people expressed the view that because of their high mobility youths were the ones who were spreading the disease therefore in order to curb the disease youths should be

vaccinated first. On the other had some expressed the view that since the elderly were the ones who were more vulnerable to the disease therefore they should be given the first priority.

However, some felt that every individual should be given an equal opportunity in terms of vaccine priority since we are all human beings. According to a study by Dhir et.al, (2021), the elderly were the ones who were prioritised in getting the Covid 19 vaccine because of their increased risk to ailments due to aging compared to the youth who most of them still had intact immune systems, therefore, the youth must be the least prioritised group.

5.2.5 Social media influence on vaccination choice

Social media has been very influential in information dissemination as far as Covid-19 is concerned. The most used social media platform was the WhatApp platform. It is key to note that whilst the national broadcaster ZBC TV news, is very influential in information there appeared to be a high level of distrust form the concerned citizens on the authenticity of the news aired on ZBC news. It is also key to note that people who relied more on national news were those aged 45 years and below whilst those under relied more on WhatsApp, Facebook, Twitter and the internet through the various media sites.

Those who expressed high level of distrust on the national broadcaster had very little trust on the government having their best interest at heart.

This study was in contrast with other studies done in America by Dror (2021), where people least relied on whatsapp and internet for Covid 19 information and most relied on their doctors and health proffessionals. However, the study concurred with studies done in Southern Africa by Dube, (2021) where the general populace relied mostly on internet, family and friends as well as whatsapp for Covid 19 information.

Hence social media played a significant role in influencing the uptake of the Covid 19 vaccine.

5.2.6 Concerns on vaccine safety and effectiveness

From the research findings there was high level of concern on the effectiveness of the vaccine as well as the issue of safety. As highlighted earlier various social media reports portrayed the vaccines as causing more harm than good. This had a negative impact in terms of fuelling vaccination hesitancy among different people. Issues to do with vaccine effectiveness were also high on the concern list since various media reports showed that being vaccinated was not a guarantee that one would not be affected by the disease.

The situation was worsened by reports that those who had been vaccinated were also dying from the disease. As a result, those who were yet to be vaccinated were hesitant to be jabbed. These findings were different from a study done in India by Dietkitemana, (2020) which showed that the general populace had trust in the effectiveness and safety of vaccine

5.2.7 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 the general populace residing and working in Harare central district. This may have a different outcome if it had included other districts. Thus, results cannot be generalized to the entire urban population in Zimbabwe

- As a cross sectional study, the researcher could not perform causal inferences. Rather it focused on associations which can be suggestive and not definitely conclusive.

5.3 Summary

Chapter one of the study provided a background of the study as well as providing a synthesis of the problem by contextualising background information surrounding the concept of vaccine hesitancy. Emerging from a background that there is consensus in literature that vaccine hesitancy is mostly promoted by negative public opinions or perceptions of the vaccine, therefore, resulting in decreasing the vaccine coverage and increasing the spread of the pandemic (Dubé et al, 2013). According to the (CDC,2021) a vaccine is a product that stimulates a person's immune system to produce immunity to a specific disease.

They are usually administered through needle injections, but can also be administered by mouth or sprayed into the nose (CDC, 2021). With a pronounced problem of Zimbabwe having reported 226460 cases of Covid 19 and 5258 fatalities of Covid 19 since the outbreak began in 2020 (MOHCC,2022).) At the same time 130 010 cases and 3598 deaths were recorded for Harare and in 46% (59805) of the cases and 27% (971) fatalities are from Harare central district. While vaccination is frequently cited as one of the most effective ways in preventing and controlling infectious disease (Mavhunga,2021).

Government of Zimbabwe has been struggling to reach its vaccination set targets with Harare province being one of the provinces struggling to reach its target and specifically Harare central district being one of the affected districts. As at 23 January 2022, Government of Zimbabwe had managed to fully vaccinate 3236083 out of a target of 900000 people (MOHCC, 2022). Therefore this study

sought to address the challenge of Covid 19 vaccine hesitance. Despite the availability of COVID-19 vaccines presenting countries with a unique opportunity in the COVID-19 response.

In addition to the primary effect of reducing disease burden, widespread vaccination will allow countries to lift restrictions previously imposed to control the spread of the virus and revive ailing economies, whilst enabling people to regain their "normal" lives through Herd immunity, the population has continued to be hesitant of the drugs (WHO,2020).

The study findings revealed that research participants were not only hesitant to Covid-19 vaccines but had relied on other alternative methods that they felt were more effective for them than the vaccines. These findings were in line with the findings by (Danabel, Magesh, Saravanan and Gopichandran,2021) whose study concluded that as a result of lack of proper information the general population is likely to be hesitant and have resorted to useof traditional medicines to alleviate Covid 19 symptoms . However the study findings further noted that irrespective of the availability of knowledge from different sources one can remain hesitant as is with the case of this particular study.

Studies that have been done in the area of Covid -19 hesitancy and socio demographic factors have provided an array of conclusions. Some have pin pointed that gender plays a critical role (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). Understanding the concept of vaccine hesitancy

is challenging but is generally argued to be a situation of believing the vaccine and its agenda but having concerns over its efficacy that leads to no or delayed participation (Dubé et al, 2013).

Dror et al., (2020) argues that vaccine hesitance is the next challenge in the effort to fight the Coving-19 pandemic. The authors found out that in Israel the concern of the phenomenon was mainly caused by misinformation about the safety and efficacy of the vaccines, social, cultural, religious and political factors Dror et al., (2020). According to Sarvoy (2021), the personnel in the medical fraternity in particular were concerned about the safety of the rapidly developed vaccines but generally the cause of hesitance was attributed to personal risk-benefit perception. However, the findings of this study deviate from the study by Dror et al (2020) that misinformation is the greatest cause for this particular study participants were well informed but were hesitant.

Whereas studies done in Europe by Schwarzinger et al (2021) and also noted by Drohr et al (2021) have revealed a strong level of association between vaccine hesitancy and gender with women most likely to get vaccinated that men. However, the current study has found a weak correlation between vaccine hesitancy and gender. The study also went ahead and even investigated the level of association between ethnicity, village of origin and religion but still however found out that the connection is poor for one to further conclude that there is an approved degree of association.

5.4 Study conclusions

Vaccine hesitancy amongst the population in Harare Central district is moderate and has a vaccine hesitancy of 29.6 % however despite the percentage of the sample size of 398. Out of the 398 respondents, 224 of them were males whilst 174 were women

which literally translate to a cumulative percentage of 56% for males and 44% for females. The percentage gap was 13% in favor of males. Whilst in previous studies it is a norm for females to visit health facilities more frequently as compared to man the change in the case of COVID-19 vaccination could be attributed to the fact that man constitute a great percentage of those formally employed as a result the mandatory vaccination by the government could be the main reason behind.

Those who have been infected and affected directly by Covid-19 were 13 times more likely to accept vaccination at first glance as compared to those with secondary exposure and who have not had been affected by Covid-19 related illness. The statistical significance of this analysis was (p=0.0001). Whereas a significance of no difference was observed on difference between those with underlying conditions and those with no pre-existing conditions. However a significance difference was highlighted on the concept of gender in which hesitancy for males were more pronounced as compared to women.

The Pearson correlation between age and those who had been vaccinated is -.178 with a significant value of 0.01. Since it is in the negative it means that age and being negatively associated. As indicated on the table only 17. 8% of the vaccine uptake can be accounted to age whilst, 82.2% can be attributed to other factors. This means that there is a strong negative association between ones age and the uptake of vaccine. R squared = -.178 x-.178 =0.0317 = 3.1% showing that the relationship between age and being vaccinated is 3.1% strong. This then means that there is a strong negative correlation between age and vaccine uptake.

The significant score of 0.02 if tested on the standard P-Value of 0.050 shows that the statistic is significant. Again this significance has been proven at 99% confidence test. The results therefore confirm that the negative relationship between age and the

uptake of Covid-19 vaccines is significant. The Pearson correlation coefficient between one's ethnic groups and vaccine uptake is at -.199 and since it is on the negative at it indicates that one's ethic group and vaccination uptake are negatively correlated. In other words no relationship exist between ones ethnic group and their choice on being vaccinated.

It shows that 19.9% (20%) of those who have been vaccinated is accounted to age whilst 79.1% (80%) is accounted for by other factors. R- Squared = -.199 x -.199 =0.0396 =3.9%. This means that the strength of the relationship between one's ethnic group and their choice on being vaccinated is 4%. In essence there is a weak association between one's ethnic group and one's choice on being vaccinated.

The results show that 65.6% felt coerced into being vaccinated, whilst 14.3 % and 20.1% did not feel pushed at all. On the other hand 20.1% pointed out that they had been vaccinated out of choice. On further analysis those who felt that they had been pushed highlighted that the no vaccine no work principle had been applied on them and as such they had no other choice other than comply with their employers' directive. The respondents regarded the level of trust for the vaccine being lack of trust in the safety of the vaccine, 81% side effects, 63%, lack of trust on the capacity of the health care to manage side effects 37%.

From the results analysis it was evident that Sinovac was the most administered vaccine followed by Sinopham whilst the least number had received Johnson and Johnson. The least percentage of the Johnson and Johnson vaccine could be attributed to availability as well as affordability. The two vaccines that is Sinovac

and Sinopharm were administered in public health institutions whilst Johnson and Johnson was administered in private health institutions which are expensive therefore not many could afford them. However, vaccine uptake maybe boosted if people were given choice on which vaccine to take as 41% ($p<0.001$) had confidence in sinovac, sinopharm 39 %, $p=0.0001$) and in Johnson and Johnson (20%, $p=0.0001$).

5.5 Implications of findings to practice

The number of people still hesitant to get vaccinated is very significant. The general population is very skeptical about vaccination program and generally lack confidence in the health care system, general mistrust and limited choice of medicines and this is a clear indication of how poor service provision in the country is thus need for regaining confidence of the public.

With a significant number of the general populace being hesitant, implications are huge since vaccination of the general populace is the key for achieving for herd immunity. Findings also point to a possible increase in hesitancy due to lack of choice on the vaccine being provided. Thus, need for government to increase variety of vaccines and manufacture their own vaccine if possible.

5.6 Recommendations

Based on the findings of the study, the following recommendations are being directed towards the ministry of health and other key stakeholders in the plight to create an immunity herd count.

Table 5.1

SPECIFIC FINDING	RECOMMENDATIONS	RESPONSIBLE AUTHORITY	TIME FRAME
Relatively High vaccination hesitancy amongst the general populace in Harare central district	• Broadening campaigns to increase awareness. Enhancing the spread of awareness and the necessity of achieving herd immunity is of paramount importance. • Embark on multi Covid-19 vaccination campaigns that have grassroots support and that rope in influential people like footballers, politicians ,churches and other social media influencers personalities	• Ministry of Health, Health Promotion Department	• Second Quarter of 2022
Limited choice of vaccine was high and this enhances the chances of vaccine hesitancy	• Alignment of the ministry of health in a manner that allows it to have multi-sectoral collaborations with other stakeholders in vaccine procurement and collaborate with donors to get variety of vaccines that are wanted by	• The ministry of health, ministry of finance, and other partners (USAID, WHO, UNICEF, and NGOs	• Second Quarter of 2022

	the public		
Lack of trust on the health care system thus moderately high beliefs in traditional and natural mitigation measures to COVID-19	• Tracking and sharing side effects and adverse events using weekly situational reports	• Epidemiological unit	
• High proportions with beliefs that the vaccine may alter their DNA, affect women fertility, death within 2 years	• Need for door to door vaccinations with health workers demystifying the myths in the public first before vaccinating • Put in place a strong social media strategy in place whose aim is debunking myth and misconceptions circulating on social media. • Use of local artists in form of drama, poems and songs	• The ministry of health, EPI department Health Promotion Department Health Promotion Department, Ministry of Information and Publicity, and partners	• Second Quarter of 2022
Lack of proper coordination on the implementing agencies	• Adress community acceptance, accessibility, and equity from the outset. • Use of existing coalitions and open town hall–style forums to both improve planning and disseminate key	• Trusted community leaders	• Second to Fourth Quarter of 2022

	initiatives. • Call centres, for both incoming and outgoing calls, have enabled scheduling of appointments for people with technology or language barriers. • Site planning can result in vaccine delivery at a diverse range of locations	

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APPENDICES

APPENDIX 1: QUESTIONAIRE ON COVID 19 VACCINE HESITANCY IN HARARE CENTRAL DISTRICT 2022.

My name is Lenciana Moyo a final year student in Master of Public Health at Africa University. I am carrying out an investigation on characterizing Covid 19 vaccine hesitancy in Harare central city. I am kindly asking you to participate in this study by filling in this questionnaire.

Section A Demographics

1. Personal information
   - Age (years) ……
   - Gender ……..
   - Educational level …..
   - Employment status…..
   - Province of origin…….
   - Number of family members……
   - Ethnic group……..

2. You would define your family income as…
   - Lower than average
   - On average
   - Higher than average

3. Do you have any of the following conditions? [select all that apply]
   - Cancer
   - Immuno-compromised state due to therapy or disease
   - Obesity
   - Asthma
   - Diabetes (type 1 or 2)
   - Cardiovascular disease

- Pulmonary disease
- Rheumatological condition
- HIV

4. Have you been vaccinated for Covid 19…no/yes…..…if yes
How many doses……and from which vaccine…….

5. Which platform do you rely on most for information ?
WhatsApp ☐ Twitter ☐ Facebook ☐ Instagram ☐ ZBC TV news ☐ Radio channels ☐ Newspaper ☐ Family and friends ☐ Internet ☐ Your doctor ☐ Health professionals ☐ Religious leader ☐

6. Which platform do you rely least for information? WhatsApp ☐ Twitter ☐ Facebook ☐ Instagram ☐ ZBC TV news ☐ Radio channels ☐ Newspaper ☐ Family and friends ☐ Internet ☐ Your doctor ☐ Health professionals ☐ Religious leader ☐

Does this affect your decision to be vaccinated? Yes ☐ No ☐

Section B Vaccine acesss

1). What a vaccine is? What does it do to the body?
……
……
……

Do you think vaccines overload the immune system? Yes ☐ No ☐

2. It is better for you to develop immunity by getting sick than to get a shot? Yes ☐ No ☐

Do you believe that there are other (better) ways to prevent diseases other than vaccination? Yes ☐ No ☐

3. Some groups or leaders do not agree to vaccination for different reasons. In general, do you agree or disagree with these groups? Yes ☐ No ☐

Do leaders (religious, political, teachers, health care workers) in your community support vaccines for Covid-19? Yes ☐ No ☐

4. Has your imam/priest/ rabbi ever advocated against Covid-19 vaccination? Yes ☐ No ☐

Did you follow this advice? Yes ☐ No ☐

5. Do you know some people who do not take a vaccine because of religious or cultural reasons? Yes ☐ No ☐

Do you agree or disagree with those people? Yes ☐ No ☐

Does your religion/ philosophy/culture recommend against vaccination? Yes ☐ No ☐

If so, which/all! Vaccines? What is the reason?

……
……
……
What do you consider more important vaccination of the elderly or youth? Elderly ☐ Youth ☐

Why?.....
.....
.....

Have you ever refused a vaccine? Yes ☐ No ☐

Section C Vaccine safety

6. Do you know which vaccine you should get for yourself? Yes ☐ No ☐

Do the vaccinators in door to door or mass immunization campaigns provide you with sufficient information to address your concerns around vaccination? Yes ☐ No ☐

7. Do you have got enough information about vaccines and their safety? Yes ☐ No ☐

Would you prefer to receive more information on vaccination at your health center? Yes ☐ No ☐

Do you think this would change your choice in favour of a vaccine? Yes ☐ No ☐

8. Have you ever felt healthcare professional, government, local authorities are pushing you into a vaccination decision you did not fully support? Yes ☐ No ☐

Why?.....
.....
.....

9. Does the health center or doctor's office have the vaccine you need, when you need them? Yes ☐ No ☐

Did you ever not return to a health center/ your doctor after not receiving the vaccine during an initial visit? Yes ☐ No ☐

What were the reasons why you did not receive the vaccine initially?
……..
……
……..

10) Do you trust (or distrust) that your government is making decisions in your best interest with respect to what vaccines are provided? Yes ☐ No ☐

Did you ever disagree with the choice of vaccine or vaccination recommendation provided by your government? Yes ☐ No ☐

I'm convinced that my government purchases the highest quality vaccines available. Yes ☐ No ☐

Did you ever have the impression your government/health care provider did not provide you with the best vaccine on the market? Yes ☐ No ☐

Section D Vaccine concerns and myths

12. How concerned are you of .....

	Not at all concerned	A little concerned	Somewhat concerned	Very concerned

Contracting COVID-19 at work? (For example: office and other work settings that are not your home)				
Contracting COVID-19 outside of work? (For example: at the grocery store, when you are using transportation, or in other aspects of your daily life)				
Infecting your family or friends with COVID-19?				

13.How concerned are you that any one of the Covid-19 vaccines might not be safe?

Not at all concerned		Slightly concerned		Somewhat concerned		Moderately concerned		Extremely concerned

14. What are the concerns about the Covid 19 vaccine……...
……
…….

Thank you for completing this questionnaire.

APPENDIX 2: INFORMED CONSENT FORM FOR CHARACTERISING COVID-19 VACCINE HESITANCY IN HARARE CENTRAL DISTRICT.

My name is Lenciana Moyo a final year Master of Public Health student from Africa University. I am carrying out an investigation on Characterising Covid 19 vaccine hesitancy in Harare central city. I am kindly asking you to participate in this study by filling in a questionnaire.

What you should know about the study:

Purpose of the study:

The purpose of the study is to characterise Covid 19 vaccine hesitance in Harare city.

Procedures and duration

If you decide to participate you will complete the questionnaire and it is expected that this will take about 10 to 15 minutes. This is the only thing that is required of you in this study.

Risks and discomforts

There are no foreseeable risks, discomforts or inconveniences to you in this study.

Benefits and/or compensation

The professional benefit of this study to you as an individual /organisation is that you give your anonymous honest opinion of the Covid 19 vaccine and Covid 19 vaccination program and areas that need improvement. This will ensure improvement of the program to the benefit of the general population. You will not be offered any direct compensation (monetary or otherwise) for participating in the study.

Confidentiality

If you indicate your willingness to participate in this study by signing this document, we plan to disclose the study findings to the research supervisors, Ministry of health (epidemiology and disease control department), Public health emergency operation

centre (PHEOC), World health organisation (WHO) and partners ,CDC, politicians and Africa University Health Sciences Faculty. Any information that is obtained in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission. Names and other identifying data will not be asked in this study.

Voluntary participation

Participation in this study is purely voluntary. If you decide not to participate in this study, If you chose to participate, you are also free to withdraw your consent and to discontinue participation at any point without penalty or victimisation.

Offer to answer questions

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

Authorisation

If you have decided to participate in this study please sign this form in the space provide below as an indication that you have read and understood the information provided above and have agreed to participate.

---------- ----------

Name of Research Participant (please print) Date

Signature of Research Participant

If you have any questions concerning this study or consent form beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, please feel free to contact the Africa University Research Ethics Committee on telephone (020) 60075 or 60026 extension 1156 or email aurec@africau.edu.

APPENDIX 3: GWARO REMIBVUNZO PAMUSORO PETSAKURUDZO YE KUZEZA KUBAIWA NHOMBA YE COVID 19

Ini ndinonzi Lenciana Moyo mudzidzi wegore rekupedzisira munezveutano zveveruzhinji ku Africa University. Ndiri kuita ongororo yekuratidza kuzezwa kwenhomba yeCovid 19 munzvimbo yeHarare central district muprovince ye Harare. Ndiri kukukumbira nemutsa kuti mutore chikamu chino kuzadzisa gwaro remubvunzo.

Section A.Demographics

1. Ruzivo rwedungamunhu

• Zera (makore)...

• Mukadzi/murume....

• Chikamu chedzidzo..

• Nzvimbo yebasa..

• Dunhu rekwaakabva...

• Nhamba yenhengo dzemhuri...

• Rudzi rwedzinza.....

2. Iwe waizotsanangura mawaniro enduramo yemhuri yako se

• Yakaderera pane avhareji

• Paavhareji

• Yakakwirira kupfuura avhareji

3.Mune zvimwe zvirwere zvamunova munorwara nazvo here? [sarudza zvese zvaunazvo]

- Cancer
- Immuno-compromised state due to therapy or disease
- Obesity

- Asthma
- Diabetes (type 1 or 2)
- Cardiovascular disease
- Pulmonary disease
- Rheumatological condition
- HIV

4. Makabaiwa nhomba yeCovid 19 here….hongu/kwete..

Mangani manhomba amakabaiwa.....uye inhomba rerudzi rwupi.....

5. Ndeipi chikuva chinopakura mashoko chaunovimba zvakanyanya paruzivo ?

WhatsApp Twitter Facebook Instagram ZBC TV nhau Nhepfenyuro Newspaper Mhuri uye shamwari Internet Chiremba Wako wezvehutano Nyanzvi Mutungamiriri

6. Ndeipi chikuva chinopakura mashoko chaunovimba nacho zvishoma paruzivo? WhatsApp Twitter Facebook Instagram ZBC TV nhau Nhepfenyuro Newspaper Mhuri uye shamwari Internet Chiremba Wako wezvehutano Nyanzvi Mutungamiriri

Izvi zvingava zvinorunzira here sarudzo yako kuti ubaiwe nhoma ye covid 19.

Section B Vaccine access

1) .Ko nhomba yecovid 19 yakanakirei? Chii chainoita kumuviri?

.....

Iwe unofunga kuti nhomba inogona kubatsira masoja emuviri kurwisa chirwere here?

2. Zviri nani here kuti iwe uve nekudzivirira kudzivirira nekurwara nemasoja emuviri wako kana kuti nenhomba.

Iwe unotenda here kuti kune dzimwe nzira (dziri nani) dzekudzivirira chirwere dzisiri nhomba.

3. Mamwe mapoka kana vatungamiriri havabvumi kubaiwa nhomba nekuda kwezvikonzero zvakasiyana. unobvuma here nemapoka iwayo kana kuti haubvumirani nemapoka aya?

Vatungamiriri (vechitendero, vezvematongerwo enyika, vadzidzisi, vashandi vehutano) munharaunda yako vanotsigira here nhomba yeCovid-19?

4. vakuru venharaunda yako / mupristi / rabbi akambotsigira kupokana nenhomba Covid-19 here?

Wakatevera zano iri here?

5. Unoziva here vamwe vanhu vasingatore mushonga/nhomba nekuda kwezvikonzero zvechitendero kana zvetsika?

Unobvuma here kana kuti haubvumirani nevanhu avo?

Ko chinamato chako / uzivi / tsika zvinokurudzira kupokana nekobaiwa nhomba kudzivirira zvirwere here kana kuti kwete?

Kana zvirizvo, izvo Chii chikonzero?

.....

Chii chaunofunga chakanyanya kukosha chekutemera panyaya yenhomba kune

vakwegura kana vechidiki?

Sei?.....

.....

.....

Wakamboramba here mushonga wekudzivirira

Section C Vaccine safety

6. Iwe unoziva here kuti ndeipi nhomba ye covid 19 yaunofanira kuzviwanira iwe?

7. Iwe une ruzivo rwakakwana nezve nhomba ye covid 19 uye kuchengetedzeka kwayo?

Ungave uchida kugamuchira rumwe ruzivo nezvekudzivirira kunzvimbo yako yehutano here?

Iwe unofunga here kuti ruzivo urwu rungachinja sarudzo yako pakutora nhomba here?

8. Wakambonzwa here vakuru vehutano hwehutano, hurumende, vatungamiriri vemunharaunda vari kukumanikidza iwe kuita sarudzo yekudzivirira nekutora nhomba ye covid 19 iwe usina kutsigira zvizere?

Sei?.....

.....

.....

9. Ko nzvimbo yehutano kana hofisi yechiremba ine nhomba yaunoda here?

Hauna kuzombodzokera kunzvimbo yehutano / chiremba wako mushure

mekusagamuchira iyo nhomba iyi yekudzivirira panguva yekushanya kwekutanga?

Ndezvipi zvikonzero nei usina kugamuchira mushonga/nhomba pakutanga? ..... .

.....

10) Iwe unovimba (kana kusavimbika) kuti hurumende yako iri kuita sarudzo mune yako yakanakira zvine chekuita nezve nhomba dzecovid 19 dzirikupiwa vanhu munyika?

Wakambopokana here nesarudzo yekudzivirira kana yekudzivirira kurudziro yakapihwa nehurumende yako maererano nenhomba?kana wakaramba zvikonzero zvacho ndezvipi…….

Une chokwadi here chekuti hurumende yako inotenga nhomba yecovid 19 yepamusoro irikuwanikwa.

Wakambove nefungidziro yekuti hurumende yako ne vezvehutano haana kukupa iwe ruzivo rwakakwana pamusoro penhomba ye covid 19?

Section D.Vaccine concerns and myths

12. Une hanya sei newe .....

	Haana hanya zvachose	Ane hanya zvishoma	Ane hanya zvikuru
Kutapurirwa nechirwere checovid 19 kubasa semuanzaniso muhofisi mako			

Kutapukira mhuri yako kana shamwari yako			
Kutapurirwa nechirwere usisiri pabasa kana kutiuchishandisa zvekufambisa zveveruzhinji,kana mune zvimwe zvinhu zvehupenyu hwako zvezuva nezuva			

13.Une hanya nazvo kusvika papi kuti nhomba ye covid 19 yakanaka pazvose

Handina hanya, Ndine hanya, Ndine hanya zvishoma, Ndine hanya zvizhinji

14. Ndezvipi zvaungada kunzwisisa maererano nenhomba ye Covid Ndatenda nekupindura kwenyu mibvunzo iyi.

APPENDIX 4: GWARO RINOKUPAI RUZIVO RWAMUNGADA KUZIVA MAERERANO NETSVAKURUDZO INO NEFOMU RE GWARO RECHIBVUMIRANO KUNE VACHABATSIRA MUTSVAKURUDZO IYI

Makadini henyu.Ini zita rangu ndinonzi Lenciana Moyo. Ndiri mudzidzi weZveutano Rweruzhinji (Masters Public Health) pachikoro che Africa University. Parizvino ndirikushanda ndiri mubazi rezveutano ku Public health emegerncy centre ye nyika ye Zimbabwe. Ndirikuita ongororo inotsvaka zvikonzero zvekuti sei vanhu vanofanirwa kubaiwa nhomba ye covid 19 muguta reHarare Central vasiri kubaiwa kunyangwe nhomba dzecovid dzacho dziipo muhuwandu hwadzo. Kana paine zvimwe zvamunoda kuziva pamusoro peongororo iyi, munogona kusvika epublic health emegerncy operation centre anowanikwa pa chipatar a chikuru cheparirenyatwa muguta reharare kana kundichaira runhare panhamba dzinoti: 0783731039 kana kuti 0784860873. Munogona kuchaira mukuru wezveutano mu Public health emergency centre . Chiremba Phiri panhamba dzinoti 0772734247.

Zvamunofanirwakuzivamaringenetsvakurudzoiyi

Tinokupai gwaro iri kuti munzwisisise chinangwa, njodzi uye mubairo hunounzwa netsvakurudzo yedu.

Chinangwa chedu chikurumaringe netsvakurudzo iyi kuti tiwane ruzivo rwekuti tingabatsirane kuchengeta varwere.

Zvisinei hatingapi mhiko yekuti tsvakurudzo iyi inokubatsirai imi semunhu asi inobatsira muupenyu neurwere hwemangwana.

Munekodzero yekuramba kubatsira patsvakurudzo iyi nyangwe mukatendera kupindura pekutanga, munozotenderwa kuramba chero tavapakati pekubvunzana.

Kutenda kana kusatenda kupindura mibvunzo ichatevera hakungakudzivisii kuwana rubatsiro hwekuchipatara.

Munokurudzirwa kunyatsoverenga gwaro iri remibvunzo musati mafunga kupindura kana kusapindura.

Chinangwa chetsvakurudzo

Chinangwa chetsvakurudzo yedu iyi ndechekuti tiwane zvikonzero zvinoita kuti vanonwa nhomba ye covid 19,

Mafambiro nenguva ichatorwa mukubvunzana

Kana matendera kuti ndikubvunzei mibvunzo inotevera zvichatitorera maminitsi angakwana guminemashanu.

Mibairo yekubatsira patsvakurudzo iyi

Hapana mibairo yemari maringe netsvakurudzo iyi zvisineyi ruzivo rwamunenge mapa rwuchabatsira panhau yekuwana nzwisiso pakubaiwa kana kusabaiwa kwecovid kwenhomba ye covid19.Munotenderwawo kubvunza muchiudzwa zvamunenge muchida kuziva maringe nezveutano.

Kuvanzirikakwetsvakurudzoyedu

Hapana mazita anotenderwa kushandiswa pamunege muchipindura mibvunzo yeyu maringe ne nhomba ye covid 19 vaccine.. Mhinduro imwe neimwe yamuchatipa ichashandiswa pakubuditsa chinangwa chetsvakurudzo ino chete.

Kubatsira kusina kumanikidzwa

Rubatsiro rwenyu rwamuchapa ruchangerusiri rwekumanikidzwa.Hamusungirwi kupindura kana musina kusungunuka. Munotenderwawo zvakare kuregedza kupindura chero kana tavepakati pekubvunzwa kwamuchaitwa.

Jekeso

Musati mabvuma kupindura kana kusapindura, sungunukai henyu kubvunza pamunoda kujekeserwa maringe netsvakurudzo yedu.

Mvumo

Mavakuita sarudzo yekupindura kana kusapindura.Runyoro rwenyu rwamuchaisa pagwaro rino rucharatidza kuti manzwisisa chinangwa chetsvakurudzo iyi uye

majekeserwa pane zvese maringe netsvakurudzo iyi.

_____

_____

Zita revabetsera mutsvakurudzo (Nyorai henyu) Musi

_____

_____

Sainecha yevabatsira patsvakurudzo Musi

Muchapihwa rimwegwaro rakafanana neirori kutimuchengete

Kana mukaona kuti muchiri kuda imwe jekeso pamusoro peyamapihwa neni, makasununguka kubata paruranhare ve AUREC panhamba dzinoti (020) 60075 or 60026 extension 1156 or email 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: AU2344/22 24 January, 2022

LENCIANA MOYO
C/O CHANS
Africa University
Box 1320
Mutare

RE: **CHARACTERISING COVID-19 VACCINE HESITANCY IN HARARE CENTRAL DISTRICT 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 2344/22
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** January 24, 2022
- **EXPIRATION DATE** January 24, 2023
- **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 –
ASSISTANT RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE