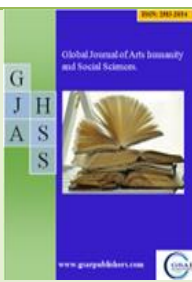
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An Assessment of Knowledge, Attitudes and Practices Towards COVID-19 Vaccination in Shamva District, Zimbabwe: Implications for Occupational Health and Safety

BY

Nyaradza Notmah Nemaware^{1*}, Robiana Modjo², Frank Kapungu³

¹Faculty of Public Health, University of Indonesia, Jakarta, Indonesia; notinembs@gmail.com

²Faculty of Public Health, University of Indonesia, Jakarta, Indonesia; bian@ui.ac.id;

³University of Zimbabwe, Faculty of Medicine and Health Sciences; kapungufrank@gmail.com



Abstract

The COVID-19 pandemic posed a significant occupational health and safety (OHS) challenge, particularly for frontline healthcare workers facing a dramatically heightened risk of infection and transmission. The pandemic's disruptions, including lockdowns and altered work practices, further exacerbated existing OHS risks across various sectors, placing immense pressure on healthcare systems worldwide. While the Zimbabwean government's lockdowns aimed to curb disease spread, they inevitably impacted the safety of work environments and disrupted essential healthcare service delivery, creating a complex and dynamic OHS landscape. The development and subsequent deployment of COVID-19 vaccines provided a crucial turning point, offering a multi-pronged approach to mitigating OHS risks. Firstly, vaccination directly protected healthcare workers, reducing their individual risk of infection and subsequent transmission to patients and colleagues. Secondly, widespread vaccination within the healthcare workforce facilitated a safer return to more normal work routines, enabling them to deliver essential services without constant fear of contracting the virus. This study, conducted in Zimbabwe's Shamva District, Mashonaland Central Province, assessed the knowledge, attitudes, and practices (KAP) of 150 healthcare workers regarding the COVID-19 vaccine. Despite initial hesitancy among some participants, almost all were ultimately vaccinated. This demonstrated the potential for robust vaccination campaigns, coupled with effective communication strategies addressing concerns and misinformation, to achieve high coverage and improve OHS outcomes within the healthcare workforce. A majority of participants expressed positive views on the vaccine's importance, recognizing its significance for protecting their safety and the safety of others at work. This research underscores the pivotal role of vaccination in safeguarding occupational health during pandemics, particularly for frontline workers. However, the challenge of misinformation circulating on social media highlights the need for reliable public health messaging to promote vaccine acceptance and optimize OHS benefits across various sectors during global health emergencies. Furthermore, this study emphasizes the importance of integrating OHS considerations into public health preparedness and response strategies from the outset. By proactively addressing potential OHS risks, such as those encountered during lockdowns or altered work practices, we can ensure the safety and well-being of essential workers throughout various stages of a pandemic response.

Keywords: COVID-19, Health and Safety, Shamva, Vaccination, Zimbabwe



Introduction

Occupational health and safety is important in identifying, preventing, and mitigating risks associated with the workplace. Despite COVID-19 being a public health threat, it was an occupational hazard that engulfed the whole globe, and the Shamva district, in Mashonaland Central province in Zimbabwe was not spared. People most at risk of acquiring the disease were those who were in contact with or who cared for patients with COVID-19 (WHO, 2020a), such as nurses. Vaccination in Zimbabwe prioritised health care workers. Elsewhere, the vaccination process began with the frontline healthcare workers (Thiagarajan, 2021).

For the government to contain the COVID-19 threat, introduced measures that forced people to stay at home, except those that were defined as essential services, such as health care services. These measures were necessary even to complement the vaccination that was later on introduced. Every employee was at risk of being infected by SARS-CoV-2. COVID-19 brought life to a standstill and resulted in a fall in trade and loss of human life.

Knowledge, attitudes, and practices (KAP) of the workers on COVID-19 vaccination is critical to understanding the compliance and success of infection Prevention and Control (IPC) measures adopted in a country as done elsewhere (Christopher *et al.*, 2021). Shamva district was not spared of the COVID-19 scourge resulting in a serious threat to health and safety at the workplace. The government had to make active efforts to ensure that COVID-19 regulations were adhered to. This was necessary to ensure that there was adherence to preventive measures and mitigate the spread of the disease, especially at the workplace.

In the field of public health, vaccination is regarded as a critical advancement since it has been used successfully to control and eliminate a wide range of infectious diseases. Pharmaceutical companies, governments, and the WHO worked together globally to accelerate studies to generate a vaccine that was effective as well as safe (Cheng *et al.*, 2022). The accelerated speed of vaccine development was essential due to the highly infective nature of SARS-CoV-2 (Callaway, 2020). The government of Zimbabwe had to secure vaccines from China and Russia. These vaccines were mainly targeting the healthcare workers initially but eventually opened up to the whole community. Employers had to ensure that their employees were vaccinated and it was mandatory.

Communication to raise awareness on the COVID-19 vaccine was done through radio and television. Additionally, other information, education, and communication (IEC) material in the form of posters were used. Community health workers and health care workers played a key role in ensuring that the vaccines were taken up. However, these healthcare workers had their challenges in taking up the COVID-19 vaccine as an occupational health and safety intervention, which included hesitancy, delay, and fear. Achieving a sustained level of herd immunity was crucial to saving the most vulnerable populations by overcoming hesitancy on vaccination (Randolph and Barreiro, 2020). As the COVID-19 epidemic spread around the world everyone looked for ways such

as safe and effective vaccines to contain the virus and lessen its effects (Mcateer, Yildirim, and Chahroudi, 2020).

As few vaccines got emergency approval for use, it was necessary to explore the attitudes and knowledge towards this intervention (WHO, 2020b). This would enable a deeper understanding of the traits motivating the public to adopt healthy habits and COVID-19-responsive behavior in general. It would also make it easier to identify factors influencing vaccination acceptance or hesitation (Mannan and Farhana, 2020). Vaccination was necessary to curtail the spread of COVID-19 (Shitu and Mose, 2025) especially in low-income countries and specifically in the workplace.

Herd immunity can result from mass vaccinations without needing a sizable population to become infected. Thus, COVID-19 vaccination in Zimbabwe, as happened elsewhere, began with the frontline healthcare workers (Thiagarajan, 2021) because they are the ones who have high occupational risk. The development of a potent vaccine that could stop the deadly virus from spreading was one of the main strategies for managing the pandemic (Al-marshoudi *et al.*, 2021). However, vaccine hesitancy, including vaccination refusals and delays posed a major hurdle to attaining herd immunity (Al-marshoudi *et al.*, 2021).

Disinformation disseminated via many platforms significantly impacted the adoption of the COVID-19 vaccine, especially in populations where vaccine hesitancy is not a concern and the country's immunization program is reliable and well-organized (Al-marshoudi *et al.*, 2021). Adoption of the COVID-19 vaccine was marred by several conspiracy theories and myths regarding vaccinations and the virus (Kline, 1998). The hesitancy was a significant factor that resulted in a high infection rate among frontline healthcare workers (Sengupta *et al.*, 2022). Thus, it is necessary to foster a positive attitude to enhance the decision to be vaccinated against COVID-19 infection. This is because positively motivated workers are more willing to participate in COVID-19 vaccination drives (Sengupta *et al.*, 2022) and ensure occupational health and safety.

The COVID-19 vaccine gave the world hope for a quick end to the pandemic and promised to get life in general back to normal (Al-marshoudi *et al.*, 2021) as well as ensuring health and safety at the workplace. With the novelty of COVID-19 and the COVID-19 vaccine, the study of KAP among workers was necessary to gauge the effectiveness of the COVID-19 vaccination and its implication on occupational health and safety as an intervention in Shamva District. Furthermore, the KAP is necessary for future occupational health and safety planning (Christopher *et al.*, 2021) among workers in case of pandemics.

Material and Methods

Study design

A cross-sectional study design was carried out in Shamva District, Mashonaland Central Province. This included using the questionnaires with both closed and open-ended questions as well as observation to confirm. Vaccination cards were used to verify

the vaccination status. The first section of the questionnaire consisted of questions on demographic characteristics related to respondent's age, sex, and educational level. The other sections of the questionnaire were designed to collect information on knowledge, attitudes, and practices as well as the importance and implications of COVID-19 vaccinations. The pretesting of the questionnaire was carried out among ten healthcare workers. This was done to identify areas that had ambiguous and unclear questions. Furthermore, this was done to ensure that the questions were reliable and to gauge the time needed for conducting each interview. The questionnaire was found to be easy to read, appropriate, and not time-consuming.

Population and Sample Size

The population included all those health care workers in Shamva, Mashonaland Central Province of Zimbabwe. Study participants were all the workers who consented to participate in the study. A total of 150 participants were enrolled in the study.

Inclusion Criteria

This study targeted healthcare workers employed at Shamva District Hospital, Zimbabwe, at the time of data collection. Participation was contingent upon providing written informed consent. This ensured all participants were fully aware of the study's objectives, potential risks and benefits, and their rights as participants. Only healthcare workers who met these criteria and actively chose to participate were included in the study.

Exclusion Criteria

Individuals not currently employed as healthcare workers in Shamva District Hospital were excluded from the study. Additionally, individuals who declined to participate or were unable to provide informed consent were not included. This ensured that only those who met the study's specific criteria and understood the requirements for participation were involved in the research.

Ethical Considerations

Ensuring ethical conduct was paramount throughout this study. To achieve this, a multi-step process was implemented to obtain informed consent from all participants. First, approval to conduct the study was secured from the Provincial Medical Director (PMD) and cascaded down to the District Medical Officer (DMO) of Shamva Hospital, ensuring alignment with relevant authorities. Participants were then comprehensively informed about the study's purpose, potential risks and benefits, and their rights as participants. This included providing ample opportunity to ask questions and express any concerns. Only after participants felt comfortable and fully informed did written informed consent proceed. Furthermore, the study prioritized participant anonymity and confidentiality. To safeguard this, each participant received a unique identification code instead of their name. All data collection and storage followed strict security protocols, with access limited solely to the research team. The study ensured the ethical treatment of all participants throughout the research process.

Data collection

Every responder who satisfied the requirements of the inclusion criteria explained the study's objectives. Both verbal and written consent were sought from the participants before the study. An interviewer-administered questionnaire was administered to the study participants. Explanation of each question was done to avoid any ambiguity and ensure consistent responses.

Data analysis and presentation

Data analysis was done using SPSSV21. Frequencies and proportions for each variable were calculated. Data was presented using graphs and tables.

Results

Demographic Characteristics of Participants in Shamva

In this study 80(53.3%) of the participants were male, while 70(46.6%) were female, 45(30.0%) were nurses, 23(15.3) were nurse aids, 15(10.0%) were 40(26.7%) and others such as laboratory assistants, laboratory scientist and data capturers were 27(18.%) . The majority of the participants, 110(73.3%) had reached the tertiary level while 40(26.7) had reached the secondary level.

Table 1: Demographic Characteristics of Participants in Shamva

Characteristic		Frequency(n=150)	Percentage (%)
Sex	Male	80	53.3
	Female	70	46.6
Type of Health Care Worker	Nurse	45	30.0
	Nurse aid	23	15.3
	Environmental health technician	15	10.0
	Village health worker	40	26.7
	Others	27	18.0
Level of education	Secondary	40	26.7
	Tertiary	110	73.3

Source of Information on COVID-19 Vaccinations

Most of the participants 100(66.7%) indicated that they had gotten information on COVID-19 vaccination from the radio, while 80(53.3%) indicated that they received the vaccination information from television. All (100%) of the participants indicated that they had received information on vaccination from social media and



from work while only 40 (26.7) had received information from the public address system.

Table 2: Source of Information on COVID-19 Vaccinations

Source	Frequency(n)	Percentage (%)
Radio	100	66.7
Television	80	53.3
Social media	150	100
Public Adress system	40	26.7
Community members	150	100
Work	150	100

Knowledge of COVID-19 vaccine among Participants in Shamva

On knowledge (Table 3), 142(94.7) knew the types of vaccines that were used in Zimbabwe, 136(90.7) knew the source of the vaccines and those who knew that the COVID-19 vaccines could reduce hospital admissions were 145(96.7). Those who knew that vaccines could reduce the spread of COVID-19 were 140(93.3%), and 100(66.7%) knew that two doses were needed for effective vaccination. Those who knew that COVID-19 was an occupational hazard were 135 (90.0%)

Table 3: Knowledge of COVID-19 Vaccine Among Participants in Shamva

Factor	Frequency(n-150)	Percentage (%)
Know the types of vaccines in Zimbabwe	142	94.7
Knew the source of the vaccines	136	90.7
Vaccines could reduce hospital admissions	145	96.7
Vaccines can prevent the spread of COVID-19	140	93.3
Two doses were needed to ensure effective vaccination	100	66.7
knew should report on any side effects	138	92.0
COVID-19 as an occupational hazard	135	90.0

Attitude on COVID-19 Vaccine Among Participants in Shamva

Those who were confident in the vaccine were 130 (86.7%), while 125 (83.3%) felt the urgency of being vaccinated to protect

themselves (Figure 1). Participants who were hesitant to COVID-19 vaccination were 100 (66.7%). Those who still wanted further vaccinations were 113 (75.3%), while 110 (73.3%) thought they could still be infected even when vaccinated.

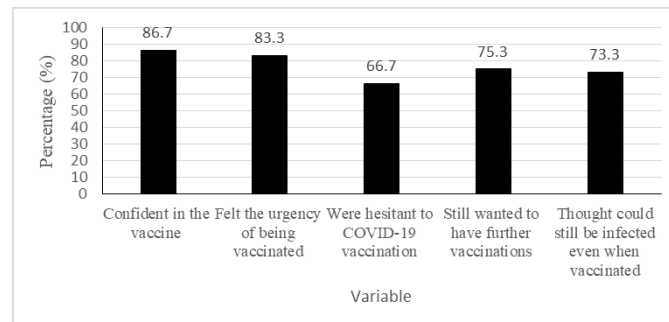


Figure 1: Attitude on COVID-19 Vaccine Among Participants in Shamva

Practices of Participants Towards COVID-19 Vaccine Among Participants in Shamva

On practice, all the participants had received at least one dose of the COVID-19 vaccine, and 120(80%) had received two doses (Table 5). Some of the participants (76.7%) encouraged others to be vaccinated. Nonetheless, 100(66.7%) had delayed in taking the vaccine. Additionally, 125(83.3) washed hands even when vaccinated, 100(66.7) used face masks even when vaccinated, and 80(53.3) practiced social distancing even when vaccinated.

Table 5: Practices of Participants Towards COVID-19 Vaccine Among Participants in Shamva

Practice	Frequency(n)	Percentage (%)
Received at least 1 dose	150	100
Received 2 doses	120	80.0
Encouraged others to be vaccinated	115	76.7
Delayed in taking the vaccine	100	66.7
Practiced social distancing	80	53.3
Used mask when dealing with clients	137	91.3
Used hand sanitisers	70	46.7
Washed hands even when vaccinated	125	83.3
Practiced social distancing even when vaccinated	80	53.3

Importance of the COVID-19 Vaccination and Implication in Occupational Health and Safety

Most of the participants (80%) considered that the COVID-19 vaccinations were able to ensure a normalization of their work and allowed them to return to work (Figure 2). Most of the participants indicated that vaccination was a requirement for them to return to work and it allowed them to renormalize their work. Those who never suffered from COVID-19 after vaccination were 96.7%.

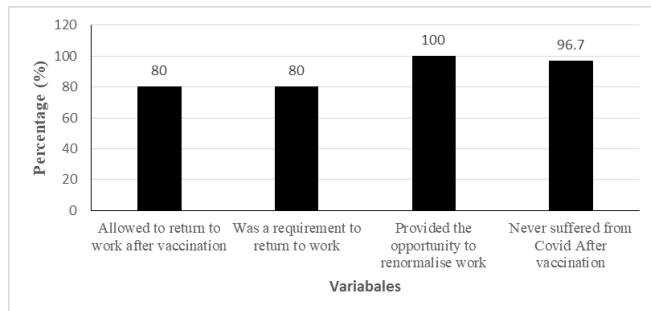


Figure 2: Importance of COVID-19 Vaccination and Implication in Occupational Health and Safety

Discussion

Most of the participants had gotten information through social media. This shows that social media is a powerful tool in transmitting information. This finding is corroborated by the findings in Saudi Arabia and Egypt (Al-Hanawi *et al.*, 2020). Social media was the most common type of information source for COVID-19 vaccines and this was in agreement with the findings established elsewhere (Detoc *et al.*, 2020). The least media was television, a finding that is supported elsewhere, in Saudi Arabia and Egypt (Al-Hanawi *et al.*, 2020). However, the major challenge was that of disinformation and misinformation as indicated by most of the participants in the study. Nonetheless, this study indicates the success of the government's information campaign (Cheng *et al.*, 2022). Despite the innate trust in the local vaccination system, the widespread dissemination of false information caused by the COVID-19 pandemic and the ease of access to a wide range of media outlets impacted the reception of the vaccination (Al-marshoudi *et al.*, 2021). The health care workers were also affected by misinformation regarding the COVID-19 vaccine (Kabamba Nzaji *et al.*, 2020) resulting in a threat to occupational health and safety. Thus it was necessary to promote vaccine confidence by dealing with rumours and ensuring that information is obtained from official sources (Al-marshoudi *et al.*, 2021). To prevent the spread of fake information, the Government of Zimbabwe implemented laws to ensure social media security through the cyber security law.

In this study, most participants indicated that they had vaccine hesitancy. This resulted in most of the participants delaying uptake. These findings are in agreement with those of a study that was carried out in Japan that established that most of the participants were hesitant to take up the vaccine (Sengupta *et al.*, 2022). This was caused by misinformation and disinformation. Nonetheless, this was despite many workers, as a routine, being vaccinated against common occupational-related infections to safeguard them

against diseases such as rabies for veterinary professionals, and hepatitis among health care workers. Therefore vaccines are a major advancement in the field of public and occupational health, where they have been successfully used to control and eradicate many infectious diseases globally (Dubé, 2017). Most of the participants in this study indicated that COVID-19 was an occupational health and safety hazard. This consideration resulted in many governments prioritising the vaccination of healthcare workers before the rollout to the public.

The major factor that resulted in most of the participants hesitating to take up the vaccine was the misinformation and disinformation fostered by social media. Vaccine hesitancy was established elsewhere in other studies (Cheng *et al.*, 2022). There was active information communication and IEC material by the government of Zimbabwe to ensure that correct information was transmitted. All the participants had heard about the COVID-19 vaccination. This was due to the immense publicity that was initiated by the Government of Zimbabwe. Publicity is essential in ensuring that high vaccine coverage is achieved (Sengupta *et al.*, 2022).

Vaccination was crucial in ensuring herd immunity. Most of the participants had taken at least one dose of the vaccine. Nonetheless, two doses were needed so that effective vaccination was achieved through a booster vaccine given two weeks later after the first dose. This finding was in agreement with a study that found the majority of the participants would agree to take the vaccine (Detoc *et al.*, 2020). In this study, vaccination was confirmed by verification of the vaccination certificates. This was necessary as evidence indicating real intent rather than probable intent (Mannan and Farhana, 2020).

Despite being vaccinated, it was necessary to ensure other preventive measures were being implemented especially at the workplace to ensure occupational health and safety. Social distancing was needed to prevent the spread of COVID-19 as the vaccine was not guaranteeing 100% immunity. That most of the participants had taken the vaccine indicates that there was a positive attitude toward the vaccine (Larson, 2015). Elsewhere, even in vaccinated groups, social distancing was the most commonly practiced preventive measure (Cheng *et al.*, 2022).

Most of the participants indicated that being vaccinated would prevent the spread of the disease to others and would allow renormalization of their work. This finding is in agreement with a study that was done in Singapore which revealed that a sizable percentage of those who had received vaccinations knew that a high vaccination rate provides indirect protection for those who had not received vaccinations (Cheng *et al.*, 2022). Slightly above half of the participants would advise their family members to be vaccinated. This finding is consistent with other studies where participants indicated that they would advise their friends and family members to get the COVID-19 vaccine (Al-marshoudi *et al.*, 2021). Peer communication is necessary to ensure vaccine confidence and to deal with vaccine hesitancy even at work. In Zimbabwe, the government recommended those who were employed bring their family members to be vaccinated as well.

In this study, most of the participants knew about the COVID-19 vaccine. This is in agreement with the study that was carried out elsewhere which found that the knowledge of the COVID-19 vaccine was high (Cheng *et al.*, 2022). The knowledge on COVID-19 as established in this study could be attributed to the type of respondents who participated in the survey. This is in agreement with other research that found that educated respondents tend to have more knowledge and a positive vaccine attitude (Christopher *et al.*, 2021). In this study, these participants included mostly nurses who should be propagators and disseminators of information on vaccination.

The Government of Zimbabwe initiated numerous approaches to ensure that vaccination was taken up and thus improved vaccine coverage. These strategies included free vaccination and ensuring equity and equality in the distribution of the vaccines. Free vaccination at work tends to ensure uptake among employees. These methods are similar to those that were implemented in other countries. Some methods can be adopted to increase the uptake of the vaccine, such as free vaccination for all the targeted groups, ensuring equality and equity in the distribution of the vaccine as well as launching a national media campaign that promotes the vaccines (Al-Hanawi *et al.*, 2020). Vaccines in Shamva District were availed to the various health centers. This shows that vaccines were easily made available to every community including the rural health centres. The first to be vaccinated were the health care workers as they were more at risk, thus addressing an occupational health and safety risk.

Conclusion and recommendation

This study underscores the importance of dealing with vaccine hesitancy to bolster occupational health and safety among healthcare workers. Vaccines hesitancy and fear of being vaccinated using an expedited COVID-19 vaccine. This resulted in a delay in vaccine uptake and having most of the participants taking up one dose only. Thus, more information, education, and communication (IEC) are still needed to boost vaccine uptake especially when dealing with vaccine-preventable occupational health and safety hazards like COVID-19. Vaccines such as COVID-19 vaccines, play a significant role in occupational health and safety and their promotion should be sustained throughout the working life of the healthcare workers to guarantee occupational health and safety. This study recorded the participants were knowledgeable about COVID-19 vaccination; however, more health campaigns are necessary to foster optimistic attitudes and practices toward COVID-19 vaccinations.

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