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REVIEW ARTICLE

COVID-19 Vaccine Acceptability and Hesitancy in Africa: Implications for Addressing Vaccine Hesitancy

Steward Mudenda*

University of Zambia, School of Health Sciences, Department of Pharmacy, P.O. Box 50110, Lusaka, Zambia

ABSTRACT

Background: Increased acceptance and uptake of Coronavirus Disease 2019 (COVID-19) vaccines is very essential in containing the ongoing COVID-19 pandemic. Vaccine hesitancy is a threat to public health containment of infectious diseases.

Aim: The main aim of this study was to review published articles regarding COVID-19 vaccine acceptability and hesitancy across all populations in Africa.

Materials and methods: This was a narrative review. A comprehensive literature search was done using PubMed, Google Scholar, Scopus, and EMBASE using the keywords vaccine acceptability, vaccine hesitancy, COVID-19 vaccine, COVID-19 pandemic, H1N1 vaccine, swine flu, swine flu vaccine, Africa, and the Boolean word AND. The cited literature was published between March 2001 and June 2021.

Results: The few studies were done in Africa so far are among healthcare workers and medical students. Acceptance of vaccination against COVID-19 in Africa ranged from 15.4% to 55.9%. This shows increased hesitancy to receive the COVID-19 vaccines in African countries. Many people were concerned about the potential adverse effects and ineffectiveness of COVID-19 vaccines. Misinformation about the COVID-19 vaccines has contributed to the hesitancy reported from different studies. Moreover, sociodemographic characteristics were also predictors of the acceptability of COVID-19 vaccines.

Conclusion: Low acceptability rates reported in Africa indicates increased hesitancy to vaccination against COVID-19. The low acceptance of vaccines in Africa can hinder the required 60-70% vaccinations to achieve herd immunity. Therefore, there is a need to develop strategies that will address hesitancy against the COVID-19 vaccines across countries and populations in Africa and the entire globe.

Background

The novel Coronavirus Disease 2019 (COVID-19) emerged as a global public health problem in China [1,2]. The outbreak that began in China later spread to the entire globe and was declared a pandemic on 11th March 2021 by the World Health Organization [3-5]. COVID-19 is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and is highly contagious [6-9].

Due to its ease of transmission and spread, many countries across the globe introduced preventive measures such as lockdowns, restrictions in movements, the universal wearing of face masks, social distancing, quarantine, and adequate handwashing [10-14]. The countries that adhered to these preventive measures reported a decrease in the number of COVID-19 infections and deaths [12,15]. However, with time, the number of COVID-19 infections and deaths still surged in many countries, indicating the need for a better strategy to contain the virus while adhering to the recommended preventive measures. This led to the need for the

***Corresponding author**

Steward Mudenda, Department of Pharmacy, School of Health Sciences, University of Zambia, P.O Box 50110, Lusaka, Zambia

Tel: +260-977-549-974
E-mail: freshsteward@gmail.com

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development, deployment and administration of COVID-19 vaccines across the globe [16,17].

Vaccines are substances that are meant to promote the immune system to fight foreign bodies [18-20]. Vaccines have played a vital role in containing previous pandemics such as the swine flu (H1N1) pandemic of 2009 to 2010 [21]. With regards to COVID-19 vaccines, they are meant to promote the immune system fight SARS-CoV-2 [22-24]. All individuals vaccinated against COVID-19 develop immunity that reduces the probability of contracting SARS-CoV-2 in future [25].

However, vaccinations during pandemics have received mixed feelings from people. For example, studies on the H1N1 vaccines reported variations in acceptability rates across the globe. A vaccine acceptance rate of 89% regarding vaccination against H1N1 was reported in Kenya [26], 88.2% in Nigeria [27], 46.8% in Saudi Arabia [28], 45% in China [29], 17% in France [30], and 15.4% in the United States of America (USA) [31]. These variations in the willingness to be vaccinated were high due to concerns about the safety, adverse effects and effectiveness of vaccines. Other factors that affect the acceptability of vaccines include the use of traditional remedies, consumption of alcohol, traditional and religious beliefs, decreased need for vaccines, distrust of vaccines, lack of information on how vaccines work and perceived risk of infections after vaccination [32].

Similarly, there have been some variations in the acceptance of COVID-19 vaccines across the globe. An acceptability rate of 97% regarding COVID-19 vaccines was reported in Ecuador [33], 91.3% in China [34], 76% in France [35], 74.6% in Bangladesh [36], 71.5% in a global study involving 19 countries [37], 64.7% in Saudi Arabia [38], 59% in Australia [39], 57% in the USA [40], 55.9% in the DRC [41], 46% in Egypt [42], 39.3% in Ghana [43], 37.4% in Jordan [44], 37.3% in Uganda [45], 36.8% in the Middle Easter population [46], 27.7 % in the Democratic Republic of Congo (DRC) [47], 21% in Egypt [48] and 15.4% in Cameroon [49]. The reported variations in the willingness of people to be vaccinated indicate vaccine hesitancy. Hesitancy against vaccines is the unwillingness of people to receive the vaccines due to many factors and beliefs. COVID-19 vaccine hesitancy has been reported to be due to concerns about the safety and effectiveness of the vaccine. Besides, the cited studies above reported that the acceptance of vaccines acceptability is also affected by the sociodemographic characteristics of individuals [42,43,45,47,48].

The variations in acceptance of COVID-19 vaccines are due to many factors. Hence, this review was conducted to present the acceptance rates of the ongoing vaccinations against COVD-19 among different populations in Africa. The gathered results can be used to develop strategies that address vaccine hesitancy during disease outbreaks.

Materials and Methods/ Search Strategy

This was a narrative review that was conducted using published articles from January 2021 to June 2021. The published articles and documents were accessed using PubMed, Google Scholar, Scopus, and EMBASE databases. Search words that were used included vaccine acceptability, vaccine hesitancy, COVID-19 vaccine, COVID-19 pandemic, H1N1 vaccine, swine flu, swine flu vaccine, Africa, and the Boolean word AND. This narrative review was conducted from April 2021 to June 2021. Only full published articles between March 2001 and June 2021 were considered to be part of this review. All articles not published in English were excluded. From a total of 84 documents searched, only 67 qualified to be included in this manuscript.

Acceptability of COVID-19 Vaccines in Africa

Vaccine acceptance is very cardinal in containing disease outbreaks. However, people have mixed feelings regarding vaccinations more especially during disease outbreaks. In Africa, studies have reported variations in acceptance of COVID-19 vaccines across nations and different populations. Acceptance rates of vaccination against COVID-19 and reasons for vaccine hesitancy have been shown in table 1. The willingness of individuals to be vaccinated in Africa ranged from 15.4% to 55.9% across Healthcare Workers (HCWs), medical students and the general population. The results show that there are very few studies that have been conducted in Africa regarding COVID-19 vaccine acceptability and hesitancy. The highest acceptance rate was reported at 55.9% while the highest hesitancy was 84.6%.

Hesitancy Against COVID-19 Vaccines and Associated Factors

Earlier studies indicated that vaccine hesitancy was mainly due to the potential adverse effects and lack of proven efficacy of vaccines [21,50-52]. These concerns deter individuals from being vaccinated and hence cause failure to achieve the goals of immunisations.

Studies done in Africa across different populations have shown that vaccine hesitancy is due to safety and effectiveness concerns, as shown in table 1. Despite the participants being HCWs and medical students, the acceptance of COVID-19 vaccines was very low among this population. This is despite the HCWs and medical students being the custodians of adequate information about vaccines. However, vaccine acceptance can be improved among HCWs and medical students if they know the benefits and importance of vaccination [53]. This will in turn improve the acceptance rate of vaccines by the general population.

Misinformation about the COVID-19 vaccines has also contributed to the vaccine hesitancy that has been reported

Table 1: African studies on the acceptability of COVID-19 vaccines.

Authors	Country	Target population	Acceptability	Factors associated with vaccine hesitancy
Ditekemena, et al. [41]	DRC	Adult population	55.9%	Many HCWs were unwilling to receive the vaccine. The participants in the DRC did not trust the vaccine and were concerned about the adverse effects and questionable efficacy of the COVID-19 vaccines. Rumours and misinformation about the vaccines also contributed to the unwillingness of individuals not to accept the vaccine.
Saied, et al. [42]	Egypt	Medical students	46%	Medical students in Egypt were unwilling to be vaccinated due to concerns of potential adverse effects and effectiveness of vaccines. Besides, there was a lack of information about the vaccine itself and the potential adverse effects.
Agyekum, et al. [43]	Ghana	HCWs	39.3%	HCWs in Ghana were unwilling to be vaccinated due to concerns of safety and potential adverse effects of vaccines
Kanyike, et al. [45]	Uganda	Medical students	37.3%	Medical students in Uganda were unwilling to be vaccinated because of safety concerns of the vaccine and heard negative information about the vaccine reported on social media.
Nzaji, et al. [47]	DRC	HCWs	27.7%	Spread of misinformation and harmful effects of social networks. Besides, HCWs could have heard of the poor quality of vaccines reported in some media.
Fares, et al. [48]	Egypt	HCWs	21%	HCWs in Egypt were concerned about the potential adverse effects and effectiveness of vaccines. Besides, the HCWs were worried that COVID-19 vaccines did not undergo full clinical trials.
Dinga, et al. [49]	Cameroon	Adult population	15.4%	The adult general population in Cameroon were concerned about the safety, effectiveness, source and cost of COVID-19 vaccines. Besides, participants responded that they never wanted the clinical trials to be done in Africa.

in Africa [47]. Misinformation and myths about COVID-19 and COVID-19 vaccines have majorly contributed to the unwillingness of people to receive the vaccine [54-59]. Political leaders can worsen vaccine misinformation and prevent many citizens from receiving the vaccine [60]. Lack of information about the COVID-19 vaccines is also a contributing factor to vaccine hesitancy [42]. Therefore, there is a need for governments, stakeholders and ministries responsible for health to deliver the right information to communities.

Further, sociodemographic characteristics have also been reported to be among the factors that may affect the acceptability of COVID-19 vaccines. Among the sociodemographics, gender and marital status have been reported to affect the acceptability of COVID-19 vaccines. A study in Uganda reported that male and single medical students were more willing to be vaccinated than female and married medical students [45]. Similarly, a study conducted in the DRC and Egypt reported that male participants were more willing to receive the vaccine compared to female participants [47,48]. In Ghana, the gender of participants also affected the willingness for HCWs to be vaccinated [43]. Therefore, it is very essential to address the sociodemographic characteristics of community members when delivering vaccination programs and campaigns.

Other factors that are likely to affect the acceptability of vaccines in Africa include lack of equity in access to COVID-19 vaccines, lack of effective and efficient supply chain systems [61]. Lack of access to vaccines promotes vaccine hesitancy [62,63]. Hence, there is an urgent need to develop and implement effective strategies to address all the factors that can lead to COVID-19 vaccine hesitancy.

Strategies to Address Vaccine Hesitancy

Vaccine hesitancy is a global problem and requires to be addressed. Studies have reported many strategies to use when addressing vaccine hesitance [53,64-67]. Below are some of the strategies that can be used in addressing hesitancy to vaccines during and after the COVID-19 pandemic.

- Prominent citizens, community and religious leaders can be used in interventions that lead to increased vaccine uptake or reduced hesitancy against vaccines. These are influential people in their communities and institutions and can positively contribute to the acceptance and uptake of COVID-19 vaccines. For example, a study reported that prominent individuals and political leaders can either promote vaccine uptake or not [60]. Many citizens are likely to listen and adhere to information concerning vaccines if it comes from their leaders.

- Community education regarding the benefits and importance of vaccines is cardinal in ensuring the successful implementation of vaccination programs. Lack of information among community members on the importance of COVID-19 continues to be a factor that reduces the acceptance and uptake of COVID-19 vaccines. Hence, there must be community education on the importance and benefits of vaccines before they are rolled out.

- Initiation of pieces of training and education programs for HCWs and students on the benefits and importance of vaccination against infectious diseases. HCWs and students are very essential in promoting and recommending vaccines to people. By their profession, they can convince and win many people to accept vaccinations against COVID-19.

- Community sensitisation on the potential short and long-term adverse effects of vaccines is cardinal in achieving the goals of vaccination programs. Vaccine hesitancy has been reported to be due to concerns about the potential adverse effects. It this therefore

imperative that the authorities and ministries responsible for health must share all information regarding the adverse effects of COVID-19 vaccines with the general public.

- Community sensitisation on the effectiveness of vaccines is very important in addressing the doubts about vaccines. Vaccines support and boost the immune system in fighting diseases. Hence, they are very effective even in the containment of disease outbreaks such as COVID-19.

- There is a need to address the traditional and religious beliefs with regards to how vaccines work and their benefits. Certain beliefs contribute to vaccine hesitancy and must be addressed. Religious beliefs about faith healing have continued destructing individuals from receiving vaccines.

- The sociodemographic characteristics of individuals across all populations must be taken into consideration when promoting the use of vaccines. Segmentation of populations based on their sociodemographic characteristics can be another way of improving vaccine uptake. Some elderly individuals may require different approaches regarding education about vaccines compared to young people. Similarly, this may also apply to gender, employment status, level of education, residential area and religion.

- Engaging celebrities and authorities in disseminating information regarding COVID-19 vaccinations programs and campaigns. People may change their behaviour towards vaccine acceptance and uptake when vaccine campaign messages and programs are delivered by celebrities and authorities.

- There must be regular collaborations between the HCWs, health authorities and patients for the successful implementation of vaccination programs. HCWs and health authorities can build confidence in individuals regarding the benefits of vaccines. Many individuals would accept to be vaccinated when HCWs interact with them on the use, safety and effectiveness of vaccines.

- Providing accurate and sufficient information on all available COVID-19 vaccines would help increase the acceptance and uptake of vaccines. The ministries responsible for health should provide all information about the vaccines to ensure people do not get wrong information from other sources like social media. This makes people build trust in the vaccines and hence accept to be vaccinated.

- Engaging the public in vaccine policy development is a vital strategy to overcome vaccine hesitancy. When the general public is consulted, they feel being a part of the vaccination program compared to policies developed by the governments alone. The engagement of the general population in vaccine policy development also makes people feel respected. This in turn leads to a reduction in vaccine hesitancy.

The strategies outlined above are among the ways to address COVID-19 vaccine hesitancy and reach herd immunity. Herd immunity will be reached when 60-70% of populations are vaccinated. However, the strategies used to address vaccine hesitancy may not be limited to the ones reported in this review.

Conclusion

There have been significant variations in the acceptance of COVID-19 vaccines across populations in Africa. The acceptance rates of COVID-19 vaccines among HCWs and medical students have been low. Vaccine hesitancy calls for quicker responses from authorities and stakeholders if vaccination programs are to be successful during disease outbreaks. There is a need for African countries to develop effective strategies that can be used to increase the acceptance and uptake of COVID-19 vaccines across all populations.

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Author Contributions

SM conceptualized the study, did a literature search and analysis of the results. SM wrote the initial and final version of the manuscript. SM approved the final version of the manuscript.

Data Availability Statement

The author confirms that the data supporting the findings of this study are available within the article.

Disclaimer

The views expressed in the submitted article are my own and not an official position of the institution of my affiliation.

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