SAFETY OF VACCINE A DETERMINANT OF UTILIZATION OF COVID-19 VACCINES AMONG ACADEMIC STAFF OF COLLEGES OF EDUCATION IN NORTHERN STATES, NIGERIA

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Abstract

The purpose of this study was to assess the safety of vaccines as a determinant of the utilization of COVID-19 vaccines among colleges of education academic staff in Northern States, Nigeria. To achieve the purpose of the study, one research question and hypothesis were formulated and tested for the study. The research design for this study was ex post facto research design. The target population for this study comprised 4,947 academic staff of the twelve Colleges of Education in the Northern States of Nigeria. Therefore, the sample for this study consists of 650 academic staff which were selected among colleges of education academic staff in Northern States, Nigeria by using multi-stage sampling techniques. The instrument used for data collection was a researcher-developed close-ended questionnaire which was validated by five experts in the Department of Human Kinetics and Health Education, Public Health and Nursing Science at Ahmadu Bello University Zaria with a reliability coefficient of 0.80. Descriptive statistics of frequencies and percentages were used to describe the demographic information of the respondents; means and standard deviations to answer the research question, and inferential statistics of one-sample t-test was used to test the null hypotheses at 0.05 level of significance. The study findings revealed that the safety of the vaccine is a significant determinant of COVID-19 vaccine utilisation among academic staff of Colleges of Education in Northern Nigeria (t=115.134, P=0.000). Based on the findings of the study it was concluded that; the safety of the vaccine determines the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria. It was therefore recommended that FGN and NGOs should sensitize the general public on the safety of vaccines through symposiums, lectures, drama, seminars and magazines this will help in correcting misconceptions and improve the rate of utilization of the vaccines among colleges of education academic staff in the northern states, Nigeria.

Keywords: Determinant, Safety, Utilization, Vaccination, COVID-19, Academic Staff

Introduction

The emergence of COVID-19 in late 2019 fundamentally altered the course of human history. This novel coronavirus, characterized by its high transmissibility and potential for severe illness, rapidly swept across the globe, leaving a devastating trail of illness and death. In late December 2019, a cluster of patients in Wuhan, China, presented with a mysterious respiratory illness. Investigations by Chinese health authorities identified a novel coronavirus, later named SARS-CoV-2, as the causative agent (Zhu et al., 2020). The disease caused by this virus was termed COVID-19 (coronavirus disease 2019) by the World Health Organization (WHO) in February 2020 (Cucinotta, & Vanelli, 2020). The outbreak rapidly escalated, prompting the WHO to declare a Public Health Emergency of International Concern (PHEIC) in January 2020 and a global pandemic just two months later (WHO, 2020). COVID-19 quickly spread across the globe, posing a significant threat to public health due to its high transmissibility and the absence of prior immunity in the human population.

Coronaviruses are a large family of viruses that can infect mammals and birds. While some coronaviruses cause the common cold, others, like SARS-CoV-2, can lead to more severe respiratory illnesses. The exact origin of SARS-CoV-2 remains under investigation, but scientists believe it likely jumped from bats to an intermediate animal host before infecting humans (Andersen et al., 2020). The virus primarily spreads through respiratory droplets expelled when an infected person coughs or sneezes. People can also become infected by touching a contaminated surface and then their face. The severity of COVID-19 illness varies greatly, ranging from asymptomatic or mild flu-like symptoms to severe pneumonia, respiratory failure, and even death. Older adults and individuals with underlying health conditions are at higher risk for developing serious complications (Akorede, 2021; Laires & Nunes, 2020).

Since its emergence, COVID-19 has had a profound impact on the world. The pandemic has resulted in millions of cases and deaths worldwide, straining healthcare systems and disrupting economies (Idris et al., 2022; Clemente-Suárez et al., 2021; Kaye et al., 2021). The global scientific community has responded rapidly, developing diagnostic tests, treatments, and most

importantly, vaccines. However, the virus continues to evolve, with new variants emerging that can be more transmissible or evade immune responses (Akorede et al., 2021; Lazarevic et al., 2021). As we move forward, continued vigilance and research are crucial to effectively manage COVID-19 and mitigate its future impact.

Vaccination is the introduction of a live or attenuated antigen to induce the formation of antibodies to protect against organisms that cause disease, such as bacteria and viruses. According to WHO (2020), vaccination is one of the most effective preventative measures against infectious illnesses. But for a vaccine or immunization program to be successful, uptake and coverage are essential factors (Akorede et al., 2022; Kwok et al., 2020). Estimating the degree of herd immunity needed to stop the COVID-19 outbreaks in the impacted nations. With the widespread distribution of many safe and effective vaccinations against SARS-Cov-2, false information about possible vaccine candidates has proliferated worldwide. According to many media sources, mistrust against the US and certain EU nations has grown to be a significant barrier to more widespread vaccination (Bajos et al., 2022). However, there are conflicting emotions, a great deal of mistrust, indifference, and denial in Nigeria regarding the pandemic's growth, as well as vaccine-related difficulties.

The global rollout of COVID-19 vaccines has been a significant achievement, with over 5.5 billion people receiving at least one dose as of May 2024 (UNU-MERIT, 2024). However, significant disparities exist in vaccine uptake between countries. High-income nations have generally achieved higher vaccination rates, with some exceeding 70% fully vaccinated (UNU-MERIT, 2023). Conversely, low- and middle-income countries often lag, hindered by a complex interplay of factors. These include vaccine supply chain challenges, limited healthcare infrastructure, economic constraints, and political instability (WHO, 2015).

Sub-Saharan Africa presents a unique picture of COVID-19 vaccine uptake. While initial enthusiasm was high, with surveys suggesting a strong willingness to be vaccinated (Wollburg, Markhof, Kanyanda, & Zezza, 2023), actual uptake has fallen short. As of March 2023, less than 30% of the population in Sub-Saharan Africa is fully vaccinated (UNU-MERIT, 2023). This gap can be attributed partly to logistical hurdles, such as limited vaccine access in remote areas, cold chain infrastructure deficiencies, and shortages of trained healthcare workers (Afolabi et al., 2021). However, vaccine hesitancy fuelled by misinformation and lack of trust in healthcare systems also plays a significant role (Tijani et al., 2023).

Nigeria, Africa's most populous nation, reflects the broader challenges faced by the continent. Despite government efforts, including public awareness campaigns and free vaccination programs, only a fraction of the population is fully vaccinated. Olumuyiwa, Mbachu, Nwizu and Uchegbu (2022) affirmed a high vaccine acceptance among those already vaccinated, but hesitancy remains a significant barrier. Misconceptions about vaccine safety and efficacy, particularly around social media-driven rumours and conspiracy theories, coupled with logistical issues and limited access to reliable information through trusted channels, contribute to this hesitancy (Olumuyiwa, et al, 2022). Additionally, pre-existing vaccine hesitancy related to routine childhood immunizations can spill over and influence COVID-19 vaccine decisions (Owolabi, Balogun, Adekanmbi, Nwizu, Uchegbu & Meremikwu, 2021).

While concerns about vaccine safety are a major factor contributing to hesitancy globally, their specific impact in Nigeria is nuanced. Anxieties surrounding unknown long-term effects and misinformation about serious adverse reactions propagated on social media remain significant deterrents (Olumuyiwa, et al, 2022; Owolabi, et al, 2021). This highlights the need for targeted public health campaigns that emphasize the rigorous testing undergone by COVID-19 vaccines and leverage trusted community voices to counter misinformation.

Despite the sensitizations on the devastating outcome of COVID-19 when contracted, the researchers observed that some myths and misconceptions about the vaccine still exist. Some saying is not safe, while others believe it is a plot to depopulate the African population and cause infertility among others. The researchers observed that despite the effort of the government to ensure everyone gets vaccinated against the disease. A lot of persons including academicians in the colleges of education shy away from being vaccinated. As a result, more people in Northern Nigeria are refusing to receive the immunization. The researcher also observed that despite jingles aired on vaccination safety, unfavourable perceptions about vaccination continue to persist. Therefore, on this background, the researcher was moved to carry out this study to assess the safety of vaccine as a determinant of the utilization of COVID-19 vaccines among academic staff of the colleges of education in Northern States, Nigeria.

Purpose of the Study

The purpose of this study was to assess the safety of vaccine as a determinant of COVID-19 vaccine utilization among academic staff of the College of Education in Northern States, Nigeria.

Research Question

Does the safety of vaccine determine the utilization of the COVID-19 vaccine among academic staff of the College of Education in Northern States, Nigeria?

Hypothesis

Safety of vaccine is not a significant determinant of the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria.

Methodology

To examine the safety of vaccine as a determinant of the utilization of COVID-19 vaccination among academic staff at colleges of education in the Northern States, Nigeria the study employed an ex-post facto research design. From the population of 23491 academic staff of Colleges of Education in the Northern States of Nigeria, a sample size of 650 academic staff members was drawn from 12 randomly selected colleges of education in the Northern States of Nigeria. Adopting a multistage sampling procedure; the researcher also adopted the Research Advisor (2006) procedure to arrive at the sample size. Research Advisor emphasized that for a population of more than 4,947 a sample size of 650 should be appropriate.

The researcher stratified the Northern states of Nigeria into the already existing three geo-political zones North-East zone, North-Central zone and North-West zone. Simple random sampling technique was used to select two States from each of the three geopolitical zones. Two (2) Colleges of Education were randomly selected from each of the six (6) States that were drawn from the three (3) geopolitical zones. A proportionate sampling technique was used to compute the number of respondents in each College of Education using the proportionate formula and lastly purposive sampling procedure was used to administer the questionnaires at the colleges selected for the study.

Table 1: Selected States Target Population and Proportionate sampled Respondents

S/N	Geo-political	State	College	Number of Staff	Sampled size
1.	North-east	Bauchi	ASCOE Azare	493	65
			ATBCOE Kangere	786	103
		Gombe	FCE Gombe	254	33
			COE Billiri	841	110
2.	North-west	Jigawa	COE Gumel	241	32
			COE Ringim	350	46
		Kano	FCE Kano	433	57
			COE SadaatuRimi	222	29
3.	North-central	Niger	COE Minna	303	40
			FCE Kotagora	261	34
		Plateau	FCE Pankshin	378	50
			COE SarkinMangu	385	51
	Total	**6**	**12**	**4947**	**650**

Source: National Commission for Colleges of Education, Abuja (2017)

The researchers used a researcher-developed questionnaire for data collection. The research instrument is made up of seven sections. The research instrument was vetted by five (5) experts in the Department of Human Kinetics and Health Education, Faculty of Education, Ahmadu Bello University, Zaria-Nigeria to determine its face, content and construct validity. After the final draft was produced a pilot test was conducted at the Federal College of Education Technical Potiskum (Yobe State) to confirm the content validity and reliability of the instrument. Using the split-half reliability approach of Cronbach's Alpha technique a reliability coefficient of 0.80 was obtained. Mean and standard deviation was used to answer the research question. One – Sample t-test was used to analyse the formulated hypothesis at 0.05 alpha level.

Answering of Research Questions

Research Question One: Is the safety of COVID-19 vaccination a determinant of utilization among academic staff of Colleges of Education in Northern States, Nigeria?

Table 2: **Mean scores and standard deviation on the Response of Academic Staff of Colleges of Education in Northern Nigeria on the Safety of COVID-19 vaccine as a Determinant of its Utilisation**

S/N	Safety of Covid-19 as Determinant of its Utilisation	Mean	SD
1.	There is no harm in taking COVID-19 vaccine	2.92	0.73
2.	The COVID-19 vaccine will be useful in protecting me from the COVID-19 infection.	2.95	0.71
3.	There is sufficient data regarding the vaccine safety released by the government.	2.65	0.76
4.	There is sufficient data regarding the vaccine efficacy released by the government.	2.55	0.75
5.	There are no serious side effects after taking the COVID-19 vaccine	2.69	0.70
6.	Many people are taking the COVID-19 vaccine because it is safe.	2.81	0.74
	Aggregate mean	**2.76**	**0.73**

Decision mean=2.50

Table 2 revealed the mean of the responses of the academic staff of Colleges of Education in Northern Nigeria on the safety of the COVID-19 vaccine as a determinant of COVID-19 vaccine utilisation. The table showed that the mean response of each item on the safety of the COVID-19 vaccine as a determinant of COVID-19 utilization was greater than the decision means of 2.50, the table also showed that the aggregate mean of 2.76 obtained was greater than the decision mean of 2.50, therefore, the safety of COVID-19 vaccine is a determinant of COVID-19 vaccine utilization among academic staff of Colleges of Education in Northern Nigeria.

Hypothesis Testing

Hypothesis: The safety of vaccine is not a significant determinant of the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria

Table 3: Summary of One Sample T-test on Safety as Determinant of COVID-19 Utilisation among Academic Staff of Colleges of Education in Northern Nigeria

Variable	N	Mean	SD	SE	Df	T	P
Safety of Vaccine	650	2.76	3.12	0.122	649	115.134	.000
Test mean	650	2.50					

t_{tab}=1.962, df: 649; P<0.05

Table 3 revealed the summary of one sample t-test on safety as a determinant of COVID-19 vaccine utilisation among academic staff of Colleges of Education in Northern Nigeria. The table showed the calculated mean of 2.76 which is greater than the decision mean of 2.50. The calculated t-cal was 115.134 greater than the t-critical value of 1.962 at 648df. The table further revealed that the calculated p-value was .000 less than the alpha value of .05; this indicated that safety is a significant determinant of COVID-19 vaccine utilisation among academic staff of Colleges of Education in Northern Nigeria, therefore, the hypothesis was rejected.

Discussions

This research assesses the safety of vaccine as a determinant for the utilization of COVID-19 vaccinations among academic staff in Northern States of Nigerian colleges of education. Data collected were computed and analysed. One hypothesis was developed and examined. According to the study's findings, academic staff at Northern Nigerian colleges of education have a higher likelihood of using the COVID-19 vaccination if they feel the vaccines are safe (t=115.134, df: 649; P<0.05). The study's conclusion showed that the safety of the COVID-19 vaccine is a significant factor in vaccination uptake among

academic staff in Northern Nigerian colleges of education. The results are consistent with the study conducted in 2021 by El-Elimat, Abu-AlSamen, Almomani, Al-Sawalha, and Alali, which evaluated attitudes and acceptability of the COVID-19 vaccination. According to the results, Jordan's public acceptance of the COVID-19 vaccination was just 37.4%. Participants who thought vaccinations are usually safe also said as much. Furthermore, participants were less likely to accept COVID-19 vaccinations if they thought there was a conspiracy behind it or if they didn't trust any source of information about it. The finding of this study aligns with the findings from a study conducted by Altulaihi, Alharbi, Alaboodi, Alkanhal, Alobaid, Aldraimly,...&Aldraimly, (2021) in Riyadh Saudi Arabia, the study reported that the most common deterrent to taking the COVID-19 vaccine was safety issues.

Conclusion

Based on the findings of this study, the study concluded that the safety of vaccine determines the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria.

Recommendation

Based on the conclusion of this study, the study recommended that the federal government and NGOs should sensitize the general public on the safety of vaccines through symposiums, lectures, drama, seminars and magazines this will help in correcting misconceptions and improve the rate of utilization of the vaccines among colleges of education academic staff in the northern states, Nigeria.

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