Understanding COVID-19 Vaccine Hesitancy in Nigeria Through University Community Lens

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Abstract. It is widely acknowledged that vaccination represents one of the greatest advances in public health in human history. Nonetheless, vaccine rejection or hesitancy is a public health issue that has continuously thwarted coordinated attempts by health officials to stop the spread of infectious diseases like the Coronavirus in Nigeria. It is critical to assess public perception, which will encourage vaccine acceptance through focused initiatives. Therefore, this study assesses vaccination reluctance among the Benue State University student community. A cross-sectional descriptive design was used in the study. A questionnaire was distributed to 150 participants, selected through the convenience sample technique. SPSS was used to enter and analyse the data. Eighty-seven percent of the respondents were between their first and third years, and the majority (63%) were over 18-30. Only 68% of the respondents thought the virus was real.

Additionally, none of the students had a favourable disposition towards the vaccination. The respondents cited fear of vaccine side effects (46.2%), distrust of the government (33.9%), vaccine efficacy (12.5%), and a variety of mystical possibilities (7.4%) as the major causative factors behind their hesitation to receive the vaccination. Available data show a serious communication breakdown between the respondents and the regional health authority. To improve public acceptance of the COVID-19 vaccine, broad and focused public health promotion initiatives are needed to alleviate some public concerns.

Keywords: Vaccine; Hesitancy; COVID-19; Students; Health.

INTRODUCTION

The first case that led to the discovery of the dreaded coronavirus (COVID-19) occurred in the Wuhan City of the Hubei Province of China and was described as a respiratory illness [1]. Severe infectious disease outbreaks have become more common in the twenty-first century; the most recent was the COVID-19 pandemic, which devastated lives and livelihoods everywhere it struck [2]. Most persons with this viral illness report mild to moderate respiratory symptoms and recover independently without medication [3]. The World Health Organization [4] found that ageing old adults, persons suffering from severe ailments, and people living with medical conditions like diabetes, cancer, cardiovascular disease, or chronic respiratory diseases are more likely to get infected by the virus. Meanwhile, it has been observed that the policies, procedures, and safeguards implemented go a long way to reduce or contain the spread of COVID-19.

About 70 vaccinations had been evaluated in human clinical trials as of February 2021, with another 20 in phase III clinical studies [5, 6]. Over time, clinical research has shown that immunisation is one of the most effective approaches to contain the spread of diseases [7, 8]. Unfortunately, the World Health Organization reported in 2019 that people's hesitation to take vaccines is among the top 10 threats to world health [7, 9]. Nevertheless, vaccine hesitation remains a growing obstacle to immunisation.

Numerous research shows that the reluctance to take vaccines is a widespread public health issue around the world, which comes with a wide range of reasons for vaccination rejection. These

reasons include misconceptions about the necessity of vaccinations, mistrust of the government and the healthcare system, and concerns about the vaccine's effectiveness and potential side effects [9, 10]. Unfortunately, vaccine hesitation affects the population, and individuals are unsure about receiving it, making it extremely difficult to achieve herd immunity [11]. Despite attempts by nations across the globe to increase immunisation rates and contain the spread of the virus, research indicates that vaccine reluctance remains relatively high globally, primarily because of mistrust, misunderstandings, and inadequate information.

According to recent data from seven OECD nations, about 25% of people in France, Germany, and the US are likely to refuse vaccinations, with a higher percentage among young individuals. Furthermore, a lack of trust in the organisations that administer vaccinations has prevented over 50% of French and about 33% of Dutch people between the ages of 25 and 34 from getting vaccinated [12]. According to recent research, the deliberate efforts undertaken thus far to contain the virus are being stalled by COVID-19 vaccine hesitancy in Sub-Saharan Africa, a serious public health concern [13]. It was discovered that between 20% and 50% of people in nations like Zimbabwe, Ghana, and South Africa have vehemently objected to the vaccination.

According to a recent survey, only 58.2% of adult Nigerians 18 or older were eager to receive the COVID-19 vaccine when it became available [14]. Another study conducted across six states revealed that most participants disregarded the potential of vaccination because they did not think the COVID-19 virus existed in Nigeria. This was explained by the fact that none of their loved ones had contracted the virus. Even though more than 84% of the respondents knew that the vaccine existed, only 68.3% were prepared to receive it, with religious convictions providing another compelling justification for not wanting to receive the shot [15].

Due to the scarcity of relevant publications, a global systematic review suggested that additional research be conducted in Africa to address COVID-19 vaccination reluctance [10]. Very few studies on COVID-19 vaccine reluctance have been done in Nigeria, mostly focusing on the general adult population before and after the vaccines were given. To our knowledge, no article has looked at young adults' reluctance to get the

COVID-19 virus since the start of the continuing vaccination process. In light of this, a study was conducted in Southwest Nigeria to learn more about how students perceive vaccine hesitancy.

Studies indicate that for several geographically specific reasons, the rate of COVID-19 immunisation and resistance in Africa is low [16, 17]. The fact that so many vaccines are being developed and demonstrated is particularly encouraging, as containing the COVID-19 pandemic requires a balanced supply of safe and efficacious vaccinations [18]. Researchers everywhere put endless effort into creating, manufacturing, and administering safe and efficient vaccinations. Any nation's ability to successfully distribute vaccinations depends on the availability and acceptability of vaccines.

The World Health Organization [19] defines vaccine hesitancy as the inability or unwillingness to receive a vaccination on time, even when the services are readily available. As it varies with time, region, and vaccinations, vaccine hesitancy is complicated and context-specific [20]. A sizable portion of the populace still opposes receiving the COVID-19 vaccination shot, even though COVID-19 vaccinations are extremely effective at preventing infections and serious illnesses from COVID-19 [21, 22]. There could be a variety of reasons behind the reluctance to receive the COVID-19 vaccine, such as misperceptions about Africans' innate immunity to the virus [23], conspiracy theories [24] or religious beliefs [23].

Therefore, to ensure that the right steps are taken to achieve sufficient vaccination coverage, it is imperative that, as the COVID-19 vaccination program continues in Benue State, the current situation and the factors leading to vaccine hesitation among the population be investigated. Thus, this study aimed to identify the variables linked to COVID-19 vaccination reluctance in Benue State University Student Community.

Research questions

1. How do religious beliefs about COVID-19 lead to vaccine hesitance?

2. How do health concerns lead to vaccine hesitance?

3. Do political factors result in Covid-19 vaccine hesitance?

4. In what ways do circumstantial / cultural beliefs lead to vaccine hesitance?

METHODS

Study Design and Setting. The research adopted a descriptive cross-sectional design and a self-administered questionnaire to gather data on vaccination hesitancy views among university community members within a predetermined timeframe. The study was carried out from January to June of 2024. This inquiry's target demographic was the student body at Benue State University, located in Nigeria's north-central region. The principal objective was to understand better the variables impacting this particular academic student community's reluctance to receive COVID-19 immunisation.

Inclusion and Exclusion Criteria. The convenience sample approach resulted in the recruitment of 150 respondents in total. The COVID-19 vaccine refusal signal was the only criterion used to include participants in the research. Those with legitimate forms of identification proving they were accepted into the university and were students were among the responders. The exclusion criteria comprised not being granted admission by the university, not being accepted as a student during the data collection period, and not agreeing to be excluded from the study.

Data Collection Tool and Technique. A hardcopy, semi-structured questionnaire was the instrument used in this investigation. The questionnaire consisted of 27 items in total, divided into four sections: the first section asked questions about respondents' socio-demographic characteristics; the second section evaluated respondents' perceptions of COVID-19; the third section evaluated respondents' perceptions of the COVID-19 vaccine; and the fourth section asked participants why they were reluctant to take COVID-19 vaccination. The questionnaire was created based on study objectives and questions developed after thoroughly evaluating pertinent literature to guarantee the instrument's validity. The questionnaire was made as easy to use as possible for the literate population. About thirty minutes were allotted to each interview [25].

Sample Size Determination and Sampling Techniques. According to [26], evidence suggests that qualitative investigations should not include more than 50 participants to allow researchers to manage the analytic work's complexity adequately. However, other academics have contended that the number of participants in qualitative studies should be determined by applying the data saturation principle rather than requir-ing an a priori sample size [27–30]. Given this, the study's sample size was chosen based on the data saturation principle rather than being pre-determined. The acceptance rate of COVID-19 immunisation in a university trial was reported to be 27.7%, with 10% attrition, using the sample size formula. The sample size (n = 150) was determined by adding the 62.7% acceptance rate, 50% vaccine reluctance, 5% margin of error, and 95% confidence range using a single population proportion computation [31].

Data Quality Assurance. Nigeria's official language, English, was used to write the survey questionnaire to increase public understanding and participation. 15% of the sample size participated in a pre-test. The pilot research asked for any necessary revisions before data collection. Regular oversight, supervision, and evaluations of the completed questionnaire were carried out to preserve the data's integrity.

Statistical Analysis. Version 2.0 of IBM SPSS was used for data entry and analysis. The means, frequencies, and percentages of the individual's knowledge and awareness of the COVID-19 vaccine were calculated using descriptive and inferential statistics about socio-demographic variables. Similarly, the socio-demographic characteristics of participants were compared using the chi-square test for independence to look for potential correlations with acceptance or reluctance to the COVID-19 vaccination.

Ethical consideration. The Benue State University Teaching Hospital (BSUTH) Institutional Review Board (IRB) provided ethical approval for this study (Approval ID: BSUTH/IRB/2024/HS109). After being fully informed about the study's goal, each individual provided verbal informed consent before participating in the experiment. The questionnaire was created with participant identity and confidentiality in mind and made optional. Participants in the study were informed that all information they provided would be treated in the strictest of confidence. Every participant in the research gave their informed consent.

RESULTS AND DISCUSSION

Respondents' Socio-Demographic Characteristics. Respondents who indicated unwillingness to take the COVID-19 jab were interviewed after distributing the questionnaire. Their ages ranged from 18 to 56 years, and their mean age was 39. A response rate of 65.6% was noted. Most

(22.7%, 34/150) respondents were postgraduates (people with educational qualifications above first degree); of the respondents, Christian faith was the majority (92.7%, 139/150). Of the 150 respondents, 86 were men (57.3%), and they took part in the study. Regarding religion, most participants were Christians, except 10 (6.7%) were Muslims, and 1 (0.7) were atheists. Furthermore, 75 (50.0%) were from year 1, 38 (25.3%) from year 2 and 37 (24.6%) were between 3rd and 5th year.

All the participants interviewed had not received vaccination against COVID-19 at the time of this research.

Table 1 below shows the association between various socio-demographic factors and tests for COVID-19 among the respondents.

Table 1 – Association between socio-demographic characteristics of the respondents

Test Variable	%	X2 – value	P- value	COVID-19 vaccination status
Gender				
Male	57.3	3.785	0.096	Not vaccinated
Female	42.6			
Marital status				
Married	14.0	1.766	0.521	Not vaccinated
Single	86.0			
Divorced	0			
Age				
18 – 30	63.3	2.621	0.042	Not vaccinated
31 – 45	34.0			
46 – 60	2.7			
Category				
Undergraduate	77.3	0.772	0.768	Not vaccinated
Postgraduate	22.7			
Religion				
Christian	92.7	4.605	0.551	Not vaccinated
Muslim	6.7			
Other	0.7			
Class				
100 level	50.0	7.580	0.056	Not vaccinated
200 level	25.3			
300 level	13.3			
400 level	11.3			

Perception of COVID-19 and COVID-19 Vaccine Hesitancy. Four main concepts emerged from the subject areas: religious beliefs, health concerns, political factors, and circumstantial/ cultural factors with nine subsets.

First Concept: Health Concerns. The following subsets fall under the concept of health concerns. They are:

Subset 1: Compromised public confidence amongst health workers: There are concerns about the possible long-term side effects of the vaccine on people who take the jabs. There are also doubts about the vaccine's efficacy since it wasn't subjected to long testing before its widespread use. The majority (66.0%) of the respondents do not believe in the vaccine's effectiveness, around 24.0% were neutral, and less than 10% were convinced about the vaccine's effectiveness. Also, some (32.0%) are suspicious of the safety concerns in the vaccines' hasty manufacturing/rollout (P 0.16).

Subset 2: Risk posed on individual health: Fears of compounding the health condition of people with terminal illnesses already exist. People are afraid there will be complications resulting from taking COVID-19 jabs when they already have other underlying illnesses. Interference of the vaccine on the health of people already living on drugs is also a difficult pill for many to swallow. Furthermore, over 59% of respondents believed the vaccine would harm their health (P 0.02).

Second Concept: Political factors. The subset that emerged under this main concept includes the following:

Subset 1: Non-belief in the Colonialists: COVID-19 vaccines were often associated with the colonialists' agenda to reduce the number of Africans. They feel that African countries' ever-growing populations worry the Western world. There are a few others who feel that fake vaccines were sent to African countries while the effective ones were retained for the use of the whites (P 0.09).

Subset 2: Non-belief in political leadership: Some respondents feel that the COVID-19 vaccine is unimportant because it is cost-free. There is a general feeling that only things without value go for free. Some feel that those in power should be the first benefactors of the vaccine. The essence is to watch and see if it doesn't have adverse effects on them before the commoner takes too if need be. Another belief system from the respondents is that the figures about COVID-19 contractions and deaths are largely fictitious and are used to deceive the unsuspecting public (P 0.14).

Third Concept: Circumstantial/ Cultural factors. This concept has the following subsets:

Subset 1: Conspiracy theories surrounding the vaccine as heard from social media and internet sources: Several respondents believed that COVID-19 is a less severe disease and should not be given that attention. Some also believe the COVID-19 virus could be destroyed by the heat intensity in tropical countries where Africans have found themselves and will not need special attention (P 0.06).

Subset 2: Perceived less vulnerability to COVID-19: There is a belief that COVID-19 is a disease for temperate regions, especially for the whites who are termed as 'less strong' than the blacks. Some respondents feel if the pandemic had spread amongst the blacks, the genes in them would withstand the virus. Other respondents believe that COVID-19 is a disease that affects only the rich in society. They feel some diseases are meant for those who have amassed wealth, especially through fraud. Younger folks hold the belief that COVID-19 is for the elderly. Some feel the virus can only hold sway in the bodies of fully aged persons without the strength to fight the virus (P 0.12).

First Concept: Religious factors. The following subsets fall under the concept of religious factors. They are:

Subset 1: Fear of receiving the mark of the beast: Some of the Respondents who are of the Christian faith associated the COVID-19 vaccine with the mark of the devil. They claimed that the antichrist that was forewarned about is finally here, and so believers should be wary about taking the vaccine. Some still regard the COVID-19 vaccine as a sign of initiation into a cult. They claim the antichrist has only used a subtle way to infiltrate believers to make them susceptible to future attacks (P 0.01).

Subset 2: Fear of being separated from God eternally: There are perceptions that the COVID-19 vaccine is a mark to establish a relationship with the devil eternally, as such, leading to total separation from God. Others associate the COVID-19 vaccine with the government of antichrist, which they feel has already come with the disease in place (P 0.18).

Subset 3: Lack of faith/ Going against the prompts of religious leaders and mentors: Some of the respondents who were perceived die-hard fans of their denominations feel permission must be sought from religious leaders before taking the COVID-19 jab, else it will be termed indiscipline and unwillingness to obey authority over them. Some religious leaders are against the COVID-19 jab, which shows a lack of faith in the creator. They feel prayers would work and not necessarily take vaccines out of fear of the unknown (P 0.06).

Table 2 – Concepts Leading to Hesitancy in COVID-19 Vaccination

Concept	Subsets	Areas
Health concerns	Compromised public confidence amongst health workers	Concerns about the possible long-term side effects of the vaccine
		Doubts about the efficacy of the vaccine since it wasn't subjected to long testing
	The risk posed to individual health.	Fears of compounding the health condition of people living with terminal illnesses
		Interference of the vaccine on the health of people already living on drugs
Political factors	Non-belief in the Colonialists	Associating the COVID-19 vaccine with the colonialists' agenda to reduce the numbers of Africans.
		Feeling that fake vaccines are sent to African countries.
	Non–belief in political leadership	I feel that the COVID-19 vaccine is unnecessary because it is cost-free.
		A feeling that let those in power be the first benefactors of the vaccine.

Concept	Subsets	Areas
		A belief that COVID-19 fictitious figures are used to deceive the unsuspecting public
Circumstantial / Cultural issues	Conspiracy theories surrounding the vaccine are heard from social media and internet sources.	The perception that COVID-19 is a less severe disease
		The belief that the COVID-19 virus could be destroyed by the intensity of heat in tropical countries
	Perceived less vulnerability to COVID-19	The belief is that COVID-19 is a disease for temperate regions, especially for the whites.
		The belief is that COVID-19 is a disease that affects only the rich in society.
		The belief is that COVID-19 is for the elderly.
Religious beliefs	Fear of receiving the mark of the beast	Associating the COVID-19 vaccine with a mark of the devil
		Regarding the COVID-19 vaccine as a sign of initiation into a cult.
	Fear of being separated from God eternally	The perception that the COVID-19 vaccine is a mark of establishing a relationship with the devil eternally
		Associating COVID-19 vaccine with the government of antichrist
	Lack of faith/ Going against the prompts of religious leaders and mentors.	Permission from religious leaders before taking a COVID-19 jab
		Religious leaders are against the COVID-19 jab as it shows a lack of faith in the creator.

In Benue State, Nigeria, we assessed the COVID-19 vaccine and the socio-demographic variables influencing vaccine hesitancy among students at Benue State University. The COVID-19 pandemic has presented a major problem since it was proclaimed a global pandemic, and several preventive efforts have been attempted to avert it. Vaccination was one of the best strategies to halt the COVID-19 epidemic's spread. According to recent research, 60–70% of the population needs immunisation to prevent the COVID-19 pandemic from spreading and to create herd immunity [16].

Only married status ($P < 0.05$) was found to be significantly relevant in the bivariate analysis testing the relationship between respondents' socio-demographic factors and their impression of the COVID-19 vaccine; all other variables investigated were not significant ($P > 0.05$). Since most participants were single, this outcome might be the product of chance. The respondents'

perceptions of the COVID-19 vaccine were significantly influenced by age, ethnic group, and study level ($P < 0.05$). Related characteristics like socioeconomic position and educational attainment were noted in a prior study. According to [32], there is no discernible relationship between sex and vaccination willingness. A significant correlation ($P<0.05$) was found in the bivariate testing between the perception of COVID-19 and the perception of the COVID-19 vaccination. One such belief that some of our responders could share is the possibility that COVID-19 is not real.

Misconceptions about the vaccine and fear of societal conspiracy theories about COVID-19 infection are predictors of high vaccine reluctance and low vaccination and testing rates among the respondents. This is consistent with data from the World Health Organization's COVID-19 website, which showed that there were only three fully vaccinated people and nine total vaccine doses given to 100 Nigerian populations [33]. Com-

pared to the global average of 52 persons, this number of completely vaccinated individuals per 100 population is incredibly low [33].

The study's conclusions about vaccine hesitancy among Benue State University students may be consistent with earlier research in Nigeria and other nations dealing with comparable issues. Previous research has demonstrated that various variables can impact vaccine hesitancy, including misinformation, fear of side effects, mistrust of the government or health authorities, and cultural or religious views. These variables may have played a role in the study's findings regarding hesitancy, which are in line with those from comparable contexts. This study demonstrates that Benue State University students' hesitation to take the COVID-19 vaccine was mostly caused by religious faith and views. Christians exhibited greater reluctance than Muslims. This result is consistent with a study that found Ugandan churchgoers unwilling to get the COVID-19 vaccine [23].

Authors [9] additional research validates a report stating that several Nigerian Christians have described the COVID-19 vaccine as the mark of the beast. Christians who believe they will be damned for eternity if they get vaccinated against COVID-19 are terrified because of this false belief about the disease and its vaccinations. The study's findings indicate that respondents' hesitation to receive the COVID-19 immunisation was also influenced by political considerations. Strong scepticism was expressed about the projects, policies, and changes from the political class and the West. Some even contend that phoney vaccinations were secretly transported from the West to Africa by the political elite with the express intent of driving out the continent's native population. This result is consistent with a study poll that revealed respondents' worries that COVID-19 vaccinations were created and produced outside of Africa [24].

Numerous other research studies have also revealed that many communities are unwilling to get the COVID-19 vaccine. For example, according to an IPSOS report [34], the percentage of people in Russia, Poland, Hungary, France, South Africa, and Germany who do not want to take the COVID-19 vaccination is 47%, 45%, 44%, 36%, and 33%, respectively. However, in Senegal, Niger, and Ethiopia, respectively, up to 5%, 7%, and 35% refused the vaccination [35]. Not many trial participants are eager to receive the vaccination,

even though more than half of them thought it was effective. Furthermore, only 33 % of those surveyed said they would consent to their friends and family receiving the vaccination. Less than half of the survey participants consented to vaccinations for their elderly, and more than half consented to vaccinations for their school-age children, according to [36]. Young people are often influenced by their peers. Therefore, there's a good potential that young people who choose to receive the vaccination or not may be able to persuade their friends and family to follow suit.

Conspiracy theories regarding the COVID-19 vaccination may have had an impact on this. Reduced severe COVID-19 and reduced susceptibility to COVID-19 perceptions have also been significant contextual factors in the Benue State University student body's vaccine reluctance. This result is consistent with [23], who noted that social media has disseminated misleading information on the African continent's immunity to COVID-19 due to its climate. Many Africans now mistakenly believe that they are immune to COVID-19 by nature, which minimises the requirement for immunisation. According to [37], social media has proved useful in all spheres of life and presents us with diverse opportunities to improve the dissemination of public health information. Still, it has its downsides, such as enabling the circulation of misinformation like fake news, conspiracies, and propaganda.

One would have expected that a high level of awareness would translate into a high level of vaccine acceptance and uptake, given that the respondents are primarily highly educated university community members. However, a different pattern was seen, with high levels of awareness regarding COVID-19 not translating into high rates of testing or vaccination. Nonetheless, we discovered that several factors, including social media conspiracy and fear of the unknown, lead to low vaccination rates. Few responders have received a COVID-19 test. Thus, they will likely be unwilling to get the shot. According to earlier research, persons who find an illness horrifying are more likely to call for a vaccination against it [38].

Additionally, the reluctance rate in this study is in line with findings from other studies [38, 39] that indicate somewhat high hesitancy across nations, making it challenging to obtain the required immunisations (60–70%) to stop the COVID-19 pandemic's progress. The low rate of vaccination

acceptance may be due to the belief propagated by social media that humans produced the COVID-19 virus. All around the world, this conspiracy theory has influenced people's perceptions of the COVID-19 pandemic. People have misconceptions regarding the origins of vaccines and their possible efficacy and safety.

A multifaceted worldwide public health concern, vaccination hesitancy varies among cultures, eras, places, and vaccine varieties [10]. Given the impact of sociocultural factors, studies have found and recommended the effective use of social media to do away with cultural divides that affect the implementation of national health emergency programmes [40]. However, authors [38] note that complacency, convenience, and overconfidence are among the elements that impact it. The study found that vaccination acceptance was significantly impacted by scepticism regarding the vaccine due to fear of unknown conspiracy theories, unfavourable attitudes against vaccines due to negative social media reports/rumours, and the effect of anti-COVID-19 vaccine campaigns.

CONCLUSIONS

The present investigation has discerned that COVID-19 vaccine reluctance among the Benue State University student community can be attributed to contextual variables, political misconceptions, and religious beliefs. Addressing a significant misunderstanding regarding COVID-19 and its vaccinations is imperative through community health education, especially by utilising the far-reaching affordances of mediated communication tools such as newspapers, radio stations, television channels, and social media [41]. Religious leaders such as pastors, reverend fathers, and imams should be involved in interventions aimed at dispelling myths about COVID-19 vaccination to help their followers understand the importance of vaccinating against the virus and dispel conspiracy theories about it. This will help Benue State reach a sufficient vaccination rate. Influential members of the community and traditional leaders should also be consulted to convince their constituents to embrace COVID-19 immunisation.

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