



ENUGU STATE UNIVERSITY OF SCIENCE & TECHNOLOGY

JOURNAL OF SOCIAL SCIENCES & HUMANITIES

**Volume 9
Number 1,
2024**

EDITOR-IN-CHIEF

Prof. Oby Omeje

MANAGING EDITOR

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PUBLISHED BY

**Faculty of Social Sciences,
Enugu State University of Science And Technology**

Sociocultural Determinants and Implications of Resistance to COVID-19 Vaccination among Academic Staff of a Nigerian University

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Abstract

The COVID-19 pandemic has sparked a global effort to develop and distribute vaccines to combat the virus. However, the success of vaccination campaigns hinges on the availability of vaccines and the population's acceptance and uptake of these vaccines. This study explores the sociocultural factors influencing COVID-19 vaccine resistance among academic staff at Alex Ekwueme University in Nigeria. It also investigated the implications of COVID-19 vaccine resistance among highly educated individuals, who are expected to be at the forefront of vaccine acceptance. A cross-sectional design was employed, and a structured questionnaire was administered to 380 academic staff members. Data was analyzed through descriptive statistics, and hypotheses tested through chi-square revealed a complex interplay of sociocultural factors contributing to vaccine resistance, including concerns about vaccine safety, the influence of social networks and religious beliefs, and reliance on traditional remedies. Furthermore, the study identifies implications of vaccine resistance, such as the continued spread of the pandemic and strain on healthcare resources. Therefore, targeted communication strategies, community engagement, and involvement of key stakeholders are needed to address vaccine hesitancy and promote vaccine acceptance among academic staff and beyond. The Nigerian government should also consider incorporating indigenous remedies in the fight against COVID-19. Ultimately, understanding and addressing sociocultural determinants of vaccine resistance is crucial for effective public health interventions and containment of the pandemic.

Keywords: *COVID-19, community engagement, pandemic, public health, vaccine resistance*

Introduction

Culture, according to Odetola and Ademola (2015), is a configuration of learned and shared patterns of behaviour and understanding concerning the meaning and value of things, ideas, emotions, and actions, which arises out of language communication within a social group and helps an individual to adapt to his physical environment, his biological nature, and his group life. Our culture and social heritage provide a sense of shared understanding that we employ in fashioning our actions. Thus, it provides us with a map or a guidepost for finding our way about life. Sociocultural factors have been found to play a vital role in people's health-seeking behaviour because most people are traditionally oriented and superstitious (Afolabi & Ilesanmi, 2021). It is thus assumed that in seeking a cure for diseases and preserving our lives, sociocultural factors such as occupation, age, religious belief, and the location of health facilities may affect the health-seeking behaviour of an individual. Social and cultural

behaviour are intertwined and are crucial factors in determining how people live, what they eat, what they believe, what values they have, and what technology they command. Hence, an individual's health is affected by sociocultural factors and the choice of healthcare facilities they would adopt/access (Jegede, 2000).

The novel coronavirus disease of 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has become a significant public health problem since the initial outbreak in Hubei, Wuhan, China (Shereen, 2020). The pandemic has significantly impacted health systems and economies globally (Lone, 2020). The pandemic is one of the fatal outbreaks due to the coronavirus, including the severe acute respiratory syndrome (SARS) in 2003 and the Middle East respiratory syndrome (MERS) in 2012. Countries with weaker health systems, particularly those in Africa, were projected to be devastated by COVID-19 (Ita, 2020).

Following the sequencing of the SARS-CoV-2 genome, there has been rapid development of COVID-19 vaccines. Several vaccines are presently available, while others are at different phases of clinical evaluation. In other words, some of the vaccines have since obtained Emergency Use Authorization (EUA) from the World Health Organization (WHO) and other relevant authorities (Lone, 2020); notably, BioNTech/Pfizer (BNT162b), Moderna (mRNA-1273), (Ad26.COV2.S), AstraZeneca (ChAdOx1 nCoV-19) vaccines and host of others. Since vaccination coverage is a defining factor for thriving herds' immunity, there is a need to explore the determinants of COVID-19 vaccine uptake that could guide effective vaccination strategies. The National Agency for Food and Drug Administration and Control (NAFDAC) of Nigeria has approved the use of the AstraZeneca® (ChAdOx1 nCoV-19) vaccine for use in the country (Mellet, 2021), and presently several others. The Nigerian government has received several batches of the vaccine via the COVID-19 Vaccines Global Access Facility (COVAX), a partnership between the Coalition for Epidemic Preparedness Innovations (CEPI), Gavi the Vaccine Alliance, the United Nations Children's Fund (UNICEF), the World Bank, and the WHO. The COVAX is part of the Access to COVID-19 Tools (ACT) Accelerator, a global collaboration to accelerate development, production, and equitable access to tests, treatments, and vaccines for COVID-19 (Shrotri, 2020). Nigeria's National Primary Health Care Development Agency (NPHCDA) has since commenced stage-wise vaccination with priority groups, starting with frontline healthcare workers. The agency has also deployed an online self-registration portal to roll out a country-wide vaccination program.

Notwithstanding the need for mass vaccination against the COVID-19 virus, the vaccine's success lies with the people's level of acceptance and cooperation. This brings to the fore "vaccine resistance" as an impediment to the mass vaccine rollout. Vaccine resistance is the reluctance to accept available vaccines (Ekwebelem, 2021; MacDonald, 2015). Vaccine resistance was listed by the World Health Organisation (WHO) as one of the top health threats in 2019 (WHO, 2019). Moreover, as early as mid-2020, public health experts expressed concerns about COVID-19 vaccine resistance (Khunchandani, 2021). Whilst vaccine resistance has also been noted in developed nations, the African continent has been associated with high incidents of vaccine resistance. To ensure COVID-19 vaccine acceptance, the federal government approved a vaccine mandate policy for all its employees (of which all federal higher learning institutions are among). The government also directed its staff from grade level 12 and below to get vaccinated. A circular signed by the Head of Service of the Federation, Folasade Yemi-Esan, dated November 26, 2021, cited by Vanguard, Friday night, explained that the vaccine mandate policy was in line with the recommendations of the Presidential Steering Committee on COVID-19. Therefore, all Federal Government employees must show

proof of COVID-19 vaccination or present a negative COVID-19 PCR test result. Despite the COVID-19 mandate policy for all the staff of the federal institutions, the attitude toward taking COVID-19 vaccination among federal government staff calls for public concern.

A safe and effective vaccine is critical to controlling the COVID-19 pandemic. Although practical and equitable distribution of COVID-19 vaccines is a key policy priority, ensuring acceptance is just as important. Trusts in vaccines, as well as the institutions that administer them, are critical determinants of the success of any vaccination acceptance. The resistance to taking COVID-19 vaccination could be associated with sociocultural beliefs that the vaccine causes illness, the belief that there is no need for vaccinating a healthy person, poor attitudes towards vaccines, and a lack of trust in the health delivery systems.

Another development is cultural beliefs of not subscribing to vaccination; for instance, some religious organizations do not subscribe to modern medicine in general, and vaccinations in particular, as these medicines are perceived as dangerous and causing diseases and deaths. The negative perceptions of vaccines are embedded in the religious beliefs that associate their use with a lack of trust in God. Regarding religious beliefs, cultural beliefs also contribute to resistance to COVID-19 vaccination (Pugliese-Garcia, 2022). Given the lack of trust in the COVID-19 vaccines for various reasons, most staff members have turned to cultural practices to deal with the COVID-19 pandemic. One common cultural practice that has withstood the test of time is the use of local herbs. Thus, the complexities brought about by the sociocultural dynamics have significantly resulted in vaccine resistance among staff of higher institutions in Nigeria. Despite the fatality of COVID-19 and the purported success of developing vaccines, a sceptical attitude continues to trail vaccination in many countries of the world, including developed countries. This phenomenon, sometimes called 'vaccine hesitancy, has been reported in many countries mainly due to vaccine disinformation and misinformation. Latkin (2021) reported that 40.9% of adults in the United States mistrusted the vaccine, while 16% of adults in the U.K. had a high level of mistrust towards the vaccine. In Africa, the percentage of those who resist vaccines is relatively high, even among educated people. People with higher education should be among the first to comply with vaccination calls. The story is quite different in Nigeria. Several studies have been conducted on the origin, causes and consequences of COVID-19. However, not much study has been carried out in Nigeria to understand why those in ivory towers should resist COVID-19 vaccines. This is despite their exposure and knowledge. As a result, assessing the essential social and cultural factors that propel their resistance towards COVID-19 vaccines becomes imperative.

Therefore, the study was aimed at assessing the extent to which academics in the university believe that vaccines are safe, the extent to which they resist COVID-19 vaccines, the social/cultural factors hindering them from taking COVID-19 vaccines and the consequences of not taking COVID-19 vaccines. The study will also determine effective measures that can be used to motivate people to take the vaccines. The study was therefore anchored on some basic propositions, such as no significant relationship between people's age, educational level, marital status, or religion and their resistance to taking the COVID-19 vaccine.

COVID-19 Vaccines

The COVID-19 vaccine is intended to provide acquired immunity against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease 2019 (COVID-19). Before the COVID-19 pandemic, an established body of knowledge existed about

the structure and function of coronaviruses causing diseases like severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). This knowledge accelerated the development of various vaccine platforms in early 2020. The initial focus of SARS-CoV-2 vaccines was on preventing symptomatic, often severe illness. On January 10 2020, the SARS-CoV-2 genetic sequence data was shared through GISAID, and by March 19, the global pharmaceutical industry announced a significant commitment to address COVID-19 (Macdonald, 2015).

The COVID-19 vaccines are widely credited with reducing the severity and death caused by COVID-19. Many countries have implemented phased distribution plans, prioritizing those at the highest risk of complications, such as the elderly, and those at high risk of exposure and transmission, such as healthcare workers. COVID-19 vaccines help to first look at how our bodies fight illness. When germs, such as the virus that causes COVID-19, invade our bodies, they attack and multiply. This invasion, called an infection, is what causes illness. Our immune system uses several tools to fight infection. Blood contains red cells, which carry oxygen to tissues and organs, and white or immune cells, which fight infection.

The first time a person is infected with the virus that causes COVID-19, it can take several days or weeks for their body to make and use all the germ-fighting tools needed to get over the infection. After the infection, the person's immune system remembers what it learned about protecting the body against that disease. The body keeps a few T-lymphocytes, called "memory cells," that go into action quickly if the body reencounters the same virus. When the familiar antigens are detected, B-lymphocytes produce antibodies to attack them. Experts are still learning how long these memory cells protect a person against the virus that causes COVID-19.

Types of COVID-19 Vaccines

Currently, three main types of COVID-19 vaccines are approved or authorized for use in the United States or are undergoing large-scale (Phase 3) clinical trials in the United States.

CDC recommends that people starting their vaccine series or getting a booster dose get either Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines); however, which vaccine you can get depends on your age. The mRNA vaccines are preferred over Johnson & Johnson's Janssen COVID-19 vaccine (a viral vector vaccine) in most circumstances. Although mRNA vaccines are preferred, the J&J/Janssen COVID-19 vaccine may be considered in some situations. Below is a description of how each type of vaccine prompts our bodies to recognize and protect us from the virus that causes COVID-19. None of these vaccines can give you COVID-19 (Riad, 2021).

- mRNA vaccines (**Pfizer-BioNTech or Moderna**) contain material from the virus that causes COVID-19 that gives our cells instructions for how to make a harmless protein that is unique to the virus. After our cells make copies of the protein, they destroy the genetic material from the vaccine. Our bodies recognize that the protein should not be there and build T-lymphocytes and B-lymphocytes that will remember how to fight the virus that causes COVID-19 if we are infected in the future.
- **Protein subunit vaccines (vaccines under development)** include harmless pieces (proteins) of the virus that cause COVID-19 instead of the entire germ. Once vaccinated, our bodies recognize that the protein should not be there and build T-lymphocytes and antibodies that will remember how to fight the virus that causes COVID-19 if we are infected in the future.
- Vector vaccines (**Johnson & Johnson's Janssen**) contain a modified version of a virus different from the one that causes COVID-19. Inside the modified virus's shell is material from

the virus that causes COVID-19. This is called a "viral vector." Once the viral vector is inside our cells, the genetic material instructs cells to make a protein unique to the virus that causes COVID-19. Using these instructions, our cells make copies of the protein. This prompts our bodies to build T-lymphocytes and B-lymphocytes that will remember how to fight that virus if we are infected in the future (Larson, 2015).

Sociocultural Determinants for COVID-19 Vaccination

Research has shown that religious and cultural beliefs significantly influence vaccine acceptance of vaccines (Masumbuko, 2019; Mukungwa, 2015; Ministry of Health and Child Care (MHCC), 2019). Citizens' sentiments regarding vaccines result from divergent and deep-seated beliefs emanating from "the tension between divergent cultural viewpoints and value systems" (Jiva-Doko, 2020), with most of these cultural beliefs not subscribing to vaccination. Some religious organizations do not subscribe to modern medicine in general, and vaccinations in particular, as these medicines are perceived as dangerous and causing diseases and deaths (MHCC, 2016). The negative perceptions of vaccines are embedded in the religious beliefs that associate their use with a lack of trust in God. They perceive all diseases and health challenges to be having spiritual dimensions. Thus, the spiritualization of illnesses, in this case COVID-19, reinforces "radical beliefs" that shun modern medical care and vaccines. Religion-based objections to vaccination have also been attributed to ethical dilemmas that characterize the use of "human tissue cells to manufacture vaccines and the belief that the body is sacred" (Jiva-Doko, 2020, p. 2). Furthermore, some of these objections are amplified because not much is known by the public about the ingredients used to manufacture the vaccines.

Religious leaders have also been instrumental in indoctrinating their congregants against receiving COVID-19 vaccines. Given the influence the religious leaders wield over their followers, their negative sentiments towards the COVID-19 vaccine will sway their congregants' perception of it. In Nigeria, the government at one point had to censure some religious leaders who were preaching against the COVID-19 vaccine, highlighting that only professional health personnel were authorized to speak against the vaccine (Murwira, 2021). In a related incident, one prominent church leader released a 35-minute video denouncing the COVID-19 vaccine, indicating that those who used the vaccine would have long-term side effects and would ultimately die (Murwira, 2021). In South Africa, Dzinamarira (2021) and Mappingure (2021) documented the anti-vaccine sentiments expressed by some religious leaders who reported on various media platforms where they rallied their followers against accepting the vaccine. The influence of these religious leaders in shaping societal beliefs cannot be taken for granted.

Closely linked to religious beliefs are cultural beliefs, which also contribute to vaccine hesitancy (Pugliese-Garcia, 2018). Given the citizens' lack of trust in the COVID-19 vaccines, they have turned to cultural practices to deal with the COVID-19 pandemic. One common cultural practice that has withstood the test of time is steaming. Though not backed by scientific evidence, most Africans have come to accept that steaming can be used to prevent and treat COVID-19. In Nigeria, there has also been a widely accepted belief that some herbs and traditional remedies can keep COVID away.

Government and Staff attitude towards the COVID-19 vaccine

The attitude of the government and critical government employees towards the COVID-19 vaccines significantly influences the citizens' beliefs towards the vaccine. One classical case is the halting of the rollout of the AstraZeneca/ Oxford vaccine at the early rollout stages in South Africa due to concerns over the vaccine's efficacy (Fihlani, 2021). The rollout was halted in

February after the release of results that showed the vaccine had low efficacy against the 501Y.V2 variant, which is common in South Africa (Dzinamarira, 2021; Heywood, 2021). Whilst the government may have been taking a cautionary approach to COVID-19 vaccination, the halt in the vaccine rollout further diminished "public trust in COVID-19 vaccinations, as an impression was generated that vaccines may not be effective after all" (Dzinamatira, 2021). In Zimbabwe, the onset of the vaccine rollout was characterized by negative sentiments from some government officials and opposition political leaders.

In Nigeria, there are media reports that thousands of nurses and other health workers in public hospitals reportedly refuse to be vaccinated against the COVID-19 virus using the Sinopharm vaccine due to fears of side effects (Pindula News, 2021). This is primarily attributed to a lack of adequate information regarding the vaccine. Given the significant role that the health workers play in the whole vaccine rollout process, their hesitancy in taking the vaccine will send negative signals to ordinary citizens, who look up to the health workers for health-related choices. In an incident that received global media coverage in South Africa, the Chief Justice, who is also a devout Christian, prayed against what he termed "Satanic" COVID-19 vaccines. Given his stature as a top public servant, his sentiments had a bearing on South Africans and other African citizens' perceptions about the COVID-19 vaccines.

Methods

Study design and setting

The descriptive survey design was adopted. Ndiyo (2005) described it as extracting information from a target population through observations, questionnaires, or interviews and subjecting the data obtained to statistical analysis to conclude.

The research was conducted among the academic staff of Alex Ekwueme University, Ndufu-Alike (AE-FUNAI), Ebonyi State, Nigeria. The academic staff was chosen because they are believed to be highly educated and exposed, and as such, they are expected to be among the first people to embrace the COVID-19 vaccines. AE-FUNAI was selected because it is located in a rural setting, and Ebonyi State is one of the states in Nigeria that has been ravaged by several endemic diseases, such as Lassa Fever.

Participants

The study's population is the entire Academic Staff of Alex Ekwueme Federal University Ndufu-Alike, which, according to the record obtained from the office of the Registrar, is 688 and distributed among eleven faculties.

Taro Yamane formula was used to calculate a sample size

Formula:

$$n = \frac{N}{\dots}$$

$$1+N(e)^2$$

Where: n = the sample size
 N = the total population for the study
 e = the error margin
 1 = constant

Therefore;

$$n = \frac{688}{1+688 (0.05)^2}$$

$$n = \frac{688}{1+688 (0.0025)}$$

$$n = \frac{688}{1.7225}$$

∴ The sample size (n) = 399.4

Approximately sample size = 399

The simple Random Sampling method is adopted because it gives each unit in the population equal opportunity or the same probability of being selected in the sample. Samples resulting from the application of this procedure were said to be unbiased and are, therefore, representative of the population.

Instruments and techniques

The research instrument used in the study is a structured questionnaire on a 5-point Likert Scale of measurement. The instrument was validated by giving the draft questionnaire to experts in measurement studies. These professionals were requested to critically and logically examine the instrument's relevance to the issue at stake. Their suggestions and advice were taken, and the instrument was adjusted several times to achieve the necessary validity. The instrument's reliability can be estimated by examining the consistency of the responses between the two tests. To obtain its reliability, it was subjected to a trial study on 50 respondents selected from the academic staff of the College of Education, Ikwo. This pilot study yielded a test-retest reliability of .85. In the end, the instrument was adjusted in line with the focus and objectives of the study. The resultant data were analyzed using descriptive statistics. The formulated hypotheses were tested with Chi-square.

Results

Out of 399 copies of the questionnaire distributed, 380 copies were returned, representing 95.2%, while 19 copies were not returned, representing 4.8%. This shows that the instrument was effectively recovered.

Socio-Demographic Characteristics of Respondents

Table 1: Socio-demographic characteristics of the respondents

Variables	Categories	Frequency	Percentage
Sex	Male	210	55.2
	Female	170	44.8
Age	15-20 years	5	1.3
	21-25 years	80	21.1
	26-30 years	90	23.6
	31-35 years	85	22.4
	36-40 years	70	18.5
	40 years and above	50	13.1
Marital status	Single	20	5.2
	Married	345	90.7
	Divorced	3	0.7
	Widowed	10	2.6
	Separated	2	0.5
Educational Qualification	FSLC	1	0.2
	WAEC/SSCE/GCE/NECO/TCC	2	0.5
	HND/BA/BED/B.Sc	50	13.1
	MA/MSc/MED	100	26.3
	PhD	170	44.7
	Others	7	1.8
Religion/Denominations	Anglican/Orthodox	66	17.4
	Catholic	281	73.9
	Pentecostal	18	4.7
	Islam	10	2.6
	Traditional Religion	5	1.3

Source: Fieldwork 2023

N=380

Table 1 shows that 170(44.8%) of respondents were males, while 210(55.2%) were females. The table also shows that 5(1.3%) respondents were between the age bracket of 15-20 years; 80(21.1%) were between the age bracket of 21-25 years; 90(23.6%) were between the age bracket of 26-30 years; 85(22.4%) were between the age bracket of 31-35 years; 70(18.5%) were between the age bracket of 41-45 years while 50(26.4%) were between the age bracket of 46 and above. It was also found that 5.2% of the participants were single; 345(47.4%) were married; 3(0.7%) were divorced; 10(26%) were widowed, while 2(0.5%) were separated. In terms of educational status, 1(0.2%) participant had first school leaving certificate (FSLC); 2(0.5%) had WAEC/SSCE/GCE; 50(10.5%) were holders of HND/B.Sc./B.A./B.Ed.; 100(7.8%) participants had M.A./M.Sc./M.Ed.; 170(7.8%) respondents held Ph.D; while seven respondents, representing 1.8% were with other certificates.

People's belief about how safe COVID-19 vaccines are

Table 2: People believe that vaccines are safe

Statement Item	SA	A	UD	DA	SDA	Total Agreement
COVID-19 vaccines are not safe because it is a mark of the beast	0 (0%)	190 (50%)	35 (9.2%)	35 (9.2%)	120 (31.6%)	190 (50%)
COVID-19 vaccines reduce immune system	202 (53.1%)	113 (29.7%)	40 (10.3%)	5 (1.3%)	20 (5.2%)	315 (82.8%)
COVID-19 vaccines are safe because of NCDC advise	20 (5.2%)	20 (5.2%)	300 (78.9%)	20 (5.2%)	20 (5.2%)	40 (10.4%)
COVID-19 vaccines are not safe because I have not seen people taking them.	10 (2.6%)	290 (76.3%)	40 (10.5%)	20 (5.2%)	20 (5.2%)	300 (78.9%)
COVID-19 vaccines are not safe because of the adverse reports on social media.	150 (39.5%)	150 (39.5%)	0 (0%)	40 (10.5%)	40 (10.5%)	300 (78.9%)

Source: Fieldwork 2023**N=380**

Table 2 shows respondents' views on whether the COVID-19 vaccines are safe. Many respondents (190 or 50%) strongly agreed that vaccines are not safe because they are the mark of the beast. Most respondents (315 or 82.8%) believed vaccines reduce the human immune system. The table further shows that a few respondents (40 or 10.4%) believed the vaccines were safe because of NCDC advice. The majority of the respondents also believed that vaccines are not safe because they have not seen people taking them, while other respondents strongly agreed and agreed respectively that vaccines are unsafe because of the negative report on social media.

Table 3: Social factors preventing people from taking COVID-19 vaccines

Statement Item	SA	A	UD	DA	SDA	Total Agreement
My faith prevents me from taking the COVID-19 vaccines.	20 (5.2%)	300 (78.9%)	20 (5.2%)	20 (5.2%)	20 (5.2%)	320 (84.1%)
My parents encourage you not to take COVID-19 vaccines.	10 (2.6%)	290 (76.3%)	40 (10.5%)	20 (5.2%)	20 (5.2%)	300 (78.9%)
My friends have not taken the COVID-19 vaccines.	42 (11.1%)	290 (76.3%)	5 (1.3%)	20 (5.3%)	23 (6.1%)	332 (87.4%)
Discrimination from colleagues prevents me from taking COVID-19 vaccines.	150 (39.5%)	150 (39.5%)	0 (0%)	45 (11.8%)	35 (9.2%)	300 (78.9%)
Fear of associating with my family members if they are aware that I take	25 (6.6%)	312 (82.1%)	0 (0%)	19 (5%)	24 (6.3%)	337 (88.7%)

Source: Fieldwork 2023

N=380

From Table 3, most respondents believed that some social factors prevent people from taking COVID-19 vaccines. Most respondents (320 or 84.1%) believed their faith/religion prevented them from taking the COVID-19 vaccine. Again, the majority of the respondents (300 or 78.9%) were of the view that their parents discourage them from taking COVID-19 vaccines. In the same vein, many respondents (332 or 87.4%) believed their friends had not taken the COVID-19 vaccines, so they could not take them. It can also be seen that most respondents (300 or 78.9%) believed that discrimination from colleagues prevents them from taking COVID-19 vaccines. The result also shows that the majority of the respondents (337 or 88.7%) believed that fear of associating with family members if they are aware that they have taken the COVID-19 vaccine is a significant factor that stopped them from taking it.

Cultural factors preventing people from taking COVID-19 vaccines

Table 4: Cultural factors that prevented people from taking COVID-19 vaccines

Statement Item	SA	A	UD	DA	SDA	Total Agreement
Religious preaching on the COVID-19 vaccines prevents people from taking the vaccines.	66 (17.4%)	281 (73.9%)	18 (4.8%)	10 (2.6%)	5 (1.3%)	347 (91.3%)
Traditional herbs discourage people from taking COVID-19 vaccines.	160 (42.2%)	100 (26.4%)	20 (5.2%)	80 (21.1%)	20 (5.2%)	260 (68.6%)
Traditional beliefs prevent people from taking the COVID-19 vaccines.	19 (5%)	300 (78.9%)	0 (0%)	40 (10.6%)	21 (5.5%)	319 (83.9%)
Indigenous diets prevent people from taking COVID-19 vaccines.	5 (1.3%)	290 (76.3%)	0 (0)	80 (21.1%)	5 (1.3%)	295 (77.6%)

Source: Fieldwork 2023

N=380

From Table 4, most respondents agreed that cultural factors prevent people from taking the COVID-19 vaccine. Based on the analysis, many respondents (347 or 91.3%) believed that religious preaching against COVID-19 prevents them from taking the vaccines. The result also revealed that most respondents (260 or 68.6%) believed that using traditional herbs discourages them from taking COVID-19 vaccines. From the table, it can be seen that 319(83.9%) of the participants believe that traditional beliefs prevent them from taking the COVID-19 vaccines. The result also indicates that most participants (295 or 77.6%) agreed that indigenous diets help prevent diseases and that taking COVID-19 vaccines becomes unnecessary.

Implications associated with resistance to taking COVID-19 vaccinations among the staff of AE-FUNAI

Table 5: Implications of refusing to take COVID-19 vaccines

Statement Item	SA	A	UD	DA	SDA	Total Agreement
The pandemic will spread further	170 (44.7%)	181 (47.6%)	0 (0%)	9 (2.4%)	20 (5.3%)	351 (92.3%)
The pandemic will lead to more deaths.	0 (0%)	190 (50%)	35 (9.2%)	35 (9.2%)	120 (31.6%)	190 (50%)
Resistance to taking COVID-19 vaccinations will stretch hospitals beyond their capacity.	202 (53.2%)	113 (29.7%)	40 (10.5%)	5 (1.3%)	20 (5.3%)	315 (82.9%)
Workforce production will be highly reduced due to resistance to taking COVID-19 vaccinations.	20 (5.3%)	20 (5.3%)	300 (78.9%)	20 (5.3%)	20 (5.3%)	40 (10.4%)

Source: Fieldwork 2023

N=380

Table 8 shows that almost all the respondents strongly agreed that profound implications are associated with resistance to COVID-19 vaccinations. It was also discovered that the majority of the respondents (351 or 92.3%) were of the view that the pandemic will spread further if people continue to resist taking vaccines. The result also shows that most respondents (315 or 82.9%) believed resistance to COVID-19 vaccinations would stretch hospitals beyond their capacity. However, only 190(50%) of the participants agreed that not taking COVID-19 could lead to more deaths among humans. On the issue of whether resistance to COVID-19 vaccines could lead to a reduction in workforce production, the majority of the respondents (300 or 78.9%) are undecided. In other words, the participants were not sure whether the refusal of people to take COVID-19 vaccines would lead to workforce reduction within society.

Test of Hypotheses

Rule

$$X^2_{cal} = \sum \frac{(O - E)^2}{E}$$

Where: O = the observed frequency of responses

E = the expected frequency of responses

If $X^2_{cal} > X^2_{tab}$, we accept the alternative hypothesis;

If $X^2_{cal} < X^2_{tab}$, we reject the alternative hypothesis.

Hypothesis One: There is no significant relationship between age of the people and resistance to taking COVID-19 vaccine

A demography table on educational qualification will be used to analyze the hypothesis

The X^2 calculation can be made

Options	O	E	O - E	(O-E) ²	$\frac{(O-E)^2}{E}$
15-20	5	63.4	-58.4	3410.56	53.7
21-25	80	63.4	16.6	275.56	4.3
26-30	90	63.4	26.6	707.56	11.1
31-35	85	63.4	21.6	466.56	7.3
36-40	70	63.4	6.6	43.56	0.6
41 and above	50	63.4	-13.4	179.56	2.8
Total	380				69.8

$$X^2_{cal} = 69.8$$

$$\text{Degree of freedom } n - 1$$

$$= 6-1$$

$$= 5$$

Level of significance = 5% or 0.05 Therefore, X^2_{tab} , with degree of freedom at 5% level of significance = 25.05

From the values calculated above, we observe that:

$$X^2_{cal} = 69.8$$

$$X^2_{tab} = 25.05$$

This means that $X^2_{cal} > X^2_{tab}$. Therefore, we accept the alternative hypothesis that there is a significant relationship between people's age and resistance to taking the COVID-19 vaccine.

Hypothesis Two: There is no significant relationship between educational level and resistance to taking the COVID-19 vaccine.

The X^2 calculation

Options	O	E	O - E	(O-E) ²	$\frac{(O-E)^2}{E}$
FSLC	1	63.4	-62.4	3893.76	61.4
WAEC/SSCE/GCE/NECO/TCC	2	63.4	-61.4	3769.96	59.4
HND/BA/BED/B.SC	50	63.4	-13.4	179.56	2.8
MA/MSC/MED	100	63.4	36.6	1339.56	21.1
PHD	170	63.4	106.6	11363.56	179.2
OTHERS	7	63.4	-56.4	3180.96	50.1
Total	380				374

$$X^2_{cal} = 374.$$

$$\text{Degree of freedom } n - 1$$

$$= 6-1$$

$$= 5$$

Level of significance = 5% or 0.05 Therefore, X^2_{tab} , with degree of freedom at 5% level of significance = 25.05

From the values calculated above, we observe that:

$$X^2_{cal} = 373$$

$$X^2_{tab}, 25.05$$

This means that $X^2_{cal} > X^2_{tab}$. Therefore, we accept the alternative hypothesis that there is a significant relationship between people's age and resistance to taking the COVID-19 vaccine.

Hypothesis Three: No significant relationship exists between marital status and resistance to taking COVID-19 vaccine.

The X^2 calculation

Options	O	E	O - E	(O-E) ²	$\frac{(O-E)^2}{E}$
Single	20	63.4	-43.4	1883.56	29.7
Married	345	63.4	281.6	79298.56	1250.7
Divorced	3	63.4	-60.4	3648.16	57.5
Widowed	10	63.4	-53.4	2851.56	44.9
Separated	2	63.4	-61.4	3769.96	59.4
Total	380				1442.2

$X^2_{cal} = 1442.2$

Degree of freedom $n - 1$
 $= 5 - 1$
 $= 4$

Level of significance = 5% or 0.05 Therefore, X^2_{tab} , with degree of freedom at 5% level of significance = 25.05

From the values calculated above, we observe that:

$X^2_{cal} = 1442.2$

$X^2_{tab}, 25.05$

This means that $X^2_{cal} > X^2_{tab}$, we accept the alternative hypothesis that there is a significant relationship between marital status and resistance to taking the COVID-19 vaccine.

Hypothesis Six

Ho₆: There is no significant relationship between religion and resistance to taking the COVID-19 vaccine.

The X^2 calculation can be made

Options	O	E	O - E	(O-E) ²	$\frac{(O-E)^2}{E}$
Anglican/Orthodox	66	76	-10	100	1.3
Catholic	281	76	205	42025	552.9
Pentecostal	18	76	-58	3364	44.2
Islam	10	76	-66	4356	57.3
Traditional Religion	5	76	-71	5041	66.3
Total	380				722

$X^2_{cal} = 722$

Degree of freedom $n - 1$
 $= 5 - 1$
 $= 4$

Level of significance = 5% or 0.05 Therefore, X^2_{tab} , with degree of freedom at 5% level of significance = 25.05

From the values calculated above, we observe that:

$X^2_{cal} = 722$

X^2_{tab} , 25.05

This means that $X^2_{cal} > X^2_{tab}$. We, therefore, accept the alternative hypothesis that there is a significant relationship between religion and resistance to taking the COVID-19 vaccine.

Discussion of Findings

The results revealed the extent to which people believe that vaccines are safe. According to the participants, the vaccines are unsafe because it is a mark of the beast, and they reduce the immune system. The people also believed that COVID-19 vaccines were not safe because of the adverse reports about them on social media. This aligns with the earlier submission of Gabarron and Oyeyemi (2021) when they argued that vaccine hesitancy based on misinformation seems to be a worldwide phenomenon regardless of the uneven distribution of COVID-19 vaccines. Social media is crucial in disseminating correct information and misinformation about infectious diseases and vaccines. This influence by social media has also been reported by Wilson and Wiysonge (2020) when they showed that there was a significant relationship between social media use and vaccine hesitancy in a global cross-national analysis of geographically coded tweets and vaccination rates from 166 countries.

The results show that social factors prevent people from taking COVID-19 vaccines. The data analysis revealed that the people's faith, parents and friends discourage them from taking the COVID-19 vaccines. Other factors revealed include discrimination from colleagues and fear of associating with their family members if they know they take the COVID-19 vaccines. This result aligns with the view of Ani (2020) when he posited that people's attitude towards people who take the vaccines makes many people avoid taking the vaccines. Sometimes, people feel that only those with COVID-19 disease go for vaccination. As a result, the people who take the vaccines are treated as outcasts, with the possibility of their families also being rejected by the community. Discrimination and stigmatization exhibited by the community in Nigeria can create a non-supportive environment, which adds to the burden on the healthcare providers and the administrators and drives negative behaviours such as failure to seek health, ultimately leading to more severe complications, increased number of cases, and deaths due to COVID-19.

The study also revealed that cultural factors prevent people from taking COVID-19 vaccines. These cultural factors include religious preaching against COVID-19 vaccines, the use of traditional herbs for COVID-19 treatment, traditional beliefs about COVID-19 and the use of indigenous diets to manage COVID-19. These results support the views of Masumbuko (2019), Mukungwa (2015) and the Ministry of Health and Child Care (2016) that cultural factors such as religion and beliefs have a significant influence on vaccine acceptance. Some religious organizations do not subscribe to modern medicine in general, and vaccinations in particular, as these medicines are perceived as dangerous and causing diseases and deaths (Ministry of Health and Child Care, 2016). The negative perceptions of vaccines are embedded in the religious beliefs that associate their use with a lack of trust in God.

The study discovered implications associated with resistance to taking COVID-19 vaccinations. In other words, the consequences of not accepting/taking COVID-19 vaccines are further spread of the pandemic, more deaths of humans, stretching hospitals beyond their capacity and a decline in workforce production. The result agreed with the view of Lazarus and Sallam (2021) that there had been concerns about people rejecting COVID-19 vaccines and that if this is not checked, the pandemic would spread further, and humans should expect a harvest of deaths.

Conclusion

The results have shown that COVID-19 is a deadly disease that requires essential preventive measures, such as vaccines. Many vaccines exist to prevent the spread of the pandemic. However, for various sociocultural reasons, many people, including the highly educated ones, avoid COVID-19 vaccines. The implication is that it will be difficult to curtail the spread of the disease and its devastating consequences, which include death.

As a result, government intervention through various mass media is necessary for public acceptance of COVID-19 vaccines among staff of public institutions such as Alex Ekwueme Federal University Ndufu Alike, Ebonyi State Nigeria. The mistrust, fake news and misinformation on the COVID-19 vaccine administration have given room for public rejection of the COVID-19 vaccine. In other words, governments need to listen to people's concerns and explain why they do not trust the approved vaccines against COVID-19 and cater to their need for reassurance. The government should look inward for indigenous remedies and options that match the sociocultural dynamics of the country (Njemanze et al., 2023). While vaccine hesitancy is characterised by mistrust and misinformation, this is unrelated to their competence or technical knowledge of the subject but rather to perceptions that public health practitioners or the government do not act in good faith.

For this reason, one-way communication about the benefits of vaccination will not suffice in convincing people to modify their views. Instead, allowing vaccine-resistant public members to express their views, expressing empathy, and dealing with resistance without antagonism are effective ways of promoting behavioural change. Community and organisational leaders and trade union leaders in tertiary institutions should be involved in bringing about the expected behavioural changes. These can be achieved by bringing in doctors and nurses to demonstrate how the vaccines work. Similarly, the Nigerian Center for Disease Control (NCDC), medical health workers and the National Primary Health Care Development Agency must leverage social media and traditional media to propagate vaccine campaigns to eliminate the misinformation on COVID-19 vaccine intake.

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