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Vaccine Hesitancy: A Ticking Time Bomb

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Abstract

The rise in cases of vaccine hesitancy is becoming a global threat to tackling emerging public health challenge such as pandemics. This study aims to investigate the prevalence and underlying factors fuelling vaccine hesitancy within Nigerian population. The study focuses on young adults of school age below 25 years due to factors including critical developmental stage of human beings, familiarity with technology and propensity to explore and make independent decisions. The study adopted a cross-sectional survey design and utilized qualitative data obtained from responses of individuals for analysis. The findings revealed that, despite the general acknowledgement of the efficiency of previous vaccines, a significant proportion of the respondent were not vaccinated against COVID-19. Factors including lack of trust in government and scientific institutions, widespread misinformation about the vaccine and impact of religion and traditional beliefs were identified as the primary drivers of hesitancy. A striking observation is that the challenge public health institutions may face in tackling future pandemics will be not just combating the pathogens but also convincing a great section of the population to accept the vaccine. In conclusion, this study suggests that vaccine hesitancy, a biological challenge that is gradually changing to a societal and behavioural challenge must be carefully addressed before the next pandemic strikes.

Keywords: Vaccine hesitancy, COVID-19, pandemic, vaccination, young adult, misinformation

Introduction

1.1. Vaccination: History and Public Health Importance

The history of man has been greatly shaped by the ongoing battle against infectious diseases, with pandemics such as the Black Death and the 1918 Spanish Influenza serving as stark reminders of microbial threats.[1] While pharmaceutical interventions have provided therapeutic relief, the advent of vaccination marked a pivotal shift in public health strategy by prioritising disease prevention over treatment.[2] Since their inception, vaccines have played a critical role in reducing morbidity and mortality, offering robust protection against illnesses such as Ebola, SARS, COVID-19, and influenza.[3]

The origins of modern vaccination are rooted in the pioneering work of Dr. Edward Jenner in 1796, who utilised cowpox to confer immunity against smallpox. This foundational breakthrough catalysed further advancements, including Louis Pasteur's rabies vaccine in 1885, Emil von Behring's tetanus antitoxin in 1890, and the Bacillus Calmette-Guérin (BCG) vaccine for tuberculosis in 1922.[2] These innovations demonstrated vaccines' capacity to provide long-term, and in some cases lifelong immunity, distinguishing them from therapeutic drugs aimed primarily at symptom relief.[4]

Unexpectedly, the very success of vaccination programs has led to a diminished perception of their necessity.[5] As once-prevalent diseases such as measles and polio have become rare, younger generations, lacking direct experience with their consequences, may underestimate the importance of immunisation. This temporal and experiential distance fosters complacency and increases vulnerability to misinformation, thereby contributing to the contemporary rise in vaccine hesitancy.

1.2. Global Proliferation of Vaccine Hesitancy in the Post-COVID-19 Era

The COVID-19 pandemic, which originated in Wuhan, China, in late 2019, precipitated an unprecedented global public health crisis.[6] Simultaneously, it triggered a surge in vaccine hesitancy, now widely regarded as a significant barrier to effective pandemic response.[7] Indeed, the foremost challenge in future health emergencies may not lie in combating the pathogen itself, but rather in overcoming public resistance to the preventive tools designed to mitigate its impact.[8] Several interrelated factors have contributed to this erosion of trust. The rapid development and emergency authorization of COVID-19 vaccines, although

necessary, were perceived by some as indicative of insufficient testing and oversight.[9] Reports of breakthrough infections and reinfections among vaccinated individuals further undermined public confidence in vaccine efficacy.[10] Additionally, revisions to the definitional parameters of "vaccine" by reputable health organisations were interpreted by some as strategic efforts to justify rushed production, thereby intensifying public scepticism.[11]

This climate has fostered a self-reinforcing cycle of distrust. Initial scepticism toward scientific and governmental institutions creates fertile ground for misinformation and conspiracy theories.[12] Perceived inconsistencies in communication, coupled with reports of vaccine limitations, amplify public doubt, thereby weakening compliance with public health directives and impeding immunisation campaigns.[13]

1.3. Vaccine Hesitancy: African Perspective

In the African context, particularly in Nigeria, vaccine hesitancy is influenced by a complex intersection of traditional beliefs, sociocultural dynamics, and political distrust.[14] A widely held belief in intrinsic immunity, as reflected in adages like "Disease no dey kill Africa," perpetuates the reliance on traditional remedies over biomedical interventions.[15] Consequently, vaccines are frequently perceived as unnecessary, foreign, or even harmful intrusions. The role of religious and community leaders is also significant.[16] These figures command substantial authority and are often pivotal in shaping public health behaviours.[17] In some cases, they propagate doubts regarding vaccine safety or link immunisation efforts to unfounded concerns such as infertility or Western conspiracies, thereby fuelling resistance.

Governance-related issues further exacerbate the situation. In Nigeria, longstanding mistrust of government institutions, driven by perceptions of corruption, mismanagement of pandemic resources, and inconsistent communication, has undermined public confidence. The lack of transparency during the pandemic, particularly the suppression of infection and mortality data, intensified public scepticism.[18] This context creates a detrimental feedback loop: ineffective governance leads to diminished public trust, which, in turn, casts suspicion on vaccination initiatives. When vaccination campaigns are perceived as coercive or as profit-driven schemes by corrupt officials, voluntary uptake declines sharply.[19] The subsequent use of mandates or enforcement mechanisms further alienates the population, thereby reinforcing vaccine hesitancy and undermining public health goals.

1.4. Rationale and Study Objectives

The need to understand and effectively address the issue of vaccine hesitancy, which threatens global health security especially in periods of pandemic or deadly infectious diseases forms the rationale of this study. Knowledge gaps exist in the drivers of vaccine across different demographic groups in within the Nigerian population. This study aims to identify and characterize the key factors contributing to vaccine hesitancy among the Nigerian population. Particular attention will be placed on conducting a comparative analysis of perceptions and behaviours associated with vaccine hesitancy between individuals aged 18-24, referred to as young adults in this study and individuals aged 25 and above referred to as older adults. This study approach has the potential of generating insights that can inform the development of directed and culturally sensitive public health interventions to improve the rate of vaccine acceptance in Nigeria.

Methods

2.1. Study Design and Participants

A cross-sectional survey design was used to obtain data on vaccine hesitancy and related perceptions from a section of Nigerian population. A total of 227 random participants who filled the survey forms online were enrolled. The participants were drawn from various demographic backgrounds and information including the gender, age, educational attainment, occupation and their perception about vaccines were collected to facilitate a comprehensive analysis across different segments of the population.

Ethical consideration:

Informed consent was sought from participants before enrolment in the study. The study purpose was clearly explained to the participants and their right to withdraw from the study without any repercussions was also clearly explained. Data anonymity and confidentiality was maintained throughout the study.

2.2. Data Source and Collection:

The primary data used for this study was derived from responses obtained from Google Forms. The link to the Google form was sent to various social media, and individual responses were collated thereafter. Information required from the survey included demographic characteristics, fundamental beliefs regarding vaccine efficacy, reported timing of when they first heard about vaccine hesitancy, and when they began developing hesitant attitudes. In addition, the COVID-19 vaccination status, reasons for receiving or not receiving vaccination, Individuals' perceptions regarding the likelihood of future pandemics and participants' views on specific factors influencing hesitancy were all collected.

Validation of survey instruments:

The survey instrument was designed to collect data on various factors related to vaccine hesitancy in Nigeria. The study design and questions covering aspects including demographic characteristics, beliefs about vaccine hesitancy, reasons for non-vaccination and perception about future pandemics were developed based on thorough information obtained from previous literature and informed decisions of experts in the field of public health.

2.3. Data Analysis

Descriptive statistics, specifically frequencies and percentages, were used to summarise all responses obtained from the survey data. To rigorously address the study's primary objective of comparing vaccine hesitancy patterns between young adults and older adults, comprehensive cross-tabulations were performed. This involved analysing responses to key questions on vaccine beliefs, the timing of hesitancy development, COVID-19 vaccination status, and the stated reasons for non-vaccination, against the defined age groups (18-24 years old versus 25 years old and above) and occupational categories (Students versus Others).

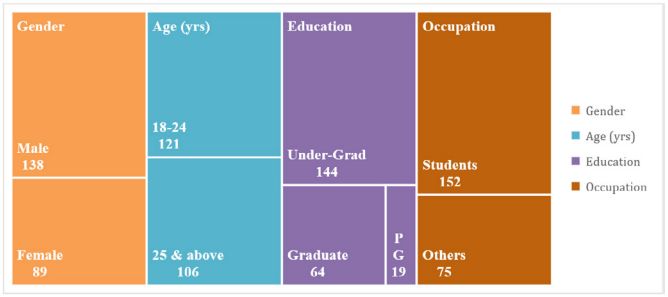
Results

3.1. Participant Demographics

A total of 227 participants were enrolled in the study. The demographic characteristics of the study population are presented in Table 1. Males constituted a significant percentage of the study participants (60.8%) compared to females (39.2%). The

age distribution showed that 53.3% were within 18-24 age group, while 46.7% were 25 years old and above. In terms of educational qualifications, undergraduates were the largest group (63.4%), followed by graduates (28.2%), and post-graduates (8.4%). In regard to occupation, the number of students was significantly higher (66.9%) compared to other occupations, including academics, civil servants, medical practitioners and military personnel combined (33.0%).

Table 1: Participant Demographics



PG: Post-graduate

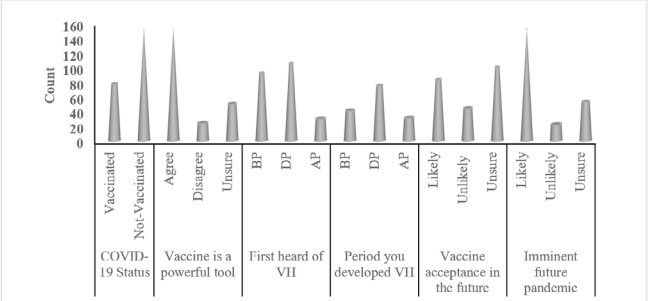
3.2. Vaccine Perception and Hesitancy Status

The picture of individuals perception about the vaccine and actual vaccination status of the participants is presented in Table 2. Of the 227 participants, 67.4% agreed on the choice of vaccines as the best tools for fighting pandemics. However, despite acknowledging the power of vaccines in the fight against rapidly spreading diseases such as COVID-19, a significant proportion of the participants (66.1%) did not receive the COVID-19 vaccine.

Regarding the time the participants first learn of the term vaccine hesitancy, 46.3% of the participants first heard of vaccine hesitancy during the Pandemic, 40.5% before the Pandemic and 13.2% after the Pandemic. Similarly, out of the 147 participants who reported being hesitant to vaccine intake, 51.0% started developing hesitancy during the Pandemic, 27.9 % before the Pandemic and 21.1% after the Pandemic. This data indicates that while the era of the COVID-19 pandemic came with the urgent need for vaccines, it simultaneously acted as a significant catalyst for the development and spread of vaccine hesitancy among a substantial portion of the population.

Concerning the likelihood of participants receiving any vaccine in the future, a large segment of the population (44.1%) was unsure, 36.6% were likely to receive the vaccine, while 19.4% reported that they were unlikely to receive vaccination. Despite these varied opinions, a significant proportion of the participants (66.9%) believe there will be more pandemics in the future, 9.7% have doubts on the possibility of future pandemics, while 23.3% were not sure.

Table 2: Vaccine Perception and Hesitancy Status



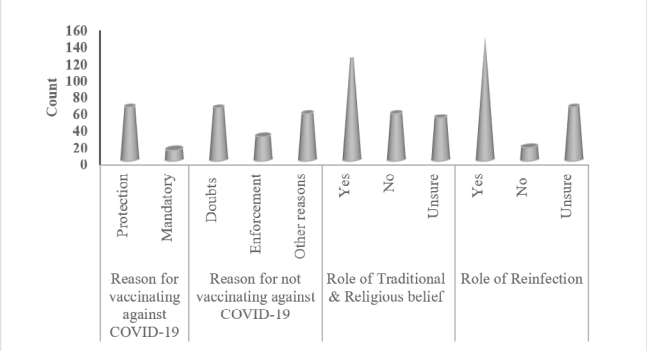
VH: Vaccine hesitancy, BP: Before Pandemic. DP: During pandemic, AP: After pandemic

3.3. Reasons for Hesitancy and Non-Vaccination

The survey identified specific reasons for non-vaccination and factors that contributed to COVID-19 vaccine hesitancy among the participants (Table 3). Among the 150 participants who reported not being vaccinated against COVID-19, 42.7% cited doubts about the effectiveness of the vaccine as their reason for hesitancy. Other significant reasons cited by participants for non-vaccination included enforcement of vaccine intake by the Government (20.0%) and other reasons, including conditions for accessing public spaces, the workplace and conditions for travelling out of the country (37.3%).

On the perceived role of traditional & religious beliefs in the development of hesitancy, 52.9% of the participants acknowledge its role while 24.7% did not and 22.5% were not sure. Importantly, 64.7% of the respondents, believed that reports of reinfection among vaccinated individuals increased their hesitancy, while 7.0% disagreed, and 28.2% were not sure. For those who received vaccination, 83.1% primarily received the vaccine for protection against Infection, while 16.9% received it because it was made mandatory by the government to access workplaces, worship centres and conditions for travelling out of the country.

Table 3: Reasons for COVID-19 Non-Vaccination and Perceived Contributions to Hesitancy



3.4. Comparative Analysis of Key Hesitancy Factors by Age

The comparative analysis of participants responses by age group (Table 4) reveals several interesting patterns. While both age groups showed a high rate of non-vaccination rate, respondents within the age of 18-24 years had a slightly higher proportion (70.5%) of unvaccinated individuals compared to those of 25 years & above (61.0%). Conversely, older adults (39.0%) were slightly more likely to be vaccinated than younger adults (29.5%). In terms of reasons for non-vaccination, both groups agreed that doubts about the effectiveness of the vaccine was primarily responsible for their hesitancy (31.1% vs. 24.8%), followed by vaccine enforcement as another factor. In both cases, the proportion was slightly higher in the younger cohort.

The general belief in vaccine efficacy was slightly higher among older adults (70.5% agree) than among younger adults (64.8% agree). The timing of hesitancy development was largely similar across both groups, with the timing during the Pandemic being the most significant. Both age groups also showed similar levels of response about the contribution of traditional & religious beliefs to hesitancy and reports of reinfection among the vaccinated increased hesitancy across both groups.

Table 4: Comparative Analysis of Key Hesitancy Factors by Age Group

Factor	Response	18-24 Yrs (%)	25 Yrs & above (%)	Total	χ^2	P-value
COVID-19 Vaccination Status	Vaccinated	36 (29.5)	41 (39.0)	77(33.9)	17.87	0.01
	Not-Vaccinated	86 (70.5)	64 (61.0)	150 (66.1)		
Reason for not vaccination	Doubt about vaccine effectiveness	38 (44.1)	26 (40.6)	63 (42.6)	20.12	0.01
	Government Enforcement	17 (19.8)	13 (20.3)	29 (19.6)		
	Other reasons	31 (36.1)	25 (39.1)	56 (37.8)		
Vaccine is a Powerful strategy against infections	Agree	79 (64.8)	74 (70.5)	153 (67.4)	1.02	0.60
	Disagree	14 (11.5)	10 (9.5)	24 (10.6)		
	Unsure	29 (23.7)	21 (20.0)	50 (22.0)		
Chances of receiving any vaccine in the Future	Likely	42 (34.5)	41 (39.0)	83 (36.6)	5.72	0.06
	Unlikely	27 (22.1)	17 (16.2)	44 (19.4)		
	Unsure	53 (43.4)	47 (44.8)	100 (44.0)		
When did you start developing Hesitancy	Before the Pandemic	19 (22.6)	22 (34.9)	41 (27.9)	5.31	0.15
	During the Pandemic	45 (53.6)	30 (47.6)	75 (51.0)		
	After the Pandemic	20 (23.8)	11 (17.5)	31 (21.1)		
Traditional & Religious belief contributed to hesitancy	Yes	61 (50.4)	59 (55.7)	120 (52.9)	0.65	0.72
	No	31 (25.6)	25 (23.6)	56 (24.7)		
	Not sure	29 (24.0)	22 (20.8)	51 (22.5)		
Reports of reinfection among vaccinated increased hesitancy	Yes	81 (66.9)	66 (62.3)	147 (64.8)	0.86	0.65
	No	7 (5.8)	9 (8.5)	16 (7.0)		
	Not sure	33 (27.3)	31 (29.2)	64 (28.2)		

3.5. Comparative Analysis of Key Hesitancy Factors by Occupation

The occupational comparison (Table 5) largely mirrors the age-based trends, given the high proportion of students in the younger age group. Students exhibited a higher rate of non-vaccination (71.1%) compared to other occupations (56.0%). Conversely, individuals with other type of occupations were more likely to be vaccinated (44.0%) than students (28.9%). While doubts about the effectiveness of the vaccine was the primary reason for non-vaccination across both groups, the number of responses from individuals unlikely to take vaccine in the future was notably higher among students (23.7%) than among other occupations (10.7%). Interestingly, the number of respondents not sure of taking vaccines in the future was higher among other occupations (50.7%) compared to students (40.8%). The influence of traditional & religious beliefs and reports of reinfection among individuals previously vaccinated was perceived similarly across both occupational groups.

Table 5: Comparative Analysis of Key Hesitancy Factors by Occupation

Factor	Response	Students (%)	Others (%)	Total (%)	χ^2	P-value
COVID-19 vaccination Status	Vaccinated	42 (27.6%)	35 (46.7%)	77 (33.9)	8.12	0.04
	Not-Vaccinated	110 (72.4%)	40 (53.3%)	150 (66.1)		
Reason for not vaccination	Doubt about effectiveness of vaccination	47 (43.2)	16 (41.0)	63 (42.6))	8.95	0.03
	Government Enforcement	20 (18.3)	9 (23.1)	29 (19.6)		
	Other reasons	42 (38.5)	14 (35.9)	56 (37.8)		
Vaccine is a Powerful strategy against infections	Agree	99 (65.1%)	54 (72.0%)	153 (67.4)	1.99	0.37
	Disagree	19 (12.5%)	5 (6.7)	24 (10.6)		
	Unsure	34 (22.4%)	16 (21.3)	50 (22.0)		
Chances of receiving any vaccine in the Future	Likely	41 (27.0%)	42 (56.0)	83 (36.6)	18.37	0.01
	Unlikely	33 (21.7%)	11 (14.7)	44 (19.4)		
	Unsure	78 (51.3%)	22 (29.3)	100 (44.1)		

When did you start developing Hesitancy	Before the Pandemic	24 (23.5)	17 (37.8)	41 (27.9)	4.43	0.22
	During the Pandemic	54 (52.9)	21 (46.7)	75 (51.0)		
	After the Pandemic	24 (23.5)	7 (15.6)	31 (21.1)		
Traditional & Religious belief contributed to hesitancy	Yes	73 (48.0%)	47 (62.7%)	120 (52.9)	4.78	0.09
	No	43 (28.3%)	13 (17.3%)	56 (24.7)		
	Not sure	36 (23.7%)	15 (20.0%)	51 (22.5)		
Reports of reinfection among vaccinated increased hesitancy	Yes	94 (61.8)	53 (70.7%)	147 (64.8)	1.77	0.41
	No	12 (7.9)	4 (5.3%)	16 (7.0)		
	Not sure	46 (30.3)	18 (24.0%)	64 (28.2)		

Discussion

Trend in vaccine Hesitancy

The survey results suggest a significant disconnect between a general positive belief in vaccine efficacy and actual vaccination behaviour. A substantial proportion of participants (67.4%) acknowledged that vaccines were a powerful weapon against infections, yet a significant proportion (66.1%) reported that they did not receive the COVID-19 vaccine. This mentality (behaviour) suggests that vaccine hesitancy in Nigeria is not fundamentally driven by a lack of belief in the science of vaccination, but by other powerful factors, including lack of trust in government and international institutions[20,21], exposure to misinformation[22,23], perceived personal risk[24,25] and socio-cultural influences[26] which is preventing individuals from translating their general positive belief into actual vaccination behaviour.

The timing of the development of hesitancy gives more clarity on the dynamics of vaccine hesitancy. A significant portion of participants first heard of (46.3%) and developed (33.5%) hesitancy during the Pandemic. This result suggests that, although the COVID-19 pandemic era was pressured with the urgent global need for vaccines, it simultaneously acted as a profound catalyst for the development and spread of vaccine scepticism among a substantial portion of the population.[27,28] This suggests that the unique circumstances surrounding the pandemic including the rapid pace of vaccine development,[29] the global proliferation of misinformation,[30] governmental responses and perceived inconsistencies directly contributed to the surge in scepticism, rather than a pre-conceived phenomenon. This finding calls for a critical and proactive management of information and trust-building strategies for future public health crises.

Regarding the probability of vaccine intake in the future, a substantial proportion (44.1%) who are not sure of taking the vaccine in the future, represents a potentially segment of the population that could be persuaded. This group of individuals, unlike those who are certain (unlikely) to be vaccinated in the future, lacks a definitive stance, probably due to factors including insufficient or conflicting information and unresolved concerns stemming from issues such as trust deficit, reinfection reports, or misinformation.[28] This implies that public health campaigns should not solely focus on convincing those outright resistant but must also prioritise providing clear, consistent, and trustworthy information to individuals who have not decided on future vaccine acceptance, as their shift towards acceptance could significantly impact overall vaccination rates and herd immunity goals.[29-31]

Key Drivers of Vaccine Hesitancy in Nigeria

Trust Deficit and Poor Governance

The level of mistrust in government, as echoed in this study, directly translates into vaccine scepticism. This distrust is driven by bad governance, with allegations of government officials hiking infection numbers for personal gain, hoarding of COVID-19 palliatives and implementation of policies that served selfish interest rather than public interest.[32,33] The lack of transparency from Nigerian authorities, particularly their choice to hide sensitive information about the infection and mortality rate as done in other regions, further bred suspicion among the populace.[34,35] The forced implementation of vaccine intake without adequate education of the public and poor transparent communication system are other factors that further eroded public trust.[36,37] This mandate led to resistance and the subsequent invention of evasion tactics such as obtaining vaccine passports without actual vaccination.[38,39]

These observations highlight a deeper sense of mistrust among the populace about the potential of politicisation and weaponisation of public health interventions.[40,41] When activities of such corrupt government officials become public knowledge and unaddressed, they lead to widespread public distrust, which culminates in the public perception of well-intentioned initiatives such as vaccination as a ploy by the government officials to enrich themselves. This issue if left unaddressed, could transform from a health issue into a political issue, where the populace rejects medical assistance not because of the vaccine per se but due to mistrust of their government.21 This suggests that addressing vaccine hesitancy in such contexts requires fundamental reforms in governance and a rebuilding of the social contract.

Perception of Rush in Vaccine Development and Reports of Reinfection

The widespread perception among individuals on the manner in which the development of the COVID-19 vaccine was rushed significantly contributed to the high number of doubters. The urgency of a cure for a pandemic that was taking hundreds of thousands of lives daily across different nations pressured institutions to quickly produce vaccines, many felt was ineffective.[29] The reports of reinfection among vaccinated individuals as evident in this study (64.7%) is also a factor that increased scepticism among the population.[28,42] These observations highlight a critical failure in the duty of relevant authorities to adequately explain what vaccine efficacy is, especially as it relates to its ability to prevent infection. This communication gap has created a room for doubt that has turned initially non-hesitant individuals into sceptics. This trust deficit was further heightened among others who felt that the manner the definition of vaccine was altered in

the website of reputable organizations around the period of the pandemic was intentionally carried out to cover the ineffectiveness of the COVID-19 vaccine.[43]

The perception of the public about scientific institutions manipulating the definition of vaccine to accommodate a hurriedly made product undermines the credibility of the scientific institutions and indicates an erosion of these institutions. This perception if not addressed, makes it significantly harder to convey any future public health guidance, due to existing challenge of distrust of authorities saddled with responsibility of enlightening the public about health and diseases. This is a more severe consequence than just hesitancy about a vaccine but a fundamental challenge to the societal role of scientific expertise.

Impact of Tradition, Religion and Self-Medication

The deep influence of traditional African beliefs and religious sentiments in Nigeria is also a critical factor affecting vaccine acceptance. The voices and opinions of powerful and respected religious and traditional leaders have a significant impact on community health decisions and sometimes discourage the intake of vaccines based on beliefs concerning sterility or a strong preference for local herbs and traditional remedies.[44]

In addition, the widespread practice of self-medication, particularly with the reports that effective local concoctions such as the combination of common antimalarial treatments with immune boosters cured or relieve the effect of COVID-19, played a significant role in the development of hesitancy, especially during the critical period when the delivery of the vaccine to Africa was delayed.[45,46] Individuals who experienced recovery with these self-administered treatments concluded they possessed some kind of natural resistance to the infection and therefore did not need any alternative drug in the form of a vaccine to survive the infection. The significantly low morbidity rate and mortality in Africa when compared to other continents like Europe, America and Asia further compounded the problem.[47]

The delay in vaccine delivery to Africa created a period of discovery for the already agitated population who chose to explore other options instead of waiting for the delivery of the vaccine, whose date of arrival they were not sure.[47] The discovery of substances perceived to be effective and the perception of natural resistance directly undermined the urgency and perceived necessity of the vaccine when it finally arrived. This situation transformed a logistical challenge into a deep behavioural barrier, where people did not see the need for vaccines.

Comparative Analysis of Young Adults with Older Adults

The comparative analysis, as presented in Tables 4 and 5, clearly distinguishes the patterns of vaccine hesitancy across different demographic groups. While the major reasons for hesitancy including distrust and concerns about reinfection, were spread across the groups, their specific manifestations and influences appear to vary. Younger adults and students exhibited slightly higher rates of non-vaccination attitude and a slightly greater inclination towards scepticism regarding future vaccine intake compared to older adults and those in other occupations.

These findings suggest the presence of divergent communication paths and trust architectures across generations. Younger adults and students seem to be disproportionately influenced by factors such as reports of reinfection commonly propagated via digital platforms or government enforcement of vaccine intake while older adults are more influenced by traditional and religious belief systems.[48,49] These observations indicate that public health communication strategies cannot be monolithic but encompassing all available media.

Therefore, a message carefully delivered through religious institutions or traditional community leaders targeted at older and more traditionally-oriented audiences will likely be ineffective for a younger, digitally-oriented audience who may require transparent science-backed explanations delivered via social media platforms or trusted online influencers.[50] These actions require a sophisticated, multi-channel approach that recognises and leverages these divergent communication pathways and trust architectures.

Limitations and Suggestions for Future Research

This study is limited by several factors including the inability of the cross-sectional study to precisely associate the identified factors to vaccine hesitancy. The study's reliance on responses obtained from survey data may introduce response bias where participants' answers are influenced by social desirability or inaccurate recall of past events. In addition, while the study provides valuable insights about the Nigerian population, generalisation of the findings to African nations or global population may be limited by the unique socio-political and cultural dynamics of other populations.

Based on the aforementioned limitations, the authors suggest that future studies should include longitudinal studies, to help track changes in vaccine hesitancy over time and be able to provide a response to specific interventions. Employing in-depth interviews or focus group discussions with participants could provide a deeper understanding of the major factors driving hesitancy among individuals. A much better approach should focus on intervention studies that would allow for rigorous testing of the effectiveness of the tailored communication and trust-building strategies across different demographic groups.

Conclusion

The key factors driving vaccine hesitancy such as poor government and cultural disconnect from modern medicine rather than just individual decisions need not be taken for granted. Addressing these challenges holistically instead of focusing on an isolated approach is key to tackling the imminent threat posed by future pandemics, especially among the young population who are an easy target for misinformation from online sources. Therefore, addressing the challenges associated with vaccine hesitancy among this young group of individuals is paramount to avert a major challenge that could put the health of the entire future generation at risk of life-threatening infections or death.

Conflict of Interest

The Authors declare there was no conflict of interest

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