

COVID-19 Awareness and Vaccine Acceptance Among Young Adults in Agbor

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Abstract

The coronavirus disease 2019 (COVID-19) has sparked significant debate globally. While the disease has caused a substantial loss of life, efforts to mitigate its impact, particularly through the development of vaccines, have intensified. Despite the widespread distribution of these vaccines, awareness and willingness to accept them remain significant challenges in many countries, including Nigeria. This study aims to assess the knowledge and awareness of COVID-19, as well as the willingness to accept the vaccine among young adults in Agbor, Delta State, Nigeria. The research used a descriptive, cross-sectional design with multistage sampling. A total of 184 consenting participants within the target age range completed the questionnaire. The data were analyzed using inferential statistics, using a chi-square test, and a significance level of $P < 0.05$. Of the 106 female and 78 male respondents, 78.3% of females reported being aware of COVID-19 and its vaccine, while 17% of females and 19.2% of males were unsure about its existence. Regarding vaccine acceptance, 85.8% of females and 85.9% of males expressed unwillingness to be vaccinated. The study shows that while most participants are aware of COVID-19 and the vaccine, they lack detailed knowledge about them, which contributes to their reluctance to accept the vaccine. These findings indicate the need for increased awareness campaigns, as the reluctance to accept the vaccine is not gender-specific.

Keywords: Awareness, Knowledge, Acceptance, COVID-19 vaccine, Nigeria, Delta state

Introduction

The novel coronavirus disease, COVID-19, initially identified as SARS-CoV-2, emerged in December 2019 in Wuhan, China, and continues to present a major public health crisis. This virus belongs to a broad family of RNA viruses that includes the Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV), all of which can cause illnesses ranging from mild cold-like symptoms to more serious conditions [1, 2]. Common symptoms of COVID-19

include fever, dry cough, fatigue, muscle aches, shortness of breath, and difficulty breathing [3, 4]. The World Health Organization (WHO) and other public health bodies regularly update the list of symptoms as new information becomes available. Recently, evidence suggests that infants, who were previously thought to be immune to severe forms of COVID-19, can develop a rare and serious inflammatory condition linked to the virus [5-7]. Cases of pediatric multi-system inflammatory syndrome (PMIS), which can lead to organ failure and, in some instances, death, have been observed in the United States and Europe [5]. The virus appears to trigger an excessive immune response, leading to widespread inflammation, which can cause symptoms such as rashes, swollen limbs, red eyes, abdominal pain, and others resembling Kawasaki disease, a rare condition that can result in heart damage and vascular dilation [5, 6]. Recent studies also indicate that COVID-19 can have

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significant effects on the cardiovascular system, causing conditions such as myocarditis, heart attacks, arrhythmias, and abnormal blood clotting [8].

In early 2020, the World Health Organization declared COVID-19 a global pandemic, and it was also classified as a Public Health Emergency of International Concern [9]. By February 2021, there were over 109 million confirmed cases and approximately 2.4 million deaths worldwide [10]. Since the onset of the pandemic in late 2019, COVID-19 has not only posed a major public health challenge but also caused severe economic disruptions globally [10, 11]. The disease can range from asymptomatic to mild respiratory issues, or it can lead to severe pneumonia, acute respiratory failure, and death [11]. Despite ongoing debates about the safety and efficacy of vaccines, as well as concerns about potential adverse effects like antibody-dependent enhancement (ADE) seen in some animal studies of coronavirus vaccines [12], the need for an effective vaccine remains urgent to help reduce both the mortality and morbidity associated with the virus [13]. Research and development efforts by academic institutions and private companies worldwide have led to significant advances, resulting in numerous vaccine candidates [14]. These vaccines are primarily based on DNA, mRNA platforms, viral vectors, and inactivated viruses [12]. However, despite the progress in vaccine development, there is still considerable uncertainty surrounding their distribution and acceptance.

The recent mRNA-based COVID-19 vaccines have faced skepticism due to the lack of prior experience with this technology. The rapid development and approval of the vaccines in less than a year likely contributed to their low acceptance, with many questioning their safety and efficacy. This skepticism has been further fueled by anti-vaccination movements, which have gained traction globally, partly due to the introduction of new technologies and the swift rollout of the vaccines. Additionally, misleading information and imprecise translations spread through social media platforms have helped propagate conspiracy theories. Specific local factors, such as a general mistrust in government or dissatisfaction with the way the pandemic has been managed, may also be contributing to vaccine hesitancy. Given these complexities, understanding public perception, behavior, and reluctance toward the vaccine is crucial in developing effective public awareness and vaccination campaigns. The challenge of convincing the

population to accept the COVID-19 vaccine, combined with varying levels of financial ability to access it, has created a significant hurdle for the health sector. Despite these challenges, research on the adult population's attitudes toward COVID-19 and its vaccine in Nigeria is still lacking. This study aims to assess the awareness and willingness of young adults in Agbor, Delta State, Nigeria, to receive the COVID-19 vaccine.

Materials and Methods

Study population

This study involved 184 young adults (78 males and 106 females) residing in Agbor, Delta State, Nigeria. The participants were aged between 18 and 29 years, and all provided informed consent to take part. Data were gathered and analyzed at the Department of Physiology, PAMO University of Medical Sciences, Port-Harcourt, Rivers State, Nigeria. Ethical approval was granted by the University's Research Ethics Committee (PUMS-REC/2021/091).

Inclusion and exclusion criteria

Individuals under 17 years of age or older than 30 years were excluded from the study.

Research methodology

The study employed a descriptive, cross-sectional survey design with a multistage sampling technique. A questionnaire was distributed to 184 participants who met the inclusion criteria, and their responses were used for analysis.

Data analysis

The data collected was analyzed using the SPSS version 23 software. Inferential statistics were performed using the chi-square test, with a significance level set at $P < 0.05$ to determine statistically meaningful results.

Results and Discussion

The participants were divided into three age groups: 18-21 years, 22-25 years, and 26-29 years. The 18-21 years group had the highest frequency, followed by the 22-25 years group, with the least number of respondents in the 26-29 years group (**Figure 1b**). The sample comprised 106 females and 78 males (**Figure 1a**). The majority of participants were single, with a smaller proportion being married (**Figure 1c**).

Regarding awareness of COVID-19 and its vaccine, 78.3% of females and 71.8% of males affirmed the existence of COVID-19 and the vaccine, while 17% of females and 19.2% of males remained uncertain about the virus's reality (**Table 1**). As seen in **Table 2**, a moderate level of knowledge about COVID-19 and its vaccine was observed across both genders, with only a few participants claiming high knowledge, and an even smaller percentage unaware of the disease and vaccine (**Table 3**).

In **Table 4**, most respondents expressed uncertainty about the vaccine's safety, with the highest frequency falling within this category. Similarly, **Table 5** highlighted that the majority of participants were

skeptical about the information provided on COVID-19 and its vaccines. When asked about the necessity of vaccination, 49.1% of females disagreed that it was unnecessary, while 42.5% agreed it was necessary, and 9.4% were indifferent. Among males, 35.9% agreed that vaccination was necessary, while 47.4% disagreed (**Table 6**). Furthermore, 85.8% of females and 85.9% of males stated that they were unwilling to receive the vaccine.

The findings also showed that while there was no significant difference in responses between genders concerning vaccine willingness, the knowledge about COVID-19 and its vaccines was significantly influenced by gender (**Table 6**).

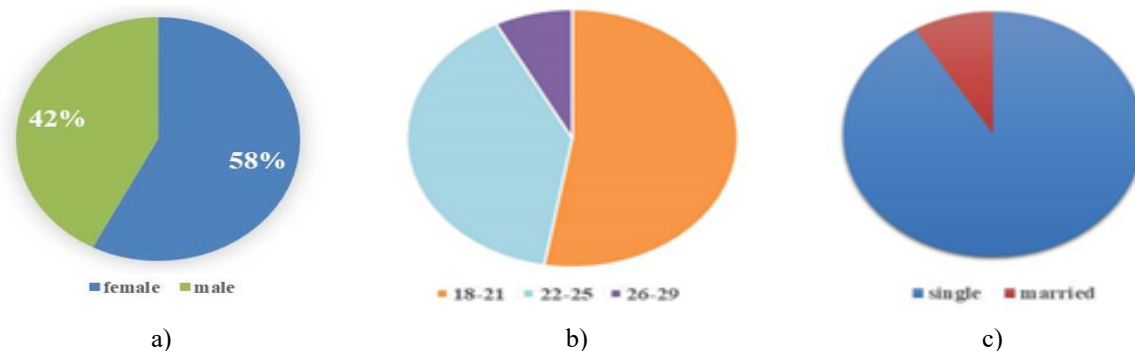


Figure 1. a) Gender distribution, b) age in classes, c) marital status; values are expressed in percentage.

Table 1. Relationship between gender and respondents' views on the existence of COVID-19.

Gender		Does COVID-19 exist?			Total
		Yes	No	Not really	
	Female	83 (78.3%)	5 (4.7%)	18 (17.0%)	106 (100.0%)
	Male	56 (71.8%)	7 (9.0%)	15 (19.2%)	78 (100.0%)
	Total	139 (75.5%)	12 (6.5%)	33 (17.9%)	184 (100.0%)

$\chi^2 = 1.62$; $df = 2$; $P\text{-value} = 0.44$

Table 2. Relationship between gender and respondents' views on the existence of the COVID-19 vaccine.

Gender		Does the COVID-19 vaccine exist?			Total
		Yes	No	Not really	
	Female	104 (98.1%)	1 (0.9%)	1 (0.9%)	106 (100.0%)
	Male	72 (92.3%)	1 (1.3%)	5 (6.4%)	78 (100.0%)
	Total	176 (95.7%)	2 (1.1%)	6 (3.3%)	184 (100.0%)

$\chi^2 = 4.32$; $df = 2$; $P\text{-value} = 0.16$

Table 3. Gender-based distribution of respondents' knowledge about COVID-19 and its vaccine.

Gender		How knowledgeable are you about COVID-19 and its vaccine			Total
		Highly	Moderate	No idea	
	Female	28 (26.4%)	74 (69.8%)	4 (3.8%)	106 (100.0%)
	Male	9 (11.5%)	56 (71.8%)	13 (16.7%)	78 (100.0%)

Total	37 (20.1%)	130 (70.7%)	17 (9.2%)	184 (100.0%)
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$\chi^2=13.05$; $df=2$, $P\text{-value}=0.001$

Table 4. Gender-based distribution of respondents' opinions on the safety of the COVID-19 vaccine.

		How safe is the COVID-19 vaccine			Total
		Safe	Not Safe	Not sure	
Gender	Female	19 (17.9%)	19 (17.9%)	68 (64.2%)	106 (100.0%)
	Male	17 (21.8%)	21 (26.9%)	40 (51.3%)	78 (100.0%)
Total		36 (19.6%)	40 (21.7%)	108 (58.7%)	184 (100.0%)

$\chi^2=3.29$; $df=2$; $P\text{-value}=0.19$

Table 5. Relationship between gender and respondents' trust in the information about COVID-19 and its vaccine.

		Can information about COVID-19 and its vaccine be reliable		Total
		Yes	No	
Gender	Female	31 (29.2%)	75 (70.8%)	106 (100.0%)
	Male	24 (30.8%)	54 (69.2%)	78 (100.0%)
Total		55 (29.9%)	129 (70.1%)	184 (100.0%)

$\chi^2=0.05$; $df=1$, $P\text{-value}=0.82$

Table 6. Gender-based distribution of respondents' willingness to receive the COVID-19 vaccine and their opinions on the vaccine's importance.

Gender	How eager are you to receive the COVID-19 vaccine?			Total	Do you think it is necessary to get vaccinated?			Total
		Eager	Reluctant			Yes	No	
						Maybe		
	Female	15 (14.2%)	91 (85.8%)	106 (100.0%)	45 (42.5%)	51 (48.1%)	10 (9.4%)	106 (100.0%)
	Male	11 (14.1%)	67 (85.9%)	78 (100.0%)	28 (35.9%)	37 (47.4%)	13 (16.7%)	78 (100.0%)
	Total	26 (14.1%)	158 (85.9%)	184 (100.0%)	73 (39.7%)	88 (47.8%)	23 (12.5%)	184 (100.0%)

$\chi^2=0.00$; $df=1$, $P\text{-value}=0.99$

$\chi^2=2.37$; $df=2$, $P\text{-value}=0.31$

This research demonstrated that a large portion of respondents acknowledge the existence of COVID-19 and its corresponding vaccine, believing that a vaccine has been developed to combat the virus. These findings are in line with those of Echoru *et al.* [15], who found increased awareness regarding the vaccine among their respondents. The level of knowledge about COVID-19 was observed to be moderate across genders, with most respondents displaying a solid understanding of the virus. This aligns with the work of Hogan *et al.* [16], who reported that awareness of COVID-19 in US adults surged, likely due to the increased emphasis on preventive health during the pandemic. Similarly, a study by El-Elmat *et al.* [17] in Jordan found that public acceptance of the COVID-19 vaccine was relatively low, with only 37.4% of respondents in favor. This mirrors the current study, where many respondents were unsure about the safety of the vaccine. Moreover, a significant portion of the respondents dismissed the information

provided about COVID-19 and the vaccine and expressed doubts about the necessity of getting vaccinated. A smaller group believed that vaccination was important, but this view did not differ significantly between genders. This contrasts with the findings of Nzaji *et al.* [18], who reported marked gender differences in vaccine acceptance. Haq *et al.* [13] emphasized the importance of getting vaccinated before exposure to the virus, as the priority is to create an effective vaccine to prevent widespread illness and death [19-21]. The current study highlights a notable reluctance towards vaccination, indicating the need for comprehensive education and campaigns to enhance understanding and encourage vaccine uptake [22, 23].

Conclusion

This study provides insights that align with, yet differ from, previous research, potentially due to variations in

methodology and local understanding of COVID-19 and its vaccines. It is strongly recommended that health authorities, including the World Health Organization and the Delta State Ministry of Health, intensify public education campaigns about the COVID-19 vaccine, focusing on its safety and effectiveness. These campaigns should collaborate with local health agencies to ensure reliable information is disseminated across various regions. Furthermore, policymakers and health professionals should encourage vaccination as a preventive measure, striving to improve public acceptance of the vaccine and promoting immunity across Delta State and Nigeria as a whole.

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