

Original Research Article

Knowledge, perception and willingness to receive the current COVID-19 vaccine among residents of Awka metropolis, Anambra State, Nigeria

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ABSTRACT

Background: Vaccines can effectively reduce most morbidities and mortalities caused by infectious agents. The emergence of the COVID-19 vaccine may be accompanied with huge success in containing the pandemic. The aim of the study was to assesses knowledge, perception and willingness to receive the current COVID-19 vaccine among residents in Awka metropolis, Anambra State, Nigeria.

Methods: Using a pre-tested semi-structured questionnaire, this study was conducted in Awka metropolis Anambra State, Nigeria among 393 respondents (aged 18 years and above), and analyzed to assess their knowledge, perception and willingness to receive the current COVID-19 vaccine. Statistical package for social sciences software (SPSS) version 23.0 was used, descriptive statistics were reported in frequencies and percentages, Chi-square test was used to assess the association between socio-demographic characteristics and willingness to receive the vaccine, and level of significance was set at $p < 0.05$.

Results: The results showed that all respondents (100%) have good knowledge of the vaccine availability. Only 25.7% were willing to receive the vaccine, although 57.3% were willing to receive any other vaccine apart from the COVID-19 vaccine. Very few respondents (18.3%) thinks the vaccine is accessible to all. Most of the respondents (72%) did not support mandatory implementation of COVID-19 vaccine in Nigeria. Among the socio-demographic characteristics, only occupation was significantly associated with willingness to receive the vaccine ($p = 0.010$, $\chi^2 = 20.214$).

Conclusions: This study highlighted the need to effectively educate the masses through appropriate public health literacy programs and enlightenment campaigns on the role of the vaccine in curbing this pandemic.

Keywords: COVID-19, Vaccine, Willingness, Perception

INTRODUCTION

With the emergence of the COVID-19 vaccine (AstraZeneca/Oxford COVID-19 vaccine shipped by COVAX) in Nigeria in March 2021, there may finally be

a relief from the ravaging pandemic caused by the Severe acute respiratory syndrome corona virus-2 (SARS-CoV-2) which was first discovered in Wuhan city, China, in 2019 and had spread drastically to almost all the countries in the world. Previously, most people especially in Nigeria did

not believe the existence of the novel virus, and erroneously attributed it to a lot of factors including the 5G network installation, political dominance, biological weapon, viral escape from the laboratory and so on.

The COVID-19 pandemic is a huge threat and has significantly affected the health, economy and other sectors. Various restrictions and lockdowns were put in place in order to curb the spread of this virus, these included travel restrictions, social distancing, self-isolation and quarantine, enforcement of curfews, closure of schools and borders.¹

The various recommended preventive measures like social distancing, wearing of face mask/shield, hand washing, avoiding crowded places and coughing/sneezing into the elbow may help to slow the spread of this virus, but it may not be sufficient to completely stop it. Thus, a vaccine may prove to be more effective in abating the spread of this virus as well as reducing the overall burden on our healthcare system.

Most morbidities and mortalities caused by infectious agents can be effectively reduced by vaccination, hence, developing safe and effective vaccines is of great public health importance in containing pandemics.² Despite the usefulness of vaccines, development of the COVID-19 vaccine has been greeted with a lot of controversies which may affect its uptake.

Previous studies in Northern and Southwestern Nigeria have focused on the knowledge, attitude and practice with respect to COVID-19, however, there is paucity of data on the awareness and perception of the already existing COVID-19 vaccine.^{3,4} The aim of the study was to assess the knowledge, perception and willingness to receive the current COVID-19 vaccine among Nigerian adults residing in Awka metropolis, Anambra State, Nigeria.

METHODS

This study was a cross-sectional questionnaire-based survey carried out in Awka, Anambra State, Nigeria from May to July, 2021. A total of 393 adults resident in Awka metropolis aged 18 years and above were recruited for this study using the convenience sampling method. A pre-tested semi-structured questionnaire was used to collect data of respondents which included the socio-demographic characteristics and response on awareness and perception of the current COVID-19 vaccine.

The sample size calculation gave a minimum sample size of 384 using the formula-

$$N = \frac{Z^2 P(1 - P)}{d^2}$$

at a confidence level of 95%, unknown proportion (P) of 50% and 5% error margin (d). A total of 430

questionnaires were shared, however only 393 questionnaires were returned.

This study was approved by the Research Ethics Committee, Iyenu Mission Hospital, Ogidi, Anambra State, and informed consent was obtained from the participants with assured confidentiality. The procedures followed were in accordance with the ethical standards and with the Helsinki Declaration.

Data were analyzed using the Statistical package for social sciences software (SPSS) version 23.0, Chicago, IL, USA. Descriptive statistics were reported in frequencies and percentages, and Chi-square test was used to assess the association between socio-demographic characteristics and willingness to receive the current COVID-19 vaccine. The level of significance was set at $p < 0.05$.

RESULTS

A total of 393 respondents aged 18 years and above completed the study. The socio-demographic characteristics of the study participants are summarized in Table 1.

More than half of the respondents were females (58.0%), majority were between the ages of 26-33 years (28.0%), and 57.3% married. A higher proportion of the respondents had tertiary education (56.0%) with primary education (1.3%) being the least, and they consisted of more civil/public servants (29.2%) followed by students (20.9%) and healthcare workers (19.6 %).

All the respondents (100%) have heard about the COVID-19 vaccine and also were aware of its availability in Nigeria. Their two major sources of information were social media (33.1%) and TV/radio (28.3%), with newspaper (3.4%) being the least (Table 2 and Figure 1). 56% of the respondents admitted knowing people who have received the COVID-19 vaccine, out of which 47.7% reported various side effects as shown in Table 2 and Figure 2.

Only 4.8% of the respondents had taken the COVID-19 vaccine, and also reported no side effects following the vaccination. Among the respondents who had not received the vaccine, only 25.7% were willing to receive the vaccine, the remaining 74.3% who were unwilling had various reasons, with the fear of possible side effects ranking highest (55%) as shown in Table 2 and Figure 3.

More than half of the respondents (57.3%) were willing to receive any other vaccine apart from the COVID-19 vaccine whereas 36.6% and 6.1% were unwilling and indecisive respectively.

Based on the accessibility of the vaccine to the masses, 18.3% thinks it is accessible to all, 47.6% thinks it is not while 34.1% were unsure of the vaccine accessibility (Table 3). Most of the respondents (72%) were not in

support of COVID-19 vaccine being made compulsory in Nigeria with the major reason being that vaccination should not be coercive (42.7%). Among the other 28% respondents who supported compulsory COVID-19

vaccination in Nigeria, majority (76.8%) believed it will help reduce the spread of the virus. Occupation was significantly associated willingness to receive the COVID-19 vaccine ($p=0.010$, $\chi^2=20.214$), as shown in Table 4.

Table 1: Socio-demographics characteristics of respondents.

Characteristics	Category	Number	Percentage (%)
Sex	Male	165	42.0
	Female	228	58.0
Age (years)	18-25	87	22.1
	26-33	110	28.0
	34-41	91	23.2
	42-49	67	17.1
	50-57	19	4.8
	>58	19	4.8
Marital status	Single	158	40.2
	Married	225	57.3
	Widowed	10	2.5
Educational level	Primary	5	1.3
	Secondary	53	13.5
	Tertiary	220	56.0
	Post-graduate	115	29.2
Occupation	Unemployed	19	4.8
	Trader/self-employed	57	14.5
	Artisan	7	1.8
	Teacher	14	3.6
	Student	82	20.9
	Health worker	77	19.6
	Civil/public servant	115	29.2
	Retiree	5	1.3
Others	17	4.3	

Table 2: Responses on knowledge of, and willingness to receive COVID-19 vaccine.

Questions	Responses	Number	Percentage (%)
Have you heard about COVID-19 vaccine?	Yes	393	100.0
	No	0	0.0
Are you aware that COVID-19 vaccine is now available?	Yes	393	100.0
	No	0	0.0
How did you hear about it?	TV/radio	201	28.3
	Social media	235	33.1
	Newspaper	24	3.4
	Internet	82	11.5
	Health professionals	77	10.8
	Family/friends	58	8.1
	Social/religious gathering	34	4.8
Do you know anyone who has taken the COVID-19 vaccine?	Yes	220	56.0
	No	173	44.0
If yes, is/are there any reported side effects?	Yes	105	47.7
	No	115	52.3
What is/are the reported side effect(s)?	Chest pain	7	4.4
	Shortness of breath	24	15.2
	Tiredness/fatigue	43	27.2

Continued.

Questions	Responses	Number	Percentage (%)
	Persistent headache	14	8.9
	Body aches	38	24.1
	Abdominal pain	6	3.8
	Fever	25	15.8
	Others	1	0.6
Have you received the COVID-19 vaccine?	Yes	19	4.8
	No	374	95.2
Are you willing to receive the COVID-19 vaccine?	Yes	96	25.7
	No	278	74.3
If no, what is/are your reason(s)?	Possible side effects	153	55.0
	Not necessary	57	20.5
	Underlying medical condition	10	3.6
	Rumored controversies	29	10.5
	Against religion	5	1.8
	Others	24	8.6
Are you willing to receive any other vaccine apart from COVID-19 vaccine?	Yes	225	57.3
	No	144	36.6
	Not sure	24	6.1

Table 3: Responses on perception of COVID-19 vaccine.

Questions	Responses	Number	Percentage (%)
Do you think COVID-19 vaccine is accessible to all?	Yes	72	18.3
	No	187	47.6
	Not sure	134	34.1
Do you think COVID-19 vaccine should be made compulsory in Nigeria?	Yes	110	28.0
	No	283	72.0
If yes, what is/are your reason(s)?	Safe and effective	19	15.2
	Helps reduce spread	96	76.8
	Only for high-risk individuals	10	8.0
If no, what is/are your reason(s)?	Should not be coercive	134	42.7
	Possible resistance by the masses	81	25.8
	May reinforce the misconceptions/controversies about COVID-19 vaccine	72	22.9
	Preference for natural immunity	14	4.5
	Others	13	4.1

Table 4: Association between socio-demographics and willingness to receive the COVID-19 vaccine.

Characteristics	Willingness to receive COVID-19 vaccine				χ^2	P value	
	Yes	%	No	%			
Sex	Male	55	47.8	110	39.6	2.277	0.145
	Female	60	52.2	168	60.4		
Age (years)	18-25	21	18.3	66	23.7	4.896	0.429
	26-33	34	29.6	76	27.3		
	34-41	28	24.3	63	22.7		
	42-49	17	14.8	50	18.0		
	50-57	6	5.2	13	4.7		
	>58	9	7.8	10	3.6		
Marital status	Single	39	33.9	119	42.8	3.444	0.179
	Married	74	64.3	151	54.3		
	Widowed	2	1.7	8	2.9		
Educational level	Primary	1	0.9	4	1.4	2.589	0.459
	Secondary	11	9.6	42	15.1		
	Tertiary	66	57.4	154	55.4		

Continued.

Characteristics	Willingness to receive COVID-19 vaccine				χ^2	P value
	Yes	%	No	%		
Post-graduate	37	32.2	78	28.1	20.214	0.010*
Unemployed	2	1.7	17	6.1		
Trader/self-employed	13	11.3	44	15.8		
Artisan	2	1.7	5	1.8		
Teacher	1	0.9	13	4.7		
Student	18	15.7	64	23.0		
Health worker	23	20.0	54	19.4		
Civil/public servant	49	42.6	66	23.7		
Retiree	1	0.9	4	1.4		
Others	6	5.2	11	4.0		

Note: *-Significant.

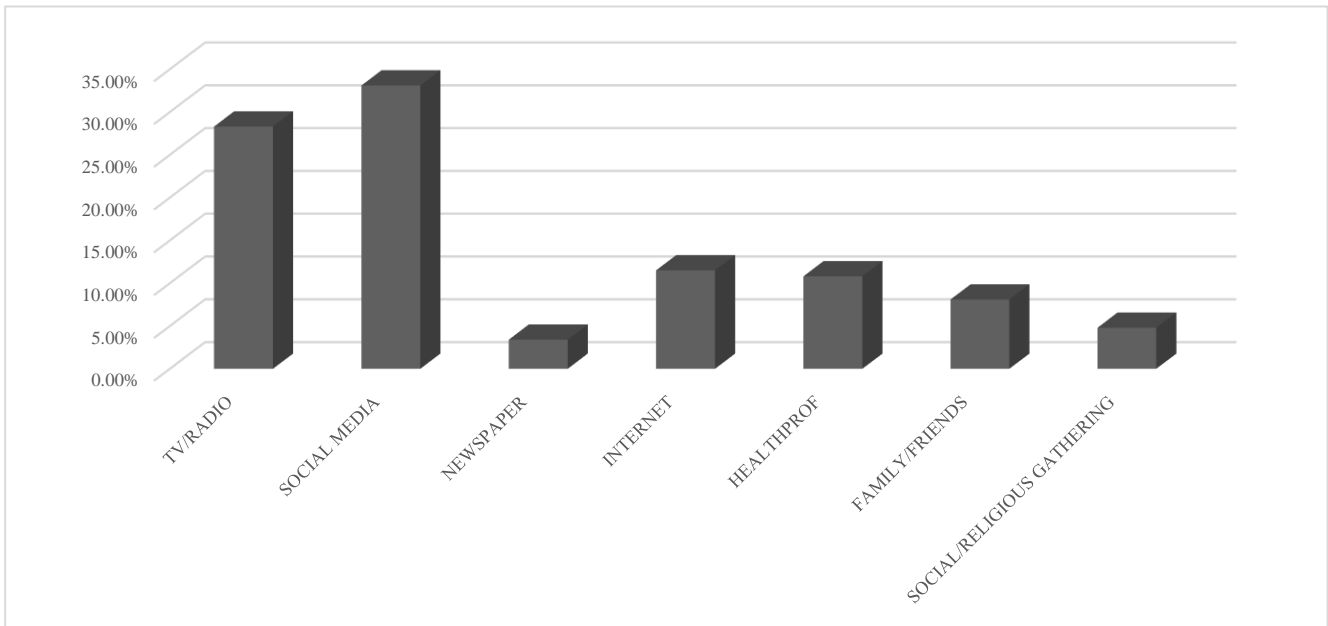


Figure 1: Respondents' information source for COVID-19 vaccine.

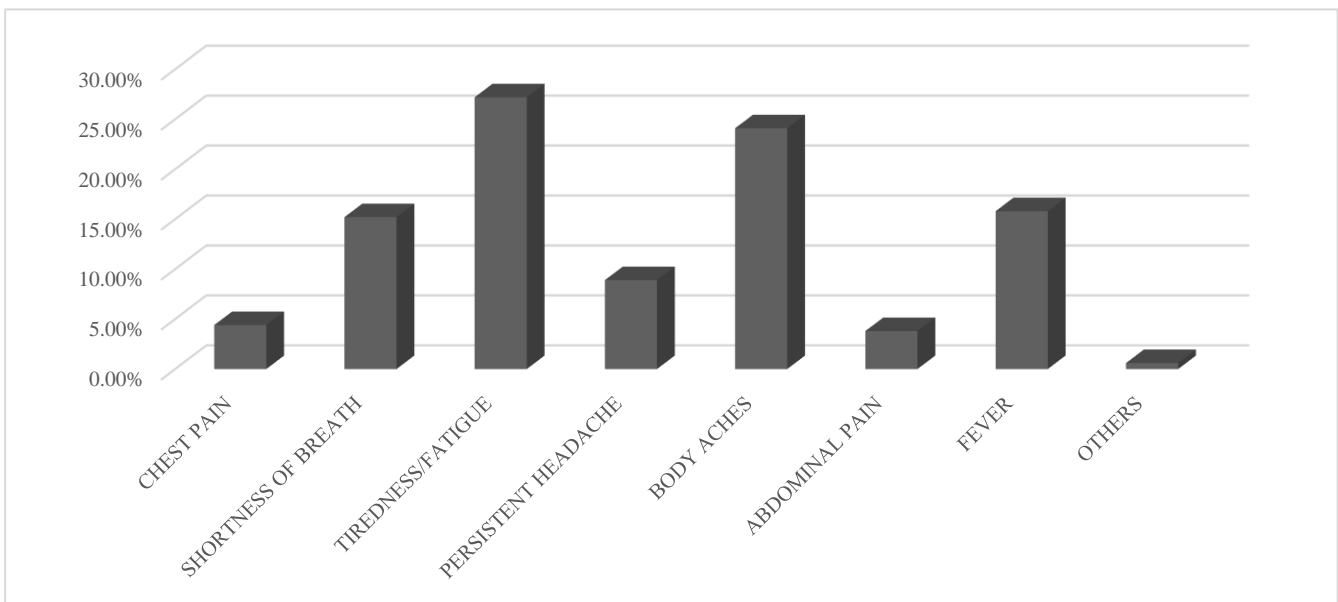


Figure 2: Reported side effects after COVID-19 vaccine.

DISCUSSION

The end of COVID-19 pandemic which has dealt a huge blow to the various sectors of the countries worldwide may be dependent on the newly developed and available COVID-19 vaccine. Vaccination is a sure way of controlling various infectious diseases, and the success or failure of a vaccination program is determined by willingness or hesitancy of the populace.⁵ Notably, the availability of this vaccine without a commensurate willingness of the general public to use same amounts to a futile effort.⁶

The present study therefore assessed the knowledge, perception and willingness of adult Nigerians residing in Awka metropolis to accept a potential COVID-19 vaccine.

The respondents have a very good knowledge (100%) of COVID-19 vaccine as well as its availability in Nigeria. Josiah et al in a study done in Delta State, however reported 53.1% knowledge of the vaccine procurement, which is lower than the present study.⁷ The three major sources of information of this vaccine as observed in this study were social media, television/radio and internet, and this could be due to substantial awareness creation through this media of communication.

Only very few (4.8%) of the respondents have received the COVID-19 vaccine as well as those willing to receive (25.7%), however, a good number of them (57.3%) were willing to receive any other vaccine apart from the COVID-19 vaccine. This may be indicative of fear of, and lack of trust in the current COVID-19 vaccine in the country. The willingness to receive the vaccine was much lower in this study when compared with the 48.6% and 53.5% reported by Josiah et al (2021) and Ekwebene et al respectively.^{7,8} It was however close to the 24.6% reported by Oriji et al among patients at the Federal Medical Centre, Yenegoa, Nigeria.⁹ The low level of willingness to receive the COVID-19 vaccine could be attributed to lack of confidence in the safety and effectiveness of the vaccine as well as erroneous information or propaganda regarding the vaccine. These were evident in the three major responses; fear of possible adverse effects of the vaccine (55%), unnecessary (20.5%) and rumored controversies about the virus and the vaccine (10.5%) which included 5G networking, political agenda, population reduction, microchip implantation and so on. Ekwebene et al reported a higher prevalence of 69.4% fear of vaccine side effects in their study on health care providers.⁸ Figueiredo et al had earlier stated that the novel virus is associated with lack of trust in the healthcare system, information gaps as well as suspicions and negative beliefs regarding the vaccine.¹⁰ Low levels of vaccine acceptance could result from lack of confidence in vaccines with respect to the ineffectiveness or potential side effects caused by the vaccine.^{11,12} Hence, trust is very crucial for vaccine acceptance, high rate of compliance and uptake.⁹

Although in some individuals, certain factors like age, pre-existing medical condition or immunosuppressed may not be eligible for the COVID-19 vaccination, and a vaccine rejection rate of more than 10% could drastically thwart the realization the vaccine goal.¹³

56% of the respondents attested to knowing people who have received the COVID-19 vaccine, out of which 47.7% reported accompanying side effects. Among the reported side effects, fatigue, body aches, fever and shortness of breath were the mostly reported with prevalence of 27.2%, 24.1%, 15.8% and 15.2% respectively. This further buttress the fact that fear of certain adverse health effects or safety concerns of the vaccine contributed to the low willingness in the respondents.

Based on the accessibility of the vaccine, very few respondents (18.3%) considered the vaccine accessible to all whereas 47.6% thinks otherwise, this may be suggestive of deficient information or information gaps regarding the COVID-19 vaccine.

Most of the respondents (72%) did not support implementation of mandatory vaccination, 42.7% and 25.8% respectively asserted that vaccination should be voluntary, not coercive and could lead to resistance by the masses, whereas 22.9% believed it may fortify the misconceptions and controversies surrounding the COVID-19 vaccine. However, among the few respondents (28%) who supported the implementation, majority (76.8%) believed it will help reduce spread, 15% believed it is safe and effective while 8% opined it should only be implemented for the high-risk individuals.

Amakiri et al however reported that 52% of the respondents rejected mandatory vaccination of a potential COVID-19 vaccine in Nigeria, this was lower than the rejection rate recorded in the present study.¹⁴ The high rejection rate of mandatory implementation of COVID-19 vaccine may be due to the previously mentioned fear of possible side effects of the vaccine, lack of confidence in the vaccine, and belief in the rumored controversies about the vaccine. A reduced vaccine coverage and increased risk of vaccine-preventable disease outbreaks or high incidence of infectious diseases are believed to result from vaccine hesitancy. This has earlier been recorded in Northeast, Nigeria which until recently was severely plagued with poliovirus due to the masses' resistance and rejection of the polio vaccine.¹⁵

In other words, regardless of the perceived potential benefits of vaccines including the COVID-19 vaccine, the consent of the masses is required in order to avoid any sort of resistance or anti-vaccine movements which will end up frustrating the aim of the vaccination program.

It is worthy of note that mandatory or compulsory implementation of COVID-19 vaccine without appropriate and adequate public enlightenment and sensitization programs to inform and gain the trusts of the masses will

definitely do more harm than good in the actualization of the desired goal of curbing the spread of the virus.

The socio-demographics characteristics including sex, age, marital status and educational level were not significantly associated with willingness to receive COVID-19 vaccine, but was significantly associated with occupation. This may be due to the low willingness to receive the COVID-19 vaccine in the various occupational groups. This is somewhat similar to the study done by Zewude et al who also reported no insignificant associations of sex, age, marital status and educational level with willingness to take the COVID-19 vaccine in Southern Ethiopia.¹⁶

Strengths and limitation of the study

To the best of our knowledge, this is the first study carried out in the study area since the roll out of the novel COVID-19 vaccine, and therefore gives an insight into the knowledge and perception of this vaccine as well as willingness to receive it. Additionally, the study made use of questionnaires for data collection, thereby omitting the limitations of online survey.

Although this study explored the association of willingness to receive the vaccine with socio-demographic characteristics, it however did not explore this association with the various sources the respondents got their information from.

CONCLUSION

Based on the findings of this study, the respondents have an optimal knowledge of COVID-19 vaccine availability in the country, but little willingness to receive the vaccine due to lack of confidence or trust in the current vaccine, information gaps, misconceptions and controversial issues regarding the novel vaccine. This shows that willingness to receive this vaccine is therefore dependent on confidence boost, proper knowledge and right perception of the masses. Government, policy makers and stakeholders should therefore make more concerted efforts to effectively educate the masses through appropriate proactive public health literacy programs, enlightenment campaigns and interventions targeted at demystifying the controversies and addressing the misconceptions about the COVID-19 vaccine as well as highlighting the role of the vaccine in curbing this pandemic. Additionally, the safety and efficacy concerns regarding this vaccine must be clearly addressed. These will go a long way in increasing confidence and willingness to receive this vaccine. The COVID-19 vaccine should be made free and accessible to all, and also administered with the consent to the masses to avoid certain limitations that can mar the efforts of curbing the spread.

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