



Acceptance of COVID-19 Vaccine in the University of Port Harcourt Community

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Vaccine acceptance is one thing that must be achieved before the masses can volunteer to be vaccinated. Vaccine acceptance is defined as the individual or group's decision to accept or refuse when presented with an opportunity to vaccinate. Acceptance can be active (adherence by an informed public that perceives the benefit of and needs for a vaccine) or passive (compliance by a public that defers to recommendations and social pressure). It will not be out of place to state that the University of Port Harcourt will not be spared in the distribution of the cases as such if no drastic action for vaccination is taken. Therefore, vaccine acceptance is essential. Hence, this study was done to survey the acceptance of the covid-19 vaccine amongst the lecturers and teachers in the University community.

Materials and Methods: The study was cross-sectional carried out at the University of Port Harcourt in Rivers State. The study population was the public tertiary institutions in Rivers State which comprised only the teaching staff. The sample size used for the study was four hundred and sixty persons calculated using the Taro Yamane formula for a population less than ten thousand;

the sampling technique used was simple random sampling. The data collection tool used for the study was a self-structured closed-ended questionnaire.

Results and Discussions: The results of the study showed that the acceptance rate of COVID 19 vaccine by the UPWA staff members was 7.4%, UNIPORT lecturers was 8.7%, and UDSS staff members were 9.1%. The UDSS staff members had the highest level of acceptance. The total acceptance rate for COVID 19 vaccine in this population was 25.2%. The difference in the proportion is statistically significant at $p < 0.001$.

Conclusions: The comparison of the variables showed that age category, occupation, sex, marital status, educational level, and insurance were all statistically significant ($p = 0.001$) with the acceptance COVID 19 vaccine by UPWA staff, UNIPORT staff members and UDSS staff. The result showed that about a quarter of the sampled population was willing to take the vaccine. This study recommends the intensification of a campaign that is geared towards enhancing COVID 19 vaccine acceptance and uptake.

Keywords: Acceptance; COVID 19; vaccine; UNIPORT community; & teachers.

1. INTRODUCTION

The Coronavirus disease 2019 (COVID-19) is a communicable respiratory disease caused by a new strain of Coronavirus that causes illness in humans SARS Cov-2. One of the major solutions to the growing rate of infectivity is vaccination. However, there are limiting factors for mass vaccination of the masses ranging from an improper understanding of the concept of vaccination, fear of side effects, and religious reasons. Vaccine acceptance is one thing that must be achieved before the masses can volunteer to be vaccinated. Vaccine acceptance is defined as the individual or group's decision to accept or refuse when presented with an opportunity to vaccinate. Acceptance can be active (adherence by an informed public that perceives the benefit of and needs for a vaccine) or passive (compliance by a public that defers to recommendations and social pressure) [1].

In Nigeria, Rivers State, there is a rapidly growing prevalence of COVID 19 cases which have become a great concern to the state government and the nation by extension. As of September 8, 2021, the number of laboratory-confirmed COVID 19 cases in Rivers the state was 10,898, 774 persons on admission, number discharged 9,987, and the number of deaths 137 [2]. Currently, Rivers State is the third state with the highest number of cases in Nigeria. This raises a concern on reducing the prevalence and the methods of prevention, and vaccination appears to be a viable option to keeping achieving the reduction in the number of cases and possibly flattening the curve.

The University of Port Harcourt is the first Federal tertiary institution in Rivers State. Rivers State is in the South-South region and a major economic city known for crude oil exploration in the country has had its share of the pandemic. It will not be out of place to state that the University of Port Harcourt will not be spared in the distribution of the cases as such if no drastic action for vaccination is taken. Therefore, vaccine acceptance is essential. Hence, this study was done to survey the acceptance of the covid-19 vaccine amongst the staff members in the University community.

There are already existing works of literature on COVID19 vaccine acceptances in Rivers State, Nigeria, Africa [3-12].

2. MATERIALS AND METHODS

The study was cross-sectional carried out at the University of Port Harcourt in Rivers State. The study population was the public tertiary institutions in Rivers State which comprised only the teaching staff. The sample size used for the study was four hundred and sixty persons calculated using the Taro Yamane formula for a population less than ten thousand; the sampling technique used was simple random sampling. The data collection tool used for the study was a self-structured closed-ended questionnaire. The tool was structured with the following headings; Section A-socio-demographic characteristics, Section B-Perception of the vaccine and Section C- Vaccine acceptability. The questionnaires were interviewer-administered. The data were analyzed using IBM Statistical Package for

Social Sciences (SPSS) version 25. The categorical variables were analyzed using a simple descriptive tool and chi-square to test for the association of variables. The confidence

interval was set at 95%, p-value at 0.05. Ethical clearance was obtained from the University of Port Harcourt Research Ethics Committee before the commencement of the study.

3. RESULTS

Table 1. Sociodemographic characteristics

Variable	Frequency	Per cent
Age category		
18 – 28 yrs	28	6.1
29 - 39 yrs	150	32.6
40 – 49 yrs	151	32.8
50 – 59 yrs	91	19.8
60 – 69 yrs	37	8.0
≥70 yrs	3	0.7
Total	460	100.0
Occupation		
UPWA Primary & Secondary staff	92	20.0
UNIPORT lecturers	213	46.3
UDSS staff	155	33.7
Total	460	100.0
Sex		
Male	252	54.8
Female	200	43.5
Don't want to disclose	8	1.7
Total	460	100.0
Marital status		
Married	314	68.3
Single	130	28.3
Don't want to disclose	16	3.4
Total	460	100.0
Religion		
Islam	44	9.6
Christianity	404	87.8
Catholic	5	1.1
Others	7	1.5
Total	460	100.0
Level of Education		
No formal education	1	2.4
Completed primary	8	1.7
Completed junior secondary	7	1.5
Completed senior secondary	128	27.8
Completed tertiary	306	66.5
Total	460	100.0
Health insurance		
Government	320	69.6
Private	49	10.7
No insurance	91	19.8
Total	460	100.0

Table 2a. Descriptive statistics on the acceptance of COVID 19 vaccine

Variable	Frequency	Per cent
Have you heard of vaccination ?		
Yes	454	98.7
No	6	1.3
Total	460	100.0
Have you taken any other vaccine before ?		
Yes	444	96.5
No	16	3.5
Total	460	100.0
Have you, family or neighbour had COVID 19 ?		
Yes	28	6.1
No	419	91.1
Not sure	13	2.8
Total	460	100.0
Availability of COVID 19 vaccine		
Yes	436	94.8
No	24	5.2
Total	460	100.0
Are you willing to be vaccinated ?		
Yes	116	25.2
No	117	25.4
Have been vaccinated	206	44.8
Not decided	21	4.6
Total	460	100.0
Are you willing to pay for the vaccine ?		
Yes	55	12.0
No	319	69.3
Don't know	86	18.7
Total	460	100.0
Reasons for not taking the vaccine		
Not sure of safety	15	3.2
Not sure of effectiveness	29	6.3
Fear of side effects such as fever & pain	33	7.2
No trust in vaccine	35	7.6
Religious belief	5	1.1
Not applicable	343	74.6
Total	460	100.0

Table 2b. Descriptive statistics on the acceptance of COVID 19 vaccine cont'd

Variable	Frequency	Per cent
Who would you consult before taking the vaccine ?		
Family members	93	20.2
Health worker	243	53.9
Religious leader	49	10.7
Community leader	4	0.9
Government officials	63	13.6
Others	3	0.7
Total	460	100.0
Preferable vaccine designated location		

Variable	Frequency	Per cent
for vaccination		
General hospital	261	56.7
Private hospital	106	23.0
Home delivery	50	10.9
Primary healthcare centres	43	9.4
Total	460	100.0
Would you like to get further information about COVID 19 vaccine ?		
Yes	383	83.2
No	56	12.2
Don't know	21	4.6
Total	460	100.0
How would you like to get more information about COVID 19 ?		
Social media such as Whatsapp, Facebook, Instagram, Twitter	49	10.7
Telecommunication such as SMS and calls	18	3.9
Online platforms such as zoom, skype	99	21.5
Print and Electronic media, TV, Newspaper	140	30.4
Face to face communication	154	33.5
Total	460	100.0

Table 3. Comparison of socio-demographic characteristics with acceptance of COVID 19 vaccine

Variable	Are you willing to take the COVID-19 Vaccine			Total	X ²	P-value
	Yes	No	Not decided			
Age category						
18 – 28 yrs	28(6.1)	0(0)	(0)	28(6.1)	116.328	0.001
29 - 39 yrs	46(10.0)	36(7.8)	68(14.8)	150(32.6)		
40 – 49 yrs	29(6.3)	48(10.4)	74(16.1)	151(32.8)		
50 – 59 yrs	9(2.0)	29(6.3)	53(11.5)	91(19.8)		
60 – 69 yrs	4(0.9)	18(3.9)	15(3.3)	37(8.0)		
≥70 yrs	0(0.0)	3(0.7)	0(0)	3(0.7)		
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		
Occupation						
UPWA staff	34(7.4)	5(1.1)	53(11.5)	92(20.0)	123.780	0.001
UNIPORT staff	40(8.7)	93(20.2)	80(17.4)	213(46.3)		
UDSS staff	42(9.1)	36(7.8)	77(16.8)	155(33.7)		
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		
Sex						
Male	68(14.8)	52(11.3)	132(28.7)	252(54.8)	33.340	0.001
Female	48(10.4)	82(17.8)	78(15.2)	208(43.5)		
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		
Marital Status						
Single	56(12.2)	34(7.2)	41(8.9)	131(28.3)	43.994	0.001
Married	60(13.0)	100(21.7)	154(33.5)	314(68.3)		
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		
Educational level						
No formal education	4(0.9)	3(0.7)	4(0.9)	11(2.5)	42.870	0.001
Completed primary	0(0)	5(1.1)	3(0.7)	8(1.8)		
Completed junior sec.	3(0.7)	0(0)	4(0.9)	7(1.6)		
Completed senior sec.	49(10.7)	23(5.0)	56(12.2)	128(27.8)		

Variable	Are you willing to take the COVID-19 Vaccine			Total	χ^2	P-value
Completed tertiary	60(13.0)	103(22.4)	143(31.1)	306(66.5)		
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		
Health insurance						
Government	68(14.8)	97(21.1)	155(33.7)	320(69.6)		
Private	39(8.5)	4(0.9)	6(1.3)	49(10.7)		
No insurance	9(2.0)	33(7.2)	49(10.5)	91(19.7)	90.923	0.001
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		

Table 4. Comparison of level of acceptance COVID 19 vaccine by UPWA staff, UNIPORT staff members and UDSS staff members

Variable	Are you willing to take the COVID-19 Vaccine			Total	χ^2	P-value
	Yes	No	Not decided			
Occupation						
UPWA staff	34(7.4)	5(1.1)	53(11.5)	92(20.0)		
UNIPORT staff members	40(8.7)	93(20.2)	80(17.4)	213(46.3)	123.780	0.001
UDSS staff	42(9.1)	36(7.8)	77(16.8)	155(33.7)		
Total	116(25.2)	134(29.1)	210(45.7)	460(100.0)		

Table 5. Adverse effects of COVID 19 vaccination seen among participants

Variable	Frequency	Per cent
Post vaccination adverse effects		
High blood pressure & fever	8	1.7
Body weakness & pains	32	7.0
High blood pressure & insomnia	3	0.7
Headache	10	2.2
Heaviness of arm, pains	15	3.3
High blood pressure only	7	1.5
No side effect	125	27.2
Not applicable	260	56.4
Total	460	100.0

4. DISCUSSIONS

4.1 Summary of Results

The results of the study showed that the most frequent age category was 40 – 49 yrs with 151(32.8%), while the least was ≥ 70 yrs with 3(0.7%); the males had the highest frequency with 252(54.8), while females had 200(43.5%) and participants that did not want to disclose their sex was 8(1.7%). The married were most frequent with 314(68.3%), Christianity was the most frequent religion with 404(87.8%), educational level with the most frequent value was tertiary education with 306(66.5%). (Table 1) Comparison of the variables showed that age category, occupation, sex, marital status, educational level, and insurance were all statistically significant ($p=0.001$) with the

acceptance of COVID 19 vaccine by UPWA staff, UNIPORT staff members, and UDSS staff (Table 3).

Table 4 showed that the acceptance rate of the COVID 19 vaccine by the UPWA staff members was 7.4%, UNIPORT lecturers were 8.7%, and UDSS staff members were 9.1%. The UDSS staff members had the highest level of acceptance. The difference in the proportion is statistically significant at $p<0.001$. The total acceptance rate for COVID 19 vaccine in this population was 25.2%.

The adverse effects of COVID 19 vaccination seen among participants who have already taken the vaccine showed that the most frequent side effect reported was body weakness & pains with 32(7.0%), while the least reported was high

blood pressure & insomnia with 3(0.7%) (Table 5).

4.2 Implications

The total acceptance rate for COVID 19 vaccine in this population was 25.2%. The study showed that there was a significant difference in the rate of acceptance of the COVID 19 vaccine between the various staff members of the schools. UDSS staff members had the highest rate of acceptance, while the least was UPWA staff members. The result in this context did not show that education level had much influence on the rate of acceptance. Otherwise, it is expected that the university lecturers who are much more educated should have had the highest rate of acceptance. This may also mean that the more educated an individual is, the more cautious the person is in doing things especially when there are possibilities of unknown side effects as is the case of the COVID 19 vaccine. These findings agree with the earlier reports by previous authors on vaccine acceptance [3-7].

The age brackets 29-39yrs were most willing to take the vaccine. This is probably because of their high-risk appetite. It is common knowledge that at a young age, the tendency to take risks is high and diminishes with advancing age. The study showed that participants who were 70years and above were the least willing to take the vaccine, even though they are more vulnerable to contracting COVID 19 because of their relatively weak immune system and the chances of survival minimal as a result of comorbidities that come with increasing age. The older demographics may have probably not have been willing to take the vaccine because of the fear of the unknown. This is because the COVID 19 vaccine is new and the fear of unknown adverse effects may have deterred them from accepting it. The study again showed that there was sexual dimorphism in the rate of acceptance of the vaccine. The males were noted to have accepted the vaccine more than the females. This probably was a result of a higher risk appetite in the males than the females. Participants who have completed tertiary education were more willing to take the vaccine compared to those who did not have a formal education. Education as it were, plays a vital role in understanding and attitudinal change. Taking the vaccine is considered to be based on the understanding of the individual on the risk and dangers of infection if the person is not vaccinated, this understanding comes with education. The more educated an individual is,

the more likely the person would easily understand things better compared to the one who does not have a formal education. Furthermore, the participants who have government insurance were more willing to take the vaccine than those who do not have any insurance. The insurance scheme gave them more courage to take the vaccine knowing that they are insured. These findings corroborate the previous reports by other authors [8-12].

The most frequent adverse effect recorded among the participants was general body weakness and pains; the least was elevated blood pressure and insomnia.

5. CONCLUSIONS

The results of the study showed that the most frequent age category was 40 – 49 yrs with 151(32.8%), while the least was ≥ 70 yrs with 3(0.7%); the males had the highest frequency with 252(54.8), while females had 200(43.5%) and participants that did not want to disclose their sex was 8(1.7%). The married were most frequent with 314(68.3%), Christianity was the most frequent religion with 404(87.8%), educational level with the most frequent value was tertiary education with 306(66.5%). Comparison of the variables showed that age category, occupation, sex, marital status, educational level, and insurance were all statistically significant ($p=0.001$) with the acceptance COVID 19 vaccine by UPWA staff, UNIPORT staff members and UDSS staff.

The total acceptance rate for COVID 19 vaccine in this population was 25.2%. The study showed that there was a significant difference in the rate of acceptance of COVID 19 vaccine between the various staff members of the schools. UDSS staff members had the highest rate of acceptance, while the least was UPWA staff members.

The result showed that about a quarter of the sampled population was willing to take the vaccine. This however is not encouraging enough as it does not reflect the anticipated level of awareness about the risk of infection if individuals are not vaccinated. This study recommends intensification of the campaign that is geared towards enhancing COVID 19 vaccine acceptance and uptake.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our

area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical clearance was obtained from the University of Port Harcourt Research Ethics Committee before the commencement of the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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