

PAPER 2: Covid-19 Vaccine Hesitancy among Health Care providers in FCT, Abuja, Nigeria.

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Abstract

Background: An outbreak of a mysterious pneumonia occurred in late December, 2019 which was characterized by fever, dry cough, fatigue, and with occasional gastrointestinal symptoms. It was epidemiologically associated with a seafood and animal market, the Huanan Seafood Wholesale Market, in Wuhan, Hubei, China. The mortality rate caused by the virus was around 10%–15%. The first COVID-19 cases in Nigeria and the FCT were confirmed on the 27th of February and 20th of March 2020 respectively. This study aimed to examine the factors responsible for the uptake or refusal to take covid-19 vaccine by the healthcare providers in FCT, Abuja, Nigeria.

Methodology

The study design is a prospective retrospective study conducted from 14th September to 15th December, 2021 among health care providers in one of the tertiary and two of the secondary health facilities in FCT, Abuja. Respondents recruited were aged 18 years and above and exclusion criteria was the administrative staff. The University of MARYLAND, USA questionnaire was adapted with some few modifications to provide a set of the comparative effect of the impact of the novel pandemic. All participants provide their written consent on the questionnaire before responding to the questions. The questionnaire was structured. Hand-delivering, self-administered that was filled by the respondent and collected them later. The sample size was 385 at a 99% confidence level, 5% margin of error and individual were randomly selected in the study areas. Their responses were analysed using Statistical Package for Social Sciences (SPSS) version 20.

Results

The result from the sample size of 385 in the studied area in both tertiary and secondary health facilities in FCT, Abuja showed that the health workers were between the age bracket of 18 to 64 years and the mean age was 41. The number of male HCWs was 132 (34.3 %) and 234 (63.8%) were female. Male: Female ratio was 1:1.8 (Approx.1:2). 335 (87%) were staying in urban area of FCT while 31(8.1%) were in the rural area. On vaccine acceptance, this study revealed that more than two third 252 (65.2%) of health care provider definitely choose to get the covid-19 but 30.2% choose not to get because of the side effect. 91(23.4%) plan to wait and see if the vaccine is safe before they will get While 81(21%) don't know whether the vaccine will work or not and lastly about 75(19%) did not trust the government (distrust). Also the level of how informed they were on Covid-19 were 90.9%, which means the level of awareness was very high. Majority of the respondents were willing to get the vaccine 251 (65.2%) while 110(30.2%) were willing not to get vaccine. The proportion of testing uptake was high (214; 56%) and the proportion of those confirm positive was low 21; (16.6%). Most of the respondents 385 (90.9%) had satisfactory /very high-level awareness on how to get covid-19 the vaccination.

Conclusion

The study showed there was high level of awareness, willingness to receive Covid-19 vaccine and a very high bad perception of the vaccine activities. Influencing factors that significantly affects the vaccine uptake probably was the side effect of the vaccine, the vaccine safety before receiving it, also to see if the vaccine is working or not (vaccine efficacy) and lastly government distrust and the conspiracy theories. All this need to be dealt with before covid-19 vaccine can be accepted.

Covid-19 vaccine hesitancy questions

The questionnaire extract questions on whether they had the vaccine, how many COVID-19 vaccinations have you received? Did you receive (or do you plan to receive) all recommended doses? If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated? Which of the following, if any, are reasons that you definitely wouldn't choose to get a COVID-19 vaccine? Which of the following, if any, are reasons that you probably wouldn't choose to get a COVID-19 vaccine? Which of the following, if any, are reasons that you only probably would choose to get a COVID-19 vaccine? Which of the following, if any, are reasons that you don't plan to receive all recommended doses of a COVID-19 vaccine? Please select all that apply why don't you believe that you need a COVID-19 vaccine? Do you have an appointment to receive a COVID-19 vaccine? Have you received the first dose of COVID-19 Vaccine? Do you intend to receive the second dose of COVID-19 Vaccine? Have you tried to get an appointment to receive a COVID-19 vaccine? How informed do you feel about how you will be able to get a COVID-19 vaccine? Would you be more likely or less likely to get a COVID-19 vaccination if it were recommended to you by each of the following: Friends and family, Doctors and other health professionals you go to for medical care, World Health Organization (WHO), Political leaders and Religious/traditional leaders? How concerned are you that you would experience a side effect from a COVID-19 vaccination?

1.0. INTRODUCTION

1.1 Background

An outbreak of a mysterious virus causing pneumonia occurred in late December, 2019 and characterized by fever, dry cough, fatigue, and with occasional gastrointestinal symptoms. It was epidemiologically associated with a seafood and animal market, the Huanan Seafood Wholesale Market, in Wuhan, Hubei, China ¹. The disease was deemed to be zoonotic in origin, from bat. This is the deadly third-generation virus in Corona family preceded by MiddleEast Respiratory Syndrome (MERS) in 2012 and Severe Acute Respiratory Syndrome (SARS) in 2003. After Rhinoviruses, Coronaviruses are ranked as the main cause of the commonplace cold without triggering any sickness ²

In 1937, the primary coronavirus was located in bats, rarely affecting humans and mostly circulating among animals like bats, camels, and cats. Later, they mutated to contaminate rats, cattle, pigs, mice, cats, dogs, horses, and turkeys. ³

However, because of mutation change, it had acquired the capacity to transfer from human to human through the air droplet after cough and sneeze from an infected person. The mortality rate caused by the virus was around 10%–15%.^{4,5} Even if the transmission dynamics are not completely understood and significant knowledge gaps still need to be filled⁶. An individual can get infected through touching of infected surfaces then touching the face, eyes, nose, and the mouth.⁷ The virus causes less severe symptoms than Ebola, but has a high competence of infection. The disease was officially named as Coronavirus Disease-2019 (COVID-19) by W.H.O on February 11, 2020. It is also named as Severe Pneumonia with Novel Pathogens on January 15, 2019 by the Taiwan CDC, the Ministry of Health and is a notifiable communicable disease of the fifth category. COVID-19 is a potential zoonotic disease with low to moderate (estimated 2%–5%) mortality rate. The WHO issued a public health emergency of international concern (PHEIC) alarm on January 30, 2020. By 11th March, 2020, it was identified as a pandemic (WHO, 2019). The outbreak of COVID-19 has currently spread widely to more than 120 countries and territories.^{4,5} The virus belongs to the family Coronaviridae, and subfamily of Coronavirinae and belong to the order Nidovirales, and the realm Riboviria.⁸ Seven human coronaviruses (HCoVs) are listed as follows: ARS, ERS, SARS-CoV-2, HCoV-229E, HCoV-OC43, HCoV-NL63, HCoV-HKU1.⁹ An unprotected hospital staff that was exposed to patients' droplets or through contact is prone to be infected and nosocomial infections ensue and this stresses the importance of good infection prevention and control.¹⁰ The spread is coming currently in waves, up to the fourth wave. Improved public safety response by early event identification, suspicious accidents monitoring, contact tracking and improved airport security, public awareness and safety staff caution are some of the intervention techniques proposed against the spread to other territories¹¹. Only familial clusters but also outbreaks in ocean liners especially cruise ships were reported. As of 29th March 2021, the global spread of confirmed cases was 126,890,643 million and 2,778,619 death. In Nigeria, confirmed cases were 162,641 with 2,049 deaths as of 30th March 2021.⁷

The infectious doses for SARS-COV1 is slightly higher than hundred but that of 2019-nCoV is not clear, but a specimen with a very high viral load of up to 108 copies/mL in patients' specimen was reported.¹² Consequently, WHO highlighted the excessively high burden on health system and healthcare professionals (HCPs), and called for intervention to address the immediate needs so as to prevent serious impacts of this outbreak on both physical and mental health of these health care providers, on the population as whole, and devastating socio, economic and political crises. Despite the various preventive measures, vaccine has been the most and best preventive measure that can control this pandemic. With huge success of developing various types of vaccines of covid-19, in almost all part of the world, vaccine hesitancy (VH) has become a very huge problem. Vaccine hesitancy defined by WHO as a delay in acceptance or refusal of vaccine despite the availability of vaccine services¹³ Nigeria received an estimated 4 million doses of the AstraZeneca/Oxford vaccine through the COVID-19 Vaccines Global Access (COVAX) facility, a partnership between Coalition for Epidemic Preparedness Innovations (CEPI), Global Alliance for Vaccines and Immunizations (GAVI), United Nation Children's Fund (UNICEF) and World Health Organisation (WHO) in March 2021.¹⁴ The National Primary Health Care Development Agency (NPHCDA), through the State's Primary Health Care Board, commenced the vaccination of Nigerians' priority groups

in March 2021, starting with frontline healthcare workers, strategic leaders, security officials and other public personnel identified as eligible for the first phase of vaccination.¹⁵ As the target date given by the Federal government of Nigeria for states to end the first phase of covid-19 vaccination by April 16, statistics obtained from the National Primary Health Care Development Agency (NPHCDA) showed that the turn out in many states remained very low, FCT attained 33.3%, however, FCT has disputed the figures, disclosing that the federal government's assessment was based on the 228,400 doses given to it, which it claimed was in excess of the 120,000 doses it actually required. Abia, Anambra, Akwa Ibom, Ebonyi, Enugu, Sokoto, Kogi and Taraba were all below the 50% of the target like the FCT. According to the figures, Abia has attained only 14.9 per cent; Akwa Ibom, 28 per cent; Anambra, 22.8 per cent; Ebonyi, 31 per cent; Enugu, 30.1 per cent; Rivers, 30.6 per cent; Sokoto, 33 per cent; Taraba, 19.5 per cent but some states such as Lagos, Ekiti, Ogun, Ondo, Osun, Katsina, Yobe, Kwara, Niger, Adamawa, Gombe, Jigawa, and Kaduna have vaccinated between 60 per cent and 111 per cent of the targeted population under the first phase.¹⁶

2.0 Methodology

2.1 Study design

The study design is a prospective retrospective study conducted September to October, 2021.

2.2. Study Population/Selection Criteria.

The study population comprised of health care workers in one tertiary and two secondary health care institutions in FCT, Abuja, Nigeria. The study design was a prospective retrospective study and the inclusion criteria Included all health care workers and exclusion criteria were the administrative staff. Respondents were recruited irrespective of gender, cultural background, or origin, aged 18years and above.

2.3. Sample Size Determination

Minimum sample size is determined using the by using the Cochran formula which is as shown below and this Cochran's formula allows the calculation of an ideal sample size given a desired level of precision, a desired confidence level, and the estimated proportion of the attribute present in the population.:

Where: e is the desired level of precision (i.e. the margin of error),

p is the (estimated) proportion of the population which has the attribute in Question,

q is $1 - p$.

The z -value is found in a Z table which is 1.96.

P Value = 0.5.

95% confidence, and at least 5% — plus or minus — Precision. A 95 %

Confidence level gives us Z values of 1.96, per the normal tables, so we get

$$(1.96)^2 \times 0.5 \times (1-p)/0.052$$

$$(3.8416) \times 0.5 \times (1- 0.5) / (0.0025)$$

$$(3.8416 \times 0.5 \times 0.5 /0.025$$

$$= (3.8416 \times 0.25) / 0.025 =385$$

So, a random sample of 385 participants will be the target population and will be enough to give the confidence levels needed. 385 questionnaires will be administered to the respondents in the study area of FCT, Abuja. However, the sample size used for the survey was 385 to take into account any incomplete and non- response data.

2.4. Sampling Technique.

The two secondary and one tertiary health care institution in the state were purposively selected: FCT University Teaching Hospital Gwagwalada and Maitama and Wuse District Hospital Using simple random sampling techniques,

2.5. Data Collection and Analysis.

Data was collected using a structured, self-administered online questionnaire from October 14 to December 15, 2021. A questionnaire of University of MARYLAND, USA survey to provide a set of the comparative effect of the impact of the novel pandemic was adapted. All participants were of aged 18 years and above and they provide their written consent on the questionnaire before responding to the questions. Those who agreed were directed to the questionnaire, and those who declined automatically exited the survey. The questionnaire was a hand-delivering, self-administered questionnaire that was filled by the respondent and collecting them later. The questionnaire extracts basic demographic information and vaccine acceptance. Individual identification information was not being collected, because the survey was completely anonymous. After administering the questionnaire and the response obtained from the respondents was kept under secure server. All responses were gathered and were treated with all confidentiality. The level of significant is 5%. A pilot study was carried out among 31 health care providers of Gwarimpa General Hospital, FCT, Abuja where participants was also randomly selected for clarity, acceptability, and readability. Finding from the field data collection after analysing were in agreement with the result from the field piloting conducted at Gwarimpa General Hospital in all the thematic area covered

ETHICS STATEMENT

This study was approved by the FCTA Health Research Ethics Committee (FHREC /2021/01/100/24-08-21). Individual written/ informed consent was also obtained from the respondents before the questionnaire was to be answered. All information sought was handled with utmost confidentiality and in accordance with the Declaration of Helsinki.

RESULTS

The result from the sample size of 385 in the studied area in both tertiary and secondary health facilities in FCT, Abuja showed that 116 (30.1%) of the health workers were between the age of 25 and 34 years while 35 (9.1%) were in the age bracket of 55 to 64 years and the mean age was 41. The number of male HCWs was 132 (34.3%) and 234 (63.8%) were female. Male: Female was 1:1.8 (Approx.1:2). Also, not less than half (50.9%) of the health workers were staying in FCT Metropolis (town) while 139 (36.1%) were staying in the (out skirt of Abuja) city clusters of FCT. Moreover, 335 (87%) were staying in urban area of FCT while 31(8.1%) were in the rural area. On vaccine acceptance, this study revealed that more than two third 252 (65.5%) of health care provider definitely choose not to get the covid-19 because of the side effect. 91(23.4%) plan to wait and see if the vaccine is safe before they will get vaccine, while 81(21%) don't know whether the vaccine will work. And lastly about 75(19%) did not trust the government (distrust). Majority of the respondents were willing to get the vaccine 251 (65.2%) those with vaccine hesitancy were 30.2%. The proportion of those tested was high (214; 56%) meaning vaccine uptake was high and the proportion of those confirm positive was as low as 21 (16.6%). Most of the respondents 385 (90.9%) had satisfactory /very high-level information /awareness on how to get covid-19 the vaccination. The main source of accurate information on Covid-19 for health care providers (HCPs) in this study was Nigerian Centre for Disease Control (NCDC), followed by the doctors and other health care professionals then World Health Organisation (WHO) the list was Twitter, Facebook and President Buhari.

Table 1: Socio Demographic Characteristics of the respondents (N=385)

Socio Demographic Characteristics	n (%)
Age Group	
18-24 years	73 (19)
25-34 years	116 (30.1)
35-44 years	51 (13.3)
45-54 years	92 (23.9)
55-64 years	35 (9.1)
Missing	18 (4.7)
Gender	
Male	132 (34.3)
Female	234 (63.8)
Missing	19 (4.9)
Area where you are staying	
City	139 (36.1)
Town	196 (50.9)
Village or rural area	31 (8.1)
Missing	19 (4.9)
In the last 7 days, did you do any work for pay, or do any kind of business, farming, or other activity to earn money, even if only for one hour	
Yes	215 (55.9)
No	156 (40.5)
Missing	14 (3.6)
Before February 2020, were you working for pay, or doing any kind of business, farming, or other activity to earn money?	
Yes	271 (70.4)
No	100 (26.0)
Missing	14 (3.6)
What is the main activity of the business or organization in which you work?	
Agriculture	28 (7.3)
Buying and selling	10 (2.6)
Construction	6 (1.6)
Education	6 (1.6)
Health	297 (77.1)
Personal Service	1 (0.3)
Professional / scientific / technical activities	1 (0.3)
Transportation	1 (0.3)
Other	11 (2.3)
Missing	24 (6.2)

What is the main activity of the business or organization in which you were working before February 2020?	
Agriculture	25 (6.5)
Buying and Selling	9 (2.3)
Education	11 (2.9)
Health	287 (74.6)
Manufacturing	1 (0.3)
Mining	8 (2.1)
Personal Service	2 (0.5)
Professional / scientific / technical activities	1 (0.3)
Transportation	1 (0.3)
Other	13 (3.4)
Missing	27 (7)
How many people slept in the place where you stayed last night (including yourself)?	
No one	26 (6.8)
1-3 people	184 (47.8)
4-7 people	90 (23.4)
8-10 people	9 (2.3)
More than 10 people	27 (7)
Missing	49 (12.7)
In the place where you are staying, how many rooms are used for sleeping?	
1 room	71 (18.4)
2 rooms	104 (27)
3 rooms	136 (35.3)
4 rooms	36 (9.4)
5 or more rooms	18 (4.7)
Missing	20 (4.2)

Source: Author, 2021

Variables	N=385 n (%)
Did you have to pay for this test?	
Yes	23 (6)
No	343 (89.1)
Missing	19 (4.9)
Have you wanted to get tested for coronavirus (COVID-19) at any time in the last 14 days?	
Yes	70 (18.2)
No	305 (79.2)
Missing	10 (2.6)
Have you had a COVID-19 vaccination?	
Yes	220 (57.1)
No	161 (41.8)
Missing	10 (2.6)
How many COVID-19 vaccinations have you received?	
1 vaccinations or doses	63 (16.4)
2 vaccinations or doses	157 (40.8)
None	134 (34.8)
Missing	31 (8.1)
Did you receive (or do you plan to receive) all recommended doses?	
Yes, received all recommended doses	155 (40.3)
Yes, plan to receive all recommended doses	88 (22.8)
Don't plan to receive all recommended doses	118 (30.6)
Missing	24 (6.2)
If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated?	
Yes, definitely	191 (49.6)
Yes, probably	60 (15.6)
No, probably not	70 (18.2)
No, definitely not	46 (12.0)
Missing	18 (4.7)

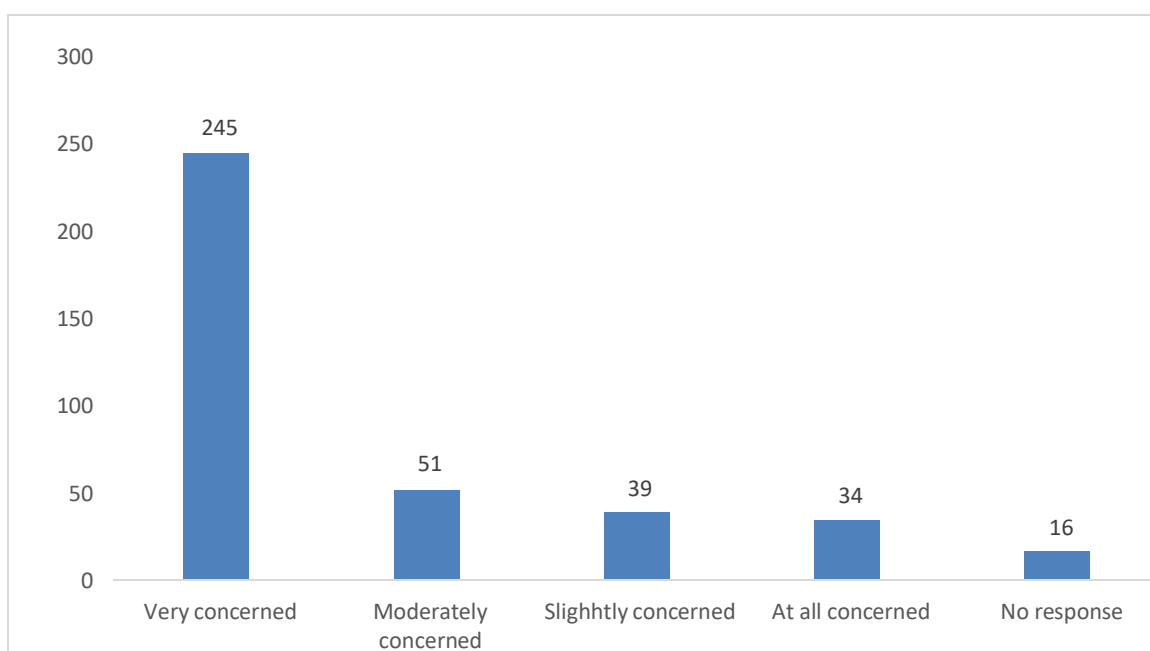
Source: Author, 2021

Table 2: Distribution of respondents based on medical response to COVID-19 in FCT

Reasons that you definitely wouldn't choose to get a COVID-19 vaccine?	N=371 n (%)
I am concerned about possible side effects of a COVID-19 vaccine	252 (65.5)
I don't know if a COVID-19 vaccine will work	81 (21)
I don't believe I need a COVID-19 vaccine	56 (14.5)
I don't like vaccines	42 (10.9)
I plan to wait and see if it is safe and may get it later	91 (23.4)
I think other people need it more than I do right now	31 (8.1)
I am concerned about the cost of a COVID-19 vaccine	8 (2.1)
It is against my religious beliefs	6 (1.6)
I don't trust the government	75 (19.5)
Other	35 (9.1)
Missing	14 (3.6)

Source: Author, 2021

Table 3: Respondents' reasons for definitely wouldn't choose to get a COVID-19 vaccine (Willingness)



Source: Author, 2021

Figure 1: Level of concerned by health workers that they would experience a Side effect from a COVID-19 vaccination

Reasons that you probably wouldn't choose to get a COVID-19 vaccine?	n (%)
I am concerned about possible side effects of a COVID-19 vaccine	218 (56.6)
I don't know if a COVID-19 vaccine will work	91 (23.6)
I don't believe I need a COVID-19 vaccine	56 (14.5)
I don't like vaccines	45 (11.7)
I plan to wait and see if it is safe and may get it later	85 (22.1)
I think other people need it more than I do right now	35 (9.1)
I am concerned about the cost of a COVID-19 vaccine	19 (4.9)
It is against my religious beliefs	15 (3.9)
I don't trust the government	90 (23.4)
Other	50 (13)
Missing	18 (4.7)

Source: Author, 2021

Table 4: Respondents' reasons for probably wouldn't choose to get a COVID-19 vaccine

How much do you trust these sources to provide accurate COVID-19 information?	Not at all n (%)	Somewha t n(%)	Mostly n(%)	Completel y n(%)	No response n(%)
Twitter	111 (28.8)	127 (33)	68 (17.7)	23 (6)	56 (14.6)
Facebook	104 (27)	113 (29.4)	83 (21.6)	27 (7)	60 (15.1)
Newspaper	67 (17.4)	120 (31.2)	92 (23.9)	33 (8.6)	73 (19)
Friends or family members	73 (19)	131 (34)	81 (21)	27 (7)	73 (19)
Co-worker or classmate	67 (17.4)	132 (34.3)	85 (22.1)	30 (7.8)	71 (18.4)
Doctors or other health care providers	63 (16.4)	72 (18.7)	109 (28.3)	79 (20.5)	62 (16.1)
Official government website	105 (27.3)	91 (23.6)	79 (20.5)	37 (9.6)	73 (19)
President Buhari	191 (49.6)	44 (11.4)	48 (12.5)	28 (7.3)	74 (19.2)
State Governor/Presidential Task Force on COVID-19	114 (29.6)	89 (23.1)	51 (13.3)	56 (14.6)	75 (19.5)
World Health Organization	59 (15.3)	68 (17.7)	79 (20.5)	105 (27.3)	74 (19.2)
Centre for Disease Control	58 (15.1)	97 (25.2)	66 (17.1)	87 (22.6)	77 (20)
State, Country, or City Health Department	84 (21.8)	79 (20.5)	74 (19.2)	69 (17.9)	79 (20.5)
CNN	62 (16.1)	121 (31.4)	73 (19)	69 (17.9)	60 (15.6)
Channels News	64 (16.6)	119 (30.9)	79 (20.5)	60 (15.6)	63 (16.4)
AIT News	75 (19.5)	96 (24.9)	77 (20)	73 (19)	64 (16.6)
Other local news (TVC, NTA)	87 (22.6)	96 (24.9)	68 (17.7)	60 (15.6)	74 (19.2)
Radio	81 (21)	103 (26.8)	67 (17.4)	58 (15.1)	76 (19.7)

Table5: Respondent level of trust on sources to provide accurate COVID-19 information

Use of sources of information on COVID-19 in last one week	n (%)
Twitter	
Yes	99 (25.7)
No	242 (62.9)
Missing	44 (11.4)
Facebook	
Yes	165 (42.9)
No	176 (45.7)
Missing	44 (11.4)
Newspaper	
Yes	143 (37.1)
No	185 (48.1)
No missing	57 (14.8)
Friends or family members	
Yes	159 (41.3)
No	172 (44.7)
Missing	54 (14)
Co-worker or classmate	
Yes	182 (47.3)
No	146 (37.9)
Missing	57 (14.8)
Doctors or other health care providers	
Yes	226 (58.7)
No	109 (28.3)
Missing	50 (13)
Official government website	
Yes	133 (34.5)
No	195 (50.7)
Missing	57 (14.8)
President Buhari	
Yes	64 (16.6)
No	263 (68.3)
Missing	58 (15.1)
State Governor/Presidential Task Force on COVID-19	
Yes	114 (29.6)
No	213 (55.3)
Missing	58 (15.1)
World Health Organization	
Yes	225 (58.4)
No	102 (26.5)
Missing	58 (15.1)
Centre for Disease Control	
Yes	227 (59)

No	99 (25.7)
Missing	59 (15.3)
State, Country, or City Health Department	
Yes	146 (37.9)
No	181 (47)
Missing	58 (15.1)
CNN	
Yes	185 (48.1)
No	154 (40)
Missing	46 (11.9)
Channels News	
Yes	206 (53.5)
No	133 (34.6)
Missing	46 (11.9)
AIT News	
Yes	207 (53.8)
No	136 (35.3)
Missing	42 (10.9)
Other local news (TVC, NTA)	
Yes	169 (43.9)
No	168 (43.6)
Missing	48 (12.5)
Radio	
Yes	167 (43.4)
No	169 (43.9)
Missing	49 (12.7)

Source: Author, 2021

Table 6: Source of information use to get information on COVID-19 in the last one week

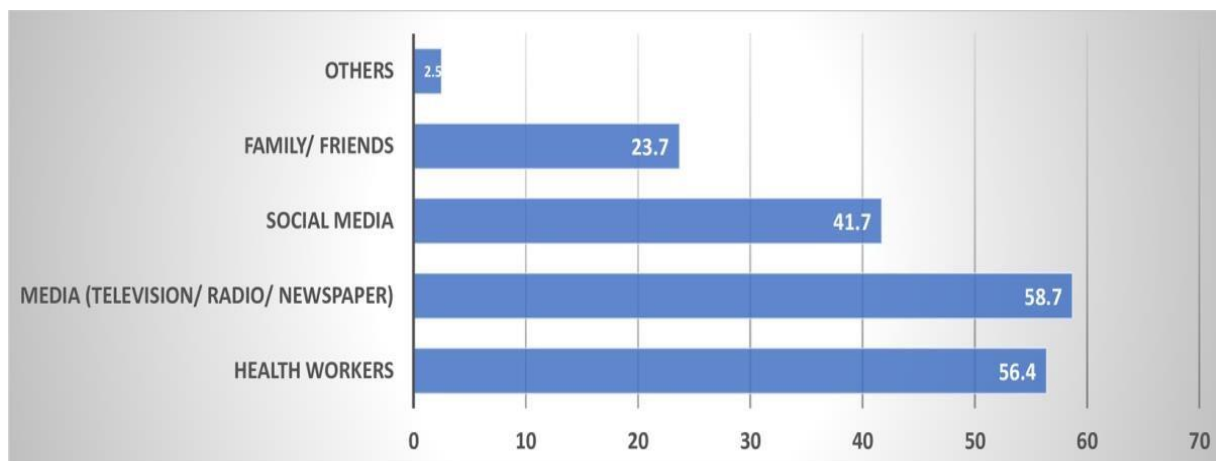


Fig2. Respondents' sources of information of first phase COVID-19 vaccination exercise in Nigeria.

Individual responses may have multiple sources of information. The total sources of COVID-19 vaccination information are not equal to the total or respondents.

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Discussion

This study aimed to assess the factors influencing covid-19 hesitancy among healthcare providers in FCT, Abuja looking into factors as their willingness to get the vaccine possible side effect of the vaccine, choose not to get the vaccine but to wait and see if the vaccine is safe, also they do not whether the vaccine will work or not and lastly to see their level of trust to the government. World Health Organisation, WHO, recently warned countries with a low number of vaccinated people like Nigeria to be on guard as the increase has led to unacceptably high mortality.

Unfortunately, one year after Nigeria rolled out COVID-19 vaccination, the country partially vaccinated 20,157,050 (16.4%) eligible persons out of its 200 million population as of 19th March 2022 and fully vaccinated was 10,925,624 (9.8%) of eligible persons, according to data obtained from the National Primary Health Care Development Agency, NPHCDA.

Vaccination remains the ultimate step towards reducing severe illness from the pandemic as well as saving lives of affected persons. But in Nigeria and some other African countries, vaccination has remained low due to vaccine hesitancy, non-compliance, lack of confidence in vaccine and inequalities in the distribution of the vaccines.¹⁷

In this study the willingness to get Covid -19 vaccines was 65.2% and the level of awareness was also high (90.9%) and vaccine hesitancy was 30.2%, from a report from NPHCDA Abuja Nigeria vaccine hesitancy in FCT attained 33.3%, according to the figures, Abia has attained only 14.9%; Akwa Ibom, 28%; Anambra, 22.8%; Ebonyi, 31%; Enugu, 30.1%; Rivers, 30.6%; Sokoto, 33%; Taraba, 19.5% all below the 50% of the targeted population under the first phase.¹⁶

In Nigeria, in a nation survey study revealed 9.3% Vaccine hesitancy rate among HCW,¹⁸ so also in a study done in south-south part of Nigeria Vaccine hesitancy was as low as 2%¹⁹.

The level of willingness by respondents to receive COVID-19 vaccine in this study was 28.8%. In global cross-sectional studies done March, 2021 from 45 different countries including Nigeria, the findings of the systematic review on the level of willingness to receive COVID-19 vaccine revealed the overall rate of participants' willingness to receive a COVID-19 vaccine ranged from 27.7% from Congo, which was the lowest, to 91.3% from China, which was the highest, followed by UK (86%) then Israel (85%) respectively^{20,21} while that of Nigeria was 50.2%. However, from this study the willingness to receive COVID-19 vaccine was 28.8% which compared favourably with that of Congo. Further studies like this in different parts of the country need to be carried out before definitive conclusion can be made. This low willingness to vaccine uptake suggests that there is a serious problem for managing and controlling the current COVID-19 pandemic

Generally speaking, several studies showed that there was different level of variability in terms awareness, perception, willingness, and acceptance rate of the COVID -19 vaccine.^{22,23,24} FCT, Abuja the level of willingness among the HCP to get the vaccine was very high up to 65.2% also Nigeria and Ghana in just over 50% of the population studied, are willing to take the vaccine and recommend it to others^{25,26,27,28} But in another survey carried out before the commencement of the vaccination exercise in Nigeria, it revealed poor perception and unwillingness to participate in COVID-19 vaccine trial.²⁹ And this is true for we have seen the destruction of expiring vaccine in Nigeria, in a study done in South Africa, with a sample size of 5,416, 94% of the participants residing in 34 countries of Africa and the rest elsewhere, Result showed that 40% of Africans support mandatory vaccinations, About 26% did not think that vaccination was necessary at all, and 43% believed that there are suitable alternatives to COVID-19 vaccination while 63% of participants would receive a COVID-19 vaccination as soon as possible. "The odds of vaccine hesitancy were substantially lower if participant's perceived risk of infection or sickness was very high," said Shameem Jaumdally, co-author and senior research scientist at the University of Cape Town's Lung Institute, in South Africa. "The majority of respondents were worried about the vaccines' side effects, and many were even concerned that they might get infected with the coronavirus by obtaining the vaccine". Just as the finding in this study among the health care providers of FCT, Abuja.

Folorunso Oludayo Fasina, a professor in the Department of Veterinary Tropical Diseases, University of Pretoria and co-author said: "Central Africa particularly had the highest level of COVID-19 vaccine hesitancy at 66.7% of the surveyed population." Compared to that of FCT HCP which was 30.2% not willing to take the vaccine was lower.

"A number of the countries in the Central African belt are characterized by conflict and political instability, poor public infrastructures and compromised health systems, all of which pushed the population to the extreme edge of health and exposed them to socio-economic vulnerabilities.

The professor also added “There is a need to tackle misconceptions and myths around the COVID-19 vaccines through targeted risk communication and community engagement strategies, in order to increase awareness, knowledge, and dissemination of accurate vaccination information to boost confidence in the safety and effectiveness of these vaccines,”

Abdul-Azeez Anjorin, medical virologist and team leader, Influenza and other Respiratory Tract Virus (IORTV) Research, Lagos State University, called for engagement of community members in non-technical aspects of vaccination campaigns, such as community meetings and advocacy.

He emphasized the need to utilize the use of personalized messages and testimonials of COVID-19 survivors, who have recovered from the illness through medical and vaccination interventions.

Fasina said COVID-19 Vaccines Global Access (COVAX), a worldwide initiative aimed at equitable access to COVID-19 vaccines, had not reached its optimum delivery level, with about 7% of Africans vaccinated. He said supplies are sometimes delayed and arrive just before their expiry date, leaving little time for national distribution.

Respondents identified the value of convenience to improve the accessibility of vaccinations. Although many of them were willing to travel up to an hour to receive vaccines, they recommended vaccination at homes or offices. Addressing these “last-mile issues” could drastically reduce vaccine hesitancy, said Jaumdall³⁰ United States, level of willingness to vaccinate declined during the pandemic compared with Malaysia and Bangladesh had a more positive attitudes to receiving the COVID-19 vaccine.^{31, 32,33} In a study carried out in Australia to understand the perception towards future COVID-19 vaccination, majority of the public had positive view.³⁴ A study in Bangladesh showed vaccine uptake was affected by inadequate knowledge and perception of respondents.³⁵ In the United Kingdom, Black African and Black Caribbean groups were less likely to be vaccinated (50%) compared to White groups (70%)
36,37

Trust in the government, vaccine safety and they do not know whether the vaccine will work or not, also significant issues associated with vaccine hesitancy in this study, HCW were 19% choose not to get the covi-19 vaccine because of distrust to the government and 23.4% because of vaccine safety, so also in the study done among tertiary HCW in Imo state, Nigeria more than two and a half times more likely to be COVID-19 vaccine hesitant with up to 20% , that the government has an ulterior motive in encouraging vaccinations. Similarly, close to one-third of the respondents did not trust the vaccine producers to develop safe and effective vaccines. These perceptions of distrust in the government and vaccine safety might have led to low vaccine uptake and more than half believe there was not enough information about the vaccine and its safety. Nevertheless, more than 70% of the respondents reported that their consideration for the vaccine depended on its safety and duration of testing. The distrust to the government among HCW of FCT, Abuja and Nigeria was a problem on ground even before the onset of covid-19, FCT HCP who even went on series of strike because of non- payment of salaries, salary irregularities and shortfalls since the migration of intergraded Personnel and

payroll information System (IPPS) , non-payment of covid-19 allowances, rural allowances and non-remittance of 3rd party deduction and non-payment of hazard allowances and inadequate supply of PPE and lack of moral support either from the government and from the community.^{38, 39} All these mean there is no motivation and will resulted the distrust and make the health care workers not to accept any programme that the government will bring willingly. Just as in the study done applied on a behaviour len to understand drivers of COVID-19 vaccination uptake among healthcare workers (HCWs) in Nigeria, showed that Motivation and ability were predictor of being fully vaccinated. ⁴⁰ The prevalence of vaccine hesitancy among health care providers of FCT, Abuja, Nigeria was 30.2% not far away from what was found in a study done in also among health care workers in in tertiary health care institutions in Imo state, Nigeria, the prevalence was 35.4% and this was similar to the study done in india.⁴¹ These two studies of FCT, Abuja and that of Imo state were somehow lower than the one found in Ethiopia which was 45.9%. ⁴² Also in the study done in Imo state it showed that vaccine hesitancy among health care was higher among the nurses compared to the doctors.

Being that the nurses are our first contact to the patients and spending more time with them, therefore they are better influencer, now that they are covid19 vaccine hesitancy positive, there is likelihood to ill-advice / counsel them against the vaccine uptake which in turn will affect the community uptake. The importance of community vaccine uptake cannot be over emphase.^{42,43,44,45} Health care workers were more likely to be willing to get vaccinated as in the findings in this study which showed up to 65.2% level of willingness as compare to non-health workers. As was found in some literatures, the majority of those unwilling to receive the vaccine were non-health workers [35, 36].^{46,47} This might imply that the subsequent phases of the COVID-19 vaccination exercise, which will involve the public, might experience a low turnout of people. Continuous targeted messages and education focusing on the effectiveness and safety assurance of the vaccine are essential to improve the COVID-19 vaccination exercise and increase uptake. There should be active involvement of all cadres of health workers (physicians, pharmacists, nurses, community health workers, and others) in ensuring health education of COVID-19 vaccination programs. Healthcare workers play an important role in a successful vaccination program. Their knowledge and awareness determine a recommendation to non-health workers.⁴⁸ Fig 2 Doctors and other health workers have been identified as potential communicators through which messages emphasizing the medical and social benefits of the COVID-19 vaccine can be effectively disseminated.⁴⁹ To counter misinformation and improve trust, the NPHCDA in partnership with multinational media platforms in Nigeria, has engaged in various initiatives to ensure residents of Nigeria get credible information on COVID-19 vaccination. For instance, there was a range of Facebook frames and Instagram stickers that allowed people to share their support for getting vaccinated with their family and friends. The frames and stickers include banners with a statement such as “Let’s Get Vaccinated” or “I Got My COVID-19 Vaccine”. ⁵⁰

Recommendations

- 1) PPE to be very much available.
- 2) Insufficient testing capacity for COVID-19, molecular laboratories and diagnostic centres must be scale up, and should be made free.
- 3) The vulnerable groups, such as children, elderly, women and people with comorbidities, and people living with disability be monitored and protected.
- 4) There should be proper documentation and provision of social services rendered to people in isolation and quarantine centres
- 5) There is a need for intensifying creation of awareness delivery of comprehensive and correct informative messages on Covid-19 to the public control of COVID-19, So as to reduce vaccine hesitancy.
- 6) Government should bring out strategies to discourage stigmatization against COVID-19 positive individuals.
- 7) There is need to intensify efforts to review data and emerging evidence and make the outcomes available to the stakeholders.
- 8) Government, community, the hospital guidance and Team support from health Care to support and training of HCP, for these will create a Protective factor against adverse mental health outcomes and Safety of their families.

Conclusion

FCT, Abuja, Nigeria and Minimum Low in-come countries should focus of increasing motivation to HCWs so as to increase Covid-19 uptake. And there must be continuous targeted messages and education focusing on the effectiveness, efficacy and safety assurance of the vaccine, so as to improve the COVID-19 vaccination exercise and uptake. Involvement of all cadres of health workers (physicians, pharmacists, nurses, community health workers) religious leaders, Government and others in creating awareness on COVID-19 vaccination programs. As supportive measure, telemedicine for monitoring and service delivery with government and communal support is very important for increasing the competence of healthcare workers and will decrease the degree of the mental disorders.

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