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ASSESSMENT OF KNOWLEDGE, ADHERENCE TO PREVENTIVE MEASURES AND WILLINGNESS TO ACCEPT COVID-19 VACCINE AMONG PATIENTS ATTENDING KUNCHINGORO PRIMARY HEALTHCARE CENTER IN ABUJA

Augustine Ajogwu[1], Ojechi Maria Chisom[2], Ukasha Hameedah[3], Taqiyya Abdullahi[4], Gani Muhammad Idris[5], & Chidumebi. F. Ajogwu[6]

[1-5]Department of Community Medicine, Nile University of Nigeria, Abuja
[6]College of Medicine, Godfrey Okoye University, Enugu, Nigeria

Corresponding Author: Dr. Augustine Ajogwu MBBS, MBA, MPH, FMCPH/CM Consultant Public Health Physician and Senior lecturer, Department of Community Medicine, Nile University of Nigeria, Abuja, Nigeria. Tel: 08035527638, 09033364436 Email: austine.ajogwu2@gmail.com, ichubaebi@yahoo.com, ORCID ID https://orcid.org/0000-0001-7546-0835

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ABSTRACT

The rapid spread of COVID-19 worldwide stimulated global efforts since 2019 and led to immense scientific progress and rapid development of vaccines for Covid-19 infection. Knowledge of the virus and its prevention would modify behavior and strengthen patient's willingness to accept COVID-19 Vaccine. Hence, this study aims to assess the knowledge, adherence to COVID-19 preventive measures and the willingness to accept COVID-19 vaccine among patients in the Kuchingoro primary health care center Abuja FCT. A descriptive cross- sectional study conducted among 230 adult patients age 18 year and above and multi stage sampling method was used to select eligible respondents. Data was collected using interviewer administered questionnaire. Results showed that majority of the respondents 152 (66.1%) had poor knowledge while 78 (33.9%) had good knowledge of Covid-19, with a mean score of 46.9 ± 11.6. However, they adopted good preventive measures. Multivariate analysis showed that good knowledge is a predictor of willingness to accept vaccine and it can be as high as 4 times (OR = 2.17; 95% CI = 1.11 to 4.23), Likewise, those respondents that adhere to preventive measures a more willing to accept Covid-19 vaccine. The study has shown that respondent's knowledge of Covid-19 was poor. However, the respondent's adherence to preventive measures appeared good but few respondents were willing to accept Covid-19 vaccine. Behavior change communication need to be intensified in the communities in order to improve the level of knowledge and respondent's willingness to accept COVID-19 vaccine.

Keywords: Knowledge, preventive measures and willingness to accept vaccine, Africa

Introduction

Wuhan, China, reported the first cases of a group of pneumonia diseases on December 31, 2019. The first recorded case of coronavirus occurred on January 7, 2020. Coronaviruses are categorized as zoonotic diseases, which means that animals are usually the source of human infection. COVID-19, also known as the coronavirus disease, is a new strain of the coronavirus that has never been discovered in a human (Abedin et al., 2021). The WHO Director General designated the novel coronavirus (COVID-19) outbreak a Public Health Emergency of International Concern (PHEIC) on January 30, 2020, and a few months after the disease outbreak in Wuhan, China, the WHO declared the outbreak a pandemic on March 11, 2020 (Alexis, 2022). According to Chia (2020), as of August 24, 2021, there were about 212 million COVID-19 cases and 4.4 million deaths worldwide.

On February 27, 2020, the first coronavirus (COVID-19) case in Nigeria was documented in Lagos State (Akif, 2021). Nigeria stopped foreign flights into the country on March 23, 2020, when there were fewer than 50 confirmed cases, in an effort to slow the spread of the coronavirus infection. According to Akif (2021), the number of confirmed COVID-19 cases in Nigeria increased to 135 in 12 States by March 31, 2020, and two people had died. This was followed by a 14-day lockdown in the Federal Capital Territory (FCT), Lagos, and Ogun States, which were the epicenters of the disease at the time. The Nigerian president subsequently imposed a second 14-day lockdown (Lucia, 2021).

Promoting non-pharmaceutical measures among the general public, such as frequent hand washing, physical distancing, banning large gatherings, and wearing face masks in public settings, among other things, was the first public health response to contain the pandemic (Oyeniran, 2020; El-Elimat, 2021 & World Health Organization, 2019). The pandemic affected almost every aspect of life and created a lot of disturbance. To stop the virus's spread,

governments everywhere were forced to impose and enforce harsh limitations on human activities (Hager, 2020).

By physically separating people, the lockdown was intended to slow the virus's transmission (Lucia, 2021). As of June 28, 2021, there were an estimated 167,467 COVID-19 cases and 2,119 deaths as reported in Nigeria. Global efforts were sparked by the COVID-19 virus's quick spread and infection rate, which resulted in significant scientific advancements and the quick creation of vaccines. Many vaccinations underwent clinical trials, and in December 2020, a Pfizer/BioNTech vaccine was authorized for emergency use (Lucia, 2021). As soon as safe and effective COVID-19 vaccines were developed, nations began acquiring the vaccines. Vaccine demand has never been higher. In an effort to halt the coronavirus's spread and save lives, the first vaccines—3.92 million doses—were sent to Nigeria via the COVAX facility on March 2, 2021 (Lucia, 2021). Panic was sparked by the COVID-19 virus's rapid global spread and the resulting mortality and morbidity. People's willingness to follow established preventative measures would be strengthened and behavioral patterns might be changed with a thorough understanding of the measures (Lazarus et al., 2021). Although the rapid development of COVID-19 vaccines is a remarkable achievement, there are several obstacles to overcome before the world's population may be effectively vaccinated, from development to distribution, implementation, and, most importantly, acceptance (Oyeniran, 2020).

Additionally, the ability of governments to properly and safely deliver vaccinations and convey the advantages of vaccination is crucial for fostering public faith in the vaccine, particularly now that it has been incorporated into the regular immunization schedule (Oyeniran, 2020). The study's goal was to evaluate the patients' knowledge, readiness to accept the COVID-19 vaccine, and adherence to preventive measures while they were at Primary Healthcare Center (PHC).

METHODS

Study Design and Setting

The study employed a cross sectional study design to determine the knowledge, adherence to preventive measures and willingness to accept covid-19 vaccine among patients attending kuchingoro Primary Healthcare Center in Federal Capital Territory, Abuja

Study Population

The population consist of adult patients accessing healthcare services and caregivers bringing children for health services at Kinchingoro PHC in the FCT, Nigeria.

Sampling Technique

The sample size was determined by applying the formulae:

$$n = \frac{Z^2pq}{d^2}$$

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

Where n = Sample size when population ≥10,000

n_f = Sample size when population <10,000

Z = Standard normal deviation that corresponds with the level of confidence

d = Level of precision (maximum error of estimate),

p = Estimated proportion of an attribute that is present in the population, and

q = 1-p.

N = Population size

At 95% confidence level, with d = 5% (0.05), if p = 20% (prevalence of adherence to COVID-19 preventive measures in previous study) and N = 1,300 (monthly attendance at the PHC facility),

Z = 1.96, p = 0.2, q = 1-0.2 = 0.8

Then, $n = \frac{1.96^2 \times 0.2 \times 0.8}{0.05^2}$

$n = 245.8624 \approx 246$

$n_f = \frac{246}{1 + 246}$

1300

n_f = 207, Giving room for 10% non-response (NR)

Adjusted sample size = n .

1 – NR Where n = Calculated sample size, NR = Non response rate

Adjusted sample size = 207

1-0.1

= 207

0.9 = 230 was used for the study and multi-stage sampling technique was used to select respondents for the study. A systematic random sampling technique was employed to select respondents. The estimated number of patient or caregivers that attend the PHC in one month is 1,300 (approximately 40 per day). Data were collected in a period of four weeks from Monday to Friday making a total of 20 days. Twelve (12) participants (obtained by dividing the sample of 230 by 20 days) were predetermined for each day, making the sampling interval per day to be 3 (40/12). The first participant to be selected among the first three patients attending the PHC per day was selected by simple random sampling (balloting), after which every 3rd person was selected until 12 participants were selected per day.

Data Collection Tool

This consists of structured questionnaire containing information about **so**cio-demographic characteristics, knowledge of COVID-19, adherence to COVID-19 preventive measures, willingness to accept COVID-19 vaccines. It was pre-tested in Apo-resettlement primary health care centre Abuja among patients attending the PHC to ensure validity of the questions. The questionnaire was administered in English and supported with translation to local language.

Data Analysis

The obtained data were entered into and analysed using Statistical Package for Social Sciences (SPSS) version 25. Variables were presented using frequency tables and charts. Numerical data were summarized using mean and standard deviation, while categorical data were summarized using percentage. Each of the 25-item knowledge questions was scored 1 for correct answer and zero for wrong answer. Each respondent's total score was expressed as a percentage of 25 (total possible score). Percentage knowledge score ≥50% was considered to be good, while score <50% was considered to be poor. Similarly, each of the 12-item adherence questions was scored 1. Each respondent's total score was expressed as a percentage of 12 (total possible score). Percentage adherence score ≥50% was considered to be good, while score <50% was considered to be poor. Chi-square test was used to determine the associations between knowledge of COVID-19, adherence to preventive measures, willing to accept COVID-19 vaccine and socio-demographic characteristics. Multiple logistic regression analysis was carried out to identify the predictors of good knowledge of COVID-19, adherence to preventive measures and willing to accept COVID-19 vaccine. The level of significant was set at 0.05.

Ethical Consideration

Ethical approval was obtained from the Health Research Ethics committee of Federal Capital Territory, Abuja. Informed consent was obtained from individual respondent prior to interview. The objectives of the research and how the results would be used were explained in detail. Confidentiality and anonymity was assured. Privacy during the interviews was maintained. Respondents were notified of their freedom to leave the research at any time and have right not to answer any question they find difficult or unwilling to answer. (FHREC/2022/01/30/25-03-22

Results

Respondents Knowledge of Covid 19.

A total of 230 respondents were used for the study with a response rate of 90%. The age range of the respondents was 18-60 years with mean age of 32 ±4 years. More than half of the respondents had secondary education (67.4%), attended tertiary education (18.3%), while (2.2%) had no formal education (See table 1a for details)

Table 1a: Knowledge of COVID-19 – 1

Variable	Frequency (n = 230)	Percent
COVID-19 the same as Flu virus		
Yes	33	14.3
No	97	42.2
Don't know	100	43.5
Cause of COVID-19		
Bacteria	19	8.3
Fungi	24	10.4
Virus	56	24.3
Don't know	131	57.0
Eating/contacting wild animals causes COVID-19 infection		
Yes	41	17.8
No	88	38.3
Don't know	101	43.9
Possible for COVID-19 positive person to show no symptom		
Yes	45	19.6
No	75	32.6
Don't know	110	47.8
Incubation period of COVID-19		
Less than 7 days	51	22.2
1–14 days	23	10.0
2–21 days	10	4.3
1–3 months	20	8.7
Don't know	126	54.8
Those who can get infected with COVID-19 1		
Old people only	118	51.3
Young adults only	7	3.0
Anyone can be infected	85	37.0
Teenagers and children only	20	8.7

Majority of the respondents 152 (66.1%) had poor knowledge of Covid 19(<50%), while 78 (33.9%) had good knowledge of covid 19 (≥50%), with mean score of 46.9 ± 11.6 (See table 1b for details)

Table 1b: Knowledge of COVID-19 – 2

Variable	Frequency (n = 230)	Percent
Symptoms for COVID-19		
High fever	163	70.9
Runny nose	49	21.3
Dry cough	196	85.2
Breathing difficulty	139	60.4
Muscle pain	57	24.8
Fatigue	37	16.1
Bleeding	42	18.3
How the virus spread		
Air droplets (from patient sneezing/coughing)	133	57.8
Mosquitoes/flies	101	43.9
Contact with contaminated surfaces	165	71.7
Close contact with people who have the virus	77	33.5
What can kill the virus		
Surfaces cleaned with diluted chlorine	145	63.0
Alcohol-based sanitizers	98	42.6
Soap/detergents	174	75.7
Water alone	111	48.3
COVID-19 preventive measures		
Use of face mask	127	55.2
Social distance	176	76.5
Hand sanitizer	178	77.4
Covid-19 vaccine	71	30.9
Knowledge score (%)		
<50	152	66.1
≥50	78	33.9
Mean	46.9 ± 11.6	

Key: Good knowledge ≥50%; Poor knowledge <50%

Adherence to COVID-19 preventive measures.

However, a good number of respondents, 212 (92.2%) of the respondents wash and disinfect hands, 113 (49.1%) observed physical distance, 125 (54.3%) wear face mask, 44 (19.1%) disinfect gadgets, 114 (49.1%) use alcohol based hand sanitizer, while 40 (17.4%) comply with

government instructions on covid 19. About 109 (47.4%) of respondents had poor adherences at <50% while 121 (52.6%) had good adherences at ≥ 50% with a mean score of 50.8 ± 18 (See table 2 for details)

Table 2: Adherence to COVID-19 preventive measures

Variable	**Frequency (n = 230)**	**Percent**
Usually observe the 1.5-2m physical distance rule	113	49.1
Usually wear a face mask when going out	125	54.3
Usually wash hands regularly	192	83.5
When cough/sneeze, always cover mouth and nose	212	92.2
Avoid touching face (eyes, nose, mouth)	59	25.7
Travel within the last 7 days	63	27.4
Usually disinfect phone when get home	44	19.1
Usually use alcohol-based hand sanitizer during the day	114	49.6
When cough/sneeze, always wash or disinfect hands immediately	212	92.2
Stay at home when having flu-like symptoms	60	26.1
Had visited crowded places in recent times	165	71.7
Complied with the stay-at-home instruction from government	40	17.4
Multiple responses		
Adherence score (%)		
<50	109	47.4
≥50	121	52.6
Mean	50.8 ± 18.1	

Key: Good adherence ≥50%; Poor adherence <50%

Willingness to accept COVID-19 Vaccine

Even though majority of respondents 219 (95.2%) are aware of the covid-19 vaccine, only (22.2%) of respondents were willing to accept the vaccine. Major reason, over two-third 159 (69.1%) of respondents feels vaccine may be ineffective (See table 3 for details)

Table 3: Willingness to accept COVID-19 Vaccine

Variable	**Frequency (n = 230)**	**Percent**
Heard of COVID-19 vaccine		
Yes	219	95.2
No	11	4.8
Willing to accept COVID-19 vaccine if available		
Yes	51	22.2
No	179	77.8
Reasons for not willing to accept COVID-19 vaccine		

Fear of side effect	157	68.3
Vaccine may be ineffective	159	69.1
Use other methods of COVID-19 prevention	55	23.9
Vaccine may turn into COVID-19	86	37.4
Vaccine may affect my health	131	57.0

Multiple logistic regression of willingness to accept COVID-19 vaccine and associated factors

The respondents with good knowledge of Covid 19 were 2 times more likely to be willing to accept Covid-19 vaccine than those with poor knowledge. It could be as high as 4 times (aOR = 2.17; 95% CI = 1.11 to 4.23). Likewise, those respondents that adhere to preventive measures are more willing to accept covid 19 vaccine (See table 4 for details)

Table 4: Multiple logistic regression of willingness to accept COVID-19 vaccine and associated factors

Predictor variable	β	SE	Wald	p-value	Adj. OR	95% CI	
						Lower	Upper
Constant	-1.86	0.28	43.86	<0.001*			
Knowledge (Good/Poor)	0.77	0.34	5.15	0.023*	2.17	1.11	4.23
Adherence to prevention (Good/Poor)	0.52	0.35	2.19	0.139	1.68	0.85	3.34

* Statistically significant β = Regression coefficient; SE = Standard error; Adj. = Adjusted; OR = Odds ratio

Discussion

The respondent's knowledge of covid 19 was generally poor. However, a number of the respondent's adherence to preventive measures were good but few were willing to accept covid 19 vaccine. The poor level of knowledge was attributed to the low level of education among the study population in which majority of 155 participants had only a secondary school certification and area of resident, as majority of the respondents (70%) that had poor knowledge live in rural areas. These finding is similar to a study done in Gwagwalada, Abuja and Lagos, Nigeria, which showed that the level of knowledge of COVID-19 was poor. (Ijeoma, 2021; Ogolodom et al., 2020). The level of knowledge was associated with the level

of education of participants. This is similar to the study done in Ghana but in contrary to the findings in a study done in Cameroon where they found that the knowledge of Covid 19 was good (Serwaa, 2019; Ngwewondo et al., 2020)

Adherence to preventive measures against covid 19 was geared towards reducing the disease transmission among the populace. The study findings revealed good adherence to preventive measures to covid 19 among the respondents, 52.6% of the respondents were observed to adhere to COVID-19 preventive measures. This increased adherence to covid 19 preventive measures could be as a result of government restriction of movement during the pandemic and high enforcement of public health laws to improve the preventive measures in various working places and communities in spite of poor knowledge of covid 19. The good adherence found in this study was similar to the findings in a study done in Ethiopia where 50% of respondents adhere to recommended COVID-19 preventive measures (Bante et al., 2021; Mose, 2021).

Some of the preventive measures found in this study, cough etiquette (92.2%), physical/ social distance, 54.3% wear face mask when going out, 83.5% wash hands regularly, 25.7% avoid touching face, 19.1% disinfect phone/gadgets, 49.6% use alcohol – based hand sanitizer during the day, 17.4% complied with the restriction order from government. This findings is slightly different to the findings in a study done in Somalia, which showed that the adherence rate to preventive measures of COVID-19 ranged from 51.2% for mask use, 87.4% for cough etiquette.(Ahmed et al,2020) Similarly, in a cross-sectional study done in Kenya among 353 respondents, the level of adherence to COVID-19 preventive measures was good with 50% of respondent that visited crowded place, 90% wear face mark and 67% maintain social distances (Omotoso, 2021; Ondieki, 2022)

The study observed that among the respondents with low willingness to accept COVID-19 vaccine. Over 219 respondents (95.2%) heard of COVID-19 vaccine but majority 179(77.8%)

of respondents were unwilling to accept COVID-19 vaccine even if it is available, most of them mentioned various reasons for not accepting the vaccine, some mentioned fear of side effects (68.3%) as the reason of not accepting the vaccine, 159(69.1%) mentioned vaccine may be ineffective, 86(37.4%) mentioned vaccine may turn into Covid-19 infection, 131(57.0%) mentioned vaccine may affect their health. There is therefore, great need to continue to educate patients that access primary health care centers about the efficacy and effectiveness of covid 19 vaccine especially now that it has been integrated into the vaccination program in the primary Health Centers. Community engagement and community participation in health cannot be over emphasized so that community's fears about vaccines and its effectiveness can be allayed.

Similarly, in a study done in South Africa, the pooled prevalence of the willingness to accept Covid-19 vaccine among respondents was very low with 23.28% (Wake, 2021) The willingness to accept covid 19 vaccine varies from one Nation to the other. In Nigeria, based on the willingness to accept Covid-19 vaccine among health works, it was observed that only 27.7% expressed willingness to accept the vaccine (Robinson, 2021) The rate of willingness to accept the Covid-19 vaccine, remains a worldwide challenge, according to the findings of a systematic review, the estimated pooled prevalence of acceptance towards Covid-19 vaccine among adults in Africa was less than 50% which indicated a critical issue in the control and management of the pandemic in Africa (Lazarus et al., 2021) Globally, most studies reported that men are more likely to accept Covid-19 vaccine than women while other variables that are associated with lower vaccine acceptances are due to living in rural area and lower income (Lazarus et al., 2021) Also, the study done in Brazil, recorded that about 9.6% participants were willing to accept the COVID-19 vaccine while 27% of the participants were unwilling to accept the vaccine (Fajar et al., 2022; Oladapo, 2021; Bono et al., 2021). The strength of the study is that it assessed the knowledge, Adherence to preventive measures and willingness of

the patients to accept covid 19 vaccine in the primary health care centers and the limitation is misreporting and recall bias as data collection was by self- reporting. Casual inference cannot be made as it was cross sectional study.

Conclusion

The study has shown that respondent's knowledge of covid 19 was poor. However, a great number of the respondent's adherence to preventive measures appeared good but few are willing to accept covid 19 vaccine as a preventive measure. Behaviour Change Communication need to be intensified in the Primary Health Centers and the communities in order to improve the level of knowledge and willingness to accept Covid-19 vaccine among community members.

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Author Biographies

A. Ajogwu; Consultant Public Health Physician and Senior lecturer, Department of Community Medicine, Nile University of Nigeria, Abuja, Nigeria.

Augustine Ajogwu is specialist public health physician and health care manager, with graduate degrees and fellowship in public health and community medicine. He has worked in the field for some years now and has broad background and knowledge in public health and community medicine, Health Management and medical research. He had specialized training and expertise in public health and Epidemiology, health management/policy and data analysis.
He finished Basic Medical degree in 2002, Master of Business Management/Health Management degree in 2011 and Master of Public health degree in 2012, from Nigerian Universities. Subsequently, he joined medical specialty residency training in public health/community medicine and bagged membership of West African College of Physicians in 2016 and a Postgraduate Fellowship degree from the National Postgraduate Medical College of Nigeria in 2019. Since graduation, he has been working with faculty members of other Nigerian Universities in addition to his colleagues in the department of public health and students to conduct operational research in health management and policy, health systems, communicable/non-communicable diseases, social determinants of health, maternal and child health and infection prevention and control in health care settings. These research activities and experiences have enabled him to gain experiences in quantitative and qualitative research, epidemiology, manuscript writing, literature reviews and data analysis. It has provided him the opportunity to publish scientific articles in peer-review journals. Email: austine.ajogwu2@gmail.com, ORCID: https//orcid.ord/0000-0001-7546-0835

Ojechi M. C; Nile University of Nigeria, Abuja

Ojechi Maria Chisom works with Nile University of Nigeria and a public Health Enthusiasts. She joined the Nile University of Nigeria and bagged Masters in Public health of the university and currently an administrative officer with Nile University of Nigeria. Email: maria.ojechi@nileuniversity.edu.ng

Ukasha H; Nile University of Nigeria, Abuja.

Ukasha Hameedah is a public Health Enthusiasts, she joined the Nile University of Nigeria and bagged Masters in Public health of the university and currently a public health professional in non-governmental organization in Abuja. Email: hamyukashah1995@gmail.com

Taqiyya A; Nile University of Nigeria, Abuja.

Taqiyya Abdullahi is a public Health practtioner. She joined the Nile University of Nigeria and bagged Masters in Public health of the university and currently a public health professional in non-governmental organization in Abuja. Email: qiyyaabdullahi@gmail.com

Gani M. I; Nile University of Nigeria, Abuja

Gani Muhammad Idris is a medical practitioner with the National Health Insurance Agency where he ensures that healthcare services are of quality for the insured in the populace. He joined the Nile University of Nigeria for master programme where bagged Masters in Public health of the university. Email.muhdgani44@gmail.com

Chidumebi. F. Ajogwu. Godfrey Okoye University

Chidumebi Ajogwu is a medical student with the Godfrey Okoye University and public health enthusiast and data analyst. Email.ajogwudumebi@gmail.com