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Knowledge, attitude, perception and practices towards covid-19 among rural dwellers in Akwa-Ibom State, Nigeria

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Abstract

Context: The novel Corona virus disease (COVID-19) has spread rapidly around the world and has brought unprecedented fear and anxiety. Several nations, including Nigeria, instituted strict prevention and control measures to curb the spread of the disease.
Objective: To assess the knowledge, attitude, perception and practices towards Covid-19 among rural dwellers in Akwa-Ibom state, Nigeria.
Methods: A cross-sectional study was carried out in the three senatorial districts in Akwa-Ibom state, using an interviewer administered semi-structured questionnaire on the ODK data entry app to obtain data. Data was analysed using SPSS version 22. Statistical significance was set at a P value of 0.05.
Results: A total of 421 respondents participated in this study with 238(56.5%) females and 183(43.5%) males. The mean age was 38.6±16.1 years. Most participants were aware of Covid-19 (97.9%) and the most common sources of information on Covid-19 were the radio (88.4%) and religious organizations (60.4%). Most respondents had good knowledge (62.6%), positive attitude (85.9%), good perception (75.0%) and good practices (77.9%) towards Covid-19. Pearson correlation showed that practice of precautionary measures against Covid-19 was significantly associated with participants' Knowledge and Perception of Covid-19 ($r=0.117$, $p=0.017$ and $r=0.201$, $p<0.0001$ respectively) but not with Attitude ($p=0.136$).
Conclusion: The results revealed that there was good knowledge, attitude, perception and practices towards Covid-19 among the study population. Practice of preventive measures was seen to be weakly correlated to knowledge and perception.

Key words: Covid-19, Knowledge, Attitude, Perception, Practice, Rural

Introduction

On the 31st of December 2019, a disease was reported from the city of Wuhan in China. This disease which was later named Corona Virus Disease (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2).[1] The virus rapidly spread to other parts of China causing The World Health Organization to recognize it as a Public Health Emergency of International Concern in Jan 30, 2020 and it's continued spread worldwide, led to it being declared a pandemic on March 11, 2020.[1] Over 110 million cases of this infection have been recorded across the globe with over 2 million deaths.[2] In Nigeria, as at 22nd February, 2021, 150,000 cases and over 1800 deaths have been recorded with 1,400 cases in Akwa Ibom state.[3]

The pandemic has impacted virtually all the countries of the world, and despite the advancement

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of health care in developed countries, they seem to have taken the worst hit in terms of disease burden and the total COVID-19 related deaths.[4] To limit spread of the disease, most nations, including African countries, instituted strict prevention and control measures including regulations such as general lockdown and home quarantine, which have since been lifted, ban on public gatherings, international flights restrictions and raising awareness on proper hand wash, hygiene, and sanitation as well as social distancing.[5] The dense population, poor access to potable water, weak healthcare system, sharing of sanitation facilities and high degree of social mixing among the inhabitants of low- and middle-income countries such as Nigeria have made the implementation of hygiene and other public health measures necessary for the curbing of the coronavirus difficult.[6]

Furthermore, information on COVID-19 and recommendations by health authorities have been met by great skepticism in our environments, with individuals considering the disease a 'big man's disease' or a disease of the white man. This has also been fueled by misinformation on the internet and by friends and colleagues amidst the wide dissemination of information by appropriate health authorities.[6] Knowledge, attitude and perception of COVID-19 by individuals have been seen in many studies to affect the practice of precautionary measures against the disease.[6,7] An online survey was done in the United Kingdom and United State and showed that higher knowledge led to a reduced likelihood of negative attitude and bad practice towards COVID-19 even though there were numerous misconceptions about the disease.[7]

Despite the efforts put in place by the Nigerian government to mitigate the impact of COVID-19,[8] poor public knowledge, attitudes and practices of people relative to COVID-19 control can be challenging even to the best national public health control response.[9] This study aims to assess the knowledge, attitude and perception of COVID-19 by rural residents of Akwa Ibom state, and how these affect the practice of precautionary measure. This study is justified by the fact that little research has been done on COVID-19 in Akwa Ibom State and even fewer in the rural areas. This data will help the state government, parastatals and agencies such as the COVID-19 response team to be better equipped in monitoring human behavior towards the virus due to the behavioral modification that anchor the prevention of the spread of COVID-19.

Methodology

Study location: The study was conducted in Akwa Ibom state, located in the south-south geopolitical zone of Nigeria. The State lies between latitudes 4°32′N and 5°33′N, and longitudes 7°25′E and 8°25′E. The state is located in the South-South geopolitical zone, and is bordered on the east by Cross River State, on the west by Rivers State and Abia State, and on the south by the Atlantic Ocean and the southernmost tip of Cross River State. It has a population of over 3,902,051 (2006 census), accounting for 2.8% of Nigeria's total population.[10] The state has 31 Local government area and 3 senatorial districts (North-east/Uyo, North-west/Ikot Ekpene and South/Eket senatorial districts).

Study population: The study population included selected adults from the three different senatorial districts in Akwa Ibom state who gave consent to participate in the study. Respondents who were too sick to participate in the survey and those who withheld consent were excluded from the study.

Study design: A descriptive cross-sectional study will be used to achieve the objectives of this study.

Sample size: Cochran Formula was used to calculate the minimum sample size for this study. The formula is given as: $n = Z^2pq/\delta^2$

n = minimum sample size, Z = 1.96 (standard normal deviates at 95% confidence interval), P = prevalence of good practice in previous study (41.6%).[11] $\delta = 0.05$ (degree of accuracy), $q = 1 - p = 1 - 0.416 = 0.584$

$n = [(1.96)^2 \times (0.416) \times (0.584)] / (0.05)^2 = 360.3 \approx 360$

Adding 10% of non-response rate makes a total of 396, a total of 421 respondents participated in this study.

Sampling technique: Multi-staged sampling method was employed to select study participants. One Local government area was selected from each of the three senatorial districts in Akwa Ibom by random sampling. A community was then selected from each local government. All adults who met the study criteria in selected communities were interviewed.

Study instruments: A semi-structured questionnaire was used to obtain information from the participants. As there was no previously validated questionnaire on the knowledge, attitude, perception and practice towards Covid-19, the questionnaire was created using the WHO and NCDC guidelines on practices towards Covid-19.[3,12] It was validated by pre-testing on 20 participants in a rural area in Uyo Local Government Area who were excluded afterward from the study.

The questionnaire had four sections including:

Section A: Sociodemographic information like Age, Sex, Occupation etc.

Section B: Knowledge of the population on COVID 19

Section C: Attitude of the population towards COVID 19

Section D: Perception of respondents concerning COVID-19

Section E: Practice of the study population on COVID 19.

Scoring of outcome variables

Knowledge score: There were 31 questions that assessed respondents' knowledge of Covid-19, each having a score of 0 for wrong answers and 1 for correct answers. Those who scored 16 and above were considered to have good knowledge and those who scored below 16, poor knowledge.

Attitude: A total of 8 Likert-type questions assessed respondents' attitude towards Covid-19. The scores ranged from 5-40. Positive attitude was taken as a score of 25 and above. While negative attitude was taken as scores less than 25.

Perception: Ten Likert-type questions assessed perception of Covid-19. Scores ranged from 10 to 30. A score of 20 and above was considered good perception while a score below 20 was considered poor perception.

Practice: Ten Likert-type questions assessed respondents' practice towards Covid-19, with scores ranging from 10-50. Good practice was taken as a score of 30 and above, and poor, less than 30.

Ethical considerations: Ethical approval was sought for and obtained from University of Uyo Institutional Health Review Ethical Committee. Informed written and verbal consent was obtained from the respondents. The respondents were informed that participation was voluntary and they could withdraw from the study at any point. Also, identifying information was not obtained from the participants to ensure confidentiality.

Statistical analysis: Data obtained was analyzed using Statistical Package for Social Sciences (SPSS) Version 22.0. The Categorical data was summarized with frequency and percentages while quantitative data was summarized using mean and standard deviation. Chi square test was used for bivariate analysis between sociodemographic characteristics and outcome variables, while Pearson's correlation was applied to find the strength of relationship between respondents' knowledge, attitude, perception and practice. P value less than 0.05 was considered statistically significant.

Results

Sociodemographic characteristics of respondents

The number of respondents who participated in this study were 421, and the average age of participants was 38.6 years. As shown in table 1, most respondents were 25-39 years (39.9%), female (56.5%), married (52.0%), and had attained secondary level of education (47.5%). Majority were artisans (25.4%), from Ikot Ekpene senatorial district (36.1%) and of the Annang tribe (36.1%).

Respondents' awareness of COVID-19 and their sources of information

A total of 412 (97.9%) respondents stated that they were aware of COVID-19, while 9(2.1%) respondents were not aware of COVID-19. Most of the respondents had no knowledge of anyone who had tested positive for COVID-19, 413(98.1%), while 8(1.9%) respondents knew someone who had tested positive for the disease. The commonest source of information on Covid-19 was the radio (88.4%), followed by religious organizations (60.6%) (figure 1).

Respondents' knowledge of COVID-19

Majority of the respondents were aware that Covid-19 could be contracted via inhalation of respiratory droplets (70.6%) and close contact with an infected person (61.9%). The most commonly stated symptom was cough (63.8%), followed by fever (57.3%). With regards to knowledge of preventive

Table 1: Sociodemographic characteristics of respondents

Sociodemographic characteristics	Frequency (n=421)	Percentage (%)
Age (years)		
18-24	82	19.5
25-39	168	39.9
40-59	111	26.4
60 and above	60	14.3
Mean age (standard deviation)	38.6 (16.1)	
Gender		
Male	183	43.5
Female	238	56.5
Marital status		
Single	154	36.6
Married	219	52.0
Divorced/separated	7	1.7
Widowed	41	9.7
Highest level of education		
No formal education	53	12.6
Primary education	133	31.6
Secondary education	200	47.5
Tertiary education	35	8.3
Occupation		
Farmer	84	20.0
Trader	98	23.3
Artisan	107	25.4
Student	47	11.2
Unemployed	43	10.2
Others	42	10.0
Senatorial district		
Ikot Ekpene	152	36.1
Eket	137	31.4
Uyo	132	32.5
Tribe		
Annang	152	36.1
Eket	132	31.4
Ibibio	130	30.9
Others	7	1.7

measures of Covid-19, majority knew that regular hand washing with soap and water (80.1%), social distancing (77.9%), and use of facemask (77.2%) were preventive measures. However, a vast majority of the respondents did not know how long proper hand washing should last (77.2%). Most participants knew there is currently no approved cure for Covid-19 (62.6%) (table 2). Over three fifths of the participants had good knowledge of Covid-19 (62.6%), while 37.4% had poor knowledge of the disease (figure 2). The average knowledge score was 17.3±5.3 i.e., 54.8%. As shown in table 3, no socio-demographic characteristic of the respondents had statistically significant relationship with their knowledge of Covid-19.

Table 2: Respondents' responses to knowledge questions

	Frequency (n=412)	Percentage (%)
How is COVID-19 transmitted?		
Inhalation of respiratory droplets when infected persons cough or sneeze	291	70.6
Close contact with infected person	255	61.9
Touching contaminated objects	186	45.1
Eating contaminated food or drinks	114	27.7
Mosquito bites	104	25.2
Playing with pets	91	22.1
Eating bush meat	60	14.6
I don't know	99	24.0
What are the symptoms of COVID-19?		
Fever	236	57.3
Breathlessness	211	51.2
Cough	263	63.8
Sore throat	121	29.4
Runny nose	148	35.9
Sneezing	181	43.9
Headaches	159	38.6
Vomiting	104	25.2
Body aches	118	28.6
Fatigue	73	17.7
Diarrhea	53	12.9
Loss of taste	94	22.8
Loss of smell	93	22.6
I don't know	124	30.1
How can COVID-19 be prevented?		
Regular handwashing with soap and water	330	80.1
Maintaining social distance between yourself and others	321	77.9
Eating garlic, ginger and turmeric	110	26.7
Bathing hot water	83	20.1
Avoiding touching eyes, nose and mouth with unwashed hands	181	43.9
	64	15.5
Taking antibiotics regularly	318	77.2
Always using facemask in public	261	63.3
Avoiding social gatherings	58	14.1
I don't know		
What is the proper amount of time hand washing should take?		

Table 3: Distribution of respondents' Knowledge of COVID-19 by their socio-demographic characteristics

Sociodemographic characteristics	Knowledge of COVID-19		Test statistic/ p value
	Good n=258(62.6%)	Poor n=154(37.4%)	
Age (years)			
18-24	51(63.0)	30(37.0)	χ^2=2.049
25-39	97(58.8)	68(41.2)	p=0.562
40-59	73(67.0)	36(33.0)	
60 and above	37(64.9)	20(35.1)	
Gender			
Male	113(63.5)	65(36.5)	χ^2=0.099
Female	145(62.0)	89(38.0)	p=0.753
Marital status			
Single	91(59.9)	61(40.1)	Fisher's exact =6.747
Married	141(65.6)	74(34.4)	p=0.080
Divorced/separated	1(16.7)	5(83.3)	
Widowed	25(64.1)	14(35.9)	
Highest level of education			
No formal education	34(69.4)	15(30.6)	χ^2=2.250
Primary education	75(58.1)	54(41.9)	p=0.522
Secondary education	126(63.3)	73(36.7)	
Tertiary education	23(65.7)	12(34.3)	
Occupation			
Farmer	56(68.3)	26(31.7)	χ^2=5.003
Trader	56(58.9)	39(41.1)	p=0.416
Artisan	67(63.8)	38(36.2)	
Student	31(66.0)	16(34.0)	
Unemployed	21(50.0)	21(50.0)	
Others	27(65.9)	14(34.1)	
Senatorial district			
Ikot Ekpene	86(58.9)	60(41.1)	χ^2=4.431
Eket	91(70.0)	39(30.0)	p=0.109
Uyo	81(59.6)	55(40.4)	
Tribe			
Annang	87(59.6)	59(40.4)	Fisher's exact =3.805
Eket	78(59.5)	53(40.5)	p=0.283
Ibibio	89(69.5)	39(30.5)	
Others	4(57.1)	3(42.9)	

Respondents' attitude towards COVID-19

Most participants agreed that they would attend a lecture on Covid-19 (48.3%), follow Covid-19 instructions on flyers (52.7%), inform health authorities if they were in contact with an infected person (51.0%) or if they had symptoms of Covid-19 (49.8%). Majority also agreed that they would accept isolation at home (36.4%) and at an isolation centre (37.1%) if infected with the virus, and that they would have the vaccine if it was available (39.3%) (table 4). The vast majority of participants had positive attitude towards Covid-19 (354, 85.9%), while 58 (14.1%) had negative attitude. No statistically significant relationship was found

Table 4: Respondents' responses to attitude questions

Attitude questions	Frequency (n=412)	Percentage (%)
If a lecture is organized near me on COVID-19, I will attend		
Strongly agree	110	26.7
Agree	199	48.3
Undecided	64	15.5
Disagree	29	7.0
Strongly disagree	10	2.4
I will follow instructions on COVID-19 if they are put on flyers		
Strongly agree	110	26.7
Agree	217	52.7
Undecided	56	13.6
Disagree	25	6.1
Strongly disagree	4	1.0
I will inform the health authorities if I was in contact with an infected person		
Strongly agree	92	22.3
Agree	210	51.0
Undecided	53	12.9
Disagree	52	12.6
Strongly disagree	5	1.2
I will inform health authorities if I have symptoms associated with COVID-19		
Strongly agree	129	31.3
Agree	205	49.8
Undecided	49	11.9
Disagree	26	6.3
Strongly disagree	3	0.7
I will accept isolation at home if infected with COVID-19		
Strongly agree	108	26.2
Agree	150	36.4
Undecided	66	16.0
Disagree	63	15.3
Strongly disagree	25	6.1
I will accept isolation in a COVID-19 isolation center if infected		
Strongly agree	94	22.8
Agree	153	37.1
Undecided	77	18.7
Disagree	58	14.1
Strongly disagree	30	7.3
If a COVID-19 vaccine was available, I would have it	144	35.0

Table 5: Distribution of respondents' attitude towards Covid-19 by their socio-demographic characteristics

Sociodemographic characteristics	Attitude towards Covid-19		Test statistic/ p value
	Positive n=354(85.9%)	Negative n=58(14.1%)	
Age (years)			
18-24	70(86.4)	11(13.6)	χ^2=2.013
25-39	146(88.5)	19(11.5)	p=0.570
40-59	91(83.5)	18(16.5)	
60 and above	47(82.5)	10(17.5)	
Gender			
Male	152(85.4)	26(14.6)	χ^2=0.073
Female	202(86.3)	32(13.7)	p=0.788
Marital status			
Single	132(86.8)	20(13.2)	Fisher's exact =2.427
Married	185(86.0)	30(14.0)	p=0.574
Divorced/separated	6(100.0)	0(0.0)	
Widowed	31(79.5)	8(20.5)	
Highest level of education			
No formal education	40(81.6)	9(18.4)	χ^2=1.633
Primary education	109(84.5)	20(15.5)	p=0.652
Secondary education	175(87.9)	24(12.1)	
Tertiary education	30(85.7)	5(14.3)	
Occupation			
Farmer	68(82.9)	14(17.1)	
Trader	80(84.2)	15(15.8)	χ^2=1.670
Artisan	92(87.6)	13(12.4)	p=0.897
Student	42(89.4)	5(10.6)	
Unemployed	36(85.7)	6(14.3)	
Others	36(87.8)	5(12.2)	
Senatorial district			
Ikot Ekpene	121(82.9)	25(17.1)	χ^2=2.760
Eket	111(85.4)	19(14.6)	p=0.245
Uyo	122(89.7)	14(10.3)	
Tribe			
Annang	120(82.2)	26(17.8)	Fisher's exact =5.699
Eket	119(90.8)	12(9.2)	p=0.127
Ibibio	108(84.4)	20(15.6)	
Others	7(100.0)	0(0.0)	

Table 6: Respondents' responses to perception of COVID-19 questions

	Frequency (n=412)	Percentage (%)
Is covid-19 highly contagious?		
Yes	303	73.5
No	30	7.3
I don't know	79	19.2
What is the probability of you being infected?		
Low	280	68.0
Moderate	77	18.7
High	55	13.3
What is the probability of your family/friends being infected with the virus?		
Low	283	68.7
Moderate	74	18.0
High	55	13.3
How effective is the use of facemask in preventing infection with the virus?		
Poorly effective	49	11.9
Moderately effective	105	25.5
Very effective	258	62.6
How effective is proper handwashing in preventing infection with the Virus?		
Poorly effective	34	8.3
Moderately effective	98	23.8
Very effective	280	68.0
How dangerous do you think COVID-19 is?		
Not dangerous	42	10.2
Moderately dangerous	114	27.7
Very dangerous	256	62.1
How worried are you about the virus?		
Only a little worried	88	21.4
Moderately worried	123	29.9
Very worried	201	48.8
How necessary do you think the mandatory lockdown and movement restriction was in preventing the spread of COVID-19?	131	31.8
Not necessary	121	29.4
Moderately necessary	160	38.8
Very necessary		

between respondents' attitudes towards covid-19 and their sociodemographic characteristics (table 5)

Respondents' perception of COVID-19

Most respondents stated that Covid-19 is highly contagious (73.5%), however, 68.0% and 68.7% stated that they and their friends/family had low probability of being infected. Table 6 also showed that majority thought that use of facemask and handwashing were very effective in preventing Covid-19 (68.0% and 62.1% respectively). Three-quarters of the respondent had good perception

Table 7: Distribution of respondents' perception of Covid-19 by their sociodemographic characteristics

Sociodemographic characteristics	Perception of Covid-19		Test statistic/ p value
	Good n= 309(75.0)	Poor n=103(25.0)	
Age (years)			
18-24	60(74.1)	21(25.9)	χ^2=5.721
25-39	123(74.5)	42(25.5)	p=0.126
40-59	89(81.7)	20(18.3)	
60 and above	37(64.9)	20(35.1)	
Gender			
Male	133(74.7)	45(25.3)	χ^2=0.013
Female	176(75.2)	58(24.8)	p=0.909
Marital status			
Single	110(72.4)	42(27.6)	χ^2=1.352
Married	166(77.2)	49(22.8)	p=0.717
Divorced/separated	4(66.7)	2(33.3)	
Widowed	29(74.4)	10(25.6)	
Highest level of education			
No formal education	33(67.3)	16(32.7)	χ^2=5.461
Primary education	99(76.7)	30(23.3)	p=0.141
Secondary education	146(73.4)	53(26.6)	
Tertiary education	31(88.6)	4(11.4)	
Occupation			
Farmer	63(76.8)	19(23.2)	
Trader	66(69.5)	29(30.5)	χ^2=2.815
Artisan	78(74.3)	27(25.7)	p=0.728
Student	38(80.9)	9(19.1)	
Unemployed	32(76.2)	10(23.8)	
Others	32(78.0)	9(22.0)	
Senatorial district			
Ikot Ekpene	94(64.4)	52(35.6)	χ^2=15.539
Eket	110(84.6)	20(15.4)	P 0.000*
Uyo	105(77.2)	31(22.8)	
Tribe			
Annang	95(65.1)	51(34.9)	Fisher's exact
Eket	102(77.9)	29(22.1)	=15.532
Ibibio	108(84.4)	20(15.6)	p=0.001*
Others	4(57.1)	3(42.9)	

*statistically significant

Table 8: Respondents' practice of preventive measures against Covid-19 (Part one)

Table 8: Respondents' practice of preventive measures against Covid-19		
Practice questions	**Frequency n=412**	**Percentage (%)**
How often do you wash your hands with soap and water?		
Always	27	6.6
Often	163	39.6
Sometimes	166	40.3
Rarely	51	12.4
Never	5	1.2
How often do you disinfect your hands with alcohol-based sanitizer?	3	7
Always	33	8.0
Often	73	17.7
Sometimes	131	31.8
Rarely	172	41.7
Never		
How often do you use a nose mask in public places?		
Always	37	9.0
Often	118	28.6
Sometimes	163	39.6
Rarely	66	16.0
Never	28	6.8
How often do you avoid touching your eyes nose and mouth with unwashed hands?		
Always	21	5.1
Often	83	20.1
Sometimes	112	27.2
Rarely	167	40.5
Never	29	7.0
How often do you shake hands with others?		
Always	29	7.0
Often	96	23.3
Sometimes	97	23.5
Rarely	144	35.0
Never	46	11.2
How often do you hug other people?		
Always	23	5.6
Often	79	19.2
Sometimes	92	22.3
Rarely	122	29.6
Never	96	23.3

Table 8: Respondents' practice of preventive measures against Covid-19 (Part two)

How often do you attend social gatherings?		
Always	27	6.6
Often	122	29.6
Sometimes	178	43.2
Rarely	67	16.3
Never	18	4.4
How often do you keep social distance from people in public places?	4	1.0
Always	63	15.3
Often	178	43.2
Sometimes	143	34.7
Rarely	24	5.8
Never		
How often do you take antibiotics to prevent contracting the virus?	1	0.2
Always	2	0.5
Often	12	2.9
Sometimes	31	7.5
Rarely	366	88.8
Never		
How often do you take garlic, turmeric and ginger to prevent contracting the virus?		
Always	10	2.4
Often	21	5.1
Sometimes	15	3.6
Rarely	19	4.6
Never	349	84.2

regarding the virus, while 25.0% had poor perception. Table 7 shows that respondents in Eket senatorial district had significantly higher proportion of good perception (84.6%), as well as those of Ibibio tribe (84.4%), p=0.000 and 0.001 respectively.

Practice of preventive measures against COVID-19

Most participants sometimes washed their hands with soap and water (40.3%), used facemask in public (39.6%), and maintained social distancing (43.2%). On the other hand, most respondents never disinfected their hands with alcohol-based sanitizers (41.7%) (table 8). Majority had good practice towards Covid-19 (77.9%), while 22.1% had poor practice (figure 3). The mean practice score was 32.9±4.5 (65.8%). Occupation showed significant relationship with respondents' practices towards Covid-19 (p=0.038). Students had the highest proportion of good practice (87.2%), followed by traders (83.2%) (table 9).

Table 10 shows that respondents' knowledge of Covid-19 had significant, albeit weak positive association with attitude and practice towards Covid-19 (p=0.014 and 0.018 respectively. Attitude was positively associated with perception (p=0.014), and practice showed positive but weak association with perception of Covid-19 (p=0.000).

Discussion

This study assessed the knowledge, attitude,

Table 9: Distribution of respondents' practice of preventive measures against Covid-19 by their sociodemographic characteristics

Sociodemographic characteristics	Practice of preventive measures		Test statistic/ p value
	Good n= 321(77.9%)	Poor n= 91(22.1%)	
Age (years)			
18-24	62(76.5)	19(23.5)	χ^2=3.327
25-39	127(77.0)	38(23.0)	p=0.344
40-59	91(83.5)	18(16.5)	
60 and above	41(71.9)	16(28.1)	
Gender			
Male	134(75.3)	44(24.7)	χ^2=1.261
Female	187(79.9)	47(20.1)	p=0.261
Marital status			
Single	119(78.3)	33(21.7)	Fisher's exact
Married	165(76.7)	50(23.3)	=0.674
Divorced/separated	5(83.3)	1(16.7)	p=0.4879
Widowed	32(82.1)	7(17.9)	
Highest level of education			
No formal education	37(75.5)	12(24.5)	χ^2=2.654
Primary education	95(73.6)	34(26.4)	p=0.448
Secondary education	161(80.9)	38(19.1)	
Tertiary education	28(80.0)	7(20.0)	
Occupation			
Farmer	68(82.9)	14(17.1)	
Trader	79(83.2)	16(16.8)	χ^2=11.752
Artisan	77(73.3)	28(26.7)	p=0.038*
Student	41(87.2)	6(12.8)	
Unemployed	29(65.9)	13(31.0)	
Others	27(65.9)	14(34.1)	
Senatorial district			
Ikot Ekpene	111(76.0)	35(24.0)	χ^2=1.459
Eket	106(81.5)	24(18.5)	p=0.482
Uyo	104(76.5)	32(23.5)	
Tribe			
Annang	111(76.0)	35(24.0)	χ^2=4.281
Eket	98(74.8)	33(25.2)	p=0.233
Ibibio	105(82.0)	23(18.0)	
Others	7(100.0)	0(0.0)	

*statistically significant

Table 10: Pearson correlation between respondents' knowledge, attitude, perception and practice of precautionary measures against Covid-19

	Knowledge	Attitude	Perception
Knowledge	-	R=0.121; p=0.014*	R=0.086; p=0.081
Attitude	R=0.121; p=0.014*	-	R=0.115; p=0.019*
Practice	R=0.117; p=0.018*	R=0.063; p=0.202	R=0.201; p=0.000*

***statistically significant**

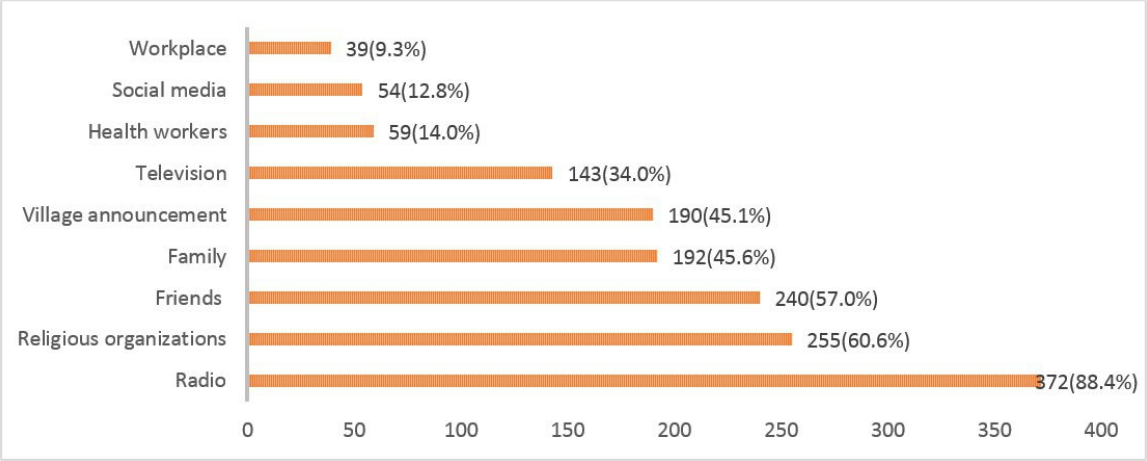

Figure 1: Respondents' sources of information on COVID-19

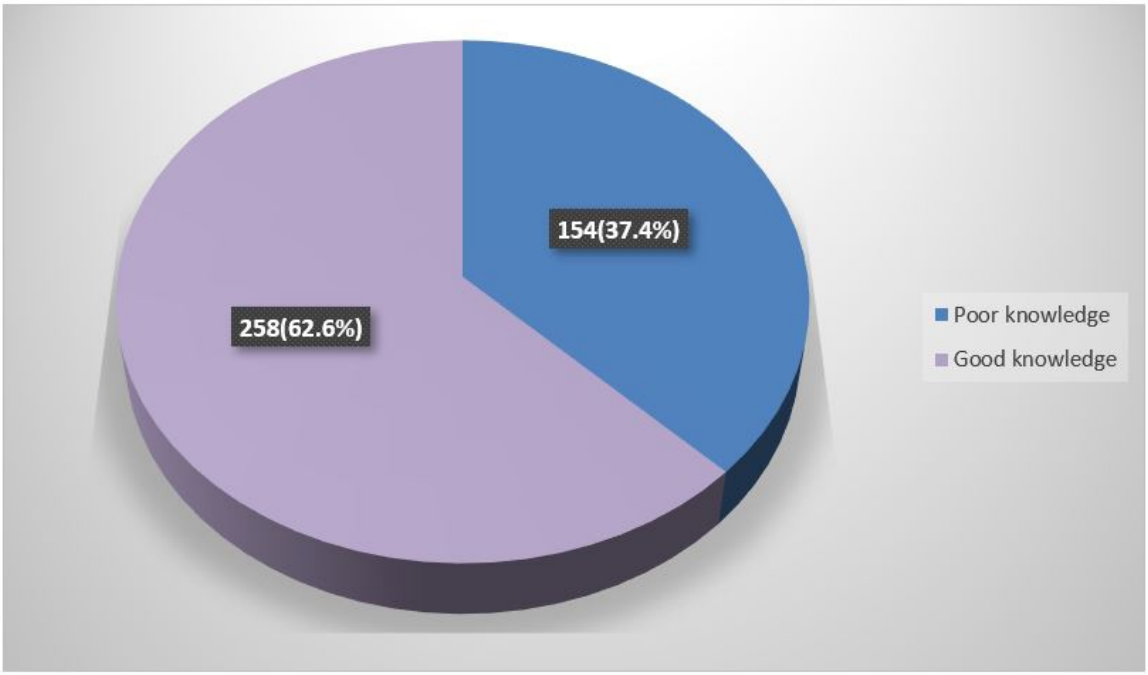

Figure 2: Respondents' knowledge of COVID-19

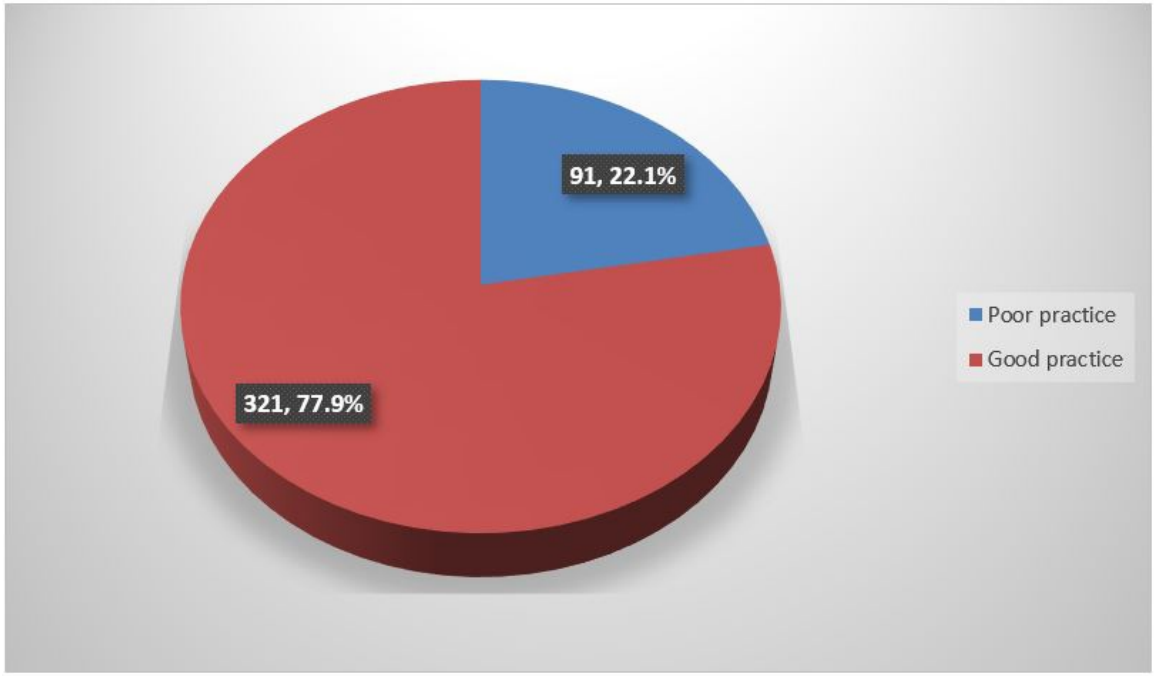

Figure 3: Respondents' practice of preventive measures against Covid-19

perception and practice towards Covid-19 rural dwellers in Akwa Ibom state, Nigeria. There was a slight female preponderance, and most of the participants were middle aged, similar to findings in Reuben et al.[13] Less than 1 in 10 participants had attained tertiary level of education, while a little under half having attained secondary level of education. This points to the low access to educational opportunities seen in rural areas, both financially and in terms of infrastructure. A study in a rural area in China also reported similar findings, where only 14% of the participants had attained tertiary level of education.[9] This is in contrast to findings in other studies with mostly urban respondents, where majority of their respondents had tertiary level of education.[14,15] Participants in this study were mostly involved in informal occupations including artisan, trading and farming, and these are known to provide limited assess to social protection.[16] This is especially important during the pandemic due to the movement restrictions as those in informal jobs were forced to work through the pandemic in order to ensure their next meal, unlike individuals working in the formal sector who were still paid some or all of their salaries.

Nearly all the participants were aware of the emerging disease, even though only 1.9% knew anyone who tested positive for Covid-19. This shows that the health authorities were successful in creating awareness on the disease, even in hard-to-reach areas. This is similar to findings in other studies.[13,14,17] The commonest sources of information on Covid-19 reported in this study were radio, religious organizations and friends/family. The use of social media and television were low, unlike in other studies[13,17,18] Therefore, information targeted at rural dwellers should not be disseminated via means that may require access to and knowledge of technology, but via simpler means like announcing in churches, mosques, village meetings, use of town criers and use of radio jingles. Also, the fact that rural dwellers hold fewer formal jobs explains why less than a tenth of them received information on Covid-19 via their workplace.

The respondents' overall knowledge of Covid-19 was average, with a mean score of 54.8%. This is low when compared to other studies in Jordan,[19] Saudi Arabia,[20] and Nigeria.[21] This may be due to low educational levels and poor access to technology characteristic of the rural setting of the present study. However, Ma et al reported a knowledge score rate of 65.5% in a rural area in China.[9] The observed difference may be due to the

younger and better educated population in the Chinese study. Good knowledge of the mode of transmission, symptoms and preventive measures were demonstrated which was similar to findings in Central China.[17] However, only 6.1% of respondents in the present study knew how long proper handwashing should take, and a little over half knew that facemasks should be washed daily. This is a pointer to the fact that though awareness has been created on the disease and its preventive measures, an in-depth education on the application of these information may be lacking.

A vast majority of participants of this study were seen to have positive attitudes towards Covid-19. This is in congruence with other studies.[17,22] The respondents showed openness to being isolated at home or in an isolation centre if they were infected with the virus and also a willingness to accept the Covid-19 vaccine. This is commendable considering the widespread misinformation about the vaccine that would have been thought to affect its uptake.[23] Another African study also reported a willingness to accept the vaccine among its participants,[24] however, a US poll found that only about half of the participants were willing to get the vaccine because vaccine may not be properly tested and may have unknown side effects.[25] A significant positive correlation was seen between respondents attitude towards Covid-19 and their perception.

Though nearly three quarters of the participants perceived Covid-19 as a highly contagious disease, and 62.1% thought it was highly dangerous, majority of them reported low probability of them or their families being infected by the virus. This may be because they thought the disease a rich man's disease or because they had not come across anyone who had the disease. Jahangiry et al. showed that respondents who had previously had Covid-19 or whose family member had been infected felt significantly more susceptible to the virus than their counterparts.[15] Nearly half of the respondents in the present study were very worried about the virus, while about thirty percent were moderately worried. However, fear/worry has been found to be an insufficient motivator for adherence to safety measures.[26,27] Respondents in Eket senatorial district, and those of the Ibibio tribe were found to have significantly better perception of the novel disease compared to other senatorial district and tribes in the state. Hence, others, especially the Ikot Ekpene senatorial district where those of the Annang tribe mainly reside, should be targeted for educational programs on Covid-19.

Our findings reported significant correlation between respondents' knowledge and perception of Covid-19 and their practice of preventive measures as was seen in similar studies.[13,21,28] The average practice score of participants in the present study was satisfactory (65.8%), influenced by the respondents' knowledge and perception of Covid-19. Most respondents sometimes practiced preventive measures such as washing of hands with soap and water, use of facemask, social distancing, and avoiding social gatherings, similar to findings in other studies.[21,26] However, only few respondents used alcohol-based hand sanitizers. This may be due to the price hike of hand sanitizers during the peak of the pandemic, which would have made it difficult to afford. This paper also revealed that most participants did not abuse antibiotics as a means of preventing Covid-19. This is commendable as the pandemic has been linked to an increased prevalence of antibiotics misuse which would subsequently result in antimicrobial resistance.[29] Students in this study were seen to have significantly higher practices of preventive measures against Covid-19 and this may be due to increased exposure gotten through schooling.

Limitations: Firstly, no standardized tool for assessing knowledge attitude, perception and practice on COVID-19 has been previously validated. However, the questions were formulated from WHO and CDC guidelines and reports on COVID-19. Also, given this was a survey, respondents' answers could have been affected by social desirability bias. However, to the best of our knowledge, this is the first study on Knowledge, attitude and practices of Akwa Ibom rural residents towards Covid-19, hence the study findings may be useful to inform policymakers and healthcare professionals, on further public health interventions, awareness-raising, policies, and health education programs targeted at rural residents.

Conclusion

This study showed good knowledge, attitudes, perception and practices of the rural residents of

Uyo towards Covid-19. The common sources of information on Covid-19 were radio and religious organizations. Respondents practices towards Covid-19 was positively correlated with their knowledge and perception of the disease. Though respondents had good practice of hand hygiene and use of facemask, majority were not knowledgeable on proper hand hygiene practices and how facemasks should be washed. The participants showed willingness to accept the Covid-19 vaccine if it were available to them. We recommend that public health education be targeted towards practically showing those in rural areas how preventive measures against Covid-19 should be done in order to achieve the necessary control. Also, subsidizing the cost of hand sanitizers and facemasks for residents in rural areas may go a long way in encouraging their uptake and continuous use.

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