Assessment of Knowledge, Risk Perception, and Intention to Adhere to Covid-19 Preventive Measures in Benue State, Nigeria. An Urban-Rural Comparative Study

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Abstract

This study aims to compare Covid-19 knowledge, perception, and Intention to adhere to preventive measures among urban and rural dwellers in Benue State, Nigeria. A multi-stage comparative cross-sectional study was conducted among consenting adults 18yrs and above or emancipated minors aged 15yrs to 17yrs between January and April 2021 among urban and rural dwellers in Benue State. The response was scored, and each composite score were converted to a percentage. A score of ≥80% were categorized as positive perception, 51% to 79% were categorized as moderate perception, while scores ≤ 50% were categorized as negative perception. Urban and rural comparisons were done with Chi square test, and the corresponding p-values presented at 5% Cl. One thousand four hundred and thirty-one (1,431) respondents were recruited into the study with mean age 33.7years± SD 12.83. Forty-six (46%) percent of urban respondents believed positive Covid-19 patients would show no symptoms compared to 41% of rural respondents. One-third, 31% of urban respondents have a positive perception of Covid-19 existence compared to 21% in the rural areas (t=1.06; P< 0.469). Seventy-one percent of urban respondents have a positive perception of the seriousness of Covid-19 compared to 73% of rural respondents (t=0.99; p<0.95). 84% of respondents in the urban and 81% in the rural area have a positive perception on the Intention to carry out preventive measures against Covid-19 (t=0.87; p<0.09). knowledge differs among both communities; however there was a higher proportion of Perception with no significant difference observed among both communities.

Keywords: Benue State, Covid-19, Knowledge, Perception, Rural, Urban.

Introduction

Coronavirus disease-2019 (Covid-19) is a newly emerged disease of primarily in the respiratory system, caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), a highly infectious novel coronavirus first reported in the Hubei province of China on 29th December 2019 [1] but has assumed a pandemic proportion since March 2020[2]. There are 201 million cases of Covid-19 reported as of July 2021, with 4.26 million deaths recorded across more than 210 countries [3]. In Nigeria, the first confirmed case was reported in Lagos on 27th February 2020 [4], followed by a rapid increase in the number of cases in all the states across the country. The

country has experienced the first and second waves of Covid-19 transmission, with the third wave gradually setting in amidst dwindling levels of adherence to control measures among both the urban and rural community members. On 13th July 2021, the number of new cases reported in the country was 154, bringing the total number of confirmed cases to 168,867 with 2,125 deaths [5].

The increasing demand for medical manpower, material, and financial resources placed by the rising number of Covid-19 cases in Nigeria continues to push the already fragile health system to the brink [4]. Furthermore, access to the Covid-19 vaccine continues to be sub-optimal in most sub-Saharan African counties, including Nigeria, due to resource constraints and equity resource allocation. In addition to the persisting challenge with the Covid-19 vaccine supply in Nigeria, misconceptions and wrong perceptions about Covid-19 and its vaccine continue to cripple control efforts and fuel vaccine hesitancy. Some of these misconceptions include the belief that Africa are free from SARS-CoV-2 since SARS-Cov-2 cannot survive in the high temperature of the tropics. Access to information by the multihued groups in society is crucial to helping and managing the Covid-19 spread and facilitate containment of the disease. It has been recommended that authentic information on Covid-19 is sought from official websites of health authorities due to myriads of false information flooding the internet [6]. However, most rural communities have no or limited access to the internet in Nigeria. Furthermore, rural communities do not have the means to solicit information on the prevention and containment of most infectious diseases like Covid-19 or are enlighten enough to seek a better understanding about the disease. Other studies have confirmed the same phenomenon among the indigenous population in Mexico, and South America [7]. Low awareness and perceptions of diseases among the population are known to negatively impact preventive measures [8],

which may influence early detection and acceptability to test for the SARS-CoV-2. Moreover, the culture and religious beliefs of the people may also play a crucial role in accepting preventive measures taken to curb the spread of diseases [9]. Since the first detection of the disease in Nigeria, there have been several efforts by the government, the private sector, communities, and individuals to support the less privileged in society. However, conscious efforts have not been made to evaluate how different groups of citizens (rural, peri-urban, and urban dwellers) are coping with the proposed measures to prevent the disease [10].

Materials and Methods

Study Area

This study was conducted in Benue State, located in North-central Nigeria. Benue State has a population of 4,253,641. Made up of 2,144,043 males and 2,109,598 females, the state has a sex ratio of 1.02, a literacy rate of 44.7% among the population aged 6 years and above, and a population density of about 130 persons per square kilometer according to the 2006 census making it the 9th most populous state in Nigeria. The predominant occupation of the residents is farming especially in the rural areas. Benue State reported its first Covid-19 case on 28th of March 2020. At the time of this study, more than 899 Covid-19 cases have been reported, with 25 deaths.

Study Design & Study Population

A comparative community-based cross-sectional study was conducted between January and April 2020 in selected settlements in 14 urban and rural communities in Benue State among consenting adults 18 yrs and above or emancipated minors aged 15 yrs to 17 yrs, living in selected households and present at the time of visit.

Sample Size Determination

The required sample size for the study was determined using the formula for two

independent proportions with categorical outcome variables using a baseline positive Covid-19 risk perception level of 67.4% from a study done in Nigeria* and assuming a difference of 15% between the two populations as follows:

$$n \text{ (per arm)} = \text{DEFF} * \frac{\left[\left[Z_\beta\sqrt{P_1(1 - P_1) + P_2(1 - P_2)}\right] + \left[Z_\alpha\sqrt{2P(1 - P)}\right]\right]^2}{[P_2 - P_1]^2}$$

Where:

n = is the minimum sample size per community

P_1 = The proportion of the Population with positive Covid-19 Risk Perception in the urban area is 71.4% [12].

P2 = The proportion of the Population with Positive Covid-19 risk perception in the rural area is 50%.

Zα = critical value of the normal distribution at 95% confidence level = 0.05

Z_β = The critical value of the Normal distribution at desired power of 80% = 0.84.

P = the mean of the proportion i.e. $(P_1+P_2)/2$ =71.4+ 50/2 = 60.7% (0.607).

DEFF = Design effect (to account for the multistage sampling technique) = 1.5.

Plugging in the values:

$$n = 1.5 * \frac{\left[\left[0.84\sqrt{0.714(1 - 0.714) + 0.50(1 - 0.50)}\right] + \left[1.96\sqrt{2(0.607)(1 - 0.607)}\right]\right]^2}{(0.714 - 0.5)^2}$$

$$n = 172.00$$

Adjusting for the anticipated non-response rate of 10% using the formula:

Final sample size = Effective sample size/ (1-nonresponse rate anticipated).

Final sample size = 172.0 /1-0.1 =191.1.

The sample size for urban and rural areas was 383 however, we recruited 1,431 respondents to the 14 communities to increase the robustness of the study.

Sampling Procedure

Multi-stage sampling technique was used to select respondents for the study as follows:

Stage 1: Selection of Three Study LGAs through Purposive Sampling

Makurdi, Otukpo, and Gboko Local Government Areas (LGAs) were purposively selected from the list of 23 LGAs in the state because they have the largest population of urban and rural communities.

Stage 2: Selection of Study Communities (7 Urban and 7 Rural) by Stratified Random Sampling

The communities in each of the three selected LGAs were first stratified into urban and rural communities. Three urban and three rural communities were then randomly sampled from the frame of urban and rural communities in Makurdi LGA respectively, giving a total of six communities. Following the same pattern, four communities (two urban and two rural) were sampled from each of the other two (smaller) LGAs i.e., Gboko and Otukpo LGAs giving a total of eight communities. In all, a total of 14 communities (7 urban and 7 rural) spread across 3 LGAs in the state were therefore selected for the study.

Stage 3: Selection of Study Households through Simple Random Sampling

The number of households to be selected from each of the 14 study communities was proportionately allocated, and the assigned number was then sampled through simple random sampling from the frame/ listing of households in each community gotten from the National Population Commission.

Stage 4: Selection of Study Participants through Simple Random Sampling

From the selected households, two eligible respondents were selected by simple random sampling using the table of random numbers.

Data Collection

Data Collection Instruments

A pretested validated semi-structured interviewer-administered electronic questionnaire on android devices, adapted from similar studies* was used by the principal investigator and trained research assistants to elicit information on respondents' sociodemographic characteristics, awareness, knowledge, and personal risk perception of Covid-19.

Check codes, skip patterns, and restriction logic were used to minimize wrong and incomplete entries during data collection.

Data Management and Analyses

Computation of Covid-19 Personal Risk Perception

Risk perception was assessed by examining respondents' perception of Covid-19 existence, perception of the seriousness of the Covid-19, Intention to carry out the Covid-19 preventive measures, and perceived degree of anxiety/fear over susceptibility to Covid-19, perceived susceptibility to Covid-19, perceived efficacy of preventive measures. Perception of Covid-19 existence was assessed by 3 questions with a maximum score of 15; perception of the seriousness of the Covid-19 was assessed using 2 questions with a maximum score of 10; perceived Intention to carry out Covid-19 preventive measures was assessed using 5 questions with a maximum score 25; Perceived degree of anxiety/fear over susceptibility to Covid-19 was assessed using 7 questions with a maximum score of 35, perceived susceptibility to Covid-19 was assessed using 5 questions with a maximum score 35 and perception of the efficacy of preventive measures was assessed using 14 questions with a maximum score 70. These composite scores were converted to a percentage. A score of ≥80% were categorized as a positive perception. The score of 51% to 79% were categorized as moderate perception, while scores ≤ 50% were categorized as negative perception.

Statistical Analyses

Data was analysed using STATA SE 64 software, and the level of significance was set at 5%. Categorical variables were summarised as frequency and percentages and presented in tables, while numerical variables were summarized with mean and standard deviation. Urban and rural comparisons were made with the Chi-square test, and the corresponding p-values presented.

Ethical Considerations

Ethical Approval (reference: MOH/STA/204/VOL.1/38) for this study was obtained from the Research Ethics Committee of the Benue State Ministry of Health. Written informed consents/assent were obtained from the study participants after explaining the study aim, procedure, and voluntariness of participation.

Result

One thousand three hundred and thirty-one (1,331) respondents were recruited into the study with a mean age of 33.7± SD 12.83 years. Most of the respondents in the urban and rural settlements were 466(46.32%) and 207(48.71%), respectively. Tables 2a & b showed that the respondent aged 26-35 yrs

accounted for 37.67% (379) of the respondents in the urban areas, while 34.12% (145) of the respondents were within the age group 16-25yrs in the rural settlements. 59.15% (595) were women in the urban settlements, while 54.59% (54.59) of the respondents in the rural settlements were female. Being married accounted for 539(53.58%) and 254(59.76%) among the urban and rural dwellers, respectively, followed by the single, urban settlements 435(43.24%) and rural settlements 150(35.29%). Half of the respondents in the urban settlements lived in a rented house, 538(53.48%), while most of the respondents in the rural own their houses, 282(66.35%). On the respondents' monthly income, 223(37.29%) of the respondents in the urban area earn less than 10,000 Naira ($24), while 135(58.19%) of the respondents in the rural area earn less than 10,000 Naira ($24).

Table 1a. Demographic Characteristics of Respondents, Benue State, Nigeria

Variables	Urban Frequency (%) (N=1006)	Rural Frequency (%) (N=425)	X^2	P-value
Age group				
16-25	287(28.43)	145(34.12)	-	-
26-35	379(37.67)	124(29.18)	-	-
36-45	197(19.58)	75(17.65)	-	-
46-55	80(7.95)	42(9.88)	16.3	0.012
56-65	42(4.17)	21(4.63)	-	-
66-75	16(1.59)	8(1.88)	-	-
>=76	5(0.40)	10(2.35)	-	-
Sex				
Male	411 (40.8)	193 (45.4)	-	-
Female	595 (59.2)	232 (54.6)	1.1	0.298
Marital Status				
Single	435 (43.2)	150 (35.3)	-	-
Married	539 (53.6)	254 (59.7)	-	-
Divorced/ Separated	10 (1.0)	6 (1.4)	12.1	0.033
Widowed	20 (2.0)	13 (3.1)	-	-
Preferred not to answer	2 (0.2)	2 (0.5)	-	-
Education				
No formal education	24 (2.4)	43 (10.1)	-	-
Primary school	60 (6.0)	70 (16.5)	-	-
Secondary school	466 (46.3)	207 (48.7)	122.1	0.000
Tertiary education	445 (44.2)	100 (23.5)	-	-
Preferred not to answer	11 (1.1)	5 (1.2)	-	-
Religion				
Christianity	987 (98.1)	412 (96.9)	-	-
Islam	11 (1.1)	0 (0.0)	16.7	0.002
Traditionalist	2 (0.2)	8 (1.9)	-	-
Preferred not to answer	6 (0.6)	5 (1.2)	-	-

Table 1b. Demographic Characteristics of Respondents, Benue State, Nigeria

Variables	Urban Frequency (%)	Rural Frequency (%)	X^2	P- value
Type of Residence				
Own your home	297 (29.5)	282 (66.4)	-	-
Rented home or apartment	538 (53.5)	52 (12.2)	195.6	0.000
Lives with friends or relatives	166 (16.5)	89 (20.9)	-	-
Others	3 (0.3)	2 (0.5)	-	-
Prefer not to answer	2 (0.2)	0 (0.0)	-	-
Employment Status				
Unemployed	143 (14.2)	99 (23.2)	-	-
Salaried employment	159 (15.8)	50 (11.8)	17.2	0.004
Self employed	491(48.8)	187 (44.0)	-	-
Student	168 (16.7)	76 (17.9)	-	-
Retired	45 (4.5)	13 (3.1)	-	-
Income in the last Month (Naira & Dollar)	(N=598)	(N=232)	-	-
≤ 9999 ($24)	223 (37.3)	135 (58.2)	-	-
10000-39999 ($25-$97)	195 (32.6)	62 (26.7)	76.7	0.000
40000-69999 ($98-$167)	107 (17.9)	18 (7.8)	-	-
70000-99999 ($168-$243)	32 (5.4)	7 (3.0)	-	-
100000-119999($244$290)	21 (3.5)	4 (1.7)	-	-
≥ 120000 ($ 291)	20 (3.3)	6 (2.6)	-	-
Ethnic or tribal group				
Tiv	556 (55.3)	243 (57.2)	-	-
Idoma	241 (23.9)	155 (36.5)	65.9	0.000
Igede	35 (3.5)	12 (2.8)	-	-
Igbo	100 (9.9)	11 (2.6)	-	-
Etulo	74 (7.4)	4 (0.9)	-	-

*Dollar exchange rate used; 1USD= 412 Naira

Table 3a. Knowledge of Covid-19 among Urban and Rural Dwellers in Benue State, Nigeria

Variables	Urban Frequency (%)	Rural Frequency (%)	X^2	P- value
Covid-19 is the same as Flu				
Yes	203 (20.2)	58 (13.7)	-	-
No	409 (40.6)	126 (29.6)	41.1	**0.000**
I do not know	394 (39.2)	241 (56.7)	-	-
Covid-19 is caused by				
Bacteria	30 (3.0)	11 (2.6)	-	-
Fungi	6 (0.6)	2 (0.5)	11.8	**0.019**
Virus	717 (71.3)	278 (65.4)	-	-
I do not know	252 (25.0)	133 (31.3)	-	-
Others	1 (0.1)	1 (0.2)	-	-
Eating or contact with wild animals causes Covid-19				

Yes	138 (13.7)	57 (13.4)	-	-
No	512 (50.9)	200 (47.1)	-	-
I do not know	356 (35.4)	168 (39.5)	13.9	**0.001**
Covid-19 can be asymptomatic				
Yes	467 (46.4)	175 (41.2)	-	-
No	314 (31.2)	115 (27.1)	21.8	**0.000**
I do not know	225 (22.4)	135 (31.7)	-	-
Covid-19 is preventable				
Yes	904 (89.9)	348 (81.9)	-	-
No	31 (3.1)	23 (5.4)	21.8	**0.000**
I do not know	71 (7.0)	54 (12.7)	-	-

The majority of respondents in both urban (71%) and rural (65%) believe that Covid-19 is caused by a virus. More than half, 51% of urban and 47% of rural respondents reported that eating or contact with wild animals does not cause Covid-19 infection. Forty-six percent of urban respondents believe it is possible for positive Covid-19 patients to show no symptoms compared to 41% of rural respondents. The majority of urban, 90%, and rural, 82% respondents, believe that Covid-19 is preventable.

Table 3b. Knowledge of Covid-19 among Urban and Rural Dwellers in Benue State, Nigeria

Variables	Urban Frequency (%)	Rural Frequency (%)	X^2	P- value
Incubation period of Covid-19				
Less than 7 days	104 (10.3)	24 (5.6)	-	-
1-14 days	642 (63.8)	264 (62.0)	30.6	0.000
2-21 days	30 (3.0)	5 (1.2)	-	-
Others	14 (1.4)	12 (3.1)	-	-
I do not know	216 (21.5)	120 (28.1)	-	-
SARS-Cov 2 virus can infect				
Elderly people only	173 (17.2)	45 (10.6)	-	-
Young adults only	4 (0.4)	1 (0.2)	-	-
Anyone can be infected	776 (77.1)	350 (82.4)	16.0	**0.007**
I do not know	44 (4.4)	22 (5.2)	-	-
Others	9 (0.9)	7 (1.7)	-	-
Symptoms of Covid-19*				
High fever	731 (72.7)	331 (80.2)	9.97	**0.002**
Runny nose	441 (43.8)	263 (63.7)	40.3	**0.000**
Dry cough	708 (70.4)	299 (72.4)	0.04	0.83
Breathing difficulty	771 (76.6)	281 (68.0)	15.4	**0.000**
Muscle pain	76 (7.6)	43 (10.4)	1.0	0.308
Fatigue	50 (4.8)	24 (5.8)	0.00	0.990
Bleeding	25 (2.5)	22 (5.3)	5.5	**0.018**
Others	20 (2.0)	29 (7.0)	18.6	**0.000**
Transmission of Covid-19*				
Air droplets	716 (71.2)	335 (78.8)	10.5	**0.001**

Mosquitoes	11 (1.1)	14 (3.3)	9.4	**0.002**
Contact with contaminated surfaces	393 (39.1)	228 (53.7)	11.8	**0.001**
Close contact with people who have the virus	760 (75.6)	297 (69.9)	25.9	**0.000**
I do not know	69 (6.7)	47 (11.1)	13.4	**0.000**
Covid-19 can be killed by*				
Cleaning surfaces with diluted chlorine	237 (23.6)	134 (31.5)	4.3	**0.039**
Alcohol based sanitizers	822 (81.7)	295 (69.4)	32.8	**0.000**
Soap /detergents	351 (34.9)	177 (41.7)	1.4	0.231`
Water alone	44 (4.5)	9 (2.1)	5.5	**0.019**
I do not know	126 (12.9)	117 (27.5)	49.2	**0.000**
Others	15 (1.5)	18 (4.2)	8.1	**0.004**

*Multiple options allowed

About two-thirds of respondents in both urban and rural parts of the State know that the incubation period of Covid-19 is 1 to 14 days. The majority of respondents, urban (77%) and rural (82%), believe anyone can get infected with Covid-19. Most of the respondents in both urban and rural parts of the State reported high fever, dry cough, and difficulty breathing as symptoms of Covid-19. Respondents in both areas also reported airborne droplets, contact with contaminated surfaces, and person-to-person contact as common modes of transmission of the virus. Respondents also reported that using alcohol-based sanitizers, soap, and detergents and cleaning surfaces with diluted chlorine can kill the virus.

Table 4. Covid-19 Personal Risk Perception among Urban and Rural Dwellers in Benue State, Nigeria

Variables	Urban Frequency (%)	Rural Frequency (%)	t- Statistic	P value	Hypothesis
Perception of Covid-19 existence					
Negative	341(33.90)	192(45.18)	1.06	0.469	Accept the Null
Moderate	353(35.10)	142(33.41)	-	-	-
Positive	312(31.01)	91(21.41)	-	-	-
Perceived perception of the seriousness of the Covid-19					
Negative	108(10.74)	47(11.06)	0.99	0.95	Accept the Null
Moderate	186(18.49)	66(15.53)	-	-	-
Positive	712(70.78)	312(73.41)	-	-	-
Perception on the Intention to carry out the Preventive measures of Covid-19					
Negative	33(3.28)	16(3.76)	0.87	0.09	Accept the Null
Moderate	124(12.33)	64(15.06)	-	-	-
Positive	849(84.39)	345(81.18)	-	-	-
Perception on the Degree of anxiety/fear over susceptibility to Covid-19					
Negative	359(35.69)	102(24)	0.95	0.57	Accept the Null
Moderate	490(48.71)	198(46.59)	-	-	-
Positive	157(15.61)	125(29.41)	-	-	-
Perception of Susceptibility to Covid-19					
Negative	826(84.54)	271(71.50)	0.64	**0.000**	Reject the Null
Moderate	151(15.46)	108(28.50)	-	-	-
Positive	-	-	-	-	-

Perception of efficacy of preventive					
Negative	20(1.99)	12(2.82)	0.859	0.0598	Accept the Null
Moderate	145(14.41)	64(15.06)	-	-	-
Positive	841(83.60)	349(82.12	-	-	-

One-third, 31% of urban respondents have a positive perception of Covid-19 existence compared to 21% in the rural areas; however there is not statistically significantly different between the perception of Covid-19 existence between the urban and rural areas; hence we refused to reject the null hypnosis of no difference (t=1.06; P< 0.469). Seventy-one percent, 71% of urban respondents, have a positive perception of the seriousness of Covid-19 compared to 73% of rural respondents; however, there was not statistically significantly different between the perception of the seriousness of Covid-19 between the urban and rural areas; hence we refused to reject the null hypnosis of no difference (t=0.99; p<0.95). 84% of respondents in the urban and 81% of respondents in the rural area have a positive perception on the Intention to carry out preventive measures against Covid-19, while few of the respondents. There was no statistical different between the perception to carry out Covid-19 preventive measures against Covid-19 between the urban and rural areas (t=0.87; p<0.09), 490(48.71%) of the respondents among the urban dwellers had moderate perception. There is no statistical difference between the urban and rural dwellers (t=0.95; P< 0.57). The majority, 85% of respondents in an urban area and 72% in rural areas have a negative perception of susceptibility to Covid-19, with a significant difference between the urban and rural dwellers (t=0.64; P <0.000) and 83% of urban respondents have a positive perception of the efficacy of Covid-19 preventive measures compared to 82% of rural respondents with no significant difference (t= 0.859; P< 0.059).

Discussion

This community-based study which compares the knowledge, and personal risk perception of respondents from urban and rural communities in Benue State, found that over 90% of both urban and rural dwellers were aware of Covid-19, and the source of this awareness varied slightly for the urban and rural dwellers. Most of the participants in the study were within the age bracket of 26-35 years old for urban dwellers and 16-25 years for rural dwellers, and the population was comprised of females for both rural and urban dwellers. In terms of education, most participants attained secondary education. Worldwide reports have shown that level of education is a determinant of health behaviors. Furthermore, studies have shown that for education to be beneficial, at least secondary education should be attained, which are in support of this study. The high level of Covid-19 awareness found in both the rural and urban communities in this study is expected as discussions around the pandemic have been dominant in both traditional media and social media. Information disseminated through the traditional media is usually verified and censored, unlike that of social media, implying that the urban dwellers are more exposed to unverified Covid-19 information, some of which may not be healthy. A higher proportion of the urban residents knew that Covid-19 is different from Flu when compared with the rural residents. A similar observation was also made when respondents were asked whether a person infected with the SARS-Cov-2 virus can be asymptomatic. This implies that the respondent's residents in the urban areas are more informed about Covid-19 than the rural dwellers. In agreement with our findings, previous studies conducted in Egypt, Kenya, and Nigeria [11-13] as well as in different countries in Asia [14, 15] have reported high levels of Covid-19 knowledge among the study population. The high level of Covid-19

knowledge recorded in this study could be due to the aggressive media campaign embarked upon by the Nigeria Centre for Disease Control and the State Ministry of Health. This study revealed that most respondents in both the urban and rural communities know that Covid-19 is caused by a virus, and it can affect anybody. The majority also knew the incubation period and were familiar with the symptoms of Covid-19 as well as the mode of transmission. On the contrary, a study in Myanmar reported that less than a third of participants knew that Covid-19 is a viral infection [16]. This difference may be due to the differences in the source of information. In contrast to our findings, a study done in Iran reported that just about half of the study participants had good knowledge of the symptoms and the mode of transmission of Covid-19 transmission [17]. The high level of knowledge about Covid-19, especially its transmission, observed in our study is a plus and can be exploited in the effort to control the disease. This study further revealed that most respondents in both the urban and rural communities believe that the use of alcohol-based sanitizers is the best way to kill the virus when compared to the use of soap and other detergents. This contradicts the finding by a study in Myanmar in which most of the respondents leaned toward the use of soap and water for hand hygiene [16]. This difference may in part be due to the variations in access to running water in these two study locations. On the comparative analysis of Covid-19 personal risk perception, this study revealed that a higher proportion of the urban residents have a positive perception of Covid-19 existence, the seriousness of the disease, effectiveness of preventive measures and Intention to adhere to Covid-19 control measures when compared to those in the rural areas. This finding agreed with the result from a study in Myanmar that reported moderate to high levels of risk perception for Covid-19 among adults [16]. Another study in Hong Kong also reported that study participants had high personal risk perception about Covid-

19, high perceived susceptibility, and high perceived severity of the disease during the initial stages of the outbreak due to a high level of uncertainties about the disease [17]. This study noted differences in the perception of susceptibility between the rural and urban dwellers, which may be attributed to a lack of public awareness regarding the Covid-19 pandemic, the delayed application of precautionary measures, and ignoring disease onset, which might have resulted in the underestimation of the pandemic. This is like the finding by [18], who reported that Egypt witnessed a rapid surge in the number of Covid-19 cases and deaths because public health measures were announced and implemented late. A study by [19] revealed that the underreporting of Covid-19 cases could be due to a lack of surveillance and diagnostic capacities and a lack of medications and treatment protocols for managing Covid-19 cases. Moreover, over 80% of the respondents in both the urban and rural communities in our study also had a positive perception of the effectiveness of Covid-19 preventive measures. Furthermore, most of the participants portrayed moderate anxiety and fear toward Covid-19 in urban and rural dwellers. This finding is in line with the belief that a novel threat is usually accompanied by heightened fear compared with a more familiar threat [20]. As at the time of this study, there was a continuous increase in the number of cases and deaths reported across various states in Nigeria, a reality that could have raised people's perception of their risk of contracting the virus. In addition, obtaining adequate information from public health professionals, government, media platforms has been associated with elevated risk perception during a pandemic [21,22]. Therefore, aggressive media and government engagement across the country on Covid-19 might be associated with the high-risk awareness found in this study. Conclusion This study revealed high awareness but varied knowledge and personal risk perception of Covid-19 among respondents' residents in the urban and rural

communities. Covid-19 Knowledge and positive risk perception were higher among the urban dwellers compared to those residents in the rural areas. Moreover, social media was an important source of Covid-19 related information among the urban residents, while traditional media, especially radio was the major source of information in the rural areas. Covid-19 risk communication efforts should be intensified, especially in the rural areas, and the government should educate the masses on the need to filter and validate Covid-19 related information circulating in social media.

Conclusion

This study revealed high awareness but varied knowledge and personal risk perception of Covid-19 among respondents resident in the urban and rural communities. Covid-19 Knowledge and positive risk perception was higher among the urban dwellers compared to those residents in the rural areas. Moreover, social media was an important source of Covid-19 related information among the urban residents, while traditional media, especially radio was the major source of information in the rural areas. Covid-19 risk communication efforts should be intensified especially in the rural areas, and the government should educate the masses on the need to filter and validate Covid-19 related information circulating in the social media.

Authors Contributions

OAU conceptualized the research, developed protocol & Data tools, collected data, conducted the analysis, wrote and review the entire manuscript. AO conceptualized the research Protocol, and tools, and review the results. PM wrote the discussion and review the manuscripts, RS reviewed the statistical analysis, wrote the results, and review the manuscript, FO & JAA critically reviewed the manuscript.

Conflicts of Interest

The authors declared no conflicts of interest.

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