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Original Article

KNOWLEDGE, FEAR, AND WILLINGNESS TO ACCEPT COVID-19 VACCINE AMONG RESIDENTS OF JERE LGA, BORNO STATE, NIGERIA

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Abstract

Background: Coronavirus (COVID-19) which emerged from Wuhan, Hubei province, China has gained tremendous attention. It has caused huge morbidity and mortality as well as a visible psychological burden on communities across the globe. Knowledge, fear, and willingness to accept COVID-19 Vaccine are reported to be serious factors in the fight against the disease in many communities for which Jere LGA, Maiduguri, Borno State, may not be an exception. **Objectives: To** determine the Knowledge, fear, and willingness to accept the COVID-19 Vaccine among the residents of Jere LGA, Maiduguri, Borno State, Nigeria. **Methodology:** A descriptive cross-sectional study design was adopted for this study. A total of 384 questionnaires were administered in this study. However, only 367 questionnaires were retrieved for analysis. The sampling technique adopted for this study was multistate sampling techniques. **Results:** The findings of the study revealed that the majority (67.8%) of the respondents had poor knowledge of the COVID-19 vaccine. On the question of COVID-19 fear, 50.1% had moderate fear. Regarding the vaccination status of the respondents, 93.5% did not receive the COVID-19 vaccine jab and 6.5% did receive the vaccine as of the time of this study. Of the 367 respondents, 78.2% were unwilling to accept the COVID-19 vaccine, if made available to them. **Conclusions:** The study concluded that there is poor knowledge, and moderate fear and the majority of respondents were unwilling to receive or accept the COVID-19 vaccine in the study area. Therefore, this study recommends a comprehensive awareness campaign on the importance of the COVID-19 vaccine at the community level.

Keywords: Fear; Knowledge; Vaccine; Willingness

Introduction

What we now know to be coronavirus (COVID-19) emerged in Wuhan, Hubei Province, China.[1] which has since gained tremendous attention, globally. The tremendous attention received by the COVID-19 pandemic is largely due to its highly infectious nature. The pandemic is not only affecting the physical health but also the mental health and well-being of communities across the globe.[2] The Mental health and psychosocial consequences of the COVID-19 pandemic may be particularly serious for communities where non-pharmacological measures like social distancing, use of face masks, and handwashing are not used or practiced in day-to-day activities.

The mental well-being of communities can be negatively affected by fear of being exposed to COVID-19.[3] This fear may be fueled by poor

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knowledge of and polluted information ecosystem on COVID-19. Given the magnitude of the COVID-19 pandemic in terms of economic and psychological problems undergone by the communities, of which Jere LGA is one, it is expected that the level of fear and stress associated with the pandemic will increase.

Implementation of preventive measures and infection control procedures are extremely important to reduce the spread of this disease.[4] The effectiveness of the COVID-19 preventive measures can be influenced by knowledge and acceptance of the COVID-19 vaccine as well as other related preventive measures. Low vaccine acceptance and uptake are the product of unfavourable social influences such as misinformation. The Widespread online misinformation observed during this pandemic could seriously threaten vaccine acceptance in countries where accurate evidence-based information is not readily accessible or where there is a politicization of scientific knowledge on vaccine effectiveness and safety.[5]

A vaccine provides the best hope for a permanent solution to controlling the pandemic. However, to be effective, a vaccine must be accepted and used by a large majority of the population. Research-wise, little is known about the level of knowledge, fear, and willingness to accept the COVID-19 vaccine among the residence of Jere LGA communities. The palpable fear related to COVID-19 is largely driven by conspiracy theories and is likely to affect the willingness to accept of COVID-19 vaccine in the general public for which Jere LGA is not an exception. In light of the above, this study assessed the level of knowledge, fear, and willingness to accept the COVID-19 vaccine among the residents of Jere LGA, Borno State, Nigeria.

MATERIALS AND METHODS

Study Setting

This study was conducted in Jere local government area of Borno State, Nigeria. Jere has a total area of 868 km^2. According to National Population Commission.[6], Jere local government has a population of 293,800. Jere local Government Area is situated in the town of Khaddamari and consists of 12 wards which include Dala-Lawanti, Dusuman, Gamboru, Gomari, Gongulong, Jere, Koshebe, Lawanti, Maimusari, Mairi, Mashamari, and Masu. The majority of the population is between 15-64 years which makes up 52.6% of the total population of the local government. Jere shares a boundary with Konduga local government, MMC, Mafa, and Nganzal local government area. It has a longitude and latitude of s9.56°N, and 7.45°E respectively.

The study design for this study was a cross-sectional research design. The study population were residents of Jere LGA, Borno State, who were 18 years and above as of the time of this study

Determination of Sample Size

According to Krejcie and Morgan[7] a sample of 384 is adequate for a population of 100,000 or more. Jere LGA has a total population of 293,800 (>100,000). Therefore, a sample size of 384 is considered adequate for this study as reported by [7]

Sampling Techniques

The sampling technique adopted for this study was multistage sampling. Jere LGA has 12 wards. The first stage sampling involved the identification of the 12 wards in Jere LGA and the selection of four (4) out of the twelve (12) wards, using simple random sampling. The second stage of sampling involved dividing the selected wards into four (4) clusters each. The third stage involved the selection of one cluster from each of the four (4) wards using a simple random sampling technique. The fourth stage is, the administration of the questionnaire in the four (4) selected clusters using convenient sampling techniques. This is because the sampling frame was not available at the final cluster level.

Instrument for Data Collection

The instrument used for data collection in this study includes a self-developed and adopted questionnaire from Ahorsu.[8] The questionnaire is divided into 3 sections. Section A contains Demographic Information; Section B: knowledge; Section C: COVID-19 Fear Levels and Section D: willingness to accept COVID-19.

The total score for knowledge, ranged between 0 to 5, with higher scores indicating Good Knowledge and a lower score indicating Poor knowledge. Specifically, a score of 0-2 is Poor knowledge of COVID-19 while a score of 3-5 is Good knowledge of COVID-19.[9]

Fear of COVID-19 Scale (FCV-19S) is a seven-item instrument developed by Ahorsu.[8] FCV-19S, in this study, was modified from a 1–5 Likert-type scale to a 1–4 Likert-type scale. The scale was modified to remove neutral responses from the questionnaire. The total score, ranged between 7 to 28, with higher scores indicating more fear.

Validity and Reliability of the Instrument

The face and content validity of the questionnaire was done for instruments used in this study. The reported validity and reliability of the adopted instrument (Fear of the COVID-19 Scale) were used for this study. However, the reliability of the questions on knowledge was calculated using a split-half method where a reliability coefficient of .78 was obtained.

Method of Data collection

Data was collected through an interviewer-administered questionnaire by 4 research assistants.

Method of Data Analysis

The data generated were analyzed using descriptive statistics (frequency distribution table and percentage).

Level of COVID-19 Fear, as characterized in this study; a score of 7–10 for Normal COVID–19 Fear, 11–20 for Mild COVID–19 Fear, and 21–24 for Moderate COVID–19 Fear 25–28 for severe COVID-19 fear and moderate COVID-19 fear.

The data was represented with tables, and bivariate analysis using chi-square was used to determine the association between what and what. The level of significance was set at 0.05

Ethical Consideration

An introduction letter was collected from the Jere LGA of Borno State. Consent was first obtained from respondents before giving out the questionnaires. The respondents were assured of the confidentiality of their participation.

RESULTS

Table 1. Sociodemographic characteristics of the respondents

Variable	Frequency	Percentage
Age		
18-30	141	38.4
31-40	55	15.0
41-50	88	24.0 mean aged
51 and above	83	22.6
Gender		
Male	157	42.8
Female	210	57.2
Religion		
Christianity	112	30.5
Islam	255	69.5
Level Educational		
Primary	89	24.3
Secondary	62	16.9
Tertiary	61	16.6
No formal Education	155	42.2
Marital Status		
Married	201	54.8
Single	153	41.7
Widow	13	3.5
Occupation		
Civil Servant	77	21.0
Farmer	240	65.4
Trader/Business	50	13.6

Table 1 shows the demographic status of the respondents. Regarding age, 141 (38.4) percent fall within the age bracket 18-30; 55(15%) 31-40; 88(24%) 41-50, and 83(24.6). Male 157 (42.8) while 210(57.3%) were female. On religion, Islam had 255(69.5%) while 112(30.5%). Level of education also reveal that 155(42. %) had no formal education, 89(24.3%) primary school, 62(16.9%) secondary school and 61 (16.6%). The marital status of the respondents shows that 201(54.8%) were married, 153(41.7%) reported as single and 13(3.5%) had divorced status. On occupation, 240(65.4%) were farmers, 77(21%) as civil servant and 50(13,6%) had Traders/business status

Table 2: Relationship between the level of knowledge and sociodemographic characteristic of the respondents

Variable	Good knowledge	Poor knowledge	Total	X2	DF	P-Value
Age						
18-30	50	91	141			
31-40	19	36	55	2.921a	3	.404
41-50	22	66	88			
51 and above	27	56	83			
Gender						
Male	74	83	157	28.229	1	<.001
Female	44	166	210			
Total	118	249	367			
Religion						
Christianity	72	40	112	76.296	1	<.001
Islam	46	209	255			
Total	118	249	367			
Educational Level						
Primary	62	27	89			
Secondary	10	52	62			
Tertiary	6	55	61	81.489	3	<.001
No formal Education	40	115	155			
Total	118	249	367			
Marital Status						
Married	81	120	201			
Single	31	122	153	17.199	2	<.001
Widow	6	7	13			
Total	118	249	367			
Occupation						
Civil Servant	60	17	77			
Farmer	41	199	240	99.004	2	<.001
Trader/Business	17	33	50			
Total	118	249	367			

Table 2. shows the association between demographic data and Knowledge of COVID-19 among the respondents. There was a statistically significant association between the Level of Knowledge of COVID-19 and Gender $\chi2(1, N = 367) = 28.229$, $p = 0.001$), level of education $\chi2(3, N = 367) = 81.489$, $p = 0.001$), religion $\chi2(1, N = 367) = 76.296$, $p = 0.001$), Occupation $\chi2(2, N = 367) = 99.004$, $p = 0.001$) and Marital status $\chi2(2, N = 367) = 17.199$, $p = 0.001$) at 0.05 level of significance. There was no statistically significant association between Age and Knowledge of COVID-19, $\chi2(3, N = 367) = 2.921$, $p = 0.001$) at 0.05 level of significance

Table 3: Association between Level of COVID-19 Fear and socio-demographic characteristics

Variable	Level of COVID-19 Fear				Total	X2	Df	P-Value
	Normal	Mild	Moderate	Severe				
Age								
18-30	10	57	68	6	141			
31-40	2	24	24	5	55	11.969	9	0.215
41 -50	8	34	44	2	88			
51 and above	5	30	48	0	83			
Gender								
Male	6	45	99	7	157	21.560	3	<.001
Female	19	100	85	6	210			
Religion								
Christianity	0	6	99	7	112	108.958	3	<.001
Islam	25	139	85	6	255			
Educational Level								
Primary	0	0	82	7	89			
Secondary	0	45	17	0	62	153.721a	9	<.001
Tertiary	1	44	16	0	61			
No formal Education	24	56	69	6	155			
Marital Status								
Married	1	93	100	7	201			
Single	17	51	79	6	153	66.219a	6	<.001
Widow	7	1	5	0	13			
Occupation								
Civil Servant	5	6	61	5	77			
Farmer	10	129	94	7	240	73.847a	6	<.001
Trader/Business	10	10	29	1	50			

Table 3. shows the association between demographic data and the Level of COVID-19 Fear among the respondents. There was a statistically significant association between Level of COVID-19 Fear and Gender $\chi2(3, N = 367) = 21.560, p = 0.001$), level of education $\chi2(9, N = 367) = 153.721, p = 0.001$), religion $\chi2(3, N = 367) = 108.508, p = 0.001$), Occupation $\chi2(6, N = 367) = 73.847, p = 0.001$) and marital status $\chi2(6, N = 367) = 66.219, p = 0.001$) at 0.05 level of significance. There was no statistically significant association between Age $\chi2(9, N = 367) = 11.969, p = 0.215$) and Level of COVID-19 Fear at 0.05 level of significance

Table 4: Level of Knowledge of COVID-19 Vaccine

Level of Knowledge	Frequency	Percentage
Good Knowledge	118	32.2
Poor Knowledge	249	67.8
Total	**367**	**100.0**

Table 4. revealed that 118(32.2%) had good knowledge of COVID-19 vaccine while 249(67.8%) had poor knowledge of COVID-19 vaccine

Table 5: Level of COVID-19 Fear

Level of COVID-19 Fear	Frequency	Percentage
Normal COVID-19 Fear	25	6.8
Mild COVID-19 Fear	145	39.5
Moderate COVID-19 Fear	184	50.1
Severe COVID-19 Fear	13	3.5
Total	**367**	**100.0**

Table 5 revealed that 25(6.8%) recorded Normal COVID-19 Fear, 145(39.5%) Mild COVID-19 Fear, 184(50.1%) Moderate COVID-19 Fear and 13(3.5%) Severe COVID-19 Fear

Table.6: Association between Level of COVID-19 Fear and Level of knowledge

Level of Knowledge	Level of COVID-19 FEAR					X2	df	P-Value
	NF	MIF	MOF	SF	Total			
Good Knowledge	7	29	75	7	118			
Poor Knowledge	18	116	109	6	249	19.069a	3	<.001
Total	**25**	**145**	**184**	**13**	**367**			

Keys: NF=normal COVID-19 Fear, MIF=Mild COVID-19 Fear, MOD=Moderate COVID-19 Fear and SF= Severe COVID-19 Fear

Table 6**.** shows the association between the level of COVID-19 Fear and the level of knowledge among the respondents. There was a statistically significant association between Level of COVID-19 Fear and level of knowledge $\chi 2(3, N = 367) = 19.069$, $p = <0.001$)

Table:7 Willingness to accept COVID-19 Vaccine

S/No	The willingness of COVID-19 Items	Yes	No
1	Receive covid-19 vaccine jab?	24(6.5%)	343(93.5%)
2	If not are you willing to receive or accept covid-19 jab when available	56(16.3%)	287(86.7%)

Table.7 shows the willingness to accept COVID-19 vaccines among the respondents. The result revealed that 343 (93.5%) did not receive a COVID-19 jabs while only 24(6.5%) received COVID-19 jabs at least one dose. On the question of willingness to accept the COVID-19 Vaccine, 287(86.7%) indicated an unwillingness to accept the COVID-19 vaccine while 56(16.3%) indicated a willingness to accept the COVID-19 vaccine if made available to them.

Discussion

The findings of this study revealed that 67.8% had poor knowledge of COVID-19 while 32.2% had good knowledge. This finding may not be unconnected to the level of education of the respondents in the study area, where the majority had no formal education. Similar to this finding, Islam et al[9] reported low knowledge of COVID-19 in a community-based cross-sectional survey. However, Khaled et al[10] reported a contrary finding in a study that assessed the Knowledge of COVID-19 where 80.8% of Participants' had good knowledge of COVID-19. The differences in the two studies could be due to the demographic variation particularly the level of education in the two populations. This implies that the respondent's level of education may a role in the knowledge of the COVID-19 vaccine as evidenced by the statistical association between the level of education and level of knowledge of the COVID-19 vaccine revealed in this study.

The findings of the present study also revealed that 50.1% of respondents recorded Moderate COVID-19 Fear. Generally, the level of fear of a situation or condition is a function of how an individual(s) perceived a problem as a threat. In essence, the respondents in this study did not look at COVID-19 as a strong threat evidenced by the moderate COVID-19 Fear observed in this study. Ali et al.,[11] in a separate study reported moderate to high fear of COVID-19 fear across continents with the Middle East and Africa having the highest mean in the surveyed populations. This suggests that COVID-19 fear is common all over the world, with the Middle East and Africa having the highest proportions.

Regarding the COVID-19 Vaccination status of the respondents, the finding of this study revealed that 93.5% did not receive the COVID-19 vaccine as of the time of this study. However, 6.5% did receive COVID-19 vaccine at least one dose as of the time of this study. This, poor COVID-19 vaccination status may also be related to poor knowledge of COVID-19 as observed among the respondents in the study area. This finding (6.5%) was lower compared to a study in Jordan where above a third accept the COVID-19 vaccine.[12] This implies that arrangements should be made to scale up campaign

awareness to improve the knowledge COVID-19 vaccine in the study area.

On willingness to accept COVID-19 Vaccine among the respondents, 78.2% indicated an unwillingness to accept the COVID-19 vaccine while 27.8% indicated a willingness to accept the COVID-19 vaccine if made available to them. This finding is contrary to Tobin [13] who assessed the intention to accept a future COVID-19 vaccine in Nigeria, where the findings revealed that 50.2% of respondents were willing to accept a COVID-19 vaccine when made available. Again, this may not unconnected to the low level of education observed in the study area where over 40% had no formal education. Lack of formal education could make them vulnerable to misinformation thereby promoting COVID-19 vaccine hesitancy and low uptake. Strategic campaign awareness will go a long to increasing COVID-19 vaccine uptake and acceptance.

On the association between demographic characteristics and Knowledge of COVID-19 among the respondents. The finding revealed a statistically significant association between the Level of Knowledge of COVID-19 and demographics (Gender, level of education, religion, Occupation, and Marital status) at 0.05 level of significance. However, there was no statistically significant association between Age and Knowledge at a 0.05 level of significance.

The finding of this study also revealed a statistically significant association between the Level of COVID-19 Fear and demographics (gender, level of education, religion, occupation, and marital status) at 0.05 level of significance. However, there was no statistically significant association between Age and Level of COVID-19 Fear at 0.05 level of significance.

These findings are in line with Saeed et al.,[14] who reported a statistically significant association between the Level of knowledge COVID-19 vaccine and demographics (gender, level of education, and marital status) at 0.05 level of significance. This implies that there is an association between the Level of knowledge COVID-19 vaccine and the demographics in the study area. However, contrary [to] this finding study is a statistically significant association between the Level of knowledge COVID-19 vaccine and age[14]

CONCLUSION

The study concludes that the knowledge of covid-19 vaccine is significantly low, with moderate levels of fear and low acceptability of the covid-19 vaccine among the residents of Jere local government. This study recommends systematic campaign awareness on the importance COVID-19 vaccine by the relevant stakeholders in the fight against COVID-19 in the study area.

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