

RISK PERCEPTION, KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS COVID-19 AND LASSA FEVER PREVENTION AMONG DOCTORS AND NURSES IN A TREATMENT CENTRE IN NIGERIA

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ABSTRACT

Background: Infection Prevention and Control practices are required to manage COVID-19 and Lassa fever (LF). We aimed to assess COVID-19 and LF risk perception and knowledge, attitude, and practices (KAP) towards prevention among doctors and nurses in a treatment centre in Ondo State, Nigeria.

Methods: We conducted a comparative cross-sectional study using semi-structured interviewer-administered questionnaires. We computed KAP scores with “+1” for correct response and “0” for incorrect response. Cumulative scores >80% implied good KAP of LF and COVID-19. Chi-square test was used to assess associations between sociodemographic characteristics and COVID-19 and LF KAP. P-values <0.05 were statistically significant.

Result: The mean age of respondents was 37.81±8.46 years. Risk perception scores were 2.82±0.53 for LF and 2.76±0.58 for COVID-19 (p=0.002). Mean overall knowledge scores towards prevention were 18.48±2.08 for LF and 15.59±3.22 for COVID-19 (p<0.001). Practices towards prevention scores were 18.18±2.27 for LF and 15.89±1.47 for COVID-19 (p<0.001). Concerning LF, 72.8% of doctors had good knowledge of prevention compared to 42.9% nurses (p<0.001), 18.3% of doctors had good attitude to LF prevention compared to 27.2% nurses (p=0.039). Also, 84.8% nurses had good LF preventive practices compared to doctors (64.5%) (p<0.001). A strong positive correlation (r=0.72) existed between COVID-19 and LF risk perception (p<0.001).

Conclusion: Continuous on-the-job trainings are needed among doctors and nurses in LF and COVID-19 treatment centres.

Keywords: Coronavirus, Lassa fever, COVID-19 knowledge, Lassa fever knowledge, COVID-19 attitude and practices, Lassa fever attitude and practices.

INTRODUCTION

The outbreak of the novel Coronavirus (COVID-19) has reiterated the vulnerability of the entire globe to pandemics, and has had a huge impact across many systems and sectors.^{1,2} The health sector has also not been spared from the COVID-19 experience.^{2,3} This is evident in the overwhelming of COVID-19 treatment centres, the need for more bed units for patients' care, and increased pressure and workload on healthcare workers (HCWs), especially doctors and nurses.⁴ These characteristic features of the pandemic are likely to cause COVID-19 transmission in healthcare settings. In this regard, infection, and prevention control (IPC) measures have been recommended to be practiced at the treatment centres for protection against COVID-19.⁴ These practices are required among all

HCWs especially doctors and nurses who are directly involved in providing care to COVID-19 and Lassa fever positive patients. Adequacy of knowledge is however required to influence the attitude and practices of these cadres of HCWs regarding the recommended IPC measures.^{3,5}

Globally, nearly 87 million cases of COVID-19 have been recorded between 31st December, 2019 and 6th January, 2021.⁶ The COVID-19 infection toll in Africa has risen to 2,879,193 laboratory confirmed cases.⁶ In Nigeria, 77,299 laboratory-confirmed COVID-19 cases have been recorded, out of which more than 800 cases have been recorded among HCWs.⁶ The increasing rate of COVID-19 infection among HCWs

has been attributed to poor IPC measures in health facilities, especially the COVID-19 treatment centres.⁷ The reported shortages of personal protective equipment (PPE) have equally contributed to increased risk for COVID-19 infection among HCWs.⁷ These reasons therefore imply that HCWs bear multiple risks while discharging their duties during the COVID-19 pandemic. Firstly, HCWs provide frontline care to COVID-19 patients who could expose them to COVID-19 infection.⁷ Secondly, they bear the risk of onward transmission of COVID-19 to families, friends, and colleagues.⁷ To reduce the vulnerability of HCWs to increased risk of COVID-19 infection, compliance with safety guidelines need to be accentuated during this period as noted in previous epidemics.

The Nigerian population and health system have been faced with several epidemics prior to the emergence of COVID-19.⁸ The Lassa fever (LF) outbreak is especially notable due to its rapid transmission rates, potential fatalities, and a significant overwhelming of the health system. HCWs in resource-poor settings are particularly vulnerable to LF outbreaks due to the unavailability of IPC materials and defaulting from IPC compliance.⁹ Non-adherence to recommended IPC measures in healthcare settings have however been reported as potential factors for LF outbreaks.⁹ High levels of LF transmission have been documented from studies conducted in healthcare facilities where IPC measures such as regular handwashing and use of face masks and hand gloves have not been frequently practiced.¹⁰ Poor IPC practices have been described as an outplay of the poor knowledge of both LASV disease and IPC measures among HCWs, including nurses and doctors. The possession of adequate knowledge regarding LF and its preventive measures is needful to address all potential sources of its infection and reduce the potential for sporadic outbreaks of LF both within and outside healthcare facilities.¹¹

Given the high attack rate associated with COVID-19 and fatalities associated with viral haemorrhagic fevers including LF, appraisal of the risk perception and KAP among HCWs is not only necessary but also expedient. Therefore, it is needful to assess the attitudes and practices of HCWs especially doctors and nurses who provide frontline care to patients. A study of this nature is timely and imperative considering the need for good IPC practices, improved health service delivery and enhanced workplace safety regarding the management of COVID-19 and LF. This study therefore aimed to assess COVID-19 and LF risk perception and knowledge, attitude, and practices (KAP) towards prevention among doctors and nurses in a treatment centre in Nigeria.

METHODS

Study Area: The study was conducted at the Federal Medical Centre (FMC), Owo, Ondo state, Southwest Nigeria. FMC Owo is a tertiary health institution, that provides primary, secondary, and tertiary levels of healthcare. It provides healthcare services to the people in Ondo state, and surrounding states like Kogi, Edo, Ekiti and Osun States. The management of LF infection started at FMC Owo in January 2017. COVID-19 ward was created and started in May 2020. The hospital has a laboratory where the Polymerase Chain Reaction is conducted for LF confirmatory test which commenced in 2018 and COVID-19 confirmatory test which commenced in July 2020.

Study Design: A descriptive cross-sectional design was employed.

Study population: Consenting doctors and nurses in clinical departments of FMC, Owo were studied.

Sampling methods: This research employed a simple random sampling technique. A list of clinical staff of the hospital was obtained from the Administrative department. From the available staff list, the units/departments were arranged serially, and a table of random number was used to select at least one out of every three staff in each unit/department.

Data Collection: A semi-structured, interviewer administered questionnaire was used to assess the risk perception, and knowledge, attitude, and practice towards the prevention of COVID-19 and LF among HCWs.

Data Management

Questionnaires were checked for omissions and errors after collection and correction were made where necessary. Data were analysed with the SPSS version 23. Chi-square test was used for the assessment of significant associations between proportions. Continuous variables were summarized using mean and standard deviation, while categorical variables were summarized using frequencies and percentages. Knowledge, attitude, and practice scores were computed with “+1” assigned for correct response and “0” assigned for incorrect response. Good knowledge, good attitude and good practice was assigned to scores > 80%, while poor knowledge, poor attitude and poor practice were allotted to scores < 80%. These scores were graded using the modified Bloom’s cut-off point. Bivariate chi-square test was performed on respondents’ characteristics and knowledge, attitude, and practices towards COVID-19 and LF. The Pearson’s correlation (r) test was used

to assess the bivariate associations between the measured mean scores. Variables in the bivariate test with p-values < 0.05 were accepted as significant.

Ethical Consideration

Informed consent (written/verbal) was obtained from the respondents, who were made to understand that participation was voluntary, information will be kept confidential and there would be no consequence for non-participation. Approval for the study was obtained from the Health Research Ethics Committee, FMC, Owo (FMC/OW/380/VOL.LXXXIX/165).

RESULTS

Table 1 shows the sociodemographic characteristics of the study participants. The total number of doctors and nurses surveyed was 393. Among them, 65 (53.8%) doctors were below 30 years, while 41 (24.3%) were between 40-49 years. Also, 127 (75.1%) doctors were males, and 150 (88.8%) doctors had obtained tertiary educational qualification only. In addition, 15 (8.9%) doctors worked at the Infectious ward/Community Health department, while 25 (14.8%) doctors worked at the Surgery department.

Table 1: Sociodemographic characteristics of doctors and nurses at the Federal Medical Centre, Owo

Variables (n=393)	Doctors n(%)	Nurses n(%)	Total n(%)
Age group (years)			
<30	63(53.8)	47(40.2)	105(26.7)
30-39 years	53(31.4)	66(29.5)	119(30.3)
40-49 years	41(24.3)	81(36.2)	122(31.0)
≥50years	5(3.0)	42(18.8)	47(12.0)
Sex			
Male	127(75.1)	33(14.7)	160(40.7)
Female	42(24.9)	191(85.3)	233(59.3)
Highest Educational Qualification			
Postgraduate	19(11.2)	9(4.0)	28(7.1)
Tertiary	150(88.8)	215(96.0)	365(92.9)
Department			
Adult Accident and Emergency	9(5.3)	9(4.0)	18(4.6)
Infectious ward/Community Health	15(8.9)	21(9.4)	36(9.2)
Diagnostic*	14(8.3)	5(2.2)	19(4.8)
Obstetrics and Gynaecology	12(7.1)	24(10.7)	36(9.2)
Paediatrics	18(10.7)	24(10.7)	42(10.7)
Medicine**	15(8.9)	59(26.3)	74(18.8)
Surgery***	25(14.8)	49(21.9)	74(18.8)
Other clinicals****	61(36.1)	33(14.7)	94(23.9)

*Diagnostic department: Haematology and Radiology.

**Medicine: Family Medicine, Staff clinic and Medicine.

***Surgery: Orthopaedics, ENT, Ophthalmology, Surgery.

****Other Clinicals: Anaesthesia, Dental, Psychiatry, House Officers.

Table 2: Mean scores of Risk perception, and KAP towards prevention of COVID-19 and Lassa fever among doctors and nurses at Federal Medical Centre, Owo

Variables	COVID-19 Mean +/- SD	Lassa Fever Mean +/- SD	T-test	p-value
Knowledge	15.59±3.220 score range = 3-22	18.48±2.076 score range = 9-22	16.333 N=393	<0.001
Attitude	17.26±1.766 score range = 6-19	4.36±1.350 score range = 0-6	-111.652 N=393	<0.001
Preventive Practices	15.89±1.468 score range = 11-19	18.18±2.272 score range = 10-20	15.676 N=393	<0.001
Risk perception	2.76±0.577 score range = 1-4	2.82±0.533 score range = 1-4	3.142 N=393	0.002

Table 2 shows the mean scores of the risk perception and KAP towards the prevention of COVID-19 and LF among doctors and nurses. The mean overall knowledge score towards the prevention of COVID-19 was 15.59 ± 3.22 and that of LF was 18.48 ± 2.08 ($p < 0.001$). The mean practices score towards the prevention of COVID-19 was 15.89 ± 1.47 and 18.18 ± 2.27 for LF ($p < 0.001$). Risk perception had a higher mean score of 2.82 ± 0.53 for LF compared to a mean score of 2.76 ± 0.58 for COVID-19 ($p = 0.002$).

Table 3 shows the association between COVID-19 and LF risk perception and KAP towards prevention

among doctors and nurses. Among them, 72.8% of the doctors had good knowledge of LF prevention compared to 42.9% nurses ($p < 0.001$), 18.3% of doctors had good attitude to LF prevention compared to 27.2% nurses ($p = 0.039$). Also, 190 (84.8%) nurses had good LF preventive practices compared to 109 (64.5%) doctors ($p < 0.001$). No significant difference existed in the KAP towards prevention of COVID-19 between doctors and nurses

Table 4 shows the correlation between the risk perception and KAP towards COVID-19 and LF

Table 3: Sociodemographic characteristics and association between knowledge, attitude, practices and risk perception towards Lassa Fever and COVID-19 prevention among doctors and nurses at Federal Medical Centre, Owo

Outcome	Disease	Status	Profession		Chi-Square	p-value
			Doctors n (%)	Nurses n (%)		
Knowledge of prevention	COVID-19	Good	56 (33.1)	60 (26.8)	1.867	0.172
	Lassa Fever	Poor	113 (66.9)	164 (73.2)	34.960	<0.001
Good		123 (72.8)	96 (42.9)			
Attitude towards prevention	COVID-19	Poor	46 (27.2)	128 (57.1)	0.145	0.704
		Good	150 (88.8)	196 (87.5)		
	Lassa Fever	Poor	19 (11.2)	28 (12.5)	4.245	0.039
Good	31 (18.3)	61 (27.2)				
Preventive Practices	COVID-19	Poor	138 (81.7)	163 (72.8)	2.855	0.091
		Good	73 (43.2)	78 (34.8)		
	Lassa Fever	Poor	96 (56.8)	146 (65.2)	21.866	<0.001
Good	109 (64.5)	190 (84.8)				
Risk Perception	COVID-19	Poor	60 (35.5)	34 (15.2)	1.017	0.313
		Good	152 (89.9)	194 (86.6)		
	Lassa Fever	Poor	17 (10.1)	30 (13.4)	0.313	0.576
Good	141 (83.4)	182 (81.2)				
		Poor	28 (16.6)	42 (18.8)		

Table 4: Correlation of COVID-19 and Lassa fever risk perception and KAP towards prevention among doctors and nurses at Federal Medical Centre, Owo

Variables	Knowledge on Lassa fever		Attitude on Lassa fever		Practices on Lassa fever		Risk perception of Lassa fever	
	Pearson's Correlation Coefficient (r)	p-value	Pearson's Correlation Coefficient (r)	p-value	Pearson's Correlation Coefficient (r)	p-value	Pearson's Correlation Coefficient (r)	p-value
Knowledge on COVID-19 prevention	0.176*	<0.001						
Attitude on COVID-19 prevention			-0.063	0.21				
Practices toward COVID-19 prevention					-0.158*	0.002		
Risk - perception of COVID-19							0.720*	<0.001
N	393		393		393		393	

*Correlation is significant at the 0.05 level (2-tailed).

prevention among doctors and nurses. There is a weak positive correlation of 0.176 between knowledge of the prevention of COVID-19 and LF ($p < 0.001$). A weak negative correlation of -0.158 was found between practices towards prevention of COVID-19 and LF. A strong positive correlation of 0.72 existed between the risk perception of COVID-19 and LF ($p < 0.001$) (Table 4).

DISCUSSION

This study found that the overall risk perception and KAP towards prevention of LF is higher compared to COVID-19 among doctors and nurses. Doctors had higher knowledge of LF prevention compared to nurses, while the attitude and practice towards prevention was better among nurses. Among doctors and nurses, no significant difference existed in the risk perception, and KAP towards COVID-19 prevention. This finding could be explained by the long-term existence of LF and the novelty of COVID-19 in Nigeria. HCWs at the centre had therefore gathered more experience on LF infection prevention since 2017 compared to COVID-19 which only commenced in April, 2020. The high proportion of overall good knowledge, attitude, and practices towards LF prevention that we obtained is higher than results from similar studies conducted among different cadres of HCWs in Nigeria.¹¹ Our results could also be due to the intensified LF hospital-based campaigns, jingles, and public health campaigns in Ondo State, a LF-endemic area. Similar public health campaigns have been conducted in other LF-endemic areas in Nigeria.¹² In addition, the lower results obtained for the risk perception, and KAP towards COVID-19 prevention might be due to its global occurrence, with no defined peculiarities for the Nigerian environment. These findings therefore highlight that HCWs are less likely to possess detailed understanding of novel illnesses compared to existing ones in which they have been involved in patient care. In lieu of these findings, it is required that information on COVID-19 be intensified and well-communicated via available channels of information such as the mass media, hospital-based health talks, and organized trainings for HCWs.

More doctors had better knowledge of COVID-19 prevention than nurses although the difference was not statistically significant ($p = 0.172$). This could firstly be explained by the higher likelihood for assessing information across multiple sources among medical doctors. This finding could be explained by the increased tendency for use of internet sites for obtaining information, including COVID-19-related knowledge. Internet sites have been reported as a frequent source for the communication of COVID-19-related information across different settings.¹³ Due to their

busy schedule, the higher proportion of females among nurses could have also compromised the search for information from diverse sources. Owing to the increased involvement in patient care, it is therefore needed that health education sessions on COVID-19 are frequently targeted at nurses who are more likely to transfer COVID-19-related knowledge on to patients and their relatives. In addition, traditional sources of information such as radio and television should be optimally harnessed to equip HCWs with lower educational qualification among whom easy internet access may seem impossible. Regulation of these sources of information would be required for the communication of only evidence-based COVID-19 information both to HCWs and the general population.

Pertaining to the knowledge of LF prevention, this study found that more doctors possessed better knowledge compared to nurses ($p < 0.0001$). Results obtained from this study infers that profession is a major factor which influences the acquisition of knowledge on LF. Membership of the healthcare profession has been described as a factor which influences LF knowledge.^{14,15} We found a weak positive correlation between knowledge of LF and COVID-19. This infers that the possession of good knowledge regarding LF prevention by HCWs could be helpful to enhance good knowledge of COVID-19 prevention. This necessitates that concerted efforts should be made to increase the knowledge of LF among HCWs in a bid to improve COVID-19 knowledge.

We observed a strong positive correlation between risk perception of LF and COVID-19 ($p < 0.001$). This corroborates the Health Belief Model which suggests that positive risk perception for any illness is a factor which influences disease-preventive behavior.¹⁶ Findings from this study therefore imply that individuals who consider themselves vulnerable to LF are likely to have positive risk perception for COVID-19, and thus adopt precautionary behavior in both contexts. Studies conducted independently on LF and COVID-19 in Nigeria and Saudi Arabia have reported an increased likelihood for adoption of protective behaviors in both regards.^{17,18,19} Such precautionary behavior would include social and physical distancing, regular hand hygiene, use of personal protective equipment, and environmental decontamination in both LF and COVID-19 contexts. Positive risk perception for LF and COVID-19 may be lacking among HCWs because of false information being communicated across different channels. This finding therefore posits that the vulnerability of all individuals to LF and COVID-19 should be communicated to HCWs. Also, factors

which increase the risk for LF and COVID-19 infections should be frequently and regularly made known to HCWs in order to model disease-preventive behaviors in them.

Regarding attitude, this study found that fewer doctors exhibited good attitude pertaining to LF prevention compared to nurses ($p=0.039$). Similarly, a higher proportion of nurses displayed good practices for the prevention of LF ($p<0.001$). This highlights that possession of good knowledge does not translate to good attitude and practices towards prevention as observed among the doctors in this study. This finding is unexpected because an individual's knowledge should ordinarily influence his attitude and practices.¹⁶ It is however unfortunate that the knowledge-attitude-practices outplay is lacking in the LF prevention context. Findings from this study contradicts the results of similar studies conducted in community-based settings in Nigeria where LF knowledge influenced respondents' attitudes and practices.^{18,20} This finding may be an indication of poor understanding of LF preventive attitudes and practices among doctors and nurses. It could be explained by the weak integration of culture and socio-behavioral preventive measures for LF; an occurrence which permeates on to HCWs as well. It is thus needed that regular assessment of HCWs practices is scheduled following health education sessions regarding COVID-19 KAP towards prevention among HCWs.

Findings from this study revealed a weak negative correlation between practices towards prevention of LF and COVID-19. This implies that the preventive practices adopted by an individual regarding LF would not prevent COVID-19. LF and COVID-19 are known to share some similarities in disease-prevention measures. These include regular handwashing, avoidance of burial rites of infected persons, change of hand gloves and face masks after each use, as well as the use of face shields, aprons, and goggles.^{21,22} In spite of these similarities, findings from this study identified LF-preventive practices which would not be suitable to address COVID-19. This include avoidance of consumption of multimammate rats, covering of food items with tight-fitted lids, avoidance of sun-drying food items on the floor, and cutting of bush in the environment.^{20,21} Therefore, it is needed that HCWs get equipped with up-to-date information on the specific practices which have been tailored for the prevention of either LF or COVID-19. The possession of this piece of knowledge would help to avoid errors which are associated with the practices of LF or COVID-19 preventive strategies. This would also ensure and assure of a healthy workforce of doctors and nurses as required for the provision of

the continuum of care to both LF and COVID-19-positive persons at designated treatment centers.

LIMITATIONS

The finding from this study was limited because the management of LF at the isolation centre commenced in 2017, while COVID-19 management commenced in April 2020. The duration of management of both illnesses differ, and this could have influenced the differences we reported. However, the infectious nature of LF and COVID-19 which are present health problems accords much credit to the findings from this study.

CONCLUSION

The COVID-19 and LF outbreaks have the capacities to overwhelm the Nigerian health system. Nosocomial transmission of these infections could result when the risk perception, and KAP of doctors and nurses towards preventing LF and COVID-19 is inadequate. We hereby recommend regular and scheduled trainings for doctors and nurses who are involved in the management of patients in COVID-19 and LF treatment centers. In addition, evaluation of knowledge gained from the trainings should be organized and implemented at regular intervals for doctors and nurses regardless of their years of professional experience. Furthermore, the available channels of information dissemination should be regulated for the communication of information on the good attitude and practices towards the prevention of COVID-19 and LF.

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Conflict of interests

None

Data Availability Statement

The data that support this research is available upon reasonable request from the corresponding author.

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