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KNOWLEDGE, PERCEPTION AND IMPACT OF COVID-19 ON PRACTICE OF DOCTORS IN AN INSURGENCY AFFECTED AREA

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ABSTRACT

Objective: **This study aimed to assess the knowledge, perception and impact of COVID-19 on doctors practising in an insurgency-afflicted Borno State, North-Eastern Nigeria.**

Method: **A cross-sectional study conducted using pretested Google forms questionnaire. Data were analysed using SPSS version 25. A multidimensional score with cut-off of ≥8 was used to rate doctors' level of knowledge and a p-value of <0.05 was considered significant.**

Results: **One hundred and thirty-nine (139) doctors (mean ± SD age: 34.7 ± 6.1years, 96 (69.1%) males) completed the survey. Eighty-five (61.2%) were not aware of the origin of SARS-COV-2. Only 42 (30.2%) and 19 (13.7%) knew about the commonest mode of transmission and the earliest symptom of COVID-19, respectively. Few (23.7%) understood why children have milder disease. Only 44 (31.7%) doctors had a score of ≥8. Majority (133, 95.7%) observed standard measures to curb COVID-19 transmission in their practice. Only 38 (27.3%) had medical journals and other academic arenas as their predominant source of information. All attested that COVID-19 has profoundly affected their practice; 85% suspended academic activities. Majority (94.2%) perceived that COVID -19 would be worse in IDP camps and 54 (38.8%) believed that insurgency could limit COVID-19 patients from accessing care. Most (116, 83.4%) participant anticipated a change in their practice after the pandemic.**

Conclusion: **There is a dearth of information on COVID-19 among doctors practising in an insurgency affected area. The pandemic has significantly changed their medical practice now and will possibly affect their future views about modes of practice during a pandemic.**

INTRODUCTION

In mid-December 2019, an outbreak of pneumonia was reported in the Chinese city of Wuhan and was later known to be caused by a new coronavirus (SARS-CoV-2), suspected to originate from bats.[1] The virus was found to be similar to the two previous causes of severe acute respiratory syndrome (SARS) that have caused two large epidemics in the past 18 years; SARS and the Middle East respiratory syndrome (MERS).[2, 3]

The World Health Organization (WHO) received a report of 44 cases of pneumonia from China on 31st December 2019. The outbreak has escalated rapidly since then, forcing the WHO to declare it a public health emergency of international concern on 30th January 2020 and then formally declared it a pandemic on 11th March 2020.[4] At the time of writing this paper, approximately 40 million people were infected, with more than 30 million recoveries and about 1,100,000 deaths recorded worldwide.[5] The first confirmation of spread to Nigeria occurred on 27th of February 2020 and 51 days later, an index case was recorded in Borno state. [6,7] Nigeria has an estimated 61,440 cases, with 1,125 deaths and 56,611 recoveries as of October 2020.[8]

The dynamics of the origin, modes of transmission, incubation period, signs and symptoms and diagnostic modalities of COVID-19 are still evolving. Initial report from China[9] indicated that it affects the middle age and elderly. It has an incubation period of 2 to 14 days and is transmitted by contact with secretions from infected individuals either directly or on surfaces. It also causes a severe acute respiratory distress, which is worse among individuals with comorbidities such as asthma, diabetes, hypertension, renal diseases and in those that smoke.

The pandemic has led to a massive change in the practice of medicine across the world. This varies from one region to the other due to overstretching of health facilities, shortages of testing kits and medications, interruption in supply and availability of personal protective equipment (PPE), inadequate manpower, lack of sound epidemiologic policies and poor knowledge about the disease.[10]

There was massive closure of routine services in most hospitals, with the setting up of temporary isolation centres and testing sites, routine use of face masks and PPE. Regular hand wash, scaling down of routine clinics and surgeries, avoidance of specific medications due to fear of disease worsening, increased physical distancing, imposition of lockdowns and use of telemedicine among doctors were commonplace. These changes in practice have resulted from incomplete knowledge of the disease dynamics and differences in perception of the nature of COVID-19 amongst health care workers (HCWs) and the general population. In addition, most HCWs are anxious about getting infected or infecting their loved ones.[11]

Areas already afflicted by conflicts and instability are presumed to be worse hit by the pandemic. The 4th Crisis Group Special Briefing of 24 March 2020,[12] highlighted the vulnerability of conflict-affected population because of disruption in flow of humanitarian aid, restricting activities to life-saving measures, limitation of peace-keeping operations, loss of economic opportunities and increased attacks by violent armed groups.[13]

Borno State, in Nigeria has been afflicted by insurgency for over a decade. There are more than 1.4 million internally displaced persons (IDPs), with over 800,000 in congested IDP camps currently. In addition, more than 280,000 children have severe acute malnutrition in the region and about 35% of the health care facilities have been destroyed or damaged by the insurgents, which has been shown to provide a "perfect storm" for a pandemic to thrive.[14] Individuals in the

region have poor access to other health facilities because of armed conflict and military activities. The COVID-19 pandemic will potentially disrupt services, yet its impact in the region is not fully understood.[15]

To forestall the progression of the COVID-19 pandemic, doctors and other HCWs need to acquire adequate knowledge of the disease to aid in effective planning and development of treatment and preventive guidelines based on scientific evidence. Sound knowledge, attitude, and practice regarding certain infectious diseases have been shown to improve the outcomes of their treatment and prevention.[16]

This study aimed to assess the knowledge, perception and impact of COVID-19 on the practice of doctors in Borno State, a province most afflicted by insurgency in north-eastern Nigeria.

METHOD

This cross-sectional, web-based study was conducted with the help of an online questionnaire designed using Google forms. The questionnaire link was sent to the WhatsApp/Telegram group of all the doctors practicing in the insurgency affected Borno State in Nigeria, and by emails. The survey started from June 9th, 2020, at 18:00 hrs. and ended on 19th at the same hour. All participants consented to the study and were assured that the results of this study will not be utilized for commercial purposes.

Instrument: The questionnaire was semi-structured in line with the study objectives and a pilot study was conducted to evaluate its internal consistency and validity before it was rolled out. It was found that it takes approximately seven minutes to complete each form. An introductory page emphasized the importance of the study and sought the consent of the participant in full compliance with the provisions of CHERRIES statement.[17] The survey questions chronologically covered aspects of demographics of the participants, knowledge of the disease which included but not limited to the dynamics of the origin, modes of transmission, incubation period, signs, and symptoms as well as diagnostic and treatment modalities of COVID-19. Participant were asked to choose the best drugs they perceived useful in the treatment of COVID-19 among those used at that time (Steroids, hydroxychloroquine, remdesivir, lopinavir and Azithromycin) and how to prevent transmission of infection in hospital settings, the availability and use of PPE. The effect of lockdown and physical distancing on training and learning among doctors at various levels of specialization and expertise was also evaluated together with various strategies employed to mitigate this effect. The difference in perception of the COVID-19 dynamics amongst health workers during this pandemic was also assessed.

Data analysis: Data were extracted into Excel data sheet (Microsoft Excel, 2016) and were checked for completeness, consistency and were cleansed. The data were then analysed with SPSS version 25 (IBM Corp., Armonk, NY, USA). Results were expressed as frequencies and percentages. Mean (±SD) and median [IQ range] of continuous variables were computed after testing for normality of data. A multidimensional scoring system was used to determine the level of knowledge of participants. Each correct answer was assigned one point, making a total score of 13 points in the knowledge section. A score of 8 (≈ 62% of 13) and above, which corresponds to almost two-third (2/3) of corrected answers was considered a good score for this study.[18] P value of < 0.05 was considered statistically significant.

RESULTS

A total of 139 doctors responded to the survey with a mean ± SD age of 34.7 ± 6.1years and comprised of 96 (69.1%) males.

Majority (103, 74.1%) of the participants were married, 77 (55.4%) were residents' doctors. The median [Interquartile range] duration of practice in years for all doctors was 5.0 IQR [4-8] years. Other demographic variables are shown in table 1.

Table 1

Demographics of the doctors

Variable	Frequency (%)
Age (mean ± SD*)	34.7 ± 6.1
Gender	
Male	96 (69.1)
Female	43 (30.9)
Marital status	
Single	35 (25.2)
Married	103 (74.1)
Divorced	1 (0.7)
Cadre	
House officer/Intern	17 (12.2)
Medical officer	35 (25.2)
Resident	77 (55.4)
Consultant	10 (7.2)
Duration of Practice (Median, IQR)	5.0 (4-8)
Place of work	
Primary health facility	5 (3.6)
Secondary health facility	15 (10.8)
Tertiary health facility	119 (85.6)
Specialty	
Dental Specialties	28 (20.1)
General practice	24 (17.3)
Medical Specialties	44 (31.7)
Pathology/Lab Medicine	5 (3.6)
Surgical specialties	38 (27.3)

**SD - standard deviation, IQ range - interquartile range, % - Percentage*

Knowledge of Covid-19 among doctors:

There is a dearth of knowledge concerning the origin of SARS-COV-2 with 85 (61.2%) doctors not aware that SARS-COV-2 originated from bats and only 42 (30.2%) knew about the commonest mode of transmission. Table 2.

Most respondents (113, 81.3%) were aware of the best WHO approved treatment option for COVID-19 as at the time of the survey. Seventy-one (51.1%) considering remdesivir as the most useful drug to treat COVID-19.

Overall, when a multidimensional scoring system was used with 8 out of 13 correct answers being the cut-off of having adequate knowledge, only 44 (31.7%) doctors were found to have adequate knowledge of COVID-19. The knowledge score was highest among doctors in medical specialties and lowest among those in laboratory medicine. Fig 1 shows the total multidimensional score of all the respondents.

Majority (133, 95.7%) of the doctors agreed that face mask, hand hygiene and physical distancing are important measures to reduce the risk of disease transmission at workplace. Forty-three (30.9%) and 42 (30.2%) of the doctors received their information about COVID-19 on social and electronic media, respectively while 38 (27.3%) doctors had

medical journals and other academic arenas as their source of information.

Table 2

Knowledge of COVID-19 among doctors in Borno State

Variable	n=139 Frequency (%)	
	Correct	Incorrect
What do you think is the origin of the new Corona virus (SARS-COV-2)? *	52 (37.4)	2 (1.4)
What is the incubation period for new Corona virus disease? (COVID-19)?	106 (76.3)	33 (23.7)
Which of these is the most common method of transmission of SARS-COV-2?	42 (30.2)	97 (69.8)
What is the earliest symptom (COVID-19)?	19 (13.7)	120(86.3)
What is the most dreaded complication of the diseases?	139 (100)	0 (0)
What is the commonest systemic manifestation of SARS-COV-2 infection?	22 (15.8)	117 (84.2)
Why are children, relatively spared from the severe complications of the disease?	33 (23.7)	106 (76.3)
Which of the following is the preferred method of diagnosis of COVID-19?	133 (95.7)	6 (4.3)
Is the pancorona antibody test useful for the diagnosis of COVID-19?	66 (47.5)	72 (52.5)
The commonest haematological finding in patients with COVID-19 is?	21 (15.1)	118 (84.9)
Determination of SPO2 is a very sensitive test in the evaluation of patients with COVID-19.	133 (95.7)	6 (4.3)
Which particular drug do you consider most useful for the treatment of SARS-COV-2 infection?	71 (51.1)	68 (48.9)
What is the best treatment option of new Corona virus disease?	113 (81.3)	26 (18.7)

N – Number, % - Percentage, SpO2 – Oxygen saturation

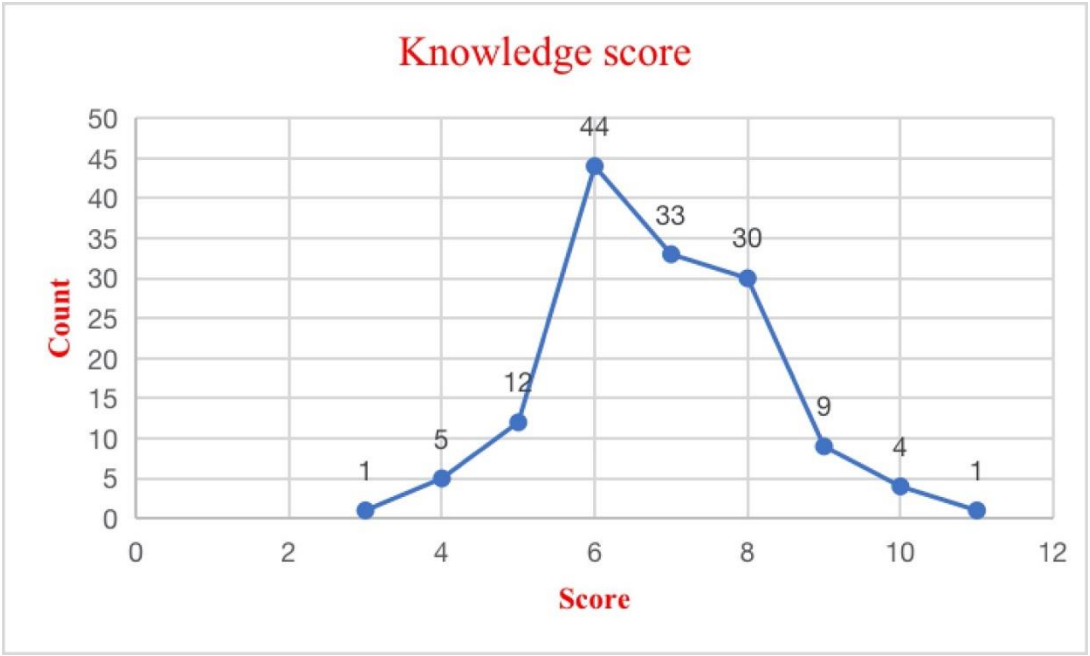

Figure 1 Multidimensional scores of all the respondents' knowledge about COVID-19.

Impact of COVID-19 on practice:

All doctors (100%) attested that COVID-19 has affected their practice profoundly, 120 (86.3%) had a reduction in the number of patients they see at the clinic, while 64 (46%) of the respondents had cancelled all their elective surgeries and 59 (42.4%) had cancelled all aerosol generating procedures (table 2).

Perception of COVID-19 among doctors practicing in Borno State:

Almost all (138, 99.3%) doctors believed that SARS-COV-2 exists, and it is responsible for the pandemic. Greater than 90% were afraid of infecting their family members or colleagues, while 131 (94.2%) believed that COVID -19 would be worse in Internally displaced persons (IDP) camps (table 3)

Table 3

Perception of COVID-19 among doctors practicing in Borno State

Variable	Yes (%)	No (%)	Not sure (%)
Do you believe that COVID-19 is a disease and a cause of the pandemic	138 (99.3)	0	1 (0.7)
Are you afraid of infecting your family?	131 (94.2)	7 (5.0)	1 (0.7)
Are you afraid of infecting your colleagues?	129 (92.8)	7 (5.0)	3 (2.2)
Are you afraid of infecting your patients?	126 (90.6)	11 (7.9)	2 (1.4)
Are you currently afraid of working in the hospital environment?	53 (38.1)	75 (54.0)	11 (7.9)
Are you afraid that the impact of COVID-19 will be worse in an IDP camp?	131 (94.2)	4 (2.9)	4 (2.9)
Has insurgency prevented suspected COVID-19 patients in IDP camps from getting access to care?	54 (38.8)	39 (28.1)	46 (33.1)
Do you think COVID-19 is man-made?	37 (26.6)	36 (25.9)	64 (46)
Do you think COVID-19 can be eliminated?	84 (60.4)	15 (10.8)	40 (28.8)
Do you think COVID-19 will change the way you practice in the future?	116 (83.5)	10 (7.2)	13 (9.4)
Do you think COVID-19 will improve health seeking behaviour in the society you practice in?	85 (61.2)	32 (23.0)	22 (15.8)
Do you think COVID-19 will stimulate improvement in emergency preparedness?	108 (77.7)	12 (8.6)	19(13.7)
Is COVID-19 part of the new world order?	54 (38.8)	17 (12.2)	68 (48.9)

DISCUSSION

This study highlighted that less than a third of doctors in an insurgency afflicted area are aware of origin and dynamics of COVID-19. Majority of them seek information about the virus from non-medical sources and attested that the virus has deeply affected and changed their clinical practice. Some are afraid of infecting their relatives and colleagues and perceived that COVID-19 would be worse in IDP camps and will lead to massive change in medical practice in the future.

Pandemics are rare phenomena that befalls communities without warning and can impose severe strain on health systems or cause their outright collapse.[19] Shortage of much needed supplies, inadequate manpower and the need to establish what's new about the disease usually play a central role.[16] There may be no previously existent diagnostic kits and known treatments if the outbreak is caused by new strain or a variant

with dynamics that are not yet clear. Strategies to curb such outbreaks are usually developed as the disease unfolds and more knowledge about the disease becomes available to HCWs and policy makers.

Front-line HCWs play a key role in provision of care, unraveling the epidemic course and shouldering the responsibility of developing guidelines be used in the region based on evolving knowledge and the consequent rapid review and updates.[20] This could be more strenuous in an environment already bedeviled by activity of the insurgents with several reports of attacks on HCWs and their facilities. The level and quality of knowledge available to front line HCWs handling patients may be the single most important determinant that could reduce the morbidity and mortality associated with the outbreak, at least in the short-term.

In this study, doctors across all cadres demonstrated relatively insufficient knowledge about the origin and transmission of this evolving disease. There is also a significant gap in the knowledge of doctors on incubation period of the virus causing COVID-19. This may relate to the fact that less than a third of them got information on COVID-19 from medical journals and other academic arenas while the majority (61.1%) relied on social media and other non-scientific electronic news media platforms similar to a report by Bhagavathula *et al*.[21] Information on social and general news media is not only unverified but is potentially malicious and usually leads to disinformation.[22]

It is paramount to ensure that front-line HCWs that drive the effort to contain this global outbreak have up-to-date information and regular assessment of their performance on how to manage this public health crisis in a health system previously bedeviled by insurgency.

Inherent delays associated with peer-review processes during the pandemic have led to dearth of factual knowledge, forcing doctors to absorb information from unreliable sources or accept a vacuum.[20] This attempt at thorough validation allows room for disinformation among front-line workers when compared with the fast-spreading pandemic.

We did not find any correlation between level of knowledge and duration of practice; this is because both young and senior doctors were simultaneously confronted with new information on this evolving disease.

Physical distancing and lockdown in various parts of the world have modified the process of learning from the usual face to face conferences to internet-based interactions with its attendant limitations.[23] Up to 85% of the respondents had suspended academic activities during which physical distancing cannot be observed such as bedside teaching. Most of the doctors are aware and have observed the important measures needed to reduce the risk of disease transmission at workplace.

The pandemic has significantly caused a massive reduction in the number of patients seen at the clinic and elective surgeries. The reduction may be because of the lockdown on the state or due to protocols set by the hospital and WHO recommendation to postpone elective treatment, non-urgent hospitalization, and specialist visits, extend duration of prescription for chronic diseases, and telephone consultations. More than 60% of surgeons that use high speed drills that generate aerosols have stopped such surgeries during the pandemic in compliance.[24] About 40% of the respondents' believed Insurgency has prevented suspected COVID-19 patients in IDP camps from accessing healthcare. This is like the situation observed in the Democratic republic of Congo during the Ebola Viral Disease outbreak.[25]

In general, the impact on practice is high, however it has helped to reduce the spread of the infection especially in the hospital setting.

The general avoidance of all aerosols generating procedures and the use of standard precautions has been observed in the dental and surgical specialties as has been reported elsewhere.[26]

Majority of participants had a positive perception of the existence of SARS-COV-2 and are afraid of infecting their families, patients and co-workers. There is a positive mood among doctors that covid-19 has caused a change in their practice and believe that there will be improvement in health seeking behavior among the general public.

CONCLUSION

There is a dearth of information on COVID-19 among doctors practising in an insurgency affected area. The pandemic has resulted in significant change in their practice and may affect their future views about modes of practice during a pandemic.

RECOMMENDATION

We recommend that doctors should seek new information about emerging/re-emerging disease(s) from peer-reviewed scientific journals and other official sources to get a proper perspective of the disease in question and mitigate the untoward effect of misinformation. Additionally, infectious diseases specialists should take the responsibility of enlightening their colleagues during such pandemics.

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