

Containing COVID-19 in Nigeria: An Appraisal of Lockdown and Surveillance at Inter-State Borders to Control Disease Spread

Benedict Ndubueze Azuogu^{1,2}, Cosmas Kenan Onah¹, Emeka Onwe Ogah³, Chinweoke Alfred Utulor^{1,4}, Osarhiemen Iyare^{1,4}, Azuka Stephen Adeke^{1,4}, Nkechi Elizabeth Ebere^{2,4}, Richard Ewah⁵, Ugochukwu Uzodimma Nnadozie⁶, Lawrence Ulu Ogbonnaya^{1,2}

Departments of ¹Community Medicine, ³Paediatrics, ⁵Anaesthesia and ⁶Surgery, Alex Ekwueme Federal University Teaching Hospital Abakaliki, ²Department of Community Medicine, Ebonyi State University, Abakaliki, Ebonyi State, ⁴Nigeria Field Epidemiology and Laboratory Training Programme, Abuja, Nigeria

ABSTRACT

Introduction: The outbreak of coronavirus disease 2019 (COVID-19) in Nigeria prompted decision-making at the various levels of governance. Ebonyi State Government in South-east Nigeria closed her borders with neighboring states as a preventive measure for the spread of the pandemic. This study was an assessment of the effectiveness and challenges of border closure and surveillance activities in controlling the dispersion of the disease across states. **Materials and Methods:** The five major borders of Ebonyi State with her neighboring States of Enugu, Cross River, and Abia were visited. Information was collected about movement restrictions and surveillance at the borders using an observation checklist and key informant interviews. Data collected were analyzed using IBM-SPSS and thematic interpretation. **Results:** Commuters on essential duty were enforced to wear face masks, perform hand hygiene, and undergo screening for the symptoms of COVID-19 before entering the State. All the first 13 COVID-19 confirmed persons in the State were from those picked up as suspected cases by surveillance at the State borders. People who travelled hundreds of kilometers across several States were stopped from entering Ebonyi State. However, movement restriction at the borders was undermined by some security personnel who were bribed by commuters to allow them crossover during night hours. **Conclusion:** The lockdown and surveillance activities at the borders were effective in controlling the spread of COVID-19, but alternative routes of entry and corrupt act during odd hours constituted serious risks. Uniformity of movement restriction across all the states borders with vigilante groups manning inter-community boundaries may control the disease spread across regions.

Keywords: Coronavirus disease 2019 surveillance, infection control, inter-state borders, lockdown, suspected cases

INTRODUCTION

An outbreak of pneumonia caused by a virus initially named “2019 novel coronavirus” in Wuhan, China was first reported to the World Health Organization (WHO) on December 31, 2019.^[1] The causative agent of the disease was later identified as “severe acute respiratory syndrome coronavirus 2” and named “coronavirus disease 2019” (COVID-19) by WHO.^[2] On January 13, 2020, the first case of the disease outside China was reported in Thailand and since then the disease has spread to other countries of the world with a large number of confirmed cases and deaths.^[3,4]

The WHO declared COVID-19 outbreak a Public Health Emergency of international concern on January 30, 2020,^[3] and a pandemic on March 1, 2020.^[5] The WHO further described the preparedness, readiness, and response actions for four different COVID-19 transmission scenarios and charged

every country to urgently take all necessary measures to slow down its further spread.^[3] It emphasized that the virus can be contained through early detection, isolation and treatment of cases, contact tracing, social and physical distancing, together with a well-coordinated and comprehensive approach that engages the entire machinery of government.^[3]

The Federal Government of Nigeria set up a Presidential Task Force (PTF) on COVID-19 on March 9, 2020, with members

Address for correspondence: Dr. Benedict Ndubueze Azuogu, Department of Community Medicine, Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State, Nigeria. E-mail: bnazuogu@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Azuogu BN, Onah CK, Ogah EO, Utulor CA, Iyare O, Adeke AS, *et al.* Containing COVID-19 in Nigeria: An appraisal of lockdown and surveillance at inter-state borders to control disease spread. Niger J Med 2021;30:293-9.

Submitted: 03-Jan-2021

Revised: 16-Feb-2021

Accepted: 03-Apr-2021

Published: 19-Jun-2021

Access this article online

Quick Response Code:



Website:
www.njmonline.org

DOI:
10.4103/NJM.NJM_4_21

drawn from key Federal Ministries, Departments and Agencies, and the WHO. Similar COVID-19 task forces were set up at the state levels to work in collaboration with the PTF.^[6]

The first case of the COVID-19 in Sub-Saharan Africa was reported in Nigeria on February 27, 2020^[7,8] in a 44-year-old Italian citizen who visited Lagos.^[9] As the pandemic continues to spread, the Ebonyi State government instituted several strategies for its control. Some of the strategies include the enactment of Ebonyi State COVID-19 and other Infectious Diseases Law 2020,^[10] constitution of the State Anti-COVID-19 Task Force, closure of all borders of entry into the State,^[11] and imposition of curfew between 8.00 pm and 6.00 am. Others are the restriction of the number of passengers for commercial transport vehicles to two per seat, banning of social gatherings in excess of 20 persons in places of worship and social events, and enforcement of the use of face masks in public places.

Until April 26, 2020, Ebonyi State did not record any case of COVID-19 despite confirmation of the disease in neighboring States of Enugu, Abia, and Benue.^[7] The appearance of an index case on April 26, 2020 made Ebonyi State one of the last in South-east geopolitical zone of Nigeria to report a case. Surprisingly, despite the implementation of these control measures, the State recorded more cases than those in the neighboring States within a short period of the index case. However, the first 13 cases of COVID-19 detected in Ebonyi State were from returnees or their contacts from other States intercepted at the borders as “suspected cases” by members of the State Anti-COVID-19 Task Force.^[9,12-16] However, the sudden rise in the number of cases in the state within few weeks after the index case aroused the curiosity of the researchers to assess the effectiveness of surveillance and lockdown operations of the State government at the inter-State borders. Our aim was to generate evidence-based recommendations for improvement in lockdown strategies for the control of infectious diseases.

MATERIALS AND METHODS

This was an exploratory survey carried out in major borders of Ebonyi State with her neighbouring States of Abia, Cross River, and Enugu Ebonyi State. Ebonyi State is one of the 36 States of Nigeria with a projected population of 2,880,383.^[17] The Ebonyi-Enugu border at Ishielu is the busiest both for human and vehicular traffics probably because of its direct link to Onitsha main market which is acclaimed to be the largest market in West Africa^[18] and also lies along the trans-Saharan highway.

The study population consists of Ebonyi State Anti-COVID-19 Task force members comprising security health care personnel, and political appointees deployed to the inter-state borders and those working at Local Government Areas involved in monitoring, movement restriction, and screening of commuters at the inter-state and inter-LGA borders within the State. All the respondents were purposively selected based on their specific duties and location. Furthermore, confidential information was

obtained from three drivers and five commuters at three of the borders and four of the returnees arrested by the vigilante group (Neighbourhood Watch) and quarantined at the Abakaliki Stadium for entering the State through unconventional routes. The study instruments consist of an observation checklist and a key informant interview (KII) guide.

Data collection lasted for 2 weeks in the month of April 2020. Twelve KIIs were conducted across all the five inter-state borders and the respondents comprised: two LGA Chairmen, five security personnel and five health-care workers. Permission was taken from the respondents to record the interview using an electronic device, complemented by note-taking, and each interview lasted for about 45 min.

Observations were independently made by three researchers at every border using the checklist and two recordings were compared for consistency while the third recording served as a tiebreaker for any differences. The checklist was developed by the researchers based on the recommended strategies for COVID-19 prevention and the tasks assigned to the security and health-care personnel deployed to the borders. Data were analyzed with IBM-SPSS (International Business Machines - Statistical Package for Social Sciences (IBM-SPSS) version 22). The KII recordings were transcribed verbatim within 24 h and read and re-read to identify the themes, and content thematic analysis was finally done.

Ethical approval for the study was obtained from the Research and Ethics Committee of Alex Ekwueme Federal University Teaching Hospital Abakaliki Ebonyi State. Verbal permission was given by the State Ministry of Health and verbal informed consent was obtained from the respondents. They were assured of anonymity and confidentiality to remove biases.

RESULTS

A total of twelve personnel participated in the KII. They comprised five security personnel, five health-care workers and two LGA Chairmen; 15 observation checklists (three for each border) were filled but collapsed into five after cross-checking for consistency and the findings were presented in Tables 1 and 2. For anonymity purpose, the names of the borders were replaced with first, second, third, fourth, and fifth in the KII presentation.

Observations

Each of the borders had at least a security checkpoints but some had multiple checkpoints. The checkpoints were manned by security personnel drawn from different security agencies including the Military, the Police, the Department of State Security, the Federal Road Safety Commission and Nigeria Security, Civil Defence Corp and COVID-19 Task Force members. The security personnel ensured the orderliness of commuters and provided security for the health-care workers stationed at the tent to screen commuters [Table 1].

All vehicles entering or leaving the State were made to drive in a single queue and this resulted in gridlock. However, all the drivers that attempted to or beat the queue were immediately

Table 1: Findings from observations at the security checkpoints of the interstate borders

Observations	Name of borders					Frequency (n=5), n (%)
	Ebonyi - Enugu (Ishielu)	Ebonyi - Enugu (Amudu)	Ebonyi - cross river (Abaomege)	Ebonyi -cross river (Izzi)	Ebonyi - Abia (Isiaka-Ivo)	
Security post						
Presence of security personnel	+	+	+	+	+	5 (100)
Presence of check points at the border	+	+	+	+	+	5 (100)
Asking for address of commuters	+	+	+	+	+	5 (100)
Asking for destination of commuters	+	+	+	+	+	5 (100)
Enforcement of use of face masks by commuters	+	+	+	+	+	5 (100)
Asking for identity card from commuters on essential duties	+	-	-	-	-	1 (20.0)
Asking for take-off points of commuters	-	-	-	+	-	1 (20)
Asking for stop-over of commuters	-	-	-	-	-	0
Asking for travel history to high-risk area	-	-	-	-	-	0
Asking for destination of commuters	+	-	-	-	-	0
Asking for passengers' manifest	-	-	-	-	-	0
Asking for waybills of goods and services	-	-	-	-	-	0

+: Observed activity, -: Not observed

intercepted and turned back by the security personnel. Apart from trucks carrying essential goods and services, other vehicles allowed into the State were those conveying medical personnel, food items, construction materials, and petroleum products. All passengers of commercial buses who crossed the Enugu-Ebonyi border at Ishielu by foot were held back and transported in open trucks to a temporary quarantine station at the stadium in Abakaliki for proper evaluation before handing them over to their Local Government Chairmen for documentation and follow-up. All the security personnel were observed asking for the address of commuters and enforcing the use of face masks by them. However, asking for identity cards and destination of commuters were only observed at Ebonyi-Enugu border while personnel at the Ebonyi-Cross River borders only asked for take-off points of commuters. None of the security personnel were observed asking for stop-overs, travel histories, passengers' manifest or waybills of goods or services [Table 1].

Only 1 out of the 5 borders visited by the researchers had a holding area (temporary quarantine station) for suspected cases and there was no ambulance at any of the borders, while all those coming from epicentres were transported in open trucks to the quarantine station in Abakaliki. There were temporary health posts at each of the borders manned by health-care workers but the holding area was only observed at the Ishielu border [Table 2].

All the health-care personnel wore their face masks; however, only health personnel in 3 out of the 5 borders observed physical distancing during the screening of commuters. Each of the health post had a functional infrared thermometer, but the appropriate technique of temperature checking was observed in four of the borders.

All the health posts had alcohol-based hand sanitizer but the availability of an improvised running tap in a moveable

refillable container (Veronica Bucket) with water and soap for hand washing was only observed at the Ebonyi-Cross River (Izzi) border. All commuters seen at the borders were observed to practice hand hygiene and wearing face masks. None of the health-care workers was observed asking for contact of commuters with a suspected or confirmed case of COVID-19 and none was keeping record of phone numbers of suspected cases. There were no ambulances at any of the border health posts and none of them had any information, education, and communication materials for COVID-19 [Table 2].

Observations at the adjacent borders of other States at Ishielu and Abaomege (for Enugu and Cross River States, respectively) revealed lighter pressure from human and vehicle movements compared to that of Ebonyi borders. There were fewer security and health personnel, and screening with enforcement of COVID-19 prevention measures was not very thorough.

Thematic analysis of key informant interviews

Three sub-themes emerged from the interviews held with the security and health-care personnel. These include border security, orderliness, and enforcement of movement restriction; screening of commuters for COVID-19; and enforcement of COVID-19 preventive measures among commuters. Verbatim quotes were presented in italics.

Border security, orderliness, and enforcement of movement restriction

The uniformed personnel ensured the security of persons at the borders; they maintained orderliness and restricted movement of vehicles across the borders in line with the directive of the State government. The only persons allowed into the State were those on essential duties or vehicles carrying essential goods. One of the security personnel interviewed at the first border said:

Table 2: Findings from observations at the health posts of the interstate borders

Observations	Name of borders					Frequency (n=5), n (%)
	Ebonyi - Enugu (Ishielu)	Ebonyi - Enugu (Amudu)	Ebonyi - cross river (Abaomege)	Ebonyi - cross river (Izzi)	Ebonyi - Abia (Isiaka-Ivo)	
Health post						
Presence of health personnel	+	+	+	+	+	5 (100)
Presence of holding area	+	-	-	-	-	1 (20)
Wearing of facemask by health-care personnel	+	+	+	+	+	5 (100)
Observation of physical distancing by health workers during screening of commuters	-	-	+	+	+	3 (60)
Availability of functional infrared thermometer	+	+	+	+	+	5 (100)
Appropriate technique of temperature checking	+	+	+	+	-	4 (80)
Availability of alcohol-based hand sanitizer	+	+	+	+	+	5 (100)
Availability of veronica bucket for hand washing	-	-	-	+	-	1 (20)
Water and soap for handwashing	-	-	-	+	-	1 (20)
Asking for contact of commuters with suspected or confirmed case of COVID-19	-	-	-	-	-	0
Keeping record of phone numbers of suspects	-	-	-	-	-	0
Presence of ambulance	-	-	-	-	-	0
Presence of IEC materials on COVID-19 for commuters	-	-	-	-	-	0

+: Observed activity, -: Not observed, COVID-19: Coronavirus disease 2019, IEC: Information, education, and communication

“We are the ones in charge of the border to ensure there is orderliness and commuters obey the instructions.”

Another informant at the fourth border put it this way:

“In collaboration with the COVID-19 task force, only persons on essential duty or carrying essential goods are allowed into the State. We also ensure that people do not enter the State through bush paths by having some task force members in the bush paths.”

The information given by the informants corresponds with the observation made by the researchers.

Screening of commuters for coronavirus disease 2019

Both the security and the health personnel stated that they ensured that all commuters were subjected to screening for COVID-19 at the borders. Many of the security personnel also asked for travel history from the commuters and those coming from States reporting many cases of COVID-19 were not allowed into the State. A security man at the first borders summarized the role of the security personnel in the screening process like this:

“We ensure people who get here surrender themselves for check by the healthcare personnel and get the necessary screening. We also ask the commuters to tell us the State they are coming from and if it is from any State with many cases of COVID-19, we hold them back and send them to quarantine station (at the Abakaliki township stadium) for further evaluation.”

Another security personnel interviewed at the third border had these to say:

“We only allow vehicles carrying essential goods to pass and persons on essential duty. Other travelers are turned back. The persons we allow to pass must be screened for

temperature and use hand sanitizer before they cross the border into the State.”

Similarly, another security personnel affirmed that:

“The few persons that want to pass the border must be asked where they are coming from. If the State is where there is COVID-19, we move them to Abakaliki stadium. Every person passing is directed to the health team to check their temperature and apply hand sanitizer” (Informant, fourth border).

Again, the information obtained from the respondents largely corresponded with the observations made by the researchers.

All the health-care workers, on the other hand, screened the commuters for fever. According to a health care worker:

“At the border, our job is to screen the travelers coming into the State to identify those who have high-grade fever as these persons may have the suspected disease.” But we go back to Abakaliki daily around 6.00pm and all those that arrive later wait till the next morning for us to arrive and screen them before entering the State (Informant, first border).

A similar observation was reported by another health personnel who said:

With the support of the security agents, every traveler passing is directed to us to check their temperature and also give them hand sanitizers and ensure they rub their hands (Informant, fifth border).

At one of the borders, the health-care workers enquired about the travel history of the commuters in addition to checking their temperatures. Commuters with travel histories to high-risk States or countries are further referred to the security personnel

for onward transfer to the quarantine station at the Abakaliki township stadium. One of the health-care workers had this to say:

“We ensure every person that is crossing the border has their temperature checked. We ask about where they are travelling from and inform the task force and security personnel if they are coming from States with a high burden of COVID-19” (Informant, second border).

Enforcement of coronavirus disease 2019 preventive measures and movement restrictions among commuters

Whereas the security personnel ensured that all commuters put on face masks, the health workers made sure the commuters either washed their hands under running water with soap or had them sanitized with alcohol-based hand rub. Security personnel in one of the borders with improvised hand washing device stated thus:

“We have Veronica Bucket with detergent that every person that can pass must wash their hands. Then we ensure the medical team checks temperature and sanitize the travelers’ hands” (Informant, fourth border).

The security personnel also made sure that commuters put on a face mask before passing the border. Our respondent in another border added this:

“Anyone coming from States like Lagos and Kano (Lagos is the epicenter of the outbreak in Nigeria and Kano is the second worst-hit city) are stopped till we move them to Abakaliki stadium where the health personnel decides on their case. We also direct them to meet the medical team at the border hand sanitizing and temperature check” (Informant, second border).

In a frustrated look, one of the respondents described their challenges with the following sentences:

“There is too much pressure here because other State governments are not enforcing the inter-State ban on movement. I cannot imagine someone travelling from Lagos or Abuja to this place without being stopped. If they are prevented from leaving their States, they wouldn’t come here to disturb us, and it is difficult for us to simply send them back.” (Informant, first border).

All the health-care workers said they screened all commuters for fever and ensured they all practiced hand hygiene by washing or sanitizing their hands before crossing the border. These are how some of the participants presented their roles at the borders:

“We administered hand sanitizers to the travelers with the aim of reducing the transmission of the virus while at the border and within the State” (Informant, first border).

Another informant at the third border added:

“We see very few persons who drive through the border. And they all use hand sanitizers and we check their temperature.”

Confidential information from some of the commuters arrested for sneaking into the State through the bush and quarantined at the Abakaliki stadium revealed that most of them were refused

entry at the Ishielu border. Others decided to enter through the neighboring communities due to fear of being detained at the Stadium for 14 days under uncomfortable conditions. A narrative from one of them was:

“I was on a short visit to Lagos when the lockdown was pronounced but had to come back due to the challenges of surviving in Lagos. I have no other place to go than to return home despite the difficulties of travelling across 6 other States before getting to Ebonyi. I paid a lot of money for motorcycle to carry me through the villages while trying to avoid the border but only to be arrested by the ‘Neighbourhood Watch’ and brought to this place.”

DISCUSSION

The delayed appearance of the first COVID-19 case was probably due to the early closure of the major borders of entry into the State, an action that the State government took more than a month before the Federal Government of Nigeria deemed it necessary to ban interstate travelling as part of the measures to fight the dreaded pandemic.^[7,11,19,20] This operation may have prevented the importation of COVID-19 by the movement of persons from other States into Ebonyi. A previous study had revealed that severe travel restrictions were associated with a reduction in COVID-19 cumulative incidence as it decreases the slope of cumulative cases by at least 50%.^[21]

Attempts to achieve the purpose of the border closure in preventing entry of COVID-19 cases into the State was clearly demonstrated by the security personnel who were observed enforcing movement restrictions for nonessential service commuters at the State borders. The fact that all the borders had checkpoints, and some multiples of it, manned by an array of security personnel and members of the State Anti-COVID-19 task force may have made border crossing more difficult or even impossible, thereby reducing the number of infected persons entering the State. Breakdown of the first 13 cases of COVID-19 confirmed in the State shows that majority of them were suspected contacts intercepted by members of Anti-COVID-19 Task Force,^[13-16] thus lending credence to the effectiveness of the border closure and surveillance activities in preventing the spread of the disease in the State, a development that received the commendation from the Nigeria Center for Disease Control.^[22]

However, the movement restriction efforts of the security personnel at the borders were not without hitches and gaps. For instance, the observed disagreement over supremacy for authority at a border could undermine the overall goal of the border control through the issuance of counter instructions to commuters by different personnel from another security group. Although there may be differences in the usual job description of the security agents, a common goal of the border control at this period of COVID-19 crisis is to enforce movement restriction in line with the directive of the State government and this should be understood by all the groups of security

personnel involved. This underscores the need for the State government to ensure a coordinated inter-agency action of the security personnel through the clear specification of roles and delegation of a single superior authority that should be in-charge of all the security agents in any border. Without such a clear definition of tasks and responsibilities, the organization and provision of joint activities and operations may cause friction, rivalries, and duplication of activities at operational levels.^[23]

Furthermore, some respondents in the KII stated that they allowed passage across the borders only for the commuters rendering essential services but our observation showed that majority of the security personnel neither asked for the identity of the commuters who claimed to be on essential duties nor inquired about their take-off points, stop-overs, travel histories, waybills, or their final destinations as a way of truly identifying those at high risks for COVID-19 transmission. According to the WHO, majority (80%) of COVID-19 infections have mild symptoms or asymptomatic, while only 15% and 5% present with severe and critical infections, respectively.^[24] These facts therefore underscore the importance of thorough border screening of commuters as an indispensable component of surveillance at the borders during lockdown to curb the spread of infectious diseases.

Inadequate screening for COVID-19 signs and symptoms, as generally observed in both the health and security posts at all the borders could have meant that some commuters infected with the virus may have been missed out and allowed entry into the State, thereby resulting in the spread of infection. Surprisingly, none of the KII respondents mentioned asking the drivers for passengers' manifest or waybills for goods. The discrepancy between what was reported by the security personnel and what was observed by the researchers suggests there may be gaps in the surveillance and enforcement of movement restrictions, and therefore calls for expedited review of the protocol for operations at the borders.

The reported enforcement on the use of face masks, the practice of hand hygiene, and screening of commuters for high temperature are good practices that should be upheld by the security and health personnel at the borders. This was corroborated by the confidential information obtained from some of the drivers and commuters that crossed the borders. However, the observations of poor hand washing or sanitizing technique among commuters, the inappropriate technique of checking temperature, and non observance of physical distancing during screening of commuters by health-care workers are indications of gaps in knowledge and skills for screening among the health-care workers on one hand and poor risk perception about COVID-19 infection by the commuters on the other. These observations emphasize the need for health workers training and commuter education about the modes of transmission of COVID-19.

Since COVID-19 has been described as highly contagious with a reported basic reproduction number of 5.7,^[25] keeping

suspected cases (especially those with symptoms) in unprotected places around the security and health personnel at the borders while waiting for an ambulance to arrive constitutes a high risk for infection transmission. Furthermore, keeping the late arrivals overnight at the border appears impracticable and exposes them to other dangers such as assault and rape. Each border should have a designated holding area and a standby ambulance for conveying suspected and symptomatic cases to isolation and quarantine centers. There should also be provisions for managing severe cases under emergency conditions.

For inter-State travel ban and lockdown at the borders to be effective in the control of COVID-19 spread in Nigeria, it must be an all-inclusive decision to be taken and enforced by all the State governments. It should be well announced, and enough time given to enable those on temporary visits to other States to return to their permanent places of residents. COVID-19 prevention and control measures are capital intensive and should be well-coordinated with adequate mobilization and judicious use of resources. The lockdown approach should be combined with aggressive public education and risk communication messages targeted at various classes of the population, together with enforcement of compliance with prevention strategies and distribution of palliatives to reduce suffering among the vulnerable groups.

CONCLUSION

Movement restrictions and surveillance activities at inter State borders can be effective means of controlling COVID-19 importation and spread across the States if it is well-coordinated and collaborative among the various arms of the governments across the States, and with the uniformed security agencies and vigilante groups. There should be adequate and reliable screening measures to identify suspected cases, together with risk communication and strict enforcement of prevention strategies. Streamlining the order of command among the security personnel, capacity building of the health-care workers, and provision of holding areas and ambulances for suspected cases at the major borders would improve orderliness and case detection among commuters. Further studies on risk perception and challenges of compliance with prevention measures among various population groups are recommended.

Acknowledgments

This study was conducted with funds contributed by the co-authors. We thank all the respondents for their voluntary participation and the provision of unbiased information.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. World Health Organization. Novel Coronavirus (2019-nCoV) Situation

- Report – 1 21 January 2020. Geneva, Switzerland : WHO Bulletin; 2020. p. 1-7.
2. WHO. Naming the Coronavirus Disease (COVID-19) and the Virus that Causes It. World Health Organization; 2020. p. 1. Available from: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it). [Last accessed on 2020 Apr 26].
 3. World Health Organization. Rolling Updates on Coronavirus Disease (COVID-19); 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>. [Last accessed on 2020 Apr 21].
 4. WHO. Coronavirus Disease (COVID-19) Situation Report – 122. Vol. 2019. World Health Organization; 2020. p. 2633. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200521-covid-19-sitrep-122.pdf?sfvrsn=24f20e05_2. [Last accessed on 2020 May 22].
 5. World Health Organization. WHO Director-General’s Opening Remarks at the Media Briefing on COVID-19 – 11 March 2020; 2020. Available from: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>. [Last accessed on 2020 Apr 26].
 6. Federal Government of Nigeria. Presidential Task Force on COVID-19. State House; 2020. Available from: <https://statehouse.gov.ng/covid19/objectives/>. [Last accessed on 2020 Apr 20].
 7. Nigeria Centre for Disease Control (NCDC). COVID-19 OUTBREAK IN NIGERIA Situation Report, 9th; 2020. p. 1-3. Available from: [https://file:///C:/Users/root/Downloads/An update of COVID-19 outbreak in Nigeria_080320_11.pdf](https://file:///C:/Users/root/Downloads/An%20update%20of%20COVID-19%20outbreak%20in%20Nigeria_080320_11.pdf). [Last accessed on 2020 April 20].
 8. World Health Organization. Coronavirus disease 2019 (COVID-19): Situation Report – 39. Vol. 2019, Situation Report – 39; 2020. p. 2633. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200228-sitrep-39-covid-19.pdf?sfvrsn=5bbf3e7d_4. [Last accessed on 2020 Apr 21].
 9. Nigeria Centre for Disease Control. COVID-19 Situation Report – 82. Vol. 205; 2020. p. 19-22. Available from: <https://ncdc.gov.ng/themes/common/files/sitreps/87e68bc490200d45226442bdb0d228d.pdf>. [Last accessed on 2020 May 22].
 10. News Agency of Nigeria. Umahi signs COVID-19, Other Infectious Diseases Emergency Prevention Bill Into Law. The Guardian Nigeria. Available from: <https://guardian.ng/news/umahi-signs-covid-19-other-infectious-diseases-emergency-prevention-bill-into-law/>. [Last accessed on 2020 Apr 20].
 11. Eze J. COVID – 19: Ebonyi Closes Boundaries from Saturday. Premium Times. Abakaliki; 2020. Available from: <https://www.premiumtimesng.com/coronavirus/384104-covid-19-ebonyi-closes-boundaries-from-saturday.html>. [Last accessed on 2020 May 22].
 12. Olufemi A. Majority of COVID-19 Cases in Ebonyi Are ‘Telephone Accessories Sellers’ – Governor. Premium Times; 2020. Available from: <https://www.premiumtimesng.com/regional/ssouth-east/393821-majority-of-covid-19-cases-in-ebonyi-are-telephone-accessories-sellers-governor.html>. [Last accessed on 2020 May 23].
 13. Ebonyi State Government. COVID-19: An Index Case Recorded in Ebonyi State. Ebonyi State News; 2020. Available from: <http://www.ebonyistate.gov.ng/NewsPost.aspx?nid=146>. [Last accessed on 2020 May 23].
 14. Eze J. Ebonyi Records First COVID-19 Case. Premium Times; 2020. Available from: <https://www.premiumtimesng.com/regional/ssouth-east/389942-ebonyi-records-first-covid-19-case.html>. [Last accessed on 2020 May 18].
 15. Orji OU. Ebonyi State Records Second Positive Case of COVID-19. Press Release of Ebonyi State Government; 2020. Available from: <http://www.ebonyistate.gov.ng/NewsPost.aspx?nid=148>. [Last accessed on 2020 May 23].
 16. Ebonyi State Government. New Cases of COVID-19 Confirmed in Ebonyi State. Ebonyi State News; 2020. Available from: <http://www.ebonyistate.gov.ng/NewsPost.aspx?nid=149>. [Last accessed on 2020 May 23].
 17. National Bureau of Statistics. Demographic Statistics Bulletin; 2018. p. 219-28. Available from: <https://nigerianstat.gov.ng/download/775>. [Last accessed on 2020 May 04].
 18. The World Bank. An Overview of Six Economic Zones in Nigeria: Challenges and Opportunities. World Bank Policy Note; 2012. p. 1-22. Available from: <http://documents.worldbank.org/curated/en/795251468196751971/pdf/103442-WP-An-Overview-of-Six-Economic-Zones-in-Nigeria-Challenges-and-Opportunities-PUBLIC.pdf>. [Last accessed on 2020 May 23].
 19. Anioke O. COVID-19: Ebonyi Closes Borders from Saturday. The Nations News. Abakaliki; 2020. Available from: <https://thenationonlineng.net/covid-19-ebonyi-closes-borders-from-saturday>. [Last accessed on 2020 Apr 26].
 20. Ailemen A, Odoh I, Edeh H, Kwen J, Egboboh C. Federal Government Bans Interstate Movement, to Relax Lockdown in Lagos, Ogun, FCT on May 4. Business Day; 2020. Available from: <https://businessday.ng/lead-story/article/fg-bans-interstate-movement-to-relax-lockdown-in-lagos-ogun-fct-on-may-4/>. [Last accessed on 2020 May 23].
 21. Le NK, Le AV, Brooks JP, Liauw D, Izurieta R, Ortiz MR. Impact of government-imposed social distancing measures on COVID-19 morbidity and mortality around the world. Bull World Health Organ 2020; E-pub:1-20.
 22. Ebonyi State Government. Nigeria Centre for Diseases Control Commends the Efforts of Ebonyi State Government in Containing Coronavirus Pandemic. Ebonyi State News. Available from: <http://www.ebonyistate.gov.ng/NewsPost.aspx?nid=151>. [Last accessed on 2020 May 24].
 23. United Nations. Good Practices in the Area of Border Security and Management in the Context of Counterterrorism and Stemming the Flow of “Foreign Terrorist Fighters”. Vol. 422, UN Counter Terrorism Centre; 2014. Available from: https://www.un.org/counterterrorism/sites/www.un.org.counterterrorism/files/goodpractices_bsm_english_2018_0.pdf. [Last accessed on 2020 May 24].
 24. World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report – 46. Vol. 2019; 2020. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf_2. [Last accessed on 2020 May 24].
 25. Sanche S, Lin YT, Xu C, Romero-Severson E, Hengartner N, Ke R. High contagiousness and rapid spread of severe acute respiratory syndrome coronavirus 2. Emerg Infect Dis 2020;26:1470-7.